

# RECENT EMPIRICAL RESEARCH AND METHODOLOGIES IN DEFENSE MECHANISMS

EDITED BY: Mariagrazia Di Giuseppe, John Christopher Perry,  
Tracy A. Prout and Ciro Conversano

PUBLISHED IN: Frontiers in Psychology and Frontiers in Psychiatry





# frontiers

## Frontiers eBook Copyright Statement

The copyright in the text of individual articles in this eBook is the property of their respective authors or their respective institutions or funders. The copyright in graphics and images within each article may be subject to copyright of other parties. In both cases this is subject to a license granted to Frontiers.

The compilation of articles constituting this eBook is the property of Frontiers.

Each article within this eBook, and the eBook itself, are published under the most recent version of the Creative Commons CC-BY licence.

The version current at the date of publication of this eBook is CC-BY 4.0. If the CC-BY licence is updated, the licence granted by Frontiers is automatically updated to the new version.

When exercising any right under the CC-BY licence, Frontiers must be attributed as the original publisher of the article or eBook, as applicable.

Authors have the responsibility of ensuring that any graphics or other materials which are the property of others may be included in the CC-BY licence, but this should be checked before relying on the CC-BY licence to reproduce those materials. Any copyright notices relating to those materials must be complied with.

Copyright and source acknowledgement notices may not be removed and must be displayed in any copy, derivative work or partial copy which includes the elements in question.

All copyright, and all rights therein, are protected by national and international copyright laws. The above represents a summary only. For further information please read Frontiers' Conditions for Website Use and Copyright Statement, and the applicable CC-BY licence.

ISSN 1664-8714

ISBN 978-2-88974-119-9

DOI 10.3389/978-2-88974-119-9

## About Frontiers

Frontiers is more than just an open-access publisher of scholarly articles: it is a pioneering approach to the world of academia, radically improving the way scholarly research is managed. The grand vision of Frontiers is a world where all people have an equal opportunity to seek, share and generate knowledge. Frontiers provides immediate and permanent online open access to all its publications, but this alone is not enough to realize our grand goals.

## Frontiers Journal Series

The Frontiers Journal Series is a multi-tier and interdisciplinary set of open-access, online journals, promising a paradigm shift from the current review, selection and dissemination processes in academic publishing. All Frontiers journals are driven by researchers for researchers; therefore, they constitute a service to the scholarly community. At the same time, the Frontiers Journal Series operates on a revolutionary invention, the tiered publishing system, initially addressing specific communities of scholars, and gradually climbing up to broader public understanding, thus serving the interests of the lay society, too.

## Dedication to Quality

Each Frontiers article is a landmark of the highest quality, thanks to genuinely collaborative interactions between authors and review editors, who include some of the world's best academicians. Research must be certified by peers before entering a stream of knowledge that may eventually reach the public - and shape society; therefore, Frontiers only applies the most rigorous and unbiased reviews.

Frontiers revolutionizes research publishing by freely delivering the most outstanding research, evaluated with no bias from both the academic and social point of view. By applying the most advanced information technologies, Frontiers is catapulting scholarly publishing into a new generation.

## What are Frontiers Research Topics?

Frontiers Research Topics are very popular trademarks of the Frontiers Journals Series: they are collections of at least ten articles, all centered on a particular subject. With their unique mix of varied contributions from Original Research to Review Articles, Frontiers Research Topics unify the most influential researchers, the latest key findings and historical advances in a hot research area! Find out more on how to host your own Frontiers Research Topic or contribute to one as an author by contacting the Frontiers Editorial Office: [frontiersin.org/about/contact](https://frontiersin.org/about/contact)

# RECENT EMPIRICAL RESEARCH AND METHODOLOGIES IN DEFENSE MECHANISMS

Topic Editors:

**Mariagrazia Di Giuseppe**, University of Pisa, Italy

**John Christopher Perry**, McGill University, Canada

**Tracy A. Prout**, Yeshiva University, United States

**Ciro Conversano**, University of Pisa, Italy

**Citation:** Di Giuseppe, M., Perry, J. C., Prout, T. A., Conversano, C., eds. (2022). Recent Empirical Research and Methodologies in Defense Mechanisms. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88974-119-9

# Table of Contents

- 05 Editorial: Recent Empirical Research and Methodologies in Defense Mechanisms: Defenses as Fundamental Contributors to Adaptation**  
Mariagrazia Di Giuseppe, John Christopher Perry, Tracy A. Prout and  
Ciro Conversano
- 09 Alexithymia and Inflammatory Bowel Disease: A Systematic Review**  
Gabriella Martino, Andrea Caputo, Peter Schwarz, Federica Bellone,  
Walter Fries, M. C. Quattropani and C. M. Vicario
- 18 Dispositional Optimism and Context Sensitivity: Psychological Contributors to Frailty Status Among Elderly Outpatients**  
Alberto Sardella, Vittorio Lenzo, George A. Bonanno, Gabriella Martino,  
Giorgio Basile and Maria C. Quattropani
- 27 Defensive Functioning Moderates the Effects of Nondirective Meditation**  
Anne Grete Hersoug, Morten Wærsted and Bjørn Lau
- 34 Increasing Mentalization to Reduce Maladaptive Defense in Patients With Mental Disorders**  
Markus C. Hayden, Pia K. Müllauer, Klea J. P. Beyer, Richard Gaugeler,  
Birgit Senft, Maria C. Dehoust and Sylke Andreas
- 43 Defense Mechanisms and Treatment Response in Depressed Inpatients**  
Yves de Roten, Slimane Djillali, Fabienne Crettaz von Roten,  
Jean-Nicolas Despland and Gilles Ambresin
- 53 Alexithymia, Emotional Distress, and Perceived Quality of Life in Patients With Hashimoto's Thyroiditis**  
Gabriella Martino, Andrea Caputo, Carmelo M. Vicario,  
Ulla Feldt-Rasmussen, Torquil Watt, Maria C. Quattropani,  
Salvatore Benvenga and Roberto Vita
- 63 The Role of Suppression and the Maintenance of Euthymia in Clinical Settings**  
Emanuele Maria Merlo, Anca Pantea Stoian, Ion G. Motofei and  
Salvatore Settineri
- 72 It's Not That Great Anymore: The Central Role of Defense Mechanisms in Grandiose and Vulnerable Narcissism**  
Leonie Kampe, Johannes Bohn, Carina Remmers and  
Susanne Hörz-Sagstetter
- 86 What Do Therapist Defense Mechanisms Have to Do With Their Experience of Professional Self-Doubt and Vicarious Trauma During the COVID-19 Pandemic?**  
Katie Aafjes-Van Doorn, Vera Békés, Xiaochen Luo, Tracy A. Prout and  
Leon Hoffman
- 98 Defensive Functioning of Individuals Diagnosed With Gender Dysphoria at the Beginning of Their Hormonal Treatment**  
Guido Giovanardi, Marta Mirabella, Mariagrazia Di Giuseppe,  
Francesco Lombardo, Anna Maria Speranza and Vittorio Lingiardi



- 111** *Inter-rater Reliability and Construct Validity of the Lerner Defense Scale in Clinical and Non-clinical Groups*  
Anna Maria Rosso, Cinzia Airaldi and Andrea Camoirano
- 119** *The Relationship Between Defense Mechanisms and Attachment as Measured by Observer-Rated Methods in a Sample of Depressed Patients: A Pilot Study*  
Vera Békés, Katie Aafjes-van Doorn, Daniel Spina, Alessandro Talia, Claire J. Starrs and J. Christopher Perry
- 130** *Psychological Adaptive Mechanism Maturity Predicts Good Outcomes in Treatment for Refractory PTSD*  
Thomas Beresford, Lawrence Wahlberg, Daniel Hipp and Patrick J. Ronan
- 136** *The Hierarchy of Defense Mechanisms: Assessing Defensive Functioning With the Defense Mechanisms Rating Scales Q-Sort*  
Mariagrazia Di Giuseppe and J. Christopher Perry
- 159** *Psychological Adaptive Mechanism Maturity, Age, and Depression Symptoms in Advanced-Stage Cancer Patients*  
Thomas Beresford, Patricia U. Teschke, Daniel Hipp and Patrick J. Ronan
- 167** *Defense Mechanisms and Repressive Coping Among Male Breast Cancer Patients*  
Rainer Weber, Johannes C. Ehrental, Evamarie Brock-Midding, Sarah Halbach, Rachel Würstlein, Christoph Kowalski and Nicole Ernstmann



# Editorial: Recent Empirical Research and Methodologies in Defense Mechanisms: Defenses as Fundamental Contributors to Adaptation

Mariagrazia Di Giuseppe<sup>1\*</sup>, John Christopher Perry<sup>2</sup>, Tracy A. Prout<sup>3</sup> and  
Ciro Conversano<sup>1</sup>

<sup>1</sup> Department of Surgical, Medical and Molecular Pathology, Critical and Care Medicine, University of Pisa, Pisa, Italy, <sup>2</sup> McGill University and the Institute of Community and Family Psychiatry, Jewish General Hospital, Montreal, QC, Canada, <sup>3</sup> Ferkauf Graduate School of Psychology, Yeshiva University, Bronx, NY, United States

**Keywords:** defense mechanisms, adaptation, mental disorder, distress, assessment, DMRS

## Editorial on the Research Topic

### Recent Empirical Research and Methodologies in Defense Mechanisms

During the past 50 years, empirical research on defense mechanisms has come a long way in contributing to the empirical science. Beginning with Freud's initial description of defenses (Freud, 1894), there have been numerous suggested revisions to the theory of defenses. At this juncture, there is general agreement on the hierarchical organization of defense mechanisms, which, for instance lead to the inclusion of an Provisional Axis for Defensive Functioning in the 4th Edition of the Diagnostic and Statistical Manual for Mental Disorders (American Psychiatric Association, 1994). The impact of defensive functioning on physical and psychological well-being has been widely demonstrated. Less appreciated than research on defenses and mental disorders, are the growing body of studies of defenses and medical conditions (Martino et al., 2019, 2020; Conversano and Di Giuseppe, 2021). Recent studies have found that cancer patients with self-sacrificing defensive style had shorter disease-free intervals, shorter survival times, and a more unfavorable cancer staging at endpoint (Weihs et al., 2000; Di Giuseppe et al., 2018). Other studies (Zilakis and Dervenis, 2003; Vita et al., 2020; Marchini et al., 2021) have linked repressed conflicts to physical and mental disorders among those with a recurrent history of unexplained distress and depression. In line with the psychosomatic hypothesis, using neurotic defenses, which inhibit awareness of disturbing wishes, feelings, thoughts, experiences and memories, lead to impaired endocrine and immune functions and relate to the somatic manifestation of psychological distress (Bahnson and Bahnson, 1966; Vos and de Haes, 2007). Moreover, defense mechanisms, like other emotion regulation strategies, function as essential moderators of psychological responses to stressful life events (Conversano et al., 2020; Di Giuseppe et al., 2021; Merlo et al.) such as chronic physical and mental conditions (Perry, 1988; Sardella et al., 2021; Martino et al.; Martino et al.).

Defenses operate largely or partly outside of awareness, and their effects take innumerable forms. Both of these realities have created measurement challenges. Some measures (Gleser and Ihilevich, 1969; Plutchik et al., 1979; Bond et al., 1983) may have been based on the same motivational constructs but presented different organizing schemas (Horowitz et al., 1992). Other measures (Cramer, 1991; Lerner, 2005) have yielded scientifically valuable findings (Cramer, 2015), but limited themselves to a small number of defenses and lack of clear link to how individuals cope with internal and external conflicts and stressors (Rosso et al.). These methodological limitations have contributed for years to the confusion between defense mechanisms and coping strategies.

## OPEN ACCESS

### Edited and reviewed by:

Antoine Bechara,  
University of Southern California,  
United States

### \*Correspondence:

Mariagrazia Di Giuseppe  
mariagrazia.digiuseppe@gmail.com

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 26 October 2021

**Accepted:** 28 October 2021

**Published:** 03 December 2021

### Citation:

Di Giuseppe M, Perry JC, Prout TA  
and Conversano C (2021) Editorial:  
Recent Empirical Research and  
Methodologies in Defense  
Mechanisms: Defenses as  
Fundamental Contributors to  
Adaptation.  
Front. Psychol. 12:802602.  
doi: 10.3389/fpsyg.2021.802602

As Cramer stated “*Coping mechanisms involve a conscious, purposeful effort, while defense mechanisms are processes that occur without conscious effort and without conscious awareness (i.e., they are unconscious). Also, coping strategies are carried out with the intent of managing or solving a problem situation, while defense mechanisms occur without conscious intentionality; the latter function to change an internal psychological state but may have no effect on external reality, and so may result in non-veridical perception, that is, in reality distortion*” (Cramer, 1998, p. 921). With continued advances in empirical research on the hierarchical nature of defense adaptation, two aspects of Cramer’s definition appear incomplete. First, some defenses confuse internal conflict with external stress and lead the individual to maladaptive responses to the environment (e.g., counter-attacking rather than reflecting before acting). Second, it does not capture the partially conscious and more flexibly adaptive aspects of mature defensive functioning.

Defense mechanisms higher in the hierarchy (i.e., high adaptive defenses) do not follow the differential criteria described in Cramer’s theory (Beresford, 2012). More than 30 years research with the Defense Mechanisms Rating Scales (DMRS; Perry, 1990) and its derivative measures (DMRS-Q; Di Giuseppe et al., 2014; Di Giuseppe and Perry, 2021; DMRS-SR-30; Di Giuseppe et al., 2020a) have demonstrated that individuals using mature defenses can: (1) be partially or fully aware of their activation (e.g., altruism, self-assertion, or self-observation); (2) intentionally use an adaptive defensive strategy to deal with internal conflict or stressful situations (e.g., anticipation or suppression); and (3) increase the probability of a gratifying resolution of the internal or external stressors without reality distortion (e.g., self-assertion or sublimation). In light of these findings, we affirm that the hierarchy of defense mechanisms (Vaillant, 1992; American Psychiatric Association, 1994; Perry, 2014; Di Giuseppe and Perry) is a comprehensive description of both more adaptive (i.e., mature defenses, overlapping in function with coping strategies) and less adaptive (i.e., immature and neurotic defenses) way of automatically responding. A clear result is that the systematic assessment of defenses which reflects this hierarchy of adaptation adds value to the diagnosis of mental disorders. We believe that it is an essential part (Perry et al., 2020; Conversano, 2021).

Research on personality disorders has found that specific defensive profiles are associated with personality traits and disorders (Maffei et al., 1995; Steiner et al., 2007; Presniak et al., 2010; Perry et al., 2013) and revealed a hierarchical organization of personality disorders based on the maturity of defensive functioning (Di Giuseppe et al., 2019). This confirms Kernberg’s Personality Organization, which includes object representations (split vs. ambivalent objects) and reality testing (Kernberg, 1984). As highlighted by Kempe et al. by analyzing the defensive functioning of individuals with narcissistic personality it is possible to distinguish the defensive profiles of both grandiose and vulnerable narcissism (Kempe et al.). Similarly, recent studies investigated defenses in relation to attachment and mentalization show promising results. As demonstrated by Tanzilli et al. (2021), depressed patients with secure attachment showed higher reflective functioning and

overall defensive maturity than those with insecure attachment. In line with these findings, Békés et al. found that the use of neurotic and immature defenses in the early phase of treatment predicted an increase in avoidant attachment over the course of treatment, whereas the use of immature non-depressive defenses (e.g., denial, rationalization) predicted a decrease in preoccupied attachment. Similarly, Hayden et al. reported that mentalization played an important role in the reduction of maladaptive defenses during inpatient therapy. However, their results showed that only maladaptive defenses decreased significantly in psychotherapy, while neurotic and mature did not increase significantly as expected. It is possible that some of these contradictory results stem from methodological issues, such as employing measures with inadequate reliability and validity. Furthermore, other research has demonstrated that specific defense are associated with psychiatric symptoms, interpersonal problems, externalizing behaviors, vulnerable sense of self, poor adjustment, suicidal ideation, and attempts (Dell’Osso et al., 2011; Boldrini et al., 2020).

Psychotherapy is important to help individuals improve their defensive functioning and outcome (Hoffman et al., 2016; Babi et al., 2019; Di Giuseppe et al., 2020b; Hersoug et al.). The proportion of mature and immature defenses change during psychotherapy and predict treatment response (Perry and Bond, 2012; Perry et al., 2020; Prout et al., 2021; Beresford et al.; de Roten et al.). Patient improvement in defensive maturity is likely to happen within the relationship with the therapist, who in turn activates and works with defenses in response to stress (Tanzilli and Gualco, 2020; Tanzilli et al., 2020). Therapists appear to utilize higher levels of mature defenses and lower levels of immature defenses compared to a community sample (Aafjes-van Doorn et al.). However, lower therapists’ defensive maturity was associated with higher levels of vicarious trauma and professional doubt during the COVID-19 pandemic (Aafjes-van Doorn et al.). Further studies should investigate the impact of the interplay between patient and therapist defense mechanisms on outcome.

In addition to psychopathology research, interesting findings come from a number of recent studies conducted on general populations under stressful conditions. Maladaptive defensive responses were reported more often by younger people during the first wave of COVID-19 pandemic, while greater reliance on mature defenses was evident among older adults during the pandemic (Prout et al., 2020). These findings were confirmed by Beresford et al. who found that maturity of defensive functioning was associated with older age and it predicted lower depression levels in a large sample of adult cancer patients. Defense mechanisms are also associated with gender. Women use more neurotic and immature-depressive defenses to deal with internal or external stressors, while in similar conditions men tend to rely more on obsessional and immature-non depressive defenses (see Di Giuseppe and Perry, 2021, for review on the hierarchy of defenses). These findings were confirmed also in individuals diagnosed with gender dysphoria, indicating that the individual’s dominant defensive functioning is related to the gender to which one chooses instead of the gender assigned at birth (Giovannardi et al.).

Advances in research on defense mechanisms widely demonstrate the impact of defense mechanisms in the onset, course, and amelioration of mental disorders. Despite the increasingly robust findings that defense mechanisms, and the hierarchy of adaptation, add scientific value to diagnosis, many practitioners have limited awareness of these scientific contributions. This special issue of *Frontiers* is dedicated to increase awareness of the relevance of these constructs to clinical practice. Although defense mechanisms are included in the *Psychodynamic Diagnostic Manual* as a key construct in diagnosis and personality structure (Lingiardi and Bornstein, 2017), we believe that greater understanding of patients' defensive functioning will be helpful to non-dynamically oriented clinicians as well. The science of our profession can be improved and the quality of our interventions can be individually tailored as a result of increased research on

the role of defenses in the course of treatment. Research on defenses adds information about symptom severity, differential diagnosis, treatment compliance, recommended interventions, and expected prognosis. The inclusion of defensive functioning in diagnosis and case formulation (Perry et al., 2018, 2020) has the potential to enrich the overall clinical understanding of patients' mental functioning and how treatment can be tailored to meet their needs. In sum, close assessment of defenses provide some of the information needed to develop truly effective, personalized treatments (Zilcha-Mano, 2021).

## AUTHOR CONTRIBUTIONS

All authors contributed in equal part to the Research Topic and the final draft of the manuscript.

## REFERENCES

- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders, 4th Edn.* Washington, DC: American Psychiatric Publishing Inc.
- Babl, A., grosse Holtforth, M., Perry, J. C., Schneider, N., Dommann, E., Heer, S., et al. (2019). Comparison and change of defense mechanisms over the course of psychotherapy in patients with depression or anxiety disorder: evidence from a randomized controlled trial. *J. Affect. Disord.* 252, 212–220. doi: 10.1016/j.jad.2019.04.021
- Bahnsen, C. B., and Bahnsen, M. B. (1966). Role of the ego defenses: denial and repression in the etiology of malignant neoplasm. *Ann. N. Y. Acad. Sci.* 125, 827–845. doi: 10.1111/j.1749-6632.1966.tb45434.x
- Beresford, M. D. (2012). *Psychological Adaptive Mechanisms: Ego Defense Recognition in Practice and Research.* New York, NY: Oxford University Press.
- Boldrini, T., Lo Buglio, G., Giovanardi, G., Lingiardi, V., and Salcuni, S. (2020). Defense mechanisms in adolescents at high risk of developing psychosis: an empirical investigation. *Res. Psychother.* 23, 4–15. doi: 10.4081/ripppo.2020.456
- Bond, M., Gardner, S. T., Christian, J., and Sigal, J. J. (1983). Empirical study of self-rated defense styles. *Arch. Gen. Psychiatry* 40, 333–338. doi: 10.1001/archpsyc.1983.01790030103013
- Conversano, C. (2021). The psychodynamic approach during COVID-19 emotional crisis. *Front. Psychol.* 12:670196. doi: 10.3389/fpsyg.2021.670196
- Conversano, C., Ciacchini, R., Orrù, G., Di Giuseppe, M., Gemignani, A., and Poli, A. (2020). Mindfulness, compassion, and self-compassion among health care professionals: what's new? A systematic review. *Front. Psychol.* 11:1683. doi: 10.3389/fpsyg.2020.01683
- Conversano, C., and Di Giuseppe, M. (2021). Psychological factors as determinants of chronic conditions: clinical and psychodynamic advances. *Front. Psychol.* 12:635708. doi: 10.3389/fpsyg.2021.635708
- Cramer, P. (1991). "The defense mechanism manual," in *The Development of Defense Mechanisms.* New York, NY: Springer. doi: 10.1007/978-1-4613-9025-1
- Cramer, P. (1998). Coping and defense mechanisms: what's the difference?. *J. Pers. Assess.* 66, 919–946. doi: 10.1111/1467-6494.00037
- Cramer, P. (2015). Defense mechanisms: 40 years of empirical research. *J. Pers. Assess.* 97, 114–122. doi: 10.1080/00223891.2014.947997
- Dell'Oso, L., Carmassi, C., Rucci, P., Ciapparelli, A., Conversano, C., and Marazziti, D. (2011). Complicated grief and suicidality: the impact of subthreshold mood symptoms. *CNS Spectr.* 16, 1–6. doi: 10.1017/S1092852912000090
- Di Giuseppe, M., Ciacchini, R., Micheloni, T., Bertolucci, I., Marchi, L., and Conversano, C. (2018). Defense mechanisms in cancer patients: a systematic review. *J. Psychosom. Res.* 115, 76–86. doi: 10.1016/j.jpsychores.2018.10.016
- Di Giuseppe, M., Gennaro, A., Lingiardi, V., and Perry, J. C. (2019). The role of defense mechanisms in emerging personality disorders in clinical adolescents. *Psychiatry* 82, 128–142. doi: 10.1080/00332747.2019.1579595
- Di Giuseppe, M., Nepa, G., Prout, T. A., Albertini, F., Marcelli, S., et al. (2021). Stress, burnout, and resilience among healthcare workers during the COVID-19 emergency: the role of defense mechanisms. *Int. J. Environ. Res. Public Health* 18:5258. doi: 10.3390/ijerph18105258
- Di Giuseppe, M., and Perry, J. C. (2021). The hierarchy of defense mechanisms: assessing defensive functioning with the defense mechanisms rating scales Q-sort. *Front. Psychol.* 12:718440. doi: 10.3389/fpsyg.2021.718440
- Di Giuseppe, M., Perry, J. C., Lucchesi, M., Michelini, M., Vitiello, S., Piantanida, A., et al. (2020a). Preliminary reliability and validity of the DMRS-SR-30, a novel self-report based on the defense mechanisms rating scales. *Front. Psychiatry* 11:870. doi: 10.3389/fpsyg.2020.00870
- Di Giuseppe, M., Perry, J. C., Petraglia, J., Janzen, J., and Lingiardi, V. (2014). Development of a Q-sort version of the defense mechanism rating scales (DMRS-Q) for clinical use. *J. Clin. Psychol.* 70, 452–465. doi: 10.1002/jclp.22089
- Di Giuseppe, M., Prout, T. A., Fabiani, M., and Kui, T. (2020b). Defensive profile of parents of children with externalizing problems receiving Regulation Focused Psychotherapy for Children: a pilot study. *Mediterranean J. Clin. Psychol.* 8. doi: 10.6092/2282-1619/mjcp-2515
- Freud, S. (1894). "The neuro-psychoses of defence," in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, ed J. Strachey (London: Hogarth Press), 41–61.
- Gleser, G. C., and Ihlevich, D. (1969). An objective instrument for measuring defense mechanisms. *J. Consult. Clin. Psychol.* 33, 51–60. doi: 10.1037/h0027381
- Hoffman, L., Rice, T. R., and Prout, T. A. (2016). *Manual of Regulation-Focused Psychotherapy for Children (RFP-C) With Externalizing Behaviors: A Psychodynamic Approach.* New York, NY: Routledge. doi: 10.4324/9781315736648
- Horowitz, M., Cooper, S., Fridhandler, B., Perry, J. C., Bond, M., and Vaillant, G. (1992). Control processes and defense mechanisms. *J. Psychother. Pract. Res.* 1, 324–336.
- Kernberg, O. F. (1984). *Severe Personality Disorders: Psychotherapeutic Strategies.* New Haven, CT; London: Yale University Press.
- Lerner, P. M. (2005). "Defense and its assessment: the lerner defense scale," in *Scoring the Rorschach: Seven Validated Systems*, eds R. F. Bornstein and J. M. Masling (Mahwah, NJ: Lawrence Erlbaum Associates Publishers), 237–269.
- Lingiardi, V., and Bornstein, R. F. (2017). "Profile of mental functioning - M axis," in *Psychodynamic Diagnostic Manual*, 2nd ed., eds V. Lingiardi and N. McWilliams (New York, NY: Guilford Press), 75–133.
- Maffei, C., Fossati, A., Lingiardi, V., Madeddu, F., Borellini, C., and Petrachi, M. (1995). Personality maladjustment, defenses, and psychopathological symptoms in nonclinical subjects. *J. Pers. Disord.* 9, 330–345. doi: 10.1521/pedi.1995.9.4.330
- Marchini, F., Langher, V., Napoli, A., Balonan, J. T., Fedele, F., Martino, G., et al. (2021). Unconscious loss processing in diabetes: associations with medication adherence and quality of care. *Psychoanal. Psychother.* 35, 5–23. doi: 10.1080/02668734.2021.1922492



- Martino, G., Bellone, F., Langher, V., Caputo, A., Catalano, A., Quattropiani, and Morabito, N. (2019). Alexithymia and psychological distress affect perceived quality of life in patients with Type 2 diabetes mellitus. *Mediterranean J. Clin. Psychol.* 7. doi: 10.6092/2282-1619/2019.7.2328
- Martino, G., Caputo, A., Vicario, C. M., Catalano, A., Schwarz, P., and Quattropiani, M. C. (2020). The relationship between alexithymia and type 2 diabetes: a systematic review. *Front. Psychol.* 11:2026. doi: 10.3389/fpsyg.2020.02026
- Perry, J. C. (1988). A prospective study of life stress, defenses, psychotic symptoms and depression in borderline and antisocial personality disorders and bipolar type II affective disorder. *J. Pers. Disord.* 2, 49–59. doi: 10.1521/pedi.1988.2.1.49
- Perry, J. C. (1990). *The Defense Mechanism Rating Scales Manual, 5th Edn.* Cambridge, MA.
- Perry, J. C. (2014). Anomalies and specific functions in the clinical identification of defense mechanisms. *J. Clin. Psychol.* 70, 406–418. doi: 10.1002/jclp.22085
- Perry, J. C., Banon, E., and Bond, M. (2020). Change in defense mechanisms and depression in a pilot study of antidepressive medications plus 20 sessions of psychotherapy for recurrent major depression. *J. Nerv. Ment. Dis.* 208, 261–268. doi: 10.1097/NMD.0000000000001112
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-year outcome. *Am. J. Psychiatry* 169, 916–925. doi: 10.1176/appi.ajp.2012.11091403
- Perry, J. C., Knoll, M., and Tran, V. (2018). “Motives, defenses, and conflicts in the dynamic formulation for psychodynamic psychotherapy using the Idiographic Conflict Formulation method,” in *Case Formulation for Personality Disorders*, ed U. Kramer, Chap 11 (Elsevier), 203–224. doi: 10.1016/B978-0-12-813521-1.00011-4
- Perry, J. C., Presniak, M. D., and Olson, T. (2013). Defense mechanisms in borderline schizotypal, antisocial and narcissistic personality disorders. *Psychiatry* 76, 32–52. doi: 10.1521/psyc.2013.76.1.32
- Plutchik, R., Kellerman, H., and Conte, H. R. (1979). “A structural theory of ego defenses and emotions,” in *Emotions in Personality and Psychopathology. Emotions, Personality, and Psychotherapy*, ed C. E. Izard (Boston, MA: Springer), 227–257. doi: 10.1007/978-1-4613-2892-6\_9
- Presniak, M. D., Olson, T., and MacGregor, M. W. (2010). The role of defense mechanisms in Borderline and Antisocial personalities. *J. Pers. Assess.* 92, 137–145. doi: 10.1080/00223890903510373
- Prout, T. A., Rice, T., Chung, H., Gorokhovskiy, Y., Murphy, S., and Hoffman, L. (2021). Randomized controlled trial of Regulation Focused Psychotherapy for children: a manualized psychodynamic treatment for externalizing behaviors. *Psychother. Res.* 1–16. doi: 10.1080/10503307.2021.1980626. [Epub ahead of print].
- Prout, T. A., Zilcha-Mano, S., Aafjes-van Doorn, K., Békés, V., Christman-Cohen, I., Whistler, K., et al. (2020). Identifying predictors of psychological distress during COVID-19: a machine learning approach. *Front. Psychol.* 11:586202. doi: 10.3389/fpsyg.2020.586202
- Sardella, A., Lenzo, V., Bonanno, G. A., Martino, G., Basile, G., and Quattropiani, M. C. (2021). Dispositional optimism and context sensitivity: psychological contributors to frailty status among elderly outpatients. *Front. Psychol.* 11:621013. doi: 10.3389/fpsyg.2020.621013
- Steiner, H., Erickson, S. J., MacLean, P., Medic, S., and Koopman, C. (2007). Relationship between defenses, personality, and affect during a stress task in normal adolescents. *Child Psychiatry Hum. Dev.* 38, 107–119. doi: 10.1007/s10578-007-0046-9
- Tanzilli, A., Di Giuseppe, M., Giovanardi, G., Boldrini, T., Caviglia, G., Conversano, C., et al. (2021). Mentalization, attachment, and defense mechanisms: a psychodynamic diagnostic manual-2-oriented empirical investigation. *Res. Psychother.* 24:531. doi: 10.4081/ripppo.2021.531
- Tanzilli, A., and Gualco, I. (2020). Clinician emotional responses and therapeutic alliance when treating adolescent patients with narcissistic personality disorder subtypes: a clinically meaningful empirical investigation. *J. Pers. Disord.* 34, 42–62. doi: 10.1521/pedi.2020.34.supp.42
- Tanzilli, A., Gualco, I., Baiocco, R., and Lingardi, V. (2020). Clinician reactions when working with adolescent patients: the therapist response questionnaire for adolescents. *J. Pers. Assess.* 102, 616–627. doi: 10.1080/00223891.2019.1674318
- Vaillant, G. E. (1992). *Ego Mechanisms of Defense: A Guide for Clinicians and Researchers*. Washington, DC: American Psychiatric Press.
- Vita, R., Caputo, A., Quattropiani, M. C., Watt, T., Feldt-Rasmussen, U., Puleio, P., et al. (2020). Quality of life in patients with hyperthyroidism: where do we stand? *Mediterranean J. Clin. Psychol.* 8. doi: 10.6092/2282-1619/mjcp-2521
- Vos, M. S., and de Haes, J. C. J. (2007). Denial in cancer patients, an explorative review. *Psychooncology* 16, 12–25. doi: 10.1002/pon.1051
- Weihs, K. L., Enright, T. M., Simmens, S. J., and Reiss, D. (2000). Negative affectivity, restriction of emotions, and site of metastases predict mortality in recurrent breast cancer. *J. Psychosom. Res.* 49, 59–68. doi: 10.1016/S0022-3999(00)00143-4
- Zilcha-Mano, S. (2021). Toward personalized psychotherapy: the importance of the trait-like/state-like distinction for understanding therapeutic change. *Am. Psychol.* 76, 516–528. doi: 10.1037/amp0000629
- Zilakis, N., and Dervenis, C. (2003). Psychosomatic aspects of pancreatic cancer. *Pancreatol.* 3, 273–275. doi: 10.1159/000071764

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Di Giuseppe, Perry, Prout and Conversano. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Alexithymia and Inflammatory Bowel Disease: A Systematic Review

Gabriella Martino<sup>1\*</sup>, Andrea Caputo<sup>2</sup>, Peter Schwarz<sup>3</sup>, Federica Bellone<sup>1</sup>, Walter Fries<sup>1</sup>, M. C. Quattropani<sup>1</sup> and C. M. Vicario<sup>4</sup>

<sup>1</sup> Department of Clinical and Experimental Medicine, University of Messina, Messina, Italy, <sup>2</sup> Department of Dynamic and Clinical Psychology, Sapienza University of Rome, Rome, Italy, <sup>3</sup> Department of Medical Endocrinology, Copenhagen University Hospital, Copenhagen, Denmark, <sup>4</sup> Department of Cognitive Sciences, Psychology, Education and Cultural Studies, University of Messina, Messina, Italy

**Background:** Given the role of alexithymia—as the inability to identify, differentiate, and express emotions—in chronic and immune-mediated illness, this systematic review analyzed the prevalence of alexithymia in patients with inflammatory bowel diseases (IBDs), mainly represented by Crohn's disease (CD) and ulcerative colitis (UC).

**Methods:** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed throughout this systematic review of the literature published between 2015 and 2020 in indexed sources from PubMed, PsycINFO, Scopus, and Web of Science databases. Search terms for eligible studies were: “Inflammatory bowel disease” AND “Alexithymia” [Titles, Abstract, Keywords]. Inclusion criteria were: articles written and published in English from 2015 and up to April 2020, reporting relevant and empirical data on alexithymia and IBD.

**Results:** The initial search identified 34 indexed scientific publications. After screening, we found that five publications met the established scientific inclusion criteria. Overall, the mean value of alexithymia ranged from 39 to 53.2 [Toronto Alexithymia Scale (TAS-20) score], thus mostly falling in non-clinical range for alexithymia ( $\leq 51$ ). Comparisons of alexithymia between patients with UC and CD highlighted that patients with CD showed externally oriented thinking and difficulties identifying feelings to a greater extent. Regarding comparisons with other samples or pathologies, patients with IBD were more alexithymic than healthy controls and less alexithymic than patients with major depressive disorder, but no difference was found when compared with patients with irritable bowel syndrome (IBS). Then, regarding correlations with other variables, alexithymia was positively associated with anxiety and depression, as well as with psychopathological symptoms and somatic complaints.

**Conclusion:** This systematic review suggests that patients with IBD cannot be generally considered alexithymic at a clinically relevant extent. However, their greater alexithymic levels and its associations with psychological variables and somatic distress may suggest a reactivity hypothesis, in which living with IBD may progressively lead to impaired emotion recognition over time. Specifically, the relationship between IBD and IBS should be further explored, paying deeper attention to the clinical psychological functioning of CD, as IBD requires more emotional challenges to patients.

**Keywords:** alexithymia, psychological distress, psychological functioning, adjustment, inflammatory bowel disease, chronic disease

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

Graziella Orrù,  
University of Pisa, Italy  
Tiziano A. Agostini,  
University of Trieste, Italy

### \*Correspondence:

Gabriella Martino  
martinog@unime.it

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 29 May 2020

**Accepted:** 26 June 2020

**Published:** 19 August 2020

### Citation:

Martino G, Caputo A, Schwarz P,  
Bellone F, Fries W, Quattropani MC  
and Vicario CM (2020) Alexithymia  
and Inflammatory Bowel Disease: A  
Systematic Review.  
Front. Psychol. 11:1763.  
doi: 10.3389/fpsyg.2020.01763

## INTRODUCTION

Increasing interest exists regarding the key role of psychological source and characteristics in protecting or exposing individuals to emotional distress. Clinical psychological features may affect the patient's ability to manage chronic diseases, leading to both lower compliance and adherence and predicting morbidity and mortality independently of several confounders (Caputo, 2013, 2019; Craparo et al., 2016; Conversano, 2019; Martino et al., 2019a,b; Merlo, 2019). On the other hand, medical conditions may impact mental health, leading to worse perceived quality of life which could in turn interfere with the ability to manage (Castelnuovo et al., 2015; Van Houtum et al., 2015; Di Giuseppe et al., 2018, 2019, 2020; Marchini et al., 2018; Catalano et al., 2019; Guicciardi et al., 2019; Rosa et al., 2019; Settineri et al., 2019; Lenzo et al., 2020; Martino et al., 2020a; Vicario et al., 2020). Among chronic illness, inflammatory bowel diseases (IBDs), mainly represented by Crohn's disease (CD) and ulcerative colitis (UC), show an increasing prevalence worldwide above all in Europe (CD, 322 per 100,000 persons; UC, 505 per 100,000 persons) and North America (CD, 319 per 100,000 persons; UC, 249 per 100,000 persons) (Molodecky et al., 2012; Jordan et al., 2016). IBD diagnosis generally occurs, without gender prevalence, debuts at age 10–40 years, showing frequently an unpredictable course. Particularly in CD, any part of intestines can be intermittently inflamed, while in UC, the inflammation is generally limited to the colon and rectum level only. This chronic medical condition leads to disabling symptoms such as fatigue, abdominal pain, diarrhea, and weight loss. The standard IBD treatment aims at pharmacological management of inflammation, with favor to an adequate compliance and adherence to regular medical controls and medications. In the most severe cases, in UC, the entire large bowel and rectum must be surgically removed, with typically subsequent transitory or permanent ileostomy, with relative psychological outcomes and worse perceived quality of life (Kiebles et al., 2010). Scientific data show that psychological features associated with specific lifestyle and environmental stressors impact both pathogenesis and relapses of IBD (Moreno-Jiménez et al., 2007; Boye et al., 2008). It is likewise reported that a high prevalence of alexithymia exists in patients suffering of chronic and immune-mediated illness characterized by somatic symptoms (Villoria et al., 2017; Erkić et al., 2018; Viganò et al., 2018), up to 35% in IBD, and that alexithymia is strictly related to clinical severity of gastrointestinal pathologies (Porcelli et al., 1995, 2014; Ferreira et al., 2015). Alexithymia is a multidimensional construct, thought as the inability to differentiate between emotions, thoughts, and physiological replies to stimuli, which involves difficulties in recognizing and expressing emotions and externally oriented thinking (Nemiah and Sifneos, 1970; Sifneos, 1996; Taylor and Bagby, 2000; Tordeurs and Janne, 2000). Alexithymia is also considered as a personality trait which may appear in comorbidity with diverse physical and psychopathological disorders [Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (Lumley et al., 2005, 2007; Mattila et al., 2009; Tolmunen et al., 2011; American Psychiatric Association, 2013; Brooks et al., 2019; Martino et al., 2019c, 2020b,c;

Thavamani et al., 2019; Velotti et al., 2019; Orrù et al., 2020)], and it may assume the role of a temporary state linked to both psychopathological conditions and stress levels (Pollatos et al., 2011). It is also suggested that alexithymia is involved in the pathogenesis of numerous somatic disorders (Porcelli et al., 1996; Willemsen et al., 2008; Mazaheri et al., 2012; Marchi et al., 2019; Martino et al., 2019c), and it seems to be associated with both, depression and anxiety, in patients suffering from IBD (Graff et al., 2006; Filipović et al., 2007; Goodhand et al., 2012). Moreover, alexithymia and psychological distress as anxiety and depression may compromise the patient's compliance and adherence, leading to a severe clinical presentation and course of IBD (Sajadinejad et al., 2012a,b; Quattropiani et al., 2019).

These evidences suggest patients living with alexithymia and IBD in comorbidity may experience significant relapses and worse course of IBD, which might be in part explained by difficulty in recognizing body signals, perceptions, and emotions (Mazaheri et al., 2012; Villoria et al., 2017; Viganò et al., 2018). Furthermore, the failure in recognizing emotion perceptions and physical symptoms could lead to a poor assessment and treatment of IBD, to an additional psychological and physical suffering, and to poor perceived quality of life, which in turn impair the patient's ability to cope and manage (Graff et al., 2006; Boye et al., 2008; Faust et al., 2012). Psychopathological comorbidity may be underestimated, and a deep, strategically oriented clinical psychological exploration is required to eventually highlight psychological features, such as alexithymic ones, considering the individual needs and outcomes of patients with IBD.

Hence, the purpose of this systematic review is to provide the current insights on the potential alexithymic characteristics of patients with IBD, underlining the clinical expressions of this complex. Particularly, our objective is to improve the awareness on the complex of alexithymia, IBD, and other related factors, supporting both psychologists and clinicians to carry out specific interventions to promote the adequate managing of IBD, encouraging psychological adjustment and well-being. A deeper understanding of this complex among patients may improve patients' knowledge of such chronic illness, way of feeling themselves, and perceived quality of life.

## MATERIALS AND METHODS

### Data Source and Search Strategy

The review was executed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Liberati et al., 2009; Moher et al., 2009). In April 2020, PubMed, PsycINFO, Scopus, and Web of Science databases were explored, between 2015 and 2020, for eligible studies, in order to analyze the most recent literature, and the following terms were engaged: "Inflammatory bowel disease" AND "Alexithymia" [Titles, Abstract, Keywords].

### Publication Screening and Eligibility Criteria

After leading the first selection of the search, we eliminated study duplicates. During the second selection, all titles and

abstracts were screened, and potential pertinent studies were identified for full-text review by two independent researchers in clinical psychology, for eligibility. Inclusion criteria were: scientific publications in English and with peer review published from 2015 and up to April 2020 reporting relevant and empirical data on alexithymia and IBD.

## Analysis Reviewed Publications and Data Synthesis

Methods were performed accordingly to the PRISMA guidelines (Liberati et al., 2009; Moher et al., 2009), seeing that the heterogeneity of the examined studies did not allow researchers to explore them by a meta-analysis. Researchers in clinical psychology independently reviewed the selected articles to confirm the reliability of the performed method. In order to provide a qualitative synthesis, carefully chosen studies were considered by matching substantial data and identifying the significant indexes of the measured variables.

## RESULTS

### Search Result

**Figure 1** shows our search result and screening results according to PRISMA. Our search identified 34 publications. Eighteen publications were duplicates leaving our search with 16 publications for title and abstract review. After this review process, we identified in total 10 papers for full review. The excluded publications did not fulfill the inclusion criteria as two were systematic reviews, three were conference/meeting abstracts, and one was out of scope. Thus, the remaining 10 publications were full text reviewed, and five of them were removed for the following reasons: two did not provide English full text as they were written in Portuguese (Amorim and Guerra, 2018) and Russian (Mnatsakanyan et al., 2016), one did not provide empirical data about alexithymia (Edman et al., 2017), and two were not specifically addressed to patients with IBD (Cozzolongo et al., 2015; Schauer et al., 2019). We concluded that five papers could be included in our systemic review based on the inclusion criteria.

### Study Characteristics

We found that two out of five selected studies used a cross-sectional research design. Two studies specified that IBD diagnosis was based on the classical clinical, radiological, endoscopic, and histological criteria proposed by the European Crohn's and Colitis Organization (ECCO) (La Barbera et al., 2017; Yanartaş et al., 2019). All the studies reported specific inclusion/exclusion criteria for patient selection. The presence of previous psychiatric disorders and comorbidity of physical disease (e.g., neurological or oncologic pathologies, diabetes, rheumatoid arthritis) were the exclusion criteria reported in all the studies, followed by intellectual disability or cognitive impairment (La Barbera et al., 2017; Viganò et al., 2018; Yanartaş et al., 2019). Two studies included only patients being considered in clinical remission based on disease activity. Specifically, Viganò et al. (2018) adopted Crohn's Disease Activity Index (CDAI) and Mayo score to measure disease activity for CD and UC, whereas

Fournier et al. (2020) used Harvey-Bradshaw Index (HBI) and UC activity index (UCAI), respectively. Concerning sample size, the retrieved studies included a number of patients with IBD ranging from 10 (Huang et al., 2016) to 170 (Viganò et al., 2018), with an average of 75 patients ( $SD = 62$ ). Overall, the patients were aged 40 years on average, except for the study by Huang et al. (2016) that was addressed to adolescents and young adults (mostly 17–19 years old). Gender was fairly well distributed in the considered studies, with a mean of 48% of male patients (average of 35.2–55.3% in the studies). Beyond sociodemographics, three studies provided information regarding alcohol and substance use (La Barbera et al., 2017; Viganò et al., 2018; Yanartaş et al., 2019), whereas two studies reported further clinical data about IBD and type of therapy (La Barbera et al., 2017; Viganò et al., 2018). The main characteristics of the studies are reported in **Table 1**.

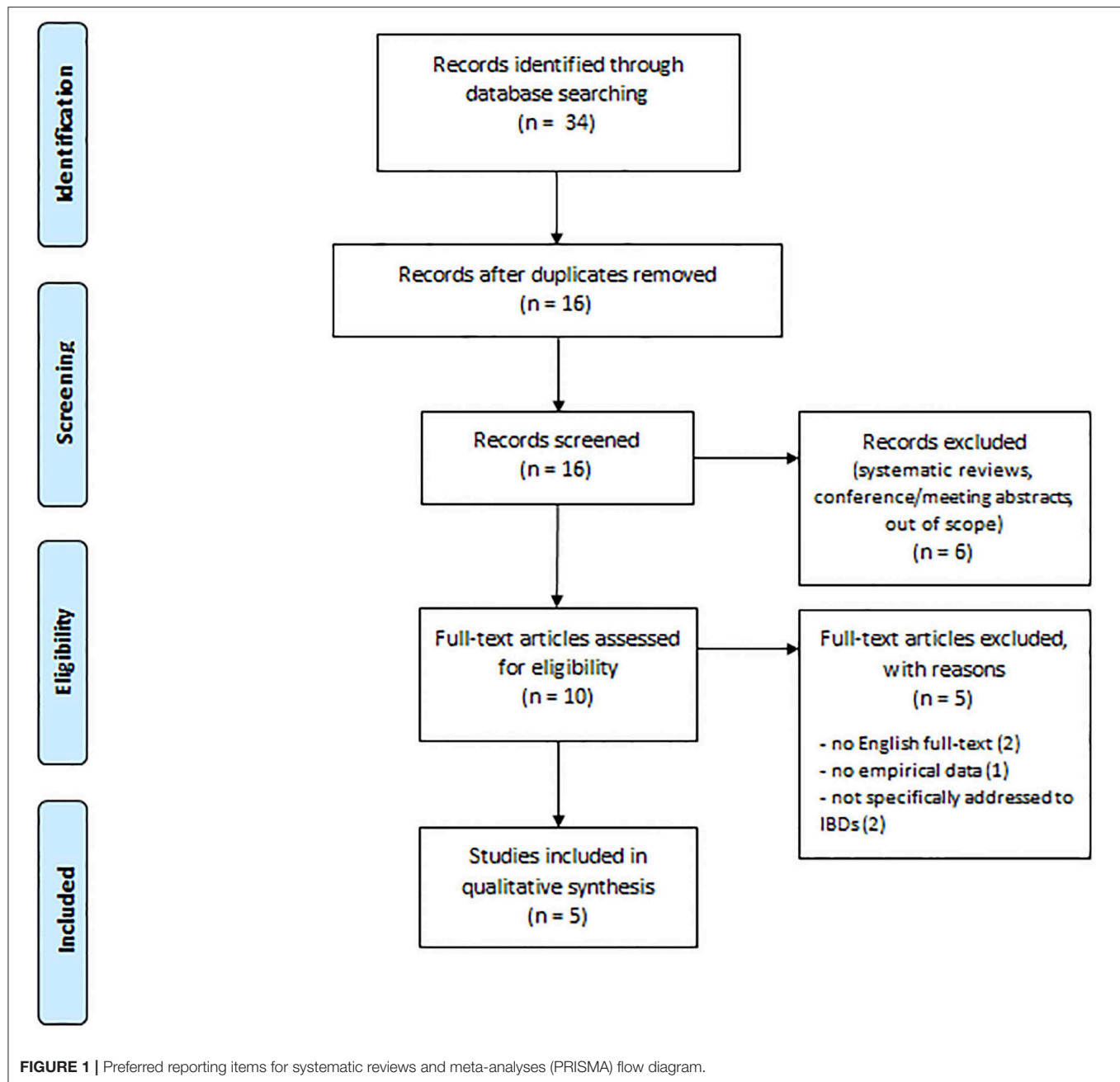
### The Prevalence of Alexithymia in Patients With Inflammatory Bowel Disease

All the studies provided descriptive statistics about the Toronto Alexithymia Scale (TAS-20) total score in patients with IBD. Overall, the mean value of alexithymia ranged from 39 (Fournier et al., 2020) to 53.2 (La Barbera et al., 2017), thus mostly falling in the normal range, indicating no alexithymia, which scores  $\leq 51$  points. In this regard, it should be acknowledged that the highest alexithymia prevalence reported by La Barbera et al. (2017) was found in clusters of patients characterized by high neuroticism, impulsivity, and severe physical conditions. No study reported the percentage of alexithymic patients among the participants affected by IBD (with a cutoff score  $\geq 61$ ). Only two studies reported scores on TAS-20 dimensions (Viganò et al., 2018; Fournier et al., 2020). For each study, we calculated effect sizes (ESs) (expressed as the mean divided by the standard deviation of the sample) about the TAS-20 dimensions [Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF), Externally Oriented Thinking (EOT)] as to compare the mean values on the different subscales as standardized scores. On average, patients with IBD scored higher on EOT ( $ES = 3.54$ ) compared to both DDF ( $ES = 2.96$ ) and DIF ( $ES = 2.79$ ), with the latter having the lowest mean values.

### Comparisons of Alexithymia Between Patients With Ulcerative Colitis and Crohn's Disease

Two studies compared alexithymia levels among IBD subsamples. The study by Viganò et al. (2018) found no statistically significant difference on TAS-20 total score between patients with UC and CD,  $d = 0.13$ , 95% CI  $[-0.18, 0.43]$ ; however, patients with CD generally reported higher values in EOT compared to their counterparts,  $d = 0.38$ , 95% CI  $[0.07, 0.69]$ . Also, the study by Fournier et al. (2020) found no difference on TAS-20 total score,  $d = 0.19$ , 95% CI  $[-0.44, 0.82]$ , but DIF values were statistically significantly higher in patients with CD,  $d = 0.80$ , 95% CI  $[0.14, 1.45]$ . Besides, additional logistic regressions showed that none of the TAS-20 dimensions





succeeded to explain for the presence of UC, whereas DDF was a significant predictor of CD [ $W_{(1)} = 6.16$ ,  $p < 0.001$ ], controlling for anxiety, depression, parasympathetic activity, and cortisol levels.

## Comparisons of Alexithymia Between Patients With Inflammatory Bowel Disease and Other Samples

Besides, four studies compared alexithymia of patients with IBD with other samples, such as healthy controls (Huang et al., 2016; La Barbera et al., 2017; Yanartaş et al., 2019;

Fournier et al., 2020), patients with irritable bowel syndrome (IBS) (Huang et al., 2016; Yanartaş et al., 2019; Fournier et al., 2020), and patients with major depressive disorder (Yanartaş et al., 2019).

Regarding comparisons with healthy controls, in the study by Huang et al. (2016), patients with IBD had overall higher values of alexithymia than healthy controls with a very large effect size,  $d = 1.84$ , 95% CI [0.80, 2.89]. This difference is confirmed by the study by Yanartaş et al. (2019), despite with a smaller effect size,  $d = 0.48$ , 95% CI [0.12, 0.84]. Based on the findings by Fournier et al. (2020), it seems to be higher in patients with CD,  $d = 1.05$ , 95% CI [0.44, 1.67], than in patients with UC,  $d =$

**TABLE 1** | Characteristics of included studies (in chronological order).

References	Country	Purpose	Number of patients with IBD (% males)	Age range or mean age (SD) where indicated; years	Presence of comparison groups and sample size
Huang et al. (2016)	USA (California)	Determine whether neural processing of somatic pain stimuli differs in adolescents and young adults with IBD and irritable bowel syndrome, as compared to healthy controls, and evaluate alexithymia, anxiety, depression, and pain catastrophizing.	10 (50%)	17–19	Yes (10 patients with irritable bowel syndrome, 10 healthy controls)
La Barbera et al. (2017)	Italy	Investigate the association between IBD and psychological dimensions such as personality traits, defense mechanisms, and alexithymia.	100 (51%)	Males: 40.7 (17.3); Females: 40 (14.1)	Yes (66 healthy controls)
Viganò et al. (2018)	Italy	Evaluate a broad spectrum of psychopathological symptoms and alexithymia levels in a group of outpatients affected by IBD in clinical remission, comparing CD and UC, and investigating the relationship with clinical and socio-demographic variables.	170 (55.3%)	47.10 (12.03)	No
Yanartaş et al. (2019)	Turkey	Investigate the effects of somatic and related symptoms, alexithymia, hypochondriasis, anxiety and depression on patients with major depressive disorder, irritable bowel syndrome, and IBD.	54 (35.2%)	36.46 (10.48)	Yes (102 patients with major depressive disorder, 51 patients with irritable bowel syndrome, 67 healthy controls)
Fournier et al. (2020)	France	Investigate whether difficulties in interoceptive abilities and difficulties in awareness of feelings are associated with the presence of irritable bowel syndrome, UC or CD, while checking for anxiety, depression, parasympathetic (vagus nerve) activity and cortisol levels.	39 (46.2%)	UC: 40.9 (10.8); CD: 40.3 (11.2)	Yes (24 patients with irritable bowel syndrome, 26 healthy controls)

SD, standard deviation; UC, ulcerative colitis; CD, Crohn's disease; IBD, inflammatory bowel disease.

0.63, 95% CI [0.02, 1.25]. Besides, large-sized effects emerged in TAS-20 dimensions, indicating that patients with CD had higher DIF,  $d = 1.05$ , 95% CI [0.44, 1.67], and DDF values than healthy participants,  $d = 0.92$ , 95% CI [0.32, 1.53]. Instead, La Barbera et al. (2017) concluded that differences between the TAS-20 total score for patients and control participants were quite small and insignificant.

Concerning comparisons with patients with IBS, no difference on TAS-20 total score emerged with patients with IBD in any study (Huang et al., 2016; Yanartaş et al., 2019; Fournier et al., 2020), but patients with IBD were found to score lower on TAS-20 compared to patients with major depressive disorder,  $d = -1.19$ , 95% CI [-1.55, -0.84] (Yanartaş et al., 2019).

## Associations Between Alexithymia and Other Variables in Patients With Inflammatory Bowel Disease

Only two studies specifically examined the relationship between alexithymia and other measures in patients with IBD (Viganò et al., 2018; Yanartaş et al., 2019). In more detail, levels of anxiety and depression were evaluated in association with alexithymia. The study by Viganò et al. (2018) used the Hospital Anxiety and

Depression Scale (HADS) and found a moderate association with anxiety ( $r = 0.52$ ) and depression ( $r = 0.56$ ). Whereas, Yanartaş et al. (2019) used the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI) and confirmed small- to medium-sized associations with anxiety ( $r = 0.52$ ) and depression ( $r = 0.39$ ), respectively. Besides this, psychopathological symptoms were assessed. Statistically significant, albeit small associations were detected between alexithymia and somatization ( $r = 0.23$ ), obsessive-compulsive symptoms ( $r = 0.36$ ), and global severity ( $r = 0.26$ ) measured through the Symptom Checklist-90-Revised (SCL-90-R) (Viganò et al., 2018). As well, associations with hypochondriac worries and beliefs ( $r = 0.34$ ) assessed through WI-7 (Whiteley Index-7) were found by Yanartaş et al. (2019). Then, the relationship between alexithymia and somatic symptoms was assessed, revealing statistically significant correlations with somatosensory amplification [ $r = 0.31$ ; Somatosensory Amplification Scale (SSAS)] and functional somatic complaints [ $r = 0.46$ ; Bradford Somatic Inventory-44 (BSI-44)]. Then, other small-sized statistically significant positive associations were found between alexithymia and clinical information, such as diagnostic delay ( $r = 0.21$ ), utilization of IBD-specific poly-therapies ( $r = 0.20$ ), and IBD extension ( $r = 0.16$ ) (Viganò et al., 2018).

## DISCUSSION

Our study aim was to evaluate the current evidence of alexithymia in patients with IBD. A limited number of scientific publications are focusing emotional capacities among patients with IBD, despite the well-acknowledged emotional issues and worse quality of life in persons living with chronic, idiopathic, inflammatory conditions compared to healthy population (Mählmann et al., 2017; Scott et al., 2020).

With regard to the prevalence of alexithymia, our findings suggest no evidence about a clinically meaningful impairment of emotional capacities in patients with IBD. However, it should be noted that only five studies addressing the review question were examined, and that none of them reported the percentage of alexithymic patients based on the widely used cutoff score  $\geq 61$ . The standardized scores of TAS-20 dimensions across studies indicated externally oriented thinking as showing greater values, as a common trait that has been found in other physical diseases (Marty and De M'Uzan, 1963), which reflects a greater tendency to operative thinking and solving internal conflicts by external projection through actions (Perry et al., 2015; Porcerelli et al., 2017).

When comparing patients with UC and CD, no difference was found in the TAS-20 total score; however, patients with CD showed externally oriented thinking and difficulties identifying feelings to a greater extent. Besides, difficulty describing feelings was found to be a significant predictor of CD condition, even controlling for other potential confounders. Despite being preliminary, these findings seem to indicate some differences between IBD subpopulations. As suggested by Fournier et al. (2020), this could depend on the diverse psychophysiological functioning of UC and CD, as the digestive expression of the disease is less restricted and affects the entire gastrointestinal tract in CD. As a result, some patients whose CD is present closer to the stomach, may be more likely to experience disturbing symptoms, such as nausea and vomiting. Our result can be also explained in the light of anxiety and depression issues that are more frequently reported in patients with CD compared to their counterparts (Neuendorf et al., 2016), and of the greater flexibility of coping strategies in UC, which might be more adaptive for improving their psychological health (Sarid et al., 2018).

Compared with healthy samples, the present review highlights that patients with IBD have overall higher alexithymic levels, despite to a different extent in terms of effect size (Huang et al., 2016; Yanartaş et al., 2019; Fournier et al., 2020). This seems consistent with previous systematic reviews reporting issues of body image dissatisfaction, poor quality of life (Beese et al., 2019), and greater prevalence of anxiety and depression in IBD populations (Hyphantis et al., 2010; Neuendorf et al., 2016; Choi et al., 2019). This difference seems particularly relevant in patients with CD (Fournier et al., 2020), especially regarding difficulties identifying and describing feelings, thus supporting the previously discussed comparison between IBD subpopulations.

Instead, concerning comparisons with other clinical samples, our results provide further interesting insights. Overall, patients with IBD were found to be substantially similar to patients with

IBS in terms of alexithymia (Huang et al., 2016; Yanartaş et al., 2019; Fournier et al., 2020). In this regard, Spiller and Major (2016) have proposed to consider IBD and IBS on the same spectrum rather than as separate entities because they share many common symptoms (e.g., abdominal pain and changed bowel habits) and have overlapping mechanisms of disease, such as increased gut permeability, increased production of mucosal mediators, and abnormal enteric nerves. Besides, patients with IBS and IBD show little differences in psychological distress or psychological risk factors if symptom activity is taken into account (Berens et al., 2019). Then, albeit some studies claiming more severe comorbid depressive and anxiety symptoms in IBS than in IBD (Geng et al., 2018), the bidirectional relationship of anxiety and depression or other altered psychological states in such populations has been scarcely explored (Rani et al., 2016).

In addition to this, the study by Yanartaş et al. (2019) showed lower alexithymic levels in patients with IBD compared to those with major depressive disorder. This result is not surprising given that depression and alexithymia are often described as similar constructs (Parker et al., 1991; Hemming et al., 2019), and there is a strong association between alexithymia and depression also in the general population (Honkalampi et al., 2000; Li et al., 2015). Besides this, most of literature supports the vulnerability hypothesis suggesting that alexithymia predisposes people to depression, rather than being reactive to depression (Hemming et al., 2019), whereas IBD represents an organic disease in which comorbid psychiatric issues are often secondary to disease itself (Pace et al., 2003).

About the associations between alexithymia and other variables, the current review highlights that alexithymia positively correlates with anxiety and depression in patients with IBD. Considering the high prevalence of anxiety and depressive symptoms in IBD populations, respectively equal to 35 and 22% (Neuendorf et al., 2016), this suggests to take into account alexithymia for planning and delivering psychological interventions. As well, some associations are detected between alexithymia and both psychopathological symptoms and somatic complaints, thus confirming the potential preventive role of emotion awareness and management for coping with illness. Then, other associations were found with IBD-related clinical data (e.g., diagnostic delay, IBD-specific therapy, and IBD extension), but they were overall small-sized and reported only in a single study (Viganò et al., 2018), thus requiring further investigation.

The current review has some inherent limitations that should be acknowledged. Among these, there is heterogeneity about the used inclusion/exclusion criteria, other study measures, and conducted analyses, as well as the size and characteristics of the samples (e.g., patients with active disease or in clinical remission). Another limitation is represented by the limited number of retrieved studies, which is also a strength of the study, since it highlights the lack of empirical findings and the need for further research in the field. Besides, as all the publications proposed cross-sectional research designs and relied on convenience samples, no generalization or inference can be made about the causal relationship between alexithymia and IBD, which would rather require longitudinal or experimental studies.

However, the aim of this review was not assessing the impact of alexithymia in the development of such a clinical condition but providing room for discussion about its potential relevance in patients' psychological status and disease management.

## CONCLUSION

In conclusion, this systematic review suggests that patients with IBD cannot be considered as alexithymic to a clinically significant extent. In this regard, they are found to be quite similar to patients with IBS and less impaired in terms of emotion capacities than patients with major depressive disorder. However, empirical evidence emerges about their greater alexithymic levels compared to healthy participants and the associations found between such levels and other relevant psychological variables (i.e., anxiety, depression, somatization, obsessive-compulsive, and hypochondriac symptoms) and somatic distress. This overview may suggest a reactivity hypothesis according to which living with IBD may progressively lead to impaired emotion recognition and poor symbolization function about somatic experience over time. As alexithymia is a subjective condition that can be described along a continuum, its role

thus remains meaningful. Future studies are needed to provide more robust empirical evidence on the issue. Specifically, the relationship between IBD and IBS should be further explored, and more attention should be paid to CD as such IBD condition seems to pose more emotional challenges to patients. In this regard, clinical psychological intervention is needed to enhance adjustment capacities in patients with CD as to promote quality of life and better adherence.

## AUTHOR CONTRIBUTIONS

GM made significant contribution to the conception and design of the systematic review, to the acquisition, qualitative analysis, and synthesis of data by drafting both the first and revised versions of the manuscript. AC contributed to the qualitative analysis and synthesis of data by drafting both the first and revised versions of the manuscript. PS, FB, and WF gave significant contribution to draft part of the manuscript. MQ and CV revised the manuscript for intellectual content and gave the final approval of the manuscript to be submitted. All authors contributed to the article and approved the submitted version.

## REFERENCES

- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders, 5th edn*. Washington, DC: American Psychiatric Association. doi: 10.1176/appi.books.9780890425596
- Amorim, R., and Guerra, M. P. (2018). Influence of Type D personality in quality of life of inflammatory bowel disease. *Rev. Iberoamer. Diagnost. Eval. Avaliac. Psicol.* 2, 53–69.
- Beese, S. E., Harris, I. M., Dretzke, J., and Moore, D. (2019). Body image dissatisfaction in patients with inflammatory bowel disease: a systematic review. *BMJ Open Gastroenterol.* 6:e000255. doi: 10.1136/bmjgast-2018-000255
- Berens, S., Schaefer, R., Baumeister, D., Gauss, A., Eich, W., and Tesarz, J. (2019). Does symptom activity explain psychological differences in patients with irritable bowel syndrome and inflammatory bowel disease? Results from a multi-center cross-sectional study. *J. Psychos. Res.* 126:109836. doi: 10.1016/j.jpsychores.2019.109836
- Boye, B. K. E. A., Lundin, S., Leganger, K., Møkleby, G., Jantschek, I., Jantschek, S., et al. (2008). The INSPIRE study: do personality traits predict general quality of life (short form-36) in distressed patients with ulcerative colitis and Crohn's disease? *Scand. J. Gastroenterol.* 43, 1505–1513. doi: 10.1080/00365520802321196
- Brooks, A. J., Norman, P., Peach, E. J., Ryder, A. H., Scott, A. J., Narula, P., et al. (2019). Prospective study of psychological morbidity and illness perceptions in young people with inflammatory bowel disease. *J. Crohns Colitis.* 13, 1003–1011. doi: 10.1093/ecco-jcc/jjz028
- Caputo, A. (2013). Health demand in primary care context: what do people think about physicians? *Psychol. Health Med.* 18, 145–154. doi: 10.1080/13548506.2012.687828
- Caputo, A. (2019). Psychodynamic insights from narratives of people with amyotrophic lateral sclerosis: a qualitative phenomenological study. *Mediterr. J. Clin. Psychol.* 7, 1–15. doi: 10.6092/2282-1619/2019.7.2009
- Castellnuovo, G., Pietrabissa, G., Manzoni, G. M., Corti, S., Ceccarini, M., Borrello, M., et al. (2015). Chronic care management of globesity: promoting healthier lifestyles in traditional and mHealth based settings. *Front. Psychol.* 6:1557. doi: 10.3389/fpsyg.2015.01557
- Catalano, A., Martino, G., Bellone, F., Papalia, M., Lasco, C., Basile, G., et al. (2019). Neuropsychological assessment in elderly men with benign prostatic hyperplasia treated with dutasteride. *Clin. Drug Invest.* 39, 97–102. doi: 10.1007/s40261-018-0720-7
- Choi, K., Chun, J., Han, K., Park, S., Soh, H., Kim, J., et al. (2019). Risk of anxiety and depression in patients with inflammatory bowel disease: a nationwide, population-based study. *J. Clin. Med.* 8:654. doi: 10.3390/jcm8050654
- Conversano, C. (2019). Opinion article: common psychological factors in chronic diseases. *Front. Psychol.* 10:2727. doi: 10.3389/fpsyg.2019.02727
- Cozzolongo, R., Porcelli, P., Lanzilotta, E., Giannuzzi, V., and Leandro, G. (2015). The role of alexithymia in quality of life impairment in patients with chronic hepatitis C during antiviral treatment. *Compr. Psychiatry* 60, 17–25. doi: 10.1016/j.comppsy.2015.04.010
- Craparo, G., Gori, A., Dell'Aera, S., Costanzo, G., Faciano, S., Tomasello, A., et al. (2016). Impaired emotion recognition is linked to alexithymia in heroin addicts. *Peer J.* 5, 1–11. doi: 10.7717/peerj.1864
- Di Giuseppe, M., Ciacchini, R., Micheloni, T., Bertolucci, I., Marchi, L., and Conversano, C. (2018). Defense mechanisms in cancer patients: a systematic review. *J. Psychosom. Res.* 115, 76–86. doi: 10.1016/j.jpsychores.2018.10.016
- Di Giuseppe, M., Di Silvestre, A., Lo Sterzo, R., Hitchcott, P., Gemignani, A., and Conversano, C. (2019). Qualitative and quantitative analysis of the defense profile in Breast Cancer women: a pilot study. *Health Psychol. Open.* 6:667. doi: 10.1177/2055102919854667
- Di Giuseppe, M., Miniati, M., Miccoli, M., Ciacchini, R., Orrù, G., Lo Sterzo, R., et al. (2020). Defensive responses to stressful life events associated with cancer diagnosis. *Mediterr. J. Clin. Psychol.* 8, 1–22. doi: 10.6092/2282-1619/mjcp-2384
- Edman, J. S., Greeson, J. M., Roberts, R. S., Kaufman, A. B., Abrams, D. I., Dolor, R. J., et al. (2017). Perceived stress in patients with common gastrointestinal disorders: associations with quality of life, symptoms and disease management. *Explore* 13, 124–128. doi: 10.1016/j.explore.2016.12.005
- Erkic, M., Bailer, J., Fenske, S. C., Schmidt, S. N. I., Trojan, J., Schroder, A., et al. (2018). Impaired emotion and a reduction in trust in patients with somatic symptom disorder. *Clin. Psychol. Psychoter.* 25, 163–172. doi: 10.1002/cpp.2151
- Faust, A. H., Halpern, L. F., and Danoff-Burg, S., and Cross, R. K. (2012). Psychosocial factors contributing to inflammatory bowel disease activity and health-related quality of life. *Gastroenterol. Hepatol.* 8, 173–181.
- Ferreiro, R., Barreiro-de Acosta, M., Lorenzo, A., and Dominguez-Munoz, J. E. (2015). Influence of alexithymia on the clinical course of Inflammatory Bowel Disease (IBD). *J. Crohns Colitis* 9, S420–S420. doi: 10.1093/ecco-jcc/jju027.794



- Filipović, B. R., Filipović, B. F., Kerkez, M., Milinić, N., and Randelović, T. (2007). Depression and anxiety levels in therapy-naïve patients with inflammatory bowel disease and cancer of the colon. *World J. Gastroenterol.* 13:438. doi: 10.3748/wjg.v13.i3.438
- Fournier, A., Mondillon, L., Luminet, O., Canini, F., Mathieu, N., Gauchez, A. S., et al. (2020). Interoceptive Abilities in Inflammatory Bowel Diseases and Irritable Bowel Syndrome. *Front. Psychiatry* 11:229. doi: 10.3389/fpsyt.2020.00229
- Geng, Q., Zhang, Q. E., Wang, F., Zheng, W., Ng, C. H., Ungvari, G. S., et al. (2018). Comparison of comorbid depression between irritable bowel syndrome and inflammatory bowel disease: a meta-analysis of comparative studies. *J. Affect. Disord.* 237, 37–46. doi: 10.1016/j.jad.2018.04.111
- Goodhand, J. R., Wahed, M., Mawdsley, J. E., Farmer, A. D., Aziz, Q., and Rampton, D. S. (2012). Mood disorders in inflammatory bowel disease: relation to diagnosis, disease activity, perceived stress, and other factors. *Inflamm. Bowel Dis.* 18, 2301–2309. doi: 10.1002/ibd.22916
- Graff, L. A., Walker, J., Lix, R., Clara, L., Rawsthorne, I., Rogala, P., et al. (2006). The relationship of inflammatory bowel disease type and activity to psychological functioning and quality of life. *Clin. Gastroenterol. Hepatol.* 4, 1491–1501. doi: 10.1016/j.cgh.2006.09.027
- Guicciardi, M., Crisafulli, A., Doneddu, A., Fadda, D., and Lecis, R. (2019). Effects of metabolic syndrome on cognitive performance of adults during exercise. *Front. Psychol.* 10:1845. doi: 10.3389/fpsyg.2019.01845
- Hemming, L., Haddock, G., Shaw, J., and Pratt, D. (2019). Alexithymia and its associations with depression, suicidality and aggression: an overview of the literature. *Front. Psychiatry* 10:203. doi: 10.3389/fpsyt.2019.00203
- Honkalampi, K., Hintikka, J., Tanskanen, A., Lehtonen, J., and Viinamäki, H. (2000). Depression is strongly associated with alexithymia in the general population. *J. Psychosom. Res.* 48, 99–104. doi: 10.1016/S0022-3999(99)00083-5
- Huang, J. S., Terrones, L., Simmons, A. N., Kaye, W., and Strigo, I. (2016). Pilot study of functional magnetic resonance imaging responses to somatic pain stimuli in youth with functional and inflammatory gastrointestinal disease. *J. Pediatr. Gastroenterol. Nutr.* 63, 500–507. doi: 10.1097/MPG.0000000000001390
- Hyphantis, T. N., Tomenson, B., Bai, M., Tsianos, E., Mavreas, V., and Creed, F. (2010). Psychological distress, somatization, and defense mechanisms associated with quality of life in inflammatory bowel disease patients. *Dig. Dis. Sci.* 55, 724–732. doi: 10.1007/s10620-009-0762-z
- Jordan, C., Sin, J., Fear, N. T., and Chalder, T. (2016). A systematic review of the psychological correlates of adjustment outcomes in adults with inflammatory bowel disease. *Clin. Psychol. Rev.* 47, 28–40. doi: 10.1016/j.cpr.2016.06.001
- Kiebles, J. L., Doerfler, B., and Keefer, L. (2010). Preliminary evidence supporting a framework of psychological adjustment to inflammatory bowel disease. *Inflamm. Bowel Dis.* 16, 1685–1695. doi: 10.1002/ibd.21215
- La Barbera, D., Bonanno, B., Rumeo, M. V., Alabastro, V., Frenda, M., Massihnia, E., et al. (2017). Alexithymia and personality traits of patients with inflammatory bowel disease. *Sci. Rep.* 7, 1–11. doi: 10.1038/srep41786
- Lenzo, V., Sardella, A., Martino, G., and Quattropiani, M. C. (2020). A systematic review of metacognitive beliefs in chronic medical conditions. *Front. Psychol.* 10:2875. doi: 10.3389/fpsyg.2019.02875
- Li, S., Zhang, B., Guo, Y., and Zhang, J. (2015). The association between alexithymia as assessed by the 20-item Toronto Alexithymia Scale and depression: a meta-analysis. *Psychiatry Res.* 227, 1–9. doi: 10.1016/j.psychres.2015.02.006
- Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., et al. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Ann. Intern. Med.* 151:W-65. doi: 10.7326/0003-4819-151-4-200908180-00136
- Lumley, M. A., Gustavson, B. J., Partridge, R. T., and Labouvie-Vief, G. (2005). Assessing alexithymia and related emotional ability constructs using multiple methods: interrelationships among measures. *Emotion* 5:329. doi: 10.1037/1528-3542.5.3.329
- Lumley, M. A., Neely, L. C., and Burger, A. J. (2007). The assessment of alexithymia in medical settings: implications for understanding and treating health problems. *J. Pers. Assess.* 89, 230–246. doi: 10.1080/00223890701629698
- Mählmann, L., Gerber, M., Furlano, R. I., Legeret, C., Kalak, N., Holsboer-Trachsler, E., et al. (2017). Psychological wellbeing and physical activity in children and adolescents with inflammatory bowel disease compared to healthy controls. *BMC Gastroenterol.* 17:160. doi: 10.1186/s12876-017-0721-7
- Marchi, L., Marzetti, F., Orrù, G., Lemmetti, S., Miccoli, M., Ciacchini, R., et al. (2019). Alexithymia and psychological distress in patients with fibromyalgia and rheumatic disease. *Front. Psychol.* 10:e1735. doi: 10.3389/fpsyg.2019.01735
- Marchini, F., Caputo, A., Napoli, A., Balonan, J. T., Martino, G., Nannini, V., et al. (2018). Chronic illness as loss of good self: underlying mechanisms affecting diabetes adaptation. *Mediterr. J. Clin. Psychol.* 6, 1–25. doi: 10.6092/2282-1619/2018.6.1981
- Martino, G., Bellone, F., Langher, V., Caputo, A., Catalano, A., and Quattropiani, M. C. (2019c). Alexithymia and psychological distress affect perceived quality of life in patients with Type 2 diabetes mellitus. *Mediterr. J. Clin. Psychol.* 7, 1–15. doi: 10.6092/2282-1619/2019.7.2328
- Martino, G., Caputo, A., Bellone, F., Quattropiani, M. C., and Vicario, C. M. (2020b). Going beyond the visible in type 2 diabetes mellitus: defense mechanisms and their associations with depression and health-related quality of life. *Front. Psychol.* 11:267. doi: 10.3389/fpsyg.2020.00267
- Martino, G., Caputo, A., Vicario, C. M., Catalano, A., Schwarz, P. and Quattropiani, M. C. (2020c). The relationship between alexithymia and type 2 diabetes: a systematic review. *Front. Psychol.* doi: 10.3389/fpsyg.2020.02026
- Martino, G., Catalano, A., Agostino, R. M., Bellone, F., Morabito, N., Lasco, C. G., et al. (2020a). Quality of life and psychological functioning in postmenopausal women undergoing aromatase inhibitor treatment for early breast cancer. *PLoS ONE* 15:e0230681. doi: 10.1371/journal.pone.0230681
- Martino, G., Catalano, A., Bellone, F., Russo, G. T., Vicario, C. M., Lasco, A., et al. (2019a). As time goes by: anxiety negatively affects the perceived quality of life in patients with Type 2 diabetes of long duration. *Front. Psychol.* 10:1779. doi: 10.3389/fpsyg.2019.01779
- Martino, G., Langher, V., Cazzato, V., and Vicario, C. M. (2019b). Editorial: psychological factors as determinants of medical conditions. *Front. Psychol.* 10:2502. doi: 10.3389/fpsyg.2019.02502
- Marty, P., and De M'Uzan, M. (1963). La pensée opératoire [Operative Thinking]. *Rev. Fr. Psychanal.* 27, 345–355.
- Mattila, A. K., Saarni, S. I., Salminen, J. K., Huhtala, H., Sintonen, H., and Joukamaa, M. (2009). Alexithymia and health-related quality of life in a general population. *Psychosomatics* 50, 59–68. doi: 10.1176/appi.psy.50.1.59
- Mazaheri, M., Afshar, H., Weinland, S., Mohammadi, N., and Adibi, P. (2012). Alexithymia and functional gastrointestinal disorders (FGID). *Medical Archives* 66:28. doi: 10.5455/medarh.2012.66.28-32
- Merlo, E. M. (2019). Opinion article: the role of psychological features in chronic diseases, advances and perspectives. *Mediterr. J. Clin. Psychol.* 7, 1–6. doi: 10.6092/2282-1619/2019.7.2341
- Mnatsakanyan, M. G., Dyukova, G. M., Pogromov, A. P., and Tashchyan, O. V. (2016). Emotional and personality features of patients with irritable bowel syndrome and bowel inflammatory diseases. *Klin. Med.* 94, 764–769.
- Moher, D., Liberati, A., Tetzlaff, J., and Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Ann. Intern. Med.* 151, 264–269. doi: 10.7326/0003-4819-151-4-200908180-00135
- Molodecky, N. A., Soon, I. S., Rabi, D. M., Ghali, W. A., Ferris, M., Chernoff, G., et al. (2012). Increasing incidence and prevalence of the inflammatory bowel diseases with time, based on systematic review. *Gastroenterology* 142, 46–54. doi: 10.1053/j.gastro.2011.10.001
- Moreno-Jiménez, B., López Blanco, B., Rodríguez-Munoz, A., and Garrosa Hernández, E. (2007). The influence of personality factors on health-related quality of life of patients with inflammatory bowel disease. *J. Psychos. Res.* 62, 39–46. doi: 10.1016/j.jpsychores.2006.07.026
- Nemiah, J. C., and Sifneos, P. E. (1970). Psychosomatic illness: a problem in communication. *Psychother. Psychosom.* 18, 154–160. doi: 10.1159/000286074
- Neuendorf, R., Harding, A., Stello, N., Hanes, D., and Wahbeh, H. (2016). Depression and anxiety in patients with inflammatory bowel disease: a systematic review. *J. Psychosom. Res.* 87, 70–80. doi: 10.1016/j.jpsychores.2016.06.001
- Orrù, G., Gemignani, A., Ciacchini, R., Bazzichi, L., and Conversano, C. (2020). Machine learning increases diagnosticity in psychometric evaluation of alexithymia in fibromyalgia. *Front. Med.* 6:319. doi: 10.3389/fmed.2019.00319
- Pace, F., Molteni, P., Bollani, S., Sarzi-Puttini, P., Stockbrügger, R., Porro, G. B., et al. (2003). Inflammatory bowel disease versus irritable bowel syndrome: a

- hospital-based, case-control study of disease impact on quality of life. *Scand. J. Gastroenterol.* 38, 1031–1038. doi: 10.1080/00365520310004524
- Parker, J. D., Bagby, R. M., and Taylor, G. J. (1991). Alexithymia and depression: distinct or overlapping constructs? *Compr. Psychiatry* 32, 387–394. doi: 10.1016/0010-440X(91)90015-5
- Perry, J. C., Metzger, J., and Sigal, J. J. (2015). Defensive functioning among women with breast cancer and matched community controls. *Psychiatry* 78, 156–169. doi: 10.1080/00332747.2015.1051445
- Pollatos, O., Werner, N. S., Duschek, S., Schandry, R., Matthias, E., Traut-Mattausch, E., et al. (2011). Differential effects of alexithymia subscales on autonomic reactivity and anxiety during social stress. *J. Psychosom. Res.* 70, 525–533. doi: 10.1016/j.jpsychores.2010.12.003
- Porcelli, P., De Carne, N., and Leandro, G. (2014). Alexithymia and gastrointestinal specific anxiety in moderate to severe irritable bowel syndrome. *Compr. Psychiatry* 55, 1647–1653. doi: 10.1016/j.comppsy.2014.05.022
- Porcelli, P., Leoci, C., Guerra, V., Taylor, G. J., and Bagby, R. M. (1996). A longitudinal study of alexithymia and psychological distress in inflammatory bowel disease. *J. Psychosom. Res.* 41, 569–573. doi: 10.1016/S0022-3999(96)00221-8
- Porcelli, P., Zaka, S., Leoci, C., Centonze, S., and Taylor, G. J. (1995). Alexithymia in inflammatory bowel disease. A case control study. *Psychother. Psychosom.* 64, 49–53. doi: 10.1159/000288990
- Porcerelli, J. H., Cramer, P., Porcerelli, D. J., and Arterbery, V. E. (2017). Defense mechanisms and utilization in cancer patients undergoing radiation therapy. a pilot study. *J. Nervous Mental Disease* 205, 466–470. doi: 10.1097/NMD.0000000000000674
- Quattropiani, M. C., Lenzo, V., Filastro, A., and Fries, W. (2019). Metacognitions and basic emotions in patients with irritable bowel syndrome and inflammatory bowel disease. *Psicoterapia Cogn. Comport.* 25, 35–51. doi: 10.1097/MOG.0000000000000556
- Rani, R. A., Ali, R. A. R., and Lee, Y. Y. (2016). Irritable bowel syndrome and inflammatory bowel disease overlap syndrome: pieces of the puzzle are falling into place. *Intest. Res.* 14, 297–304. doi: 10.5217/ir.2016.14.4.297
- Rosa, V., Tomai, M., Lauriola, M., Martino, G., and Di Trani, M. (2019). Body mass index, personality traits, and body image in Italian pre-adolescents: an opportunity for overweight prevention. *Psihologija* 52:9. doi: 10.2298/PSI181121009R
- Sajadinejad, M. S., Asgari, K., Molavi, H., Kalantari, M., and Adibi, P. (2012a). Psychological issues in inflammatory bowel disease: an overview. *Gastroenterol. Res. Practice.* 2012, 1–11. doi: 10.1155/2012/106502
- Sajadinejad, M. S., Molavi, H., Asgari, K., Kalantari, M., and Adibi, P. (2012b). Personality dimensions and type D personality in female patients with ulcerative colitis. *J. Res. Med. Sci.* 17, 898–904.
- Sarid, O., Slonim-Nevo, V., Schwartz, D., Friger, M., Sergienko, R., Pereg, A., et al. (2018). Differing relationship of psycho-social variables with active ulcerative colitis or Crohn's disease. *Int. J. Behav. Med.* 25, 341–350. doi: 10.1007/s12529-018-9712-5
- Schauer, B., Grabe, H. J., Ittermann, T., Lerch, M. M., Weiss, F. U., Mönnikes, H., et al. (2019). Irritable bowel syndrome, mental health, and quality of life: data from a population-based survey in Germany (SHIP-Trend-0). *Neurogastroenterol. Motility* 31:e13511. doi: 10.1111/nmo.13511
- Scott, A. J., Flowers, O., and Rowse, G. (2020). A comparative study of the nature and magnitude of problems sleeping in inflammatory bowel disease (IBD) compared to healthy controls. *Psychol. Health Med.* doi: 10.1080/13548506.2019.1707240. [Epub ahead of print].
- Settineri, S., Frisone, F., Merlo, E. M., Geraci, D., and Martino, G. (2019). Compliance, adherence, concordance, empowerment, and self-management: five words to manifest a relational maladjustment in diabetes. *J. Multidiscipl. Healthc.* 12:299. doi: 10.2147/JMDH.S193752
- Sifneos, P. E. (1996). Alexithymia: past and present. *Am. J. Psychiatry* 75, 137–142. doi: 10.1176/ajp.153.7.137
- Spiller, R., and Major, G. (2016). IBS and IBD—separate entities or on a spectrum? *Nat. Rev. Gastroenterol. Hepatol.* 13, 613–621. doi: 10.1038/nrgastro.2016.141
- Taylor, G. J., and Bagby, R. M. (2000). “An overview of the alexithymia construct,” in *The Handbook of Emotional Intelligence*, eds R. Bar-On and J. D. A. Parker (San Francisco, CA: Jossey-Bass), 40–67.
- Thavamani, A., Umaphathi, K. K., Khatana, J., and Gulati, R. (2019). Burden of psychiatric disorders among pediatric and young adults with inflammatory bowel disease: a population-based analysis. *Pediatric Gastroenterol. Hepatol. Nutr.* 22, 527–535. doi: 10.5223/pghn.2019.22.6.527
- Tolmunen, T., Heliste, M., Lehto, S. M., Hintikka, J., Honkalampi, K., and Kauhanen, J. (2011). Stability of alexithymia in the general population: an 11-year follow-up. *Compr. Psychiatry* 52, 536–541. doi: 10.1016/j.comppsy.2010.09.007
- Tordeurs, D., and Janne, P. (2000). Alexithymia, health and psychopathology. *L'Encephale* 26, 61–68.
- Van Houtum, L., Rijken, M., and Groenewegen, P. (2015). Do everyday problems of people with chronic illness interfere with their disease management? *BMC Public Health* 15:1000. doi: 10.1186/s12889-015-2303-3
- Velotti, P., Garofalo, C., Dimaggio, G., and Fonagy, P. (2019). Mindfulness, alexithymia, and empathy moderate relations between trait aggression and antisocial personality disorder traits. *Mindfulness* 10, 1082–1090. doi: 10.1007/s12671-018-1048-3
- Vicario, C. M., Nitsche, M. A., Salehienjad, M. A., Avanzino, L., and Martino, G. (2020). Time processing, interoception and insula activation: a mini review on clinical disorders. *Front. Psychol.* doi: 10.3389/fpsyg.2020.01893
- Viganò, C. A., Beltrami, M. M., Bosi, M. F., Zanello, R., Valtorta, M., and Maconi, G. (2018). Alexithymia and psychopathology in patients suffering from inflammatory bowel disease: arising differences and correlations to tailoring therapeutic strategies. *Front. Psychiatry* 9:324. doi: 10.3389/fpsyg.2018.00324
- Villoria, A., Garcia, V., Dosal, A., Moreno, L., Montserrat, A., Figuerola, A., et al. (2017). Fatigue in out-patients with inflammatory bowel disease: prevalence and predictive factors. *PLoS ONE* 12:e0181435. doi: 10.1371/journal.pone.0181435
- Willemsen, R., Roseeuw, D., and Vanderlinden, J. (2008). Alexithymia and dermatology: the state of the art. *Int. J. Dermatol.* 47, 903–910. doi: 10.1111/j.1365-4632.2008.03726.x
- Yanartaş, Ö., Kani, H. T., Kani, A. S., Akça, Z. N. D., Akça, E., Ergün, S., et al. (2019). Depression and anxiety have unique contributions to somatic complaints in depression, irritable bowel syndrome and inflammatory bowel diseases. *Psychiatry Clin. Psychopharmacol.* 29, 418–426. doi: 10.1080/24750573.2019.1589177

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2020 Martino, Caputo, Schwarz, Bellone, Fries, Quattropiani and Vicario. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Dispositional Optimism and Context Sensitivity: Psychological Contributors to Frailty Status Among Elderly Outpatients

Alberto Sardella<sup>1\*</sup>, Vittorio Lenzo<sup>2</sup>, George A. Bonanno<sup>3</sup>, Gabriella Martino<sup>1</sup>, Giorgio Basile<sup>4</sup> and Maria C. Quattropani<sup>1</sup>

<sup>1</sup>Department of Clinical and Experimental Medicine, University of Messina, Messina, Italy, <sup>2</sup>Department of Social and Educational Sciences of the Mediterranean Area, University for Foreigners "Dante Alighieri" of Reggio Calabria, Reggio Calabria, Italy, <sup>3</sup>Department of Clinical Psychology, Teachers College, Columbia University, New York, NY, United States, <sup>4</sup>School and Unit of Geriatrics, Department of Clinical and Experimental Medicine, University of Messina, Messina, Italy

## OPEN ACCESS

### Edited by:

Ciro Conversano,  
University of Pisa, Italy

### Reviewed by:

Olivia Realdon,  
University of Milano-Bicocca, Italy  
Annalisa Tanzilli,  
Sapienza University of Rome, Italy

### \*Correspondence:

Alberto Sardella  
asardella@unime.it

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 24 October 2020

**Accepted:** 16 December 2020

**Published:** 13 January 2021

### Citation:

Sardella A, Lenzo V, Bonanno GA, Martino G, Basile G and Quattropani MC (2021) Dispositional Optimism and Context Sensitivity: Psychological Contributors to Frailty Status Among Elderly Outpatients. *Front. Psychol.* 11:621013. doi: 10.3389/fpsyg.2020.621013

The association of resilience-related factors with frailty is a recent research topic. Dispositional optimism and context sensitivity are two psychological factors that differently contribute to individual resilience. This study aimed at investigating whether dispositional optimism and context sensitivity might contribute to a multifactorial model of frailty, together with established relevant factors such as cognitive and physical factors. This cross-sectional study involved 141 elderly outpatients (42 males and 99 females) aged  $\geq 65$  years, who were referred to the Geriatrics and Multidimensional Evaluation Clinic of the University Hospital of Messina. We used the following measures: the Mini-Mental State Examination (MMSE) to screen for global cognitive functioning; 4-m gait speed and handgrip strength to measure physical performance; a 35-item Frailty Index (FI) to evaluate patients' frailty status; the revised Life Orientation Test (LOT-R) to gauge dispositional optimism; and the Context Sensitivity Index (CSI) to measure context sensitivity. We found that LOT-R ( $\beta = -0.190, p = 0.038$ ), CSI ( $\beta = -0.191, p = 0.035$ ), and MMSE ( $\beta = -0.466, p < 0.001$ ) were all significantly associated with FI. Gait speed was only marginally associated with FI ( $\beta = -0.184, p = 0.053$ ). The present study showed a novel association of dispositional optimism and context sensitivity with frailty among elderly outpatients. These preliminary findings support a multidimensional approach to frailty in which even peculiar psychological features might provide a significant contribution.

**Keywords:** clinical psychology, psychological resilience, dispositional optimism, context sensitivity, elderly, frailty

## INTRODUCTION

The complex and joint interaction between different bio-psycho-social factors is a distinctive trait of aging trajectories. One challenge with elderly subjects is finding effective strategies that favor a positive adaptation to different age-related outcomes (Castelnuovo et al., 2015; Van Houtum et al., 2015; Yoo and Ryff, 2019). Consistently, several studies have shown that the maintenance of a healthy psychological state can be beneficial for reducing distress

not only among subjects with psychopathological problems (Marchetti et al., 2019; Rosa et al., 2019; Vicario et al., 2019) but also among patients with chronic medical conditions (Di Giuseppe et al., 2018, 2019, 2020; Quattropani et al., 2018b; Martino et al., 2020a). Similarly, several studies have recently highlighted the importance of clinical psychological features in handling the consequences of age-related medical conditions for both patients (Quattropani et al., 2018a; Catalano et al., 2019, 2020; Kelly et al., 2019; Marchi et al., 2019; Martino et al., 2020c) and health professionals (Quattropani et al., 2017; Conversano et al., 2020).

In the context of aging, frailty represents one of the most compelling outcomes since several factors throughout the life course contribute to the severity of this condition. Frailty has been defined as increased vulnerability to stressors due to reduced homeostatic reserves (Clegg et al., 2013), and it has been broadly investigated in community (Morley et al., 2012) and clinical settings (Basile et al., 2019). From a theoretical perspective, several approaches have been proposed to characterize the construct of frailty. Two of the most representative models are the frailty phenotype model (Fried et al., 2001) and the deficit accumulation model (Rockwood and Mitnitski, 2007). The *frailty phenotype model* describes mainly a physical frailty, defined as the presence or absence of weight loss, fatigue, reduced gait speed, poor handgrip strength, and sedentary habits; consequently, patients are classified as robust, pre-frail, or frail. The *deficit accumulation model* proposes a multidimensional evaluation of frailty based on the weight of different age-related problems accumulated over time; in this model, frailty is measured using a Frailty Index (FI) calculated as the ratio between the deficits an individual presents and the number of age-related health variables considered in the evaluation.

The investigation of psychological features potentially associated with frailty is a recent topic of research. In light of the above-mentioned bio-psycho-social approach, frailty should be considered as a complex syndrome that affects not only biological processes but also psychological and social processes, leading to progressive adverse outcomes in old age (Gobbens et al., 2010). In line with this perspective, previous researches have explored different clinical psychological factors associated with frailty in both community populations and clinical settings. Accordingly, it has been suggested that depressive symptoms affect multidimensional frailty status in the community population, especially among women (Freitag and Schmidt, 2016). Moreover, loneliness, depression, and social isolation appear to be involved in the interaction between physical frailty and daily autonomy in community-dwelling older adults (Mulasso et al., 2016). Psychological factors, such as social and emotional support, resilience, and emotional well-being, have been suggested as potential protective factors for physical frailty in older subjects suffering from chronic medical conditions (Rubtsova et al., 2019; Yuan et al., 2020) and institutionalized older women (Furtado et al., 2020).

Psychological resilience is increasingly considered as a relevant factor contributing to individuals' adaptation to several age-related challenges (Taylor and Carr, 2020). Dispositional optimism is commonly recognized as a psychological factor able to promote resilience and to promote a positive adaptation to aging. In

accordance with the model originally proposed by Scheier and Carver, the human behavior is modulated by a stable dispositional feature, which is based on positive or negative expectations. Consistently, when the expectations are favorable, the goal-directed behavior is characterized by a significant effort by the individual; conversely, when the expectations are unfavorable, the individual exhibits less effort to overcome difficulties. In line with this theoretical framework, optimists tend to engage more in active coping strategies, when there are difficulties to overcome (Scheier and Carver, 1985). Dispositional optimism has been previously suggested as a psychological contributor of a better individual cardiovascular health, since subjects with higher levels of dispositional optimism tend more to adopt healthy behaviors, such as not smoking or engaging in physical activity (Serlachius et al., 2015). The positive role of optimism has also been discussed in the context of age-related clinical conditions, such as cognitive impairment (Dos Santos et al., 2018) and diabetes (Faghani et al., 2018). Additionally, higher levels of optimism have been associated with a better quality of life (QoL) among patients with heart failure (Kraai et al., 2018) and Parkinson's disease (Gison et al., 2014).

Since elderly subjects frequently experience the need to adapt to new situations and challenges, the ability to read contextual cues and then flexibly regulate their behavior might be considered as an additional psychological resilience factor associated with aging. In accordance with the definition proposed by Bonanno et al. (2018), *context sensitivity* refers to individuals' ability to accurately perceive their own emotional and physiological state, and react in appropriate ways to different life situations; therefore, it has been identified as a relevant factor of efficacious self-regulation. Researchers have identified context sensitivity as a crucial factor involved in psychological adjustment and the onset of psychopathology following stressful life events (Coifman and Bonanno, 2010). Context sensitivity can be a beneficial factor for patients and caregivers; for example, it can help to prevent burnout syndrome among palliative care professionals (Lenzo et al., 2020a).

Frailty is a multidimensional syndrome, in which not only cognitive and physical factors but also psychological features may concur. Dispositional optimism is acknowledged as a psychological factor that able to promote resilient behaviors, with a consequent beneficial impact on individual health. The contribution of dispositional optimism has been discussed in the context of different chronic medical conditions; however, the association with frailty status among elderly subjects has not been investigated yet.

Context sensitivity is considered as a further resilience factor, which contributes to the individual adaptation and may explain how people differently cope with stressful events. The investigation of context sensitivity is novel in the context of elderly subjects, and in association with a negative age-related outcome as frailty.

In line with these considerations, the main purpose of the present study was to investigate interactions between frailty, dispositional optimism, and context sensitivity in a sample of elderly outpatients, in order to determine whether the two psychological



factors might contribute to a multifactorial model of frailty, along with known contributors (e.g., cognitive and physical performances).

## MATERIALS AND METHODS

### Participants

The present cross-sectional study involved elderly outpatients, referring to the Geriatrics and Multidimensional Evaluation Clinic of the University Hospital of Messina (Italy). Subjects with age  $\geq 65$  were evaluated for inclusion; the indicated range of age is consistent with the age of access to the geriatric clinics. The recruitment was carried out during the scheduled visits of the outpatients in the Clinic; each eligible outpatient participated in the study on a voluntary basis.

Each outpatient had to undergo a multidimensional evaluation, based on the assessment of cognitive status, physical performances and psychological functioning. In order to facilitate the comprehensive administration of the scales and the execution of the tasks, we included subjects without severe neurocognitive disorders, according to the DSM-5 diagnostic criteria (American Psychiatric Association, 2013), and/or severe functional and sensory limitations. Precisely, we excluded subjects with a Mini-Mental State Examination (MMSE) score  $\leq 12$ ; we additionally excluded subjects on wheelchairs and/or not able to walk, and subjects with severe limitations in the upper limbs; similarly, subjects with diagnosed severe visual and/or hearing impairments were excluded. We excluded patients with severe physical limitations also because the calculation of frailty status included the physical performances, besides other variables, as further explained in detail.

The main sociodemographic and clinical characteristics of the sample ( $N = 141$ ) are reported in **Table 1**.

**TABLE 1 |** Sociodemographic and clinical characteristics of the sample.

#### Patients ( $N = 141$ )

Sociodemographic	
Age (years; mean $\pm$ SD)	80.31 $\pm$ 6.84
Gender	
- Male ( $n$ , %)	42 (29.8)
- Female ( $n$ , %)	99 (70.2)
Education (years; mean $\pm$ SD)	7.09 ( $\pm$ 3.83)
Marital status	
- Married ( $n$ , %)	71 (50.4)
- Widow/er ( $n$ , %)	56 (39.7)
- Other ( $n$ , %)	14 (9.9)
Clinical	
MMSE (mean $\pm$ SD)	22.61 ( $\pm$ 4.52)
FI (mean $\pm$ SD)	0.25 ( $\pm$ 0.11)
Frailty status	
- Frail ( $n$ , %)	71 (50.4)
- Not frail ( $n$ , %)	70 (49.6)
LOT-R (mean $\pm$ SD)	18.20 ( $\pm$ 5.57)
CSI (mean $\pm$ SD)	18.94 ( $\pm$ 1.57)

SD, Standard Deviation; MMSE, Mini-Mental State Examination; FI, Frailty Index; LOT-R, Life Orientation Test-Revised; and CSI, Context Sensitivity Index.

### Ethics Statement

All procedures completed in the study were in accordance with the ethical standards of our institutional research committee and with the 1964 Declaration of Helsinki and its later amendments. Informed consent was obtained from all participants. The Ethics Committee of the University Hospital of Messina approved the protocol of this study (Prot. 23/19, University Hospital Ethics Committee).

### Measures

The evaluation protocol was developed in agreement with a senior geriatrician and a senior clinical psychologist; trained psychologists and trained physicians performed the assessments.

We used the MMSE to screen for global cognitive functioning (Folstein et al., 1975); the MMSE returns a score from 0 to 30, with higher scores corresponding to better performances. We adjusted the raw scores for age and education, in accordance with common normative data (Magni et al., 1996).

We measured physical performances by testing 4-m gait speed (expressed as meters per second) and handgrip strength (expressed in kilograms, measured by a Jamar dynamometer).

We evaluated the frailty status by the calculation of a 35-deficit FI, according to the standard procedure (Searle et al., 2008). The FI is expressed as a ratio of health-related deficits present to the total number of deficits considered; consistently, the greater the number of identified deficits, the higher the degree of frailty. Subjects with a FI  $\geq 0.25$  are commonly classified as frail (Rockwood and Mitnitski, 2007). The 35 variables that were evaluated for the calculation of the FI are provided as **Supplementary Material**.

We measured dispositional optimism using the Italian version of the revised Life Orientation Test (LOT-R; Scheier et al., 1994; Giannini et al., 2008). The LOT-R is a 10-item questionnaire based on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree”; higher scores reflect a greater expectation of positive results.

We used the Context Sensitivity Index (CSI), a 20-item self-report questionnaire, to assess the patients’ ability to accurately identify cues to contextual demands across different hypothetical situations (Bonanno et al., 2018). The items are rated on a 7-point Likert scale ranging from 1 (not at all) to 7 (very much). The CSI measures individuals’ ability to capture the absence or presence of stressor context cues and calculates an overall CSI score by averaging the Cue Presence and Cue Absence indexes. We used the total CSI score for our observations; higher scores are an expression of a greater individual contextual sensitivity.

### Statistical Analysis

The data were analyzed using the statistical software IBM SPSS Statistics for Windows, Version 22.0 (Armonk, NY: IBM Corp.). We classified the subjects into frail and not frail groups according to their FI scores; subjects with scores of FI  $\geq 0.25$  were classified as frail. Differences between frail and not frail subjects were evaluating using the Student’s *t* test; the Chi-squared test was performed to calculate differences in the proportion of the variable

“gender” among frail and not frail subjects; gender was categorized as follows: “0 = male; 1 = female.” Descriptive data were reported in terms of mean, standard deviation (SD), and percentage.

We performed univariate linear regressions to explore significant associations of the investigated variables with frailty. The multivariate linear regression model for frailty included the variables that were found significant at the univariate regressions. Precisely, the multivariate regression model was developed by hierarchically including the variables, as follows: we initially included the sociodemographic variables (e.g., age, gender, and education), then the clinical ones (e.g., global cognitive functioning and physical performances), since they are known contributors to frailty; ultimately, we tested the contribution of the novel psychological variables to explain the model.

Values of  $p < 0.05$  were considered as statistically significant.

## RESULTS

The study involved 141 elderly outpatients (42 males and 99 females), with a mean age of approximately 80 years. The patients exhibited mild-to-moderate cognitive impairments (MMSE mean score  $22.6 \pm 4.5$ ) and showed a mean FI score of 0.25 (the FI scores ranged from 0.05 to 0.50).

The elderly outpatients classified as frail were significantly less educated than those classified as not frail ( $p = 0.012$ ). Furthermore, the frail subjects exhibited significantly worse global cognitive (MMSE) and physical (handgrip and gait speed) performances than the not frail subjects (both  $p < 0.001$ ). The psychological profile was also different between not frail and frail subjects, with the frail subjects showing lower levels of dispositional optimism ( $p = 0.001$ ) and context sensitivity ( $p = 0.048$ ). The main differences between the subjects according to their frailty status are summarized in **Table 2**.

### Univariate and Multivariate Linear Regressions

We performed different univariate linear regressions with FI as the dependent variable, in order to investigate the association

of our variables of interest with frailty. The analysis showed that age ( $\beta = 0.180$ ,  $p = 0.03$ ) and education ( $\beta = -0.168$ ,  $p = 0.046$ ) were both significantly associated with frailty. Additionally, MMSE ( $\beta = -0.637$ ,  $p < 0.001$ ), handgrip strength ( $\beta = -0.453$ ,  $p < 0.001$ ), and gait speed ( $\beta = -0.528$ ,  $p < 0.001$ ) were significantly associated with FI, as expected. Eventually, both the LOT-R ( $\beta = -0.319$ ,  $p = 0.001$ ) and the CSI ( $\beta = -0.343$ ,  $p = 0.002$ ) scores were significantly associated with FI. The univariate regressions are summarized in **Table 3**.

We computed a multivariate linear regression to identify the variables independently associated with frailty status and to understand whether our explored psychological indexes could contribute to explaining a multifactorial model of frailty, along with several other known factors. As previously stated, the multivariate regression was hierarchically developed, considering those variables that were found significant in the univariate analysis. In the first step of the model, we included the sociodemographic variables (i.e., age and education). In the second step, we included the cognitive and physical variables (i.e., MMSE, handgrip strength, and gait speed), representing the factors most commonly associated with frailty. In the third and final step of the model, we included the psychological indexes (i.e., LOT-R and CSI), our novel potential contributors to frailty. The findings of the multivariate regression are reported in **Table 4**.

The findings from the first step of the hierarchical model were not significant, accounting for only age and years of education ( $R^2 = 0.055$ ,  $p = 0.12$ ). The findings from the second step, which additionally accounted for cognitive and physical factors, were statistically significant at  $R^2 = 0.457$ ; this step was substantially explained by the inclusion of MMSE ( $\beta = -0.536$ ,  $p < 0.001$ ) and gait speed ( $\beta = -0.254$ ,  $p = 0.009$ ) in the model. The findings from the inclusion of the two psychological indexes were globally significant ( $R^2 = 0.516$ ,  $p < 0.001$ ). According to the final model, the LOT-R scores ( $\beta = -0.190$ ,  $p = 0.038$ ), CSI scores ( $\beta = -0.191$ ,  $p = 0.035$ ), and persistent MMSE scores ( $\beta = -0.466$ ,  $p < 0.001$ ) were all significantly associated with FI. Gait speed was only marginally associated with FI ( $\beta = -0.184$ ,  $p = 0.053$ ).

## DISCUSSION

To the best of our knowledge, this is the first study to explore dispositional optimism and context sensitivity among elderly outpatients and to investigate their association with frailty status, as expressed by a calculated FI.

We investigated the contribution of the two psychological factors by developing a hierarchical regression model that accounted for different sociodemographic and clinical factors, which are widely acknowledged as predictors of patients' trajectories toward frailty: age, years of education, and cognitive and physical functioning (Etman et al., 2012; Basile and Sardella, 2020; Sardella et al., 2020). Our findings, though preliminary, showed that in our evaluated sample of outpatients, besides the global cognitive functioning, additional psychological factors, namely dispositional optimism (measured through the LOT-R)

**TABLE 2 |** Main differences between frail and not frail patients.

	Not frail (N = 70)		Frail (N = 71)		$\chi^2$	p
	Mean	SD	Mean	SD		
Gender (m/f)	25/45		16/55		19.282	0.09
Age	79.51	6.04	81.1	7.49	-1.383	0.16
Education	7.9	3.931	6.3	3.58	2.533	<b>0.012</b>
FI	0.16	0.04	0.34	0.06	-19.117	<b>&lt;0.001</b>
MMSE	25.61	2.886	19.6	4.74	9.046	<b>&lt;0.001</b>
Handgrip	19.966	6.5195	14.57	6.75	4.824	<b>&lt;0.001</b>
Gait speed	0.7373	0.16304	0.55	0.17	6.212	<b>&lt;0.001</b>
LOT-R	20.04	5.23	16.25	5.31	3.575	<b>0.001</b>
CSI	19.82	1.68	17.86	1.29	1.821	<b>0.048</b>

SD, Standard Deviation; MMSE, Mini-Mental State Examination; FI, Frailty Index; LOT-R, Life Orientation Test-Revised; and CSI, Context Sensitivity Index. Significant differences are reported in bold.

**TABLE 3 |** Univariate linear regression for FI.

	B	SE(B)	$\beta$	t	p	95% CI	
						Lower	Upper
Age	0.003	0.001	0.180	2.154	<b>0.03</b>	0	0.005
Gender	0.034	0.019	0.148	1.759	0.08	−0.004	0.072
Education	−0.005	0.002	−0.168	−2.010	<b>0.046</b>	−0.009	0.001
MMSE	−0.015	0.002	−0.637	−9.732	<b>&lt;0.001</b>	−0.018	−0.012
Handgrip	−0.007	0.001	−0.453	−5.986	<b>&lt;0.001</b>	−0.009	−0.004
Gait speed	−0.292	0.040	−0.528	−7.284	<b>&lt;0.001</b>	−0.372	−0.213
CSI	−0.022	0.007	−0.343	−3.179	<b>0.002</b>	−0.036	−0.008
LOT-R	−0.006	0.002	−0.319	−3.310	<b>0.001</b>	−0.009	−0.002

MMSE, Mini-Mental State Examination; FI, Frailty Index; LOT-R, Life Orientation Test-Revised; and CSI, Context Sensitivity Index. Significant values are reported in bold.

**TABLE 4 |** Hierarchical multivariate linear regression.

	R	R <sup>2</sup>	F change	$\beta$	p
Step 1	0.233	0.055	2.133		
Age				0.038	0.74
Education				−0.223	0.057
Step 2	0.676	0.457	17.558		
Age				0.015	0.86
Education				−0.070	0.45
MMSE				−0.536	<b>&lt;0.001</b>
Handgrip				−0.071	0.48
Gait speed				−0.254	<b>0.009</b>
Step 3	0.719	0.516	4.228		
Age				−0.016	0.85
Education				−0.085	0.34
MMSE				−0.466	<b>&lt;0.001</b>
Handgrip				−0.046	0.63
Gait speed				−0.184	0.053
LOT-R				−0.190	<b>0.038</b>
CSI				−0.191	<b>0.035</b>

MMSE, Mini-Mental State Examination; FI, Frailty Index; LOT-R, Life Orientation Test-Revised; and CSI, Context Sensitivity Index. Significant values are reported in bold.

and context sensitivity (measured through the CSI), were also significantly associated with frailty. Those subjects who exhibited a better health status (indicated by a lower FI score) also exhibited better global cognitive functioning, higher levels of dispositional optimism, and greater context sensitivity.

Dispositional optimism is an interesting psychological construct with multiple implications, which is able to promote the assumption of healthy behaviors. Previous evidence has highlighted the general positive association between adults' optimism and physical health, and the beneficial role of optimism in the treatment of such chronic medical conditions as cardiovascular diseases, cancer, diabetes, and neurological pathologies (Rasmussen et al., 2009; Schiavon et al., 2017). We can reasonably assume that frailty is the result of the interaction between multiple factors and changes throughout the life course; therefore, our findings echo this general positive conceptualization of dispositional optimism, extending the evidence not only to a physical frailty but also to a multifactorial one.

Context sensitivity, within the theoretical framework proposed by Bonanno et al. (2018), has not been previously

explored among elderly outpatients, or in association with frailty. Instead, this psychological construct has often been associated with mental health, since its protective role in the development of emotional disorders such as depression, anxiety, and complicated grief (Bylsma et al., 2008; Diminich and Bonanno, 2014; Harvey et al., 2014; Coifman et al., 2016). Recently, the positive contribution of individuals' ability to respond flexibly to contextual cues has been showed in older adults, resulting beneficial for a better adaptation to pain, although the topic requires future clarifications (Flink et al., 2019). According to the theoretical framework behind context sensitivity, particular regulatory strategies are not necessarily beneficial or maladaptive; instead, the benefit lies in the flexible use of these strategies in response to environmental changes (Bonanno and Burton, 2013; Kobylńska and Kusev, 2019). As they progressively approach a condition of frailty, the elderly gradually lose multiple functions and skills, increasingly exposing themselves to negative outcomes. A hypothetical explanation of our results could be that those elderly who have more easily and flexibly adapted to these progressive age-related changes (e.g., the onset of disease, loss of autonomy, etc.) also exhibit a lower degree of frailty. Assuming that frailty is the result of multifactorial concurring variables (as expressed by the FI scores), our study suggests that context sensitivity might be considered as a further psychological factor that contributes to the elderly adaption to age-related challenges.

Living with chronic medical conditions adds a significant burden to individuals, so it is encouraging to find evidence that some psychological factors might help patients to manage their pathologies (Filippello et al., 2016; Gentili et al., 2019; Martino et al., 2019a,b, 2020b; Quattropiani et al., 2019; Lenzo et al., 2020b; Vita et al., 2020). Aging involves the interaction among several bio-psycho-social variables that can concurrently influence patients' trajectories from normal aging to disability. From this perspective, a progressively worsening frailty status increasingly exposes elderly subjects to a higher risk of disability (Makizako et al., 2015). Researchers have grown an increasingly interest in psychological resilience, even in the context of frailty, although the most common focus has been on physical frailty (Wong et al., 2020).

The findings of the current study are also in line with the general perspective of a multidisciplinary approach to

patients with chronic medical conditions, which suggest that implementing protocols based on both psychological and physical interventions could be beneficial (Conversano, 2019; Martino et al., 2019b). Improving patients' dispositional optimism and context sensitivity might be the novel target of mindfulness-based cognitive therapy (De Jong et al., 2016), peer-to-peer support (Callus and Pravettoni, 2018), and group therapies (Lo Coco et al., 2019), with the purpose of developing tailored psychological interventions in patients with chronic medical conditions (Conversano et al., 2019). The research in psychology is moving toward an increasingly patient-centered multidimensional approach, as recently debated within a psychodynamic perspective that highlighted the joint relevance of cognitive, emotional, and personality characteristics in the evaluation of clinical populations (Lingiardi et al., 2010; Hilsenroth et al., 2018; Lingiardi and McWilliams, 2018), with a peculiar concern on the link between aging and psychopathology (Del Corno and Kiosses, 2018).

The current study presents some limitations. The cross-sectional design did not allow a determination of causal relationships. Moreover, the study's single clinical setting was an outpatient clinic, and this narrow focus might potentially reduce the generalizability of the findings. Finally, because of the relatively small number of subjects and the sample's predominance of women, we could not fully explore gender differences between subjects. Longitudinal studies, involving larger samples, should be conducted to confirm these preliminary findings.

Despite the acknowledged limitations, this study offers some significant contributions. As mentioned, several studies involving community populations have employed Fried's frailty phenotype to define frailty status. However, our addition of the deficit accumulation model (Rockwood and Mitnitski, 2007) and the associated FI scores provide a helpful strategy to capture the outpatients' clinical complexity. While the frailty phenotype returns an immediate identification of the not-disabled elderlies' risk of negative events, the FI provides a comprehensive assessment based on deficit accumulation (Cesari et al., 2014). Furthermore, for our unique observations in the context of frailty, we used the two most commonly shared tools, in order to accurately measure dispositional optimism and context sensitivity, in line with their respective theoretical frameworks and in line with previous studies.

## CONCLUSION

The present study highlights the novel association of dispositional optimism and context sensitivity with frailty among elderly outpatients. Dispositional optimism is defined as the individual tendency to expect positive outcomes from different challenges over the entire life span; it has been identified as a psychological factor affecting individuals' health status. Similarly, the ability to accurately and sensitively perceive cues to contextual demands has been identified as a further significant component of successful self-regulation;

consistently, it could help elderly patients to better adapt to challenges affecting their physical and mental health.

These preliminary findings represent a starting point for a multidimensional approach to frailty and an acknowledgment that even peculiar psychological features might play a significant role. One potential implication for both physicians and clinical psychologists could be that the Comprehensive Geriatric Assessment (CGA), the standard geriatric patient-centered methodology, could be enriched to better describe elderly outpatients' complexity. Dispositional optimism and context sensitivity should be investigated in the future as potentially useful targets for designing psychological interventions for the elderly, focusing on improving or strengthening individual psychological factors.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Ethics Committee of the University Hospital of Messina, Messina, Italy (Prot. 23/19). The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

AS made significant contributions to the study design, the drafting of the manuscript, the statistical analyses, and the data interpretation. VL performed the statistical analysis, provided an additional interpretation of the data, and contributed to the manuscript draft. GAB and GM provided the significant conceptual contribution to the manuscript and revised it. GB and MQ critically revised the manuscript. All authors contributed to the article and approved the submitted version.

## ACKNOWLEDGMENTS

We would like to thank Editage ([www.editage.com](http://www.editage.com)) for English language editing.

## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.621013/full#supplementary-material>



## REFERENCES

- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders (DSM-5)*. 5th Edn. Washington, DC: American Psychiatric Association.
- Basile, G., Catalano, A., Mandraffino, G., Maltese, G., Alibrandi, A., Ciancio, G., et al. (2019). Frailty modifications and prognostic impact in older patients admitted in acute care. *Aging Clin. Exp. Res.* 31, 151–155. doi: 10.1007/s40520-018-0989-7
- Basile, G., and Sardella, A. (2020). From cognitive to motor impairment and from sarcopenia to cognitive impairment: a bidirectional pathway towards frailty and disability. *Aging Clin. Exp. Res.* doi: 10.1007/s40520-020-01550-y [Epub ahead of print]
- Bonanno, G. A., and Burton, C. L. (2013). Regulatory flexibility: an individual differences perspective on coping and emotion regulation. *Perspect. Psychol. Sci.* 8, 591–612. doi: 10.1177/1745691613504116
- Bonanno, G. A., Macallum, F., Malgaroli, M., and Hou, W. K. (2018). The Context Sensitivity Index (CSI): measuring the ability to identify the presence and absence of stressor context cues. *Assessment* 27, 261–273. doi: 10.1177/1073191118820131
- Bylsma, L. M., Morris, B. H., and Rottenberg, J. (2008). A meta-analysis of emotional reactivity in major depressive disorder. *Clin. Psychol. Rev.* 28, 676–691. doi: 10.1016/j.cpr.2007.10.001
- Callus, E., and Pravettoni, G. (2018). The role of clinical psychology and peer to peer support in the management of chronic medical conditions—a practical example with adults with congenital heart disease. *Front. Psychol.* 9:731. doi: 10.3389/fpsyg.2018.00731
- Castelnovo, G., Pietrabbisa, G., Manzoni, G. M., Corti, S., Ceccarini, M., Borrello, M., et al. (2015). Chronic care management of globesity: promoting healthier lifestyles in traditional and mHealth based settings. *Front. Psychol.* 6:1557. doi: 10.3389/fpsyg.2015.01557
- Catalano, A., Martino, G., Bellone, F., Papalia, M., Lasco, C., Basile, G., et al. (2019). Neuropsychological assessment in elderly men with benign prostatic hyperplasia treated with dutasteride. *Clin. Drug Investig.* 39, 97–102. doi: 10.1007/s40261-018-0720-7
- Catalano, A., Sardella, A., Bellone, F., Lasco, C. G., Martino, G., and Morabito, N. (2020). Executive functions predict fracture risk in postmenopausal women assessed for osteoporosis. *Aging Clin. Exp. Res.* 32, 2251–2257. doi: 10.1007/s40520-019-01426-w
- Cesari, M., Gambassi, G., van Kan, G. A., and Vellas, B. (2014). The frailty phenotype and the frailty index: different instruments for different purposes. *Age Ageing* 43, 10–12. doi: 10.1093/ageing/afu160
- Clegg, A., Young, J., Iliffe, S., Rikkert, M. O., and Rockwood, K. (2013). Frailty in elderly people. *Lancet* 381, 752–762. doi: 10.1016/S0140-6736(12)62167-9
- Coifman, K. G., and Bonanno, G. A. (2010). When distress does not become depression: emotion context sensitivity and adjustment to bereavement. *J. Abnorm. Psychol.* 119, 479–490. doi: 10.1037/a0020113
- Coifman, K., Flynn, J. J., and Pinto, L. A. (2016). When context matters: negative emotions predict psychological health and adjustment. *Motiv. Emot.* 40, 602–624. doi: 10.1007/s11031-016-9553-y
- Conversano, C. (2019). Common psychological factors in chronic diseases. *Front. Psychol.* 10:2727. doi: 10.3389/fpsyg.2019.02727
- Conversano, C., Ciacchini, R., Orrù, G., Di Giuseppe, M., Gemignani, A., and Poli, A. (2020). Mindfulness, compassion, and self-compassion among health care professionals: what's new? A systematic review. *Front. Psychol.* 11:1683. doi: 10.3389/fpsyg.2020.01683
- Conversano, C., Poli, A., Ciacchini, R., Hitchcott, P., Bazzichi, L., and Gemignani, A. (2019). A psychoeducational intervention is a treatment for fibromyalgia syndrome. *Clin. Exp. Rheumatol.* 37, S98–S104.
- De Jong, M., Lazar, S. W., Hug, K., Mehling, W. E., Hölzel, B. K., Sack, A. T., et al. (2016). Effects of mindfulness-based cognitive therapy on body awareness in patients with chronic pain and comorbid depression. *Front. Psychol.* 7:967. doi: 10.3389/fpsyg.2016.00967
- Del Corno, F., and Kiosses, D. N. (2018). The PDM-2 perspective on later life. *Psychoanal. Psychol.* 35, 346–350. doi: 10.1037/pap0000190
- Di Giuseppe, M., Ciacchini, R., Micheloni, T., Bertolucci, I., Marchi, L., and Conversano, C. (2018). Defense mechanisms in cancer patients: a systematic review. *J. Psychosom. Res.* 115, 76–86. doi: 10.1016/j.jpsychores.2018.10.016
- Di Giuseppe, M., Di Silvestre, A., Lo Sterzo, R., Hitchcott, P., Gemignani, A., and Conversano, C. (2019). Qualitative and quantitative analysis of the defensive profile in breast cancer women: a pilot study. *Health Psychol. Open* 6:667. doi: 10.1177/2055102919854667
- Di Giuseppe, M., Miniati, M., Miccoli, M., Ciacchini, R., Orrù, G., Lo Sterzo, R., et al. (2020). Defensive responses to stressful life events associated with cancer diagnosis. *Mediterr. J. Clin. Psychol.* 8, 1–22. doi: 10.6092/2282-1619/mjcp-2384
- Diminich, E. D., and Bonanno, G. A. (2014). Faces, feelings, words: divergence across channels of emotional responding in complicated grief. *J. Abnorm. Psychol.* 123, 350–361. doi: 10.1037/a0036398
- Dos Santos, S. B., Rocha, G. P., Fernandez, L. L., de Padua, A. C., and Reppold, C. T. (2018). Association of lower spiritual well-being, social support, self-esteem, subjective well-being, optimism and hope scores with mild cognitive impairment and mild dementia. *Front. Psychol.* 9:371. doi: 10.3389/fpsyg.2018.00371
- Etman, A., Burdorf, A., Van der Cammen, T. J., Mackenbach, J. P., and Van Lenthe, F. J. (2012). Socio-demographic determinants of worsening in frailty among community-dwelling older people in 11 European countries. *J. Epidemiol. Community Health* 66, 1116–1121. doi: 10.1136/jech-2011-200027
- Faghani, S., Shamsalnia, A., Ghaffari, F., and Yadegari, N. (2018). The relationship between spiritual well-being and life orientation in elderly people with type 2 diabetes. *J. Gerontol. Geriatr.* 66, 142–148.
- Filippello, P., Spadaro, L., Sorrenti, L., Mafodda, A. V., and Drammis, L. (2016). Metacognitive processes and planning in children with dysorthography. *Psicol. Clin. Svilupp.* 20, 83–102. doi: 10.1449/83131
- Folstein, M. F., Folstein, S. E., and McHugh, P. R. (1975). Mini-mental state. A practical method for grading the cognitive state of patients for the clinician. *J. Psychiatr. Res.* 12, 189–198. doi: 10.1016/0022-3956(75)90026-6
- Flink, I. K., Boersma, K., Klein-Strandberg, E., and Linton, S. J. (2019). Responding to social cues: an experimental paradigm exploring the link between context sensitivity and pain. *Br. J. Health Psychol.* 24, 443–459. doi: 10.1111/bjhp.12362
- Freitag, S., and Schmidt, S. (2016). Psychosocial correlates of frailty in older adults. *Geriatrics* 1:26. doi: 10.3390/geriatrics1040026
- Fried, L. P., Tangen, C. M., Walston, J., Newman, A. B., Hirsch, C., Gottdiener, J., et al. (2001). Frailty in older adults: evidence for a phenotype. *J. Gerontol. A Biol. Sci. Med. Sci.* 56, M146–M156. doi: 10.1093/gerona/56.3.m146
- Furtado, G. E., Caldo, A., Vieira-Pedrosa, A., Letieri, R. V., Hogervorst, E., Teixeira, A. M., et al. (2020). Emotional well-being and cognitive function have robust relationship with physical frailty in institutionalized older women. *Front. Psychol.* 11:1568. doi: 10.3389/fpsyg.2020.01568
- Gentili, C., Rickardsson, J., Zetterqvist, V., Simons, L. E., Lekander, M., and Wicksell, R. K. (2019). Psychological flexibility as a resilience factor in individuals with chronic pain. *Front. Psychol.* 10:2016. doi: 10.3389/fpsyg.2019.02016
- Giannini, M., Schuldberg, D., Di Fabio, A., and Gargaro, D. (2008). Misurare l'ottimismo: Proprietà psicometriche della versione Italiana del Life Orientation Test—Revised (LOT-R). *Counseling, Giornale Italiano di Ricerca e Applicazioni* 1, 73–84.
- Gison, A., Dall'Armi, V., Donati, V., Rizza, F., and Giaquinto, S. (2014). Dispositional optimism, depression, disability and quality of life in Parkinson's disease. *Funct. Neurol.* 29, 113–119. doi: 10.11138/FNeur/2014.29.2.113
- Gobbens, R. J. J., Luijckx, K. G., Wijnen-Sponselee, M. T., and Schols, J. M. G. A. (2010). Towards an integral conceptual model of frailty. *J. Nutr. Health Aging* 14, 175–181. doi: 10.1007/s12603-010-0045-6
- Harvey, M. M., Coifman, K. G., Ross, G., Kleinert, D., and Giardina, P. (2014). Contextually appropriate emotional word use predicts adaptive health behavior: emotion context sensitivity and treatment adherence. *J. Health Psychol.* 21, 579–589. doi: 10.1177/1359105314532152
- Hilsenroth, M., Katz, M., and Tanzilli, A. (2018). Psychotherapy research and the psychodynamic diagnostic manual (PDM-2). *Psychoanal. Psychol.* 35, 320–327. doi: 10.1037/pap0000207
- Kelly, R. R., McDonald, L. T., Jensen, N. R., Sidles, S. J., and LaRue, A. C. (2019). Impacts of psychological stress on osteoporosis: clinical implications and treatment interactions. *Front. Psych.* 10:200. doi: 10.3389/fpsyg.2019.00200

- Kobylińska, D., and Kusev, P. (2019). Flexible emotion regulation: how situational demands and individual differences influence the effectiveness of regulatory strategies. *Front. Psychol.* 10:72. doi: 10.3389/fpsyg.2019.00072
- Kraai, I. H., Vermeulen, K. M., Hillege, H. L., Jaarsma, T., and Hoekstra, T. (2018). Optimism and quality of life in patients with heart failure. *Palliat. Support. Care* 16, 725–731. doi: 10.1017/S1478951517001055
- Lenzo, V., Bordino, V., Bonanno, G. A., and Quattropani, M. C. (2020a). Understanding the role of regulatory flexibility and context sensitivity in preventing burnout in a palliative home care team. *PLoS One* 15:e0233173. doi: 10.1371/journal.pone.0233173
- Lenzo, V., Sardella, A., Martino, G., and Quattropani, M. C. (2020b). A systematic review of metacognitive beliefs in chronic medical conditions. *Front. Psychol.* 10:2875. doi: 10.3389/fpsyg.2019.02875
- Lingiardi, V., Gazzillo, F., Colli, A., De Bei, F., Tanzilli, A., Di Giuseppe, M., et al. (2010). Diagnosis and assessment of personality, therapeutic alliance and clinical exchange in psychotherapy research. *Res. Psychother.* 2, 97–124. doi: 10.4081/ripppo.2010.36
- Lingiardi, V., and McWilliams, N. (2018). Introduction to the special issue on the psychodynamic diagnostic manual, 2nd edition (PDM-2): the PDM: yesterday, today, tomorrow. *Psychoanal. Psychol.* 35, 289–293. doi: 10.1037/pap0000188
- Lo Coco, G., Gullo, S., Profita, G., Pazzagli, C., Mazzeschi, C., and Kivlighan, D. M. Jr. (2019). The codevelopment of group relationships: the role of individual group member's and other group members' mutual influence and shared group environment. *J. Couns. Psychol.* 66, 640–649. doi: 10.1037/cou0000349
- Magni, E., Binetti, G., Bianchetti, A., Rozzini, R., and Trabucchi, M. (1996). Mini-Mental State Examination: a normative study in Italian elderly population. *Eur. J. Neurol.* 3, 198–202. doi: 10.1111/j.1468-1331.1996.tb00423.x
- Makizako, H., Shimada, H., Doi, T., Tsutsumimoto, K., and Suzuki, T. (2015). Impact of physical frailty on disability in community-dwelling older adults: a prospective cohort study. *BMJ Open* 5:e008462. doi: 10.1136/bmjopen-2015-008462
- Marchetti, D., Verrocchio, M. C., and Porcelli, P. (2019). Gambling problems and alexithymia: a systematic review. *Brain Sci.* 9:191. doi: 10.3390/brainsci9080191
- Marchi, L., Marzetti, F., Orrù, G., Lemmetti, S., Miccoli, M., Ciacchini, R., et al. (2019). Alexithymia and psychological distress in patients with fibromyalgia and rheumatic disease. *Front. Psychol.* 10:1735. doi: 10.3389/fpsyg.2019.01735
- Martino, G., Bellone, F., Langher, V., Caputo, A., Catalano, A., and Quattropani, M. C. (2019a). Alexithymia and psychological distress affect perceived quality of life in patients with type 2 diabetes mellitus. *Mediterr. J. Clin. Psychol.* 7, 1–15. doi: 10.6092/2282-1619/2019.7.2328
- Martino, G., Caputo, A., Bellone, F., Quattropani, M. C., and Vicario, C. M. (2020a). Going beyond the visible in type 2 diabetes mellitus: defense mechanisms and their associations with depression and health-related quality of life. *Front. Psychol.* 11:267. doi: 10.3389/fpsyg.2020.00267
- Martino, G., Caputo, A., Schwarz, P., Bellone, F., Fries, W., Quattropani, M. C., et al. (2020b). Alexithymia and inflammatory bowel disease: a systematic review. *Front. Psychol.* 11:1763. doi: 10.3389/fpsyg.2020.01763
- Martino, G., Caputo, A., Vicario, C. M., Catalano, A., Schwarz, P., and Quattropani, M. C. (2020c). The relationship between alexithymia and type 2 diabetes: a systematic review. *Front. Psychol.* 11:2026. doi: 10.3389/fpsyg.2020.02026
- Martino, G., Catalano, A., Bellone, F., Russo, G. T., Vicario, C. M., Lasco, A., et al. (2019b). As time goes by: anxiety negatively affects the perceived quality of life in patients with type 2 diabetes of long duration. *Front. Psychol.* 10:1779. doi: 10.3389/fpsyg.2019.01779
- Morley, J. E., Malmstrom, T. K., and Miller, D. K. (2012). A simple frailty questionnaire (FRAIL) predicts outcomes in middle aged African Americans. *J. Nutr. Health Aging* 16, 601–608. doi: 10.1007/s12603-012-0084-2
- Mulasso, A., Roppolo, M., Giannotta, F., and Rabaglietti, E. (2016). Associations of frailty and psychosocial factors with autonomy in daily activities: a cross-sectional study in Italian community-dwelling older adults. *Clin. Interv. Aging* 11, 37–45. doi: 10.2147/CIA.S95162
- Quattropani, M. C., Lenzo, V., Armieri, V., and Filastro, A. (2018a). The origin of depression in Alzheimer disease: a systematic review. *Riv. Psichiatr.* 53, 18–30. doi: 10.1708/2866.28920
- Quattropani, M. C., Lenzo, V., Baio, M., Bordino, V., Germanà, A., Grasso, D., et al. (2017). Metacognitive beliefs and coping strategies in homecare professionals at risk of burnout. *Psicologia della Salute* 2, 121–142. doi: 10.3280/PDS2017-002006
- Quattropani, M. C., Lenzo, V., and Filastro, A. (2018b). The role of metacognition in multiple sclerosis: a clinical study and assessment of possible correlation with anxiety, depression, and coping strategies. *EuroMediterranean Biomed. J.* 15, 12–18. doi: 10.3269/1970-5492.2018.13.9
- Quattropani, M. C., Lenzo, V., Filastro, A., and Fries, W. (2019). Metacognitions and basic emotions in patients with irritable bowel syndrome and inflammatory bowel disease. *Psicoter. Cogn. e Comportamentale* 25, 35–51.
- Rasmussen, H. N., Scheier, M. F., and Greenhouse, J. B. (2009). Optimism and physical health: a meta-analytic review. *Ann. Behav. Med.* 37, 239–256. doi: 10.1007/s12160-009-9111-x
- Rockwood, K., and Mitnitski, A. (2007). Frailty in relation to the accumulation of deficits. *J. Gerontol. A Biol. Sci. Med. Sci.* 62, 722–727. doi: 10.1093/gerona/62.7.722
- Rosa, V., Tomai, M., Lauriola, M., Martino, G., and Di Trani, M. (2019). Body mass index, personality traits, and body image in Italian pre-adolescents: an opportunity for overweight prevention. *Psihologija* 52, 379–393. doi: 10.2298/PSI181121009R
- Rubtsova, A. A., Marquie, M. J., Depp, C., Holstad, M., Ellis, R. J., Letendre, S., et al. (2019). Psychosocial correlates of frailty among HIV-infected and HIV-uninfected adults. *Behav. Med.* 45, 210–220. doi: 10.1080/08964289.2018.1509053
- Sardella, A., Catalano, A., Lenzo, V., Bellone, F., Corica, F., Quattropani, M. C., et al. (2020). Association between cognitive reserve dimensions and frailty among older adults: a structured narrative review. *Geriatr. Gerontol. Int.* 20, 1005–1023. doi: 10.1111/ggi.14040
- Scheier, M. F., and Carver, C. S. (1985). Optimism, coping, and health: assessment and implications of generalized outcome expectancies. *Health Psychol.* 4, 219–247. doi: 10.1037//0278-6133.4.3.219
- Scheier, M. F., Carver, C. S., and Bridges, M. W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): a reevaluation of the Life Orientation Test. *J. Pers. Soc. Psychol.* 67, 1063–1078. doi: 10.1037//0022-3514.67.6.1063
- Schiavon, C. C., Marchetti, E., Gurgel, L. G., Busnello, F. M., and Reppold, C. T. (2017). Optimism and hope in chronic disease: a systematic review. *Front. Psychol.* 7:2022. doi: 10.3389/fpsyg.2016.02022
- Searle, S. D., Mitnitski, A., Gahbauer, E. A., Gill, T. M., and Rockwood, K. (2008). A standard procedure for creating a frailty index. *BMC Geriatr.* 8:24. doi: 10.1186/1471-2318-8-24
- Serlachius, A., Pulkki-Räback, L., Elovainio, M., Hintsanen, M., Mikkilä, V., Laitinen, T. T., et al. (2015). Is dispositional optimism or dispositional pessimism predictive of ideal cardiovascular health? The Young Finns Study. *Psychol. Health* 30, 1221–1239. doi: 10.1080/08870446.2015.1041394
- Taylor, M. G., and Carr, D. (2020). Psychological resilience and health among older adults: a comparison of personal resources. *J. Gerontol. B Psychol. Sci. Soc. Sci.* doi: 10.1093/geronb/gbaa116 [Epub ahead of print]
- Van Houtum, L., Rijken, M., and Groenewegen, P. (2015). Do everyday problems of people with chronic illness interfere with their disease management? *BMC Public Health* 15:1000. doi: 10.1186/s12889-015-2303-3
- Vicario, C. M., Salehinejad, M. A., Felmingham, K., Martino, G., and Nitsche, M. A. (2019). A systematic review on the therapeutic effectiveness of non-invasive brain stimulation for the treatment of anxiety disorders. *Neurosci. Biobehav. Rev.* 96, 219–231. doi: 10.1016/j.neubiorev.2018.12.012
- Vita, R., Caputo, A., Quattropani, M. C., Watt, T., Feldt-Rasmussen, U., Puleio, P., et al. (2020). Quality of life in patients with hyperthyroidism: where do we stand? *Mediterr. J. Clin. Psychol.* 8, 1–28. doi: 10.6092/2282-1619/mjcp-2521
- Wong, R. J., Mohamad, Y., Srisengfa, Y. T., Kent, D. S., Seetharaman, S., Shar, R. J., et al. (2020). Psychological contributors to the frail phenotype: the association between resilience and frailty in patients with cirrhosis. *Am. J. Transplant.* doi: 10.1111/ajt.16131 [Epub ahead of print]
- Yoo, J., and Ryff, C. D. (2019). Longitudinal profiles of psychological well-being and health: findings from Japan. *Front. Psychol.* 10:2746. doi: 10.3389/fpsyg.2019.02746
- Yuan, H., Zhang, Y., Xue, G., Yang, Y., Yu, S., and Fu, P. (2020). Exploring psychosocial factors associated with frailty incidence among patients

undergoing maintenance hemodialysis. *J. Clin. Nurs.* 29, 1695–1703. doi: 10.1111/jocn.15225

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2021 Sardella, Lenzo, Bonanno, Martino, Basile and Quattropani. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Defensive Functioning Moderates the Effects of Nondirective Meditation

Anne Grete Hersoug<sup>1</sup>, Morten Wærsted<sup>2</sup> and Bjørn Lau<sup>3\*</sup>

<sup>1</sup>Institute of Clinical Medicine, University of Oslo, Oslo, Norway, <sup>2</sup>National Institute of Occupational Health, Oslo, Norway,

<sup>3</sup>Department of Psychology, University of Oslo, Oslo, Norway

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

John H. Porcerelli,  
University of Detroit Mercy,  
United States  
Jonathan Petraglia,  
McGill University, Canada

### \*Correspondence:

Bjørn Lau  
bjornlau2002@yahoo.no;  
bjorn.lau@psykologi.uio.no

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 16 November 2020

**Accepted:** 07 January 2021

**Published:** 28 January 2021

### Citation:

Hersoug AG, Wærsted M and  
Lau B (2021) Defensive Functioning  
Moderates the Effects of  
Nondirective Meditation.  
Front. Psychol. 12:629784.  
doi: 10.3389/fpsyg.2021.629784

We have recently found that nondirective meditation facilitates stress reduction. This supplementary study investigated whether defensive functioning would moderate these beneficial effects. We explored the occurrence of defense mechanisms and the impact of defensive functioning on the outcome of companies' stress management programs regarding worries nervousness, mental distress, sleep problems, and muscle pain. The sample was a population of active, working professionals recruited from Norwegian companies ( $n = 105$ ). The intervention group obtained significant benefits on all outcome measures, but there were no effects in the control group. We analyzed defensive functioning with the self-report questionnaire, Life Style Index, at four time points. The healthy adults who participated had a low level of defense scores at the outset. There was a significant reduction in the level of defenses in both groups over the study period, 6 months. Defensive functioning significantly moderated the change of the outcome measures from baseline to follow-up in the intervention group, but not in the control group.

**Keywords:** defense mechanisms, defensive functioning, stress management, stress reduction, nondirective meditation, worries, mental distress, muscle pain

## INTRODUCTION

The concept of defense mechanisms originated within the psychoanalytic tradition, and represents one of the most important contributions made by psychoanalysis to personality theory and psychological adaptation (Freud, 1936, 1959/1894). We use defense mechanisms to cope with demanding emotional experiences. They tend to operate outside of our awareness and may become habitual styles of responding to situations that challenge our self-image and sense of control (Vaillant, 2000). The use of more adaptive defenses is linked to work satisfaction, better mental health, subjective well-being, and better relationships, whereas less adaptive defenses are linked to work problems, difficulty in relationships, and poorer mental health (Larsen et al., 2010).

Increased psychological distress is associated with more use of defenses (Hyphantis et al., 2011). Defense mechanisms also play a role in areas associated with work-related stress. The use of maladaptive defenses predicted emotional exhaustion in a sample of intensive care unit nurses (Regan et al., 2009). The nurses had a predominantly adaptive defense style, and emotional demands itself did not lead to burnout. However, maladaptive defenses appeared to prevent the conscious processing necessary to resolve work-related anxiety, suggesting a mediating role of such defenses.



Endresen et al. (1987) examined occupational groups exposed to both acute and more enduring stress-situations. The main components of the work-related stress experience were role-stress and nonparticipation in decision-making. They found a modulating effect of psychological defenses regarding the experience of psychological stress factors, anxiety, health symptoms, and immunological measures.

Vaernes et al. (1988) investigated psychological defense mechanisms and health among shift-workers in the Norwegian process industry. They found that the combined scores for defenses, perceived health, and work problems explained 25% of the immune measures' variance. Vaernes et al. (1991) also found associations between stress, psychological factors, health, and immune levels among military aviators.

Unlike many psychological measures, the maturity of defenses is quite independent of social class, education, and IQ (Vaillant, 2000). A sense of social support may be an essential factor linked empirically with both physical health and personality functioning. Defense mechanisms may impact physical health (Olf et al., 1993; Soldz and Vaillant, 1998; Olf, 1999). Maladaptive defenses were positively associated with higher reported levels of life stress, bodily disease, and affective symptoms – and may identify poor copers with high risk for distress (Flannery and Perry, 1990). A sample of back pain patients used more defensive strategies and fewer coping strategies than a sample without such pain. They had more subjective health complaints and less mastery-oriented coping (Eriksen et al., 1997).

Changes in defensive functioning in long-term psychotherapy mostly follow the hierarchy of defense adaptation (Perry and Bond, 2012), suggesting that defenses may be mediating improvement in functioning and symptoms. Addressing defenses during psychotherapy contributes to improved adaptation (Perry and Bond, 2017). Maladaptive defenses were positively and significantly correlated with perceived stress in young and elderly adults (Segal et al., 2007). The results indicated the general stability of adaptive defense mechanisms across the lifespan, and reduced maladaptive defense mechanisms with advancing age.

The present study is a supplement to a study of the effects of a stress reduction technique – nondirective meditation – which yielded significant benefits in the intervention group on all outcome measures: fewer sleep problems, worries mental distress, and musculoskeletal pain (Hersoug et al., 2018). In the control group, no such effects were obtained. The practice of nondirective meditation yielded more effects than only education on stress management. The current study explored defensive functioning in the same non-clinical sample of healthy adults.

## Aims of the Study

The present study investigated defense mechanisms and possible interactions between defensive functioning and the effects of the intervention, nondirective meditation – a stress reduction method. Defense mechanisms were assessed with the Life Style Index (LSI; Plutchik et al., 1979). The study period was 6 months, which was assumed to be too short for significant defensive functioning changes to occur. Therefore, it was

expected that the total defense score would be relatively stable (Conte and Plutchik, 1995; Hersoug et al., 2002). Still, some fluctuations over the four repeated measures might be expected, and trends of changes might be observed. We are not aware of any previous studies of this kind, and, therefore, had no specific, empirically based hypotheses regarding possible interactions between defensive functioning and the intervention regarding the outcome measures: worries, mental distress, musculoskeletal pain, and sleep problems. The study was exploratory, without specific hypotheses.

## MATERIALS AND METHODS

### Participants

The participants were 105 healthy adults who were actively working professionals (Intervention group,  $n = 65$ ; Control group,  $n = 40$ ), who were recruited among employees in five Norwegian companies, comprising insurance, banking, labor and welfare services, and several commercial firms. **Table 1** shows baseline data on age, gender distribution, civil status, and level of education. The companies themselves were responsible for recruitment, by inviting employees to learn a nondirective relaxation technique as part of their stress management programs. The companies also recruited participants in the control group ( $N = 47$ , age 27–64) among employees, mainly from the same departments. In the context of this field study, a randomization procedure for allocating participants to intervention and control was not possible. However, the participants in the control group were informed that they might learn the technique after the 6-month study period.

### Study Design and Procedures Stress Management

The intervention and control groups were invited at their worksite to a 2-h seminar on stress, stress responses, and stress management. In each site, the lecture was given collectively to the control and intervention groups. Following the lecture, there was no follow-up for the control group that did not get any stress management teaching. They never participated as a group and never met as a group but filled out questionnaires during the rest of the study. Only the intervention group was pursued by attending an introductory course in Acem Meditation – a

**TABLE 1 |** Descriptive data at baseline for the intervention and control groups.

	Intervention group	Control group	T-test
	<i>N</i> = 65	<i>N</i> = 40/37*	<i>p</i>
Age [mean (SD)]	45.6 (8.1)	41.1 (8.4)	0.009
Gender (% females)	72.3	72.5	0.98
Civil status (% married/cohabitating)	63.1	67.5	0.65
Education (% college/university)	86.22	89.2	0.66

\*Data on civil status and education missing for three subjects in the control group.

nondirective technique (Holen, 2016). Certified teachers guided them through five 2-h sessions over 8 weeks at their workplaces. These meetings were used to meditate (30 min), provide meditation guidance, and discuss meditation experience. Regular, daily practice was recommended, varying from 45 to 30 min per day. After completing the course, the participants carried out the procedure independently without any follow-up during the rest of the study period.

### A Nondirective Technique – Acem Meditation

Acem Meditation may be described as a nondirective, self-administered type of meditation. A multi-syllable sound with no meaning, neither semantic, mental, nor symbolic, is used as a meditation object. During meditation, this sound is replicated in a soft, effortless manner. A relaxing concentration of consciousness intermittently interrupted by a wandering mind – the attention changes between the meditation object and the material that occurs spontaneously. The meditation sound is “primarily a vehicle to focus internal processes of the mind in a specific way, which can be described either as a state of silent observation, focused attention, heightened awareness of the shifting thoughts and emotions” (Ellingsen and Holen, 2015). The practitioner performs this method with a “free mental attitude,” so that thoughts, memories, emotions, sensations, and moods emerge spontaneously, whether positive or negative. Using such an open-minded approach, what may arise in consciousness is dealt with in an accepting and non-judgmental way. This attitude is characterized by an effortless activity, with no attempt to reduce or alter the spontaneous activity, such as avoiding spontaneous mind wandering. During the course, instructions included how to handle the activities of the mind when changes took place in the inner environment. The training goal was to learn to practice the free mental attitude and retrieve it when lost.

Both groups completed questionnaires at baseline, then after 2, 3, and 6 months. The questionnaires were filled out online. To keep the participants anonymous, a letter was written for each participant, giving them a unique access code. Anonymity was ensured for the research team and others by an engineer administering these procedures. To increase completion rates, general reminders were sent to the participants.

In all four time points, the questionnaires were identical, other than the first one, which also had background data on gender, age, education level, and civil status (single, married, cohabiting, widowed, divorced, or separated). The second completion was made after the end of the 8-week course. There was no follow-up after this time point. The third completion was made 1 month after this, in order to obtain at least three measurements from as many participants as possible, as some attrition was expected at the last follow-up, at the end of the 6 month project period. Besides, all the follow-up questionnaires for the intervention group asked how much the meditation technique was practiced. The selection of instruments for measuring the study results was based empirically on a pilot study (Hersoug et al., 2008). The pilot study – using the same instruments – investigated the effects of a stress reduction program for employees, with significantly better results in the

meditation group than the control group – regarding worries, sleep problems, and coping with pressure.

## Instruments

### Life Style Index

Life Style Index was developed by Plutchik et al. (1979), designed to assess defense mechanisms, assuming that their use is related to specific, affective states and diagnostic concepts. It is a 97 item true-false self-report questionnaire to assess eight defense mechanisms: intellectualization, repression, displacement, compensation, regression, denial, projection, and reaction formation. Investigations of the psychometric properties have supported that it can provide a solid ground for assessing ego defense mechanisms (Endresen, 1991; Hyphantis et al., 2011). The present study used a Norwegian translation by Holen, based on personal communication with Plutchik.

In the statistical analyses, total scores of the 97 defenses were used – i.e., the number of «true» scores were summarized. Higher scores indicated that the subject used more defenses, whereas lower scores indicated fewer «true» defense scores. The use of total LSI scores was deemed appropriate, as previous findings have found that this procedure consistently is the best discriminator among groups (Conte and Plutchik, 1995, p. 197).

### Eysenck Personality Questionnaire

Eysenck Personality Questionnaire, Neuroticism subscale, EPQ-N, is a self-reported form with 12 items measuring neuroticism, a personal style characterized by worries, nervousness, vulnerability, and tenseness (Eysenck and Eysenck, 1969). This is one of the higher-order factors that EPQ is based on. For this dimension, EPQ-N encompasses the 12 relevant items. The subject fills in “yes” (=1) or “no” (=0) for each item. The EPQ-N yields an overall total score, maximum 12 (high neuroticism).

### General Health Questionnaire

The 12 item version of the General Health Questionnaire (GHQ-12) is a self-report form (Goldberg et al., 1997) assessing the level of mental distress in the previous 2 weeks. The answers are given as “0” (much less than usual), “1” (less than usual), “2” (same as usual), or “3” (more than usual). The GHQ-12 has an overall total score of up to 36 (high distress). The Norwegian GHQ-12 has demonstrated good psychometric properties (Nerdrum et al., 2006).

### Bergen Insomnia Scale

Bergen Insomnia Scale (BIS; Pallesen et al., 2008) is a self-report form that contains six items on sleep problems over the last month and on sleep quality and the extent to which sleep quality is satisfactory or unsatisfactory.

### Musculoskeletal Pain

Self-reported muscle pain intensity for four separate regions of the body was reported for the preceding 4 weeks: neck, shoulders, and upper back; lower back; upper extremities (arms

and hands); and lower extremities (hips, legs, knees, and feet). The pain intensity was reported as no pain, mild pain, moderate pain, or severe pain (Hanvold et al., 2010). A sum score of pain in the four body regions was used in the analyses.

## Statistical Analyses

Descriptive statistics were calculated with the LSI scores at baseline and follow-up assessments for the intervention and control groups. The level of defensive functioning was calculated as the total LSI score for the whole sample, the intervention group, and the control group.

Linear mixed model analyses were used to study LSI's moderating effect on the development of the outcome variables in the intervention group and the control group during follow-up. The analyses were done both unadjusted and with adjustments for age, gender, civil status, and education. Random intercepts were added for company and person, with person nested in the company. Stata SE version 15 was used for linear mixed model analyses and IBM SPSS version 25 for the descriptive analyses.

## RESULTS

### Sociodemographic Data

There were no major differences concerning demographic data between the intervention group and the control group. As shown in **Table 1**, there were no significant differences between the groups in the distributions of gender, marital status, and education level. However, the intervention group was somewhat older (**Table 1**).

### Defensive Functioning

At baseline, the intervention group's total LSI score was 29.95 (SD 8.4), and the control group 27.24 (SD 7.4). In both groups, the total score was significantly lower at the last assessment than at baseline. As shown in **Table 2**, there were no significant differences in the scores between the two groups.

### Moderating Impact of Defensive Functioning

In the linear mixed model analysis (**Table 3**), LSI turned out to be a moderator of the effect of the intervention, nondirective meditation. Significant or near significant effects were found at most of the three follow-up time points. We observed a significant effect for muscle pain at all three time points; for GHQ-12 at

2 and 6 months, and bordering significance at 3 months; for BIS, a significant effect at 2 months, near significance at 3 months; when a preliminary improvement in the control group was also observed, and near significance at 6 months. For EPQ-N, the effect was significant at 6 months, at 3 months near significant, and a nonsignificant effect at 2 months. Adjustments for covariates, age, gender, civil status, and education did not change the result for any of the outcome variables.

Overall, the analyses indicated moderating impacts of LSI which were significant, or near significant, on the effects of nondirective meditation, on the outcome variables in the intervention group (**Table 3**).

Beta values were negative at all time points, also when values of *p* were nonsignificant. This may indicate that the estimates of the intervention's effects for those with higher LSI score were stronger, toward lower outcome scores. The indicator was found at all follow-ups, although not significant at all time points.

## DISCUSSION

### Defensive Functioning

The use of defense mechanisms varies, depending on the current life situation and factors like the level of stress. For those who work under high levels of stress, like the participants in this study, it is likely that use of defenses increases under such circumstances.

There are few studies of defensive functioning, with non-clinical samples of healthy adults. We have found a few, which allow for comparison across studies. In a Norwegian non-clinical sample (*n* = 704), the total defense score was 27.78 (8.5; Endresen, 1991), indicating that these data were in the same range as in the present study. Another Norwegian non-clinical sample had total scores in the same range (Grønningsæter et al., 1991). In comparison, a group of normal elderly persons had a total score of 34.90 (SD 10.48) (Conte and Plutchik, 1995, p. 188); and a group of non-clinical, healthy adolescents 48.88 (SD 29.77; Conte and Plutchik, 1995, p. 193), i.e., the young group used more defenses than the adults in our sample and the sample of elderly persons. Clinical samples had considerably higher defense scores (Conte and Plutchik, 1995, p. 188–193).

### Development of Defensive Functioning

The groups in this study had somewhat different scores at baseline, which is assumed to have impacted the results to some degree, including development of defensive functioning over the course of the project period. The intervention group had a higher initial LSI total score than the control group, and also somewhat higher scores of the outcome variables, which represent stress indicators, suggesting an association between the experience of stress – measured as mental distress, worries, sleep problems, muscle pain, and more use of defenses. With randomization of the participants, such differences between the groups would have been controlled. Furthermore, variability due to multiple data points that were more closely together than desirable, may have played a role in this study.

**TABLE 2 |** Life Style Index (LSI) total score at baseline and three follow-up time points.

	Intervention group			Control group			T-test
	N	Mean	SD	N	Mean	SD	p
Baseline	64	29.95	8.40	37	27.24	7.43	0.10
Follow-up 2 months	43	25.56	8.14	31	23.06	7.79	0.19
Follow-up 3 months	41	25.41	8.92	24	21.79	8.83	0.12
Follow-up 6 months	30	25.23	10.28	22	20.77	8.62	0.10

**TABLE 3** | The moderating effect of LSI on the difference between the effects on outcome from baseline to follow-up in the intervention group compared to the control group.

	Sleep (BIS)	EPQ-N	GHQ-12	Muscle pain
<b>Unadjusted<sup>a</sup></b>				
2-month follow-up	−0.13 ( $p = 0.026$ )	−0.02 ( $p = 0.23$ )	−0.09 ( $p = 0.017$ )	−0.04 ( $p = 0.001$ )
3-month follow-up	−0.11 ( $p = 0.093$ )	−0.03 ( $p = 0.090$ )	−0.08 ( $p = 0.063$ )	−0.03 ( $p = 0.012$ )
6-month follow-up	−0.11 ( $p = 0.099$ )	−0.06 ( $p = 0.001$ )	−0.11 ( $p = 0.013$ )	−0.03 ( $p = 0.021$ )
<b>Adjusted<sup>b</sup></b>				
2-month follow-up	−0.13 ( $p = 0.029$ )	−0.02 ( $p = 0.23$ )	−0.10 ( $p = 0.014$ )	−0.04 ( $p < 0.001$ )
3-month follow-up	−0.10 ( $p = 0.10$ )	−0.03 ( $p = 0.090$ )	−0.08 ( $p = 0.059$ )	−0.03 ( $p = 0.008$ )
6-month follow-up	−0.11 ( $p = 0.11$ )	−0.06 ( $p = 0.001$ )	−0.13 ( $p = 0.010$ )	−0.03 ( $p = 0.019$ )

Beta and value of  $p$  from the linear mixed model analysis.

<sup>a</sup>Linear mixed model controlling for dependency in data within company and within person (random effects).

<sup>b</sup>Linear mixed model also adjusting for the covariates age, gender, education level, living alone/cohabitating (fixed effects).

In future studies, multiple measurements over a longer period than 6 months would be preferable.

## Moderating Impact of Defensive Functioning

The analyses yielded systematic indications of a moderating impact of defensive functioning in the group who practiced nondirective meditation – on muscle pain, mental distress, and sleep problems over the study period, but not in the control group. Although there was a significant reduction of defensive functioning in the control group, no moderating impact was observed, and there was no significant improvement on the outcome variables in this group. Thus, the combined impact of the intervention, nondirective meditation, and the change of defensive functioning, was necessary for the significant improvement the intervention group obtained. Recent empirical research supports that change in defenses appears to play a fundamental mediating role in change overall (Perry and Bond, 2017).

## Strengths and Limitations

The inclusion of a control group in a field study of this kind is a strength. The use of multiple data points and several outcome measures is another strength. Another strength of this study was the questionnaires' computerized management, ensuring anonymity and minimizing the potential impact of evaluator bias. The research team was unable to access the links between the individual participants and the database. Besides, we only used validated and well-known instruments from international research. Diverse instructors taught the courses in different companies in order to reduce personality bias and skill diversities. Participants included active professionals working on their company sites, which fit well with the research questions of the study. They share a stressful situation at work. The statistical analyses were also robust for bias due to subjects leaving during the follow-up by using the linear mixed models.

A conceptual limitation is the use of only a self-report questionnaire, which measures conscious derivatives of unconscious processes. Including a more robust measure of defensive functioning would have increased the strength of

the study. Repeated measures of defensive functioning over a longer period than 6 months would have improved the quality of the study. While several measurements with close time points were not a problem regarding the outcome variables, a study of change of defensive functioning improves with measurements that are less close, and over a longer period. Due to the attrition rate after several follow-ups, the study became somewhat underpowered. There were also significantly more women in both groups, and the sample did not represent a balanced gender distribution.

Another limitation that should be mentioned, is the lack of randomization. The context and procedures in this field study did not make it possible to carry out randomization. Because the intervention was carried out as part of the companies' stress management programs, they recruited both participants to the control and intervention groups. Although the control group participants were offered to learn the meditation technique after the study period, such interests were not required to participate in the control group. Therefore, we cannot ignore that the control and intervention groups may vary in interest and motivation to learn and practice a meditation technique. We are not familiar with factors that differentiate the study participants from non-participants, apart from having time for the course and daily meditation practice. However, in one participating company, both the intervention and control groups had signed up for the intervention. Nonetheless, these analyzes are not shown here; this site's results were not different from the other companies' results, indicating that randomization would not have made a big difference in terms of the overall results. Nevertheless, we would encourage others to replicate this study by using an RCT design. Nor can we ignore that participants in the control group could have some positive effect over and above the hypothesized "active" ingredient by non-specific factors such as participating in the project or expecting a later positive impact when obtaining the control condition.

## CONCLUSION

Defense mechanisms moderated the improvement of mental distress, worries, sleep problems, and muscle pain among



working professionals. The defensive functioning may play a role in the process of better stress management. This study is a contribution to more knowledge about defensive functioning, stress reactions, and stress reduction among healthy adults.

## DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because informed consent for sharing data with other researchers was not collected from the participants. Requests to access the datasets should be directed to bjorn.lau@psykologi.uio.no.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Regional Committee for Medical Research Ethics in Eastern and Mid Norway. The patients/

participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

AH, MW, and BL contributed to the design and manifestation of the study. AH and MW collected the data. MW made the statistical analyses. AH took the main responsibility for writing the manuscript, but all authors contributed and approved the final version of the manuscript. BL took care of the submission and is the corresponding author.

## ACKNOWLEDGMENTS

We acknowledge Sharooz Elka at the National Institute of Occupational Health for taking care of the database and the administration of codes for each participant during the project period, thus ensuring anonymity.

## REFERENCES

- Conte, H. R., and Plutchik, R. (1995). *Ego defenses: Theory and development*. New York: John Wiley & Sons, Inc.
- Ellingsen, Ø., and Holen, A. (2015). "Modern meditation in the context of science" in *Meditation and culture: The interplay of practice and context*. ed. H. Eifring (London: Bloomsbury Publishing).
- Endresen, I. M. (1991). A Norwegian translation of the Plutchik questionnaire for psychological defense. *Scand. J. Psychol.* 32, 105–113. doi: 10.1111/j.1467-9450.1991.tb00861.x
- Endresen, I. M., Værnes, R., Ursin, H., and Tønder, O. (1987). Psychological stress-factors and concentration of immunoglobulins and complement components in Norwegian nurses. *Work Stress* 1, 365–375. doi: 10.1080/02678378708258527
- Eriksen, H. R., Olff, M., and Ursin, H. (1997). The CODE: a revised battery for coping and defense and its relations to subjective health. *Scand. J. Psychol.* 38, 175–182.
- Eysenck, H. J., and Eysenck, B. S. G. (1969). *Personality structure and measurement*. London: Routledge & Kegan Paul.
- Flannery, R. B. Jr., and Perry, J. C. (1990). Self-rated defense style, life stress, and health status: an empirical assessment. *Psychosomatics* 31, 313–320. doi: 10.1016/S0033-3182(90)72169-X
- Freud, A. (1936). *The ego and the mechanisms of defense*. New York: International Universities Press.
- Freud, S. (1959/1894). "The neuro-psychoses of defense" in *The standard edition of the complete psychological works of Sigmund Freud*. ed. J. Strachey (London: Hogart Press), 87–112.
- Goldberg, D. P., Gater, R., Sartorius, N., Ustun, T. B., Piccinelli, M., Gureje, O., et al. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychol. Med.* 27, 191–197. doi: 10.1017/S0033291796004242
- Grønningseter, H., Christensen, C. C., Larsen, S., and Ursin, H. (1991). Health, job stress and psychological defense in physically active and inactive subjects. *Scand. J. Med. Sci. Sports* 1, 104–111.
- Hanvold, T. N., Veiersted, K. B., and Wærsted, M. (2010). A prospective study of neck, shoulder and upper back pain among technical school students entering working life. *J. Adolesc. Health* 46, 488–494. doi: 10.1016/j.jadohealth.2009.11.200
- Hersoug, A. G., Sexton, H. C., and Høglend, P. (2002). Contribution of defensive functioning to the quality of working alliance and psychotherapy outcome. *Am. J. Psychother.* 56, 539–554. doi: 10.1176/appi.psychotherapy.2002.56.4.539
- Hersoug, A. G., Smeby, N. A., Wærsted, M., and Holen, A. (2008). "Stress management with Acem Meditation" in *Fighting stress. Reviews of meditation research*. eds. S. Davanger, H. Eifring and A. G. Hersoug (Oslo: Acem Publishing), 139–145.
- Hersoug, A. G., Wærsted, M., and Lau, B. (2018). Nondirective meditation used in stress management. *Nord. Psychol.* 70, 290–303. doi: 10.1080/19012276.2018.1443278
- Holen, A. (2016). *Psychology of silence: Perspectives on Acem meditation*. Oslo: Dyade Press.
- Hyphantis, T., Goulia, P., Floros, G. D., Iconomou, G., Pappas, A. I., Karaivazoglou, K., et al. (2011). Assessing ego defense mechanisms by questionnaire: psychometric properties and psychopathological correlates of the Greek version of the Plutchik's Life Style Index. *J. Pers. Assess.* 93, 605–617. doi: 10.1080/00223891.2011.608759
- Larsen, A., Bøggild, H., Mortensen, J. T., Foldager, L., Hansen, J., Christensen, A., et al. (2010). Psychopathology, defence mechanisms, and the psychosocial work environment. *Int. J. Soc. Psychiatry* 56, 563–577. doi: 10.1177/0020764008099555
- Nerdrum, P., Rustøen, T., and Rønnestad, M. H. (2006). Student psychological distress: a psychometric study of 1750 Norwegian 1st-year undergraduate students. *Scand. J. Educ. Res.* 50, 90–109. doi: 10.1080/00313830500372075
- Olff, M. (1999). Stress, depression and immunity: the role of defense and coping styles. *Psychiatry Res.* 85, 7–15. doi: 10.1016/S0165-1781(98)00139-5
- Olff, M., Brosschot, J. F., and Godaert, G. (1993). Coping styles and health. *Personal. Individ. Differ.* 15, 81–90. doi: 10.1016/0191-8869(93)90044-4
- Pallesen, S., Bjorvatn, B., Nordhus, I. H., Sivertsen, B., Hjørnevik, M., and Morin, C. M. (2008). A new scale for measuring insomnia: the Bergen Insomnia Scale. *Percept. Mot. Skills* 107, 691–706. doi: 10.2466/PMS.107.7.691-706
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-year outcome. *Am. J. Psychiatr.* 169, 916–925. doi: 10.1176/appi.ajp.2012.11091403
- Perry, J. C., and Bond, M. (2017). Addressing defenses in psychotherapy to improve adaptation. *Psychoanal. Inq.* 37, 153–166. doi: 10.1080/07351690.2017.1285185
- Plutchik, R., Kellerman, H., and Conte, H. R. (1979). "The structural theory of ego defenses and emotions" in *Emotions in personality and psychopathology*. ed. C. E. Izard (New York: Plenum Press), 229–257.
- Regan, A., Howard, R. A., and Oyeboode, J. R. (2009). Emotional exhaustion and defense mechanisms in intensive therapy unit nurses. *J. Nerv. Ment. Dis.* 197, 330–336. doi: 10.1097/NMD.0b013e3181a20807
- Segal, D. L., Coolidge, F. L., and Mizuno, H. (2007). Defense mechanism differences between younger and older adults: a cross-sectional investigation. *Aging Ment. Health* 11, 415–422. doi: 10.1080/13607860600963588

- Soldz, S., and Vaillant, G. E. (1998). A 50-year longitudinal study of defense use among inner city men: a validation of the DSM-IV defense axis. *J. Nerv. Ment. Dis.* 186, 104–111. doi: 10.1097/00005053-199802000-00006
- Vaernes, R. J., Knardahl, S., Romsing, J., Aakvaag, A., Tonder, O., Walther, B., et al. (1988). Relations between environmental problems, psychology and health among shift-workers in the Norwegian process industry. *Work Stress* 2, 7–15. doi: 10.1080/02678378808259142
- Vaernes, R. J., Myhre, G., Aas, H., Homnes, T., Hansen, I., and Tonder, O. (1991). Relationships between stress, psychological factors, health, and immune levels among military aviators. *Work Stress* 5, 5–16. doi: 10.1080/02678379108256998
- Vaillant, G. E. (2000). Adaptive mental mechanisms - their role in a positive psychology. *Am. Psychol.* 55, 89–98. doi: 10.1037//0003-066x.55.1.89

**Conflict of Interest:** AH and MW are affiliated to Acem School of Meditation, an international non-profit organization. They serve as unpaid instructors in Acem Meditation in their spare time.

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2021 Hersoug, Wærsted and Lau. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Increasing Mentalization to Reduce Maladaptive Defense in Patients With Mental Disorders

Markus C. Hayden<sup>1,2\*</sup>, Pia K. Müllauer<sup>1</sup>, Klea J. P. Beyer<sup>1</sup>, Richard Gaugeler<sup>3</sup>, Birgit Senft<sup>4</sup>, Maria C. Dehoust<sup>5</sup> and Sylke Andreas<sup>1</sup>

<sup>1</sup> Institut für Psychologie, Alpen-Adria-Universität Klagenfurt, Klagenfurt, Austria, <sup>2</sup> Klinik Bad Reichenhall der Deutschen Rentenversicherung Bayern-Süd, Bad Reichenhall, Germany, <sup>3</sup> Öffentliches Krankenhaus Waiern, Feldkirchen in Kärnten, Austria, <sup>4</sup> Reha-Klinik für Seelische Gesundheit und Prävention, Klagenfurt, Austria, <sup>5</sup> Psychosomatische Klinik Ginsterhof, Rosengarten, Germany

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

Gabriella Martino,  
University of Messina, Italy  
Emanuele Maria Merlo,  
University of Messina, Italy

### \*Correspondence:

Markus C. Hayden  
markus.hayden@aau.at

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychiatry

**Received:** 04 December 2020

**Accepted:** 16 February 2021

**Published:** 11 March 2021

### Citation:

Hayden MC, Müllauer PK, Beyer KJP, Gaugeler R, Senft B, Dehoust MC and Andreas S (2021) Increasing Mentalization to Reduce Maladaptive Defense in Patients With Mental Disorders.  
Front. Psychiatry 12:637915.  
doi: 10.3389/fpsy.2021.637915

**Background:** There are indications of associations between the ability to mentalize and psychological defense mechanisms. However, only a few studies have focused on these associations, and even fewer have included empirical analyses. In the present study, we aimed to fill this research gap by analyzing the link between the ability to mentalize and psychological defense mechanisms in patients with mental disorders. We examined whether changes in defense mechanisms are predicted by an increase in mentalization or whether such changes are only related to reductions in psychopathology and interpersonal problems.

**Methods:** A clinical sample of  $N = 89$  patients was studied during and after inpatient psychiatric rehabilitation. Repeated-measures analyses of variance were performed to determine changes in mentalization, psychological defense, psychopathology, and interpersonal problems over the course of therapy and post-treatment. Linear regression analyses were used to predict the change in defense patterns based on an increase in mentalization.

**Results:** Maladaptive defense mechanisms were significantly reduced during inpatient therapy and remained low until follow-up, whereas neurotic and adaptive defense mechanisms did not change significantly. The results of the regression analyses indicated that mentalization played an important role in the reduction in maladaptive defense during and after inpatient rehabilitation for mental disorders, whereas reductions in psychopathology and interpersonal distress were only partially associated with a reduction in maladaptive defense.

**Conclusion:** We conclude that mentalization is vital for reducing maladaptive defense mechanisms, which are commonly associated with mental disorders. In therapy, an increase in patients' capacity to mentalize may be a practicable approach to diminish maladaptive defense mechanisms.

**Keywords:** mentalization, psychological defense mechanisms, maladaptive defense, psychopathology, interpersonal problems

## INTRODUCTION

Mentalization is a form of mostly preconscious imaginative mental activity that is defined by the ability to understand and interpret one's own and others' behavior in terms of underlying mental states. These states go beyond thoughts, feelings, and emotions and include needs, beliefs, goals, purposes, and reasons (1–3). High levels of mentalization are characterized by a differentiated understanding of the inner world that affects human beings and include the awareness that the mind, especially the mind of another person, cannot fully be accessed or read (2). Mentalizing enables humans to reflect upon their own and other people's perceptions and understand and anticipate associated patterns of behavior. Therefore, it plays a key role in interpersonal behavior (4, 5). Furthermore, it has proven to be a substantial factor influencing the transfer of attachment security from parents to their children (6). Mentalization is a broad concept that encompasses aspects of the self vs. others as well as both implicit and explicit and both cognitive and affective dimensions (3). Therefore, there are several conceptual overlaps between mentalization and other models, such as mindfulness, empathy, affect consciousness, and theory of mind (3, 7). The most common way to operationalize and measure the capacity to mentalize is through reflective functioning (8). To date, various instruments, such as interviews and questionnaires, have been developed for the assessment of reflective functioning (9). Mentalization is positively intercorrelated with mental stability and attachment security. A growing number of studies have emphasized the importance of mentalization as a protective factor against mental disorders (10–12). On the other hand, impairments in the ability to mentalize are predictors of psychopathology and mental instability (3, 8). In the last decade, several studies have clarified the associations between a lack of mentalization and various kinds of mental disorders e.g. (13–16). In particular, mental disorders that involve a pathology of the self, such as borderline personality disorder, are characterized by a distinct pattern of impairments in the ability to mentalize (3, 8).

In contrast to the relatively new field of mentalization research, studies on psychological defense have been conducted since the late 19th century (17). Sigmund Freud published his first work on defense in 1894 (18) and continued his research in the field for several decades e.g. (19–21). His studies and the research published by his daughter, Anna Freud (22), described the main characteristics of psychological defense and most of the defense styles that are known today (23). Psychological defense mechanisms are characterized as unconscious mental processes that provide important self-protective effects by reducing or masking anxiety arising from unacceptable or potentially harmful stimuli (24, 25). In particular, defense mechanisms maintain psychological homeostasis, i.e., the organization of personality, in both pathological and healthy individuals (25, 26). In the absence of defense mechanisms, humans are persistently confronted with negative emotions, such as anger, sadness, and anxiety (24). Defense mechanisms are vital for a healthy relationship with the self, others, and the environment. However, these mechanisms have the ability to be potentially harmful as well, depending on the manner, frequency, and circumstances in

which they are unconsciously used (27). Various forms of defense styles evolve from infancy to adolescence and adulthood, making the individual more flexible in defending himself or herself against negative stimuli (22). Contemporary psychology has adapted a hierarchical understanding of different forms of defense mechanisms based on their level of adaptiveness (28). Healthy individuals can draw on a variety of defense mechanisms that match the circumstances in which they are used. People with mental disorders, however, tend to use only a limited range of defense mechanisms that may not be adapted to the situation, for example, with respect to the individual's age or the duration or intensity of the stimulus (22). In particular, immature (or maladaptive) defense styles are frequently used by patients suffering from mental disorders (29). Furthermore, research has revealed links between physical impairment and the use of different forms of defense styles. For example, studies found that the use of immature defense mechanisms may be associated with somatic symptom severity (30) and may contribute to impaired awareness in patients with traumatic brain injury (31). Other studies identified the role of psychological defense mechanisms in patients with cancer [see (27) for a review]. Defense mechanisms are known to be relatively stable in adulthood; however, they are well documented to be dynamic and reversible, e.g., via psychotherapy (28, 32, 33).

There are several indications of associations between mentalization and defense mechanisms. For example, both mentalization and defense mechanisms play important roles in the preservation of mental stability, whereas impairments are linked to psychological strain and mental disorder. Associations have also been reported in clinical research, for example, in patients suffering from alexithymia and borderline personality disorder. Both disorders are characterized by a lack of mentalization, and both disorders are characterized by the predominance of immature defense mechanisms (34, 35). Furthermore, both the enhancement of reflective functioning and the maturation of defense mechanisms are associated with mental stability and with progress in psychotherapy, e.g., in the treatment of personality disorders (11, 28, 36, 37). Since mentalization enables humans to reflect upon their own actions and, in particular, to reflect upon the mental processes that cause their own actions, an association of mentalization with the use of various kinds of defense mechanisms seems plausible. There are also indications that an increase in mentalization, as measured by reflective functioning, may enable individuals to scrutinize their own defense mechanisms, which can in turn increase their overall capability to mentalize (38).

However, there is hardly any detailed research on the associations between mentalization and the use of psychological defense styles. Only isolated studies have considered these possible associations, and even fewer studies have empirically investigated the possible intercorrelations. Shahar and colleagues (39) emphasized a possible link between impairments in mentalizing capacities and the use of immature defense mechanisms, such as projection. The authors stated that individuals with lower mentalization scores were restricted in their use of defense mechanisms, as they had struggles identifying their own mental states and those of others. This may be



an explanation for why highly burdened individuals have a tendency to use immature defense mechanisms, as people are less likely to tap the full potential of their own mentalizing abilities in situations of high emotional burden (39). In one case study (40), the author presented a phobic patient who continuously used the inhibition of mentalization as a defense against mental threats. Finally, in a study by Fischer-Kern and colleagues (35), the correlations between the primitive defenses dimension of the Structured Interview of Personality Organization (41) and reflective functioning were calculated for a sample of  $N = 92$  female outpatients with borderline personality disorder. The analysis did not find significant intercorrelations. However, the reflective functioning scores were very homogenous, with the means of the dimensions ranging from 2.4 (SD 1.1) to 2.9 (SD 1.5) (35).

Similar to the associations between psychological defense and mentalization, the associations between defense styles and concepts related to mentalization have hardly been studied. One study that analyzed  $N = 107$  students and graduates detected positive intercorrelations between the use of adaptive defense styles and both emotional knowledge and overall emotional intelligence as well as a negative correlation between maladaptive defense styles and emotional knowledge (42). Furthermore, Brown and colleagues (43, 44) pointed out that mindfulness can lead to less ego-defensive responsivity under social threat. In line with their assumptions, one study comparing an intervention group ( $N = 438$ ) with  $N = 281$  controls found that a seven-day Vipassana meditation retreat, as an intervention to foster mindfulness, led to a reduction in the use of immature defense mechanisms, namely, displacement, regression, and projection (45).

Since the relationship between the ability to mentalize and psychological defense has not been studied in a structured way, and there is hardly any empirical research apart from some scattered results, a link between the two concepts can currently only be hypothesized. Furthermore, it is unclear whether changes in the capacity to mentalize are linked to changes in the use of defense mechanisms. Therefore, the present study analyzed patterns of associations between mentalization and the use of different psychological defense mechanisms. Because both variables are known to be affectable by treatment (11, 28), we investigated the potential relationship in patients with mental disorders over the course of inpatient therapy and during the posttreatment follow-up. The focus of the study was on patients' subjective experiences as measured by patient-reported outcomes (46). First, we analyzed the degree to which the investigated variables changed over the course of therapy and follow-up. Then, we sought to determine which variables predicted changes in defense mechanisms. We hypothesized that these changes would be predicted not only by reductions in debilitating mental factors, i.e., psychopathology and interpersonal problems, but also by an increase in mentalization.

## MATERIALS AND METHODS

### Design

The study was designed as a quasiexperimental longitudinal study. We surveyed patients at the beginning of inpatient therapy

for psychiatric disorders ( $T_0$ ) and shortly before discharge from the hospital ( $T_1$ ). Furthermore, a follow-up measurement was conducted approximately half a year later ( $T_2$ ).

### Instruments

We used the 40-item German version of the Defense Style Questionnaire [DSQ-40 (47)] to analyze psychological defense mechanisms. The self-report instrument is a shortened version of the Defense Style Questionnaire presented by Andrews, Pollock, and Stewart (48), and it has widely been used and studied. The DSQ-40 has been translated into various languages and has proven to be suitable in both adult and adolescent populations (26). The instrument has three dimensions that were used in the analyses: adaptive defense, intermediate (neurotic) defense, and maladaptive defense. Cronbach's alphas range from 0.58 to 0.80. The test-retest coefficients range from 0.75 to 0.85 (47). To cluster the variables according to these main categories, we followed the recommendations of Schauenburg et al. (49), describing minor adaptations to the German version compared to the original version.

To assess the ability to mentalize, we used the global scale of the German version of the Mentalization Questionnaire [MZQ (50)]. This 15-item self-report instrument has proven to be a reliable and valid tool in the assessment of mentalization and yields results that are comparable to those generated by interview measures, such as the Adult Attachment Interview (Andreas et al., submitted). Several translated versions of the MZQ have been used in adult and adolescent populations (50–52). For the original German version, Cronbach's alpha for the global scale is 0.81 and the test-retest reliability is 0.76 (50).

Psychopathology was assessed using the Global Severity Index (GSI) of the German version of the Brief Symptom Inventory 18 [BSI-18 (53)]. The instrument is the latest short version of the Symptom-Checklist 90-R. A study that included  $N = 2516$  participants demonstrated the psychometric qualities of the German version (54). The GSI score represents the number and severity of the psychopathological symptoms assessed by the BSI-18. Cronbach's alpha for the GSI of the German version is 0.93 (54).

The German 32-item version of the Inventory of Interpersonal Problems [IIP-32 (55)] was used to assess difficulties within interpersonal contact. The questionnaire asks patients to rate items concerning actions (e.g., in groups or other forms of interpersonal contact) that they “do too much” and that they find “too hard to do” (56). A study by Thomas et al. (55) demonstrated that the quality indicators of the German version of the IIP-32 are comparable to the original version of the IIP. Values for Cronbach's alpha range from 0.60 to 0.82 in a standard population and from 0.59 to 0.83 in clinical populations (55). For our analyses, we used the full scale that represents the total amount of distress experienced in interpersonal contexts.

### Data Collection

The data were collected in two hospitals in Austria that offer psychiatric rehabilitation. In addition to medical and pharmacological treatment options, both hospitals use psychotherapy in one-on-one settings as well as group interventions. The therapy plans further include

psychoeducation, ergotherapy, physiotherapy, and physical exercise. All patients in both hospitals were at least 18 years old. The standard duration of treatment at the hospitals ranges from three to six weeks. At the beginning of therapy, all patients are diagnosed according to the ICD-10 (57).

Participation in the study was voluntary, and all the patients were informed that neither their refusal to participate nor their later withdrawal from the study would have any consequences whatsoever, particularly regarding therapy and aftercare. The exclusion criteria were an inability to complete the study questionnaire and/or take part in diagnostic interviews (i.e., an insufficient ability to understand and/or speak German, acute manic or psychotic episodes, dementia, or other forms of cognitive impairment). The study was approved by the ethical commission in charge. All patients who did not meet the exclusion criteria were asked to take part in the study within the first 4 days of therapy. For the follow-up assessments, all the patients were contacted via telephone. If a participant could not be reached, we sent a standardized form in the mail to contact them.

## Data Analysis

The data were analyzed using IBM SPSS Statistics 25. The analysis of missing values showed a missing rate of >5% at both the case and variable levels. In total, ~12.3% percent of the data were missing. Little's test of missing completely at random (58) was not significant ( $\chi^2 = 308.533$ ,  $df = 347$ ,  $p = 0.932$ ), indicating that the data were missing completely at random. For the replacement of missing values, we used multiple imputation to obtain a complete dataset. In accordance with the recommendations of White, Royston, and Wood (59), we calculated twelve imputations.

To check for possible differences between the subsamples, we calculated an independent samples *t*-test for age and chi-square tests for all the other sociodemographic variables. For the *t*-test, homogeneity of variances was tested using Levene's test for equality of variances (60).

Repeated-measures analyses of variance (rmANOVAs) were used to analyze the changes in the variables over the course of the therapy and post-treatment. The exploratory data analysis indicated that there were no outliers in the data. Mauchly's sphericity test was used to detect violations of sphericity. Since all violations that could be detected were at the level of  $\epsilon > 0.75$ , the analyses were adjusted using the Huynh-Feldt procedure (61).

For the main part of the study, we used linear regression analyses to predict a decrease in maladaptive defense. The decrease was calculated by subtracting the  $T_1$  values from the  $T_0$  values to determine the changes over the course of therapy and by subtracting the  $T_2$  values from the  $T_0$  values to determine the difference between the baseline assessments and the follow-up assessments. Changes in interpersonal problems and symptom severity were calculated in the same way. Since mentalization was reverse coded, an improvement was expressed as an increase in the MZQ score. Therefore, we subtracted the  $T_0$  values from the  $T_1$  values to determine changes during therapy and the  $T_0$  values from the  $T_2$  values to determine the difference between the baseline assessments and the follow-up assessments. There were

**TABLE 1 |** Sociodemographic variables of the clinical sample.

Age	M	44.0
	SD	9.79
	Range	22–63 years
Sex	Male	42 (47.2%)
	Female	47 (52.8%)
Civil status	Single	26 (29.2%)
	Living in Partnership	16 (18.0%)
	Married	28 (31.5%)
	Divorced or widowed	19 (21.3%)
Children	Yes	56 (62.9%)
	No	33 (37.1%)
Education	Elementary	1 (1.1%)
	Main School	25 (28.1%)
	Professional School	15 (16.9%)
	High School	17 (19.1%)
	University	14 (15.7%)
	Other	17 (19.1%)

no indications of multicollinearity (maximum variance inflation factor = 1.829) or autocorrelation (Durbin-Watson statistics = 1.744 and 2.078, respectively). Controlling the scatterplot did not reveal any indications of heteroscedasticity. Shapiro-Wilk tests of studentized residuals did not reach statistical significance ( $p = 0.493$  for  $T_1$  and  $p = 0.113$  for  $T_2$ ), suggesting a normal distribution of the residuals in both analyses. Casewise diagnostics indicated one case in the first analysis and two cases in the second analysis as outliers on the y-axis. However, neither of these values had a leverage above the cutoff of  $2k/n$  that would also indicate extreme x-values (62). In all three cases, the values for Cook's distance (63) were below the cutoff of  $\geq 1$ , which would indicate a problematic influence on the analyses.

## RESULTS

### Participants and Dropouts

Eighty-nine patients were willing to take part in the study. The sociodemographic parameters of the sample are displayed in **Table 1**. The majority of the participants ( $n = 61$ , 68.5%) had main diagnoses on the F3 spectrum according to the ICD-10 (57), followed by those with F4 diagnoses. Fifty-four participants (60.7%) had more than one diagnosis. Further information on the distribution of the diagnoses is displayed in **Table 2**. An analysis of the differences between the two subsamples is included below.

Between  $T_0$  and  $T_1$ ,  $n=3$  patients (3.4%) dropped out of the study; two participants quit because they had no further interest in the study, and one participant had to be excluded from the study because of an acute psychosocial crisis. Between  $T_1$  and  $T_2$ , another  $n = 15$  patients (16.9%) dropped out of the study. The most common reason for dropout ( $n = 9$ , 10.1%) was that patients could not be reached at follow-up. Two participants had no further interest in the study, one participant quit because of an acute physical disease, one participant was deceased, one participant did not specify the reason for withdrawal from the

**TABLE 2 |** Distribution of diagnoses as absolute frequencies.

Diagnosis according to the ICD-10	<i>n</i> main diagnosis	<i>n</i> 2nd diagnosis	<i>n</i> 3rd diagnosis
F1* Mental and behavioral disorders due to psychoactive substance use	0	13	11
F2* Schizophrenia, schizotypal and delusional disorders	3	0	0
F3* Mood disorders	61	6	1
F4* Neurotic, stress-related and somatoform disorders	24	23	3
F5* Behavioral syndromes associated with physiological disturbances and physical factors	0	3	3
F6* Disorders of adult personality and behavior	0	4	1
F9* Unspecified mental disorder	0	1	0
Other diagnoses/not F-diagnoses	1	4	1
<b>SUM</b>	<b>89</b>	<b>54</b>	<b>20</b>

study, and one participant had to be excluded from the study because of a labile mental status.

## Differences Between the Subsamples

There were no statistically significant differences between the subsamples in age ( $p = 0.840$ ), sex ( $p = 0.353$ ), employment status ( $p = 0.056$ ), level of education ( $p = 0.114$ ), parenthood ( $p = 0.951$ ), or the distribution of diagnoses ( $p = 0.269$ ). The only significant difference that was found was in civil status ( $p = 0.035$ ), with the patients from one hospital being more likely to report a single civil status at  $T_0$ .

## Changes Over the Course of Therapy and During Follow-Up

The rmANOVAs indicated that among the three dimensions of the DSQ-40 (49), neither adaptive defense nor intermediate (neurotic) defense significantly changed over time (see **Table 3**). However, maladaptive defense was significantly reduced. A *post hoc* analysis revealed that the patients reported significantly fewer maladaptive behaviors at  $T_1$  than at  $T_0$ . At follow-up, the use of maladaptive defense mechanisms was reduced even further, but the difference between  $T_1$  and  $T_2$  did not reach statistical significance. All the other variables significantly improved over the course of therapy and post-treatment.

Since the changes over the course of inpatient therapy and post-treatment in adaptive and intermediate defense styles did not reach significance, these two variables were excluded from the subsequent analyses.

## Prediction of a Decrease in Maladaptive Defense

In the final step of the analyses, we investigated whether a decrease in maladaptive defense mechanisms could be predicted by an increase in mentalization or whether the decrease would be explained only by a reduction in psychopathology and/or interpersonal problems. Therefore, two linear regression models

**TABLE 3 |** Results of the rmANOVAs.

	<i>F</i> -statistics	Significance	Partial $\eta^2$
DSQ adaptive defense	$F(1.872, 164.756) = 1.023$	$p = 0.358$	0.011
DSQ intermediate defense	$F(1.892, 166.487) = 2.221$	$p = 0.115$	0.025
DSQ maladaptive defense	$F(2, 176) = 10.228$	$p < 0.001$	<b>0.104</b>
MZQ global scale	$F(2, 176) = 11.355$	$p < 0.001$	<b>0.114</b>
GSI	$F(1.737, 152.862) = 39.554$	$p < 0.001$	<b>0.310</b>
IIP full scale	$F(2, 176) = 7.565$	$p = 0.001$	<b>0.079</b>

DSQ, Defense Style Questionnaire 40; GSI, Global Severity Index; IIP, Inventory of Interpersonal Problems 32; MZQ, Mentalization Questionnaire. The bold values indicate significant  $p$ -values.

were calculated for the duration of treatment and for the period from admission to hospital until follow-up. Because there was no significant change between  $T_1$  and  $T_2$ , this analysis was not conducted. The results of the analyses are displayed in **Table 4**.

As shown, we obtained two significant models. The  $R^2$  for the first model was 0.176 (adjusted  $R^2 = 0.146$ ), indicating moderate goodness of fit according to Cohen (64). The reduction in maladaptive defense was significantly predicted by both an increase in mentalization and a reduction in interpersonal problems.

For the second model, the  $R^2$  of 0.297 (adjusted  $R^2 = 0.272$ ) indicated high goodness of fit (64). The increase in mentalization was again found to be a significant predictor of a decrease in maladaptive defense. However, between  $T_0$  and  $T_2$ , a reduction in psychopathology was also a significant predictor, whereas interpersonal problems did not significantly affect the data.

In both analyses, an increase in mentalization that was observed over the course of the inpatient therapy and the posttreatment period significantly predicted a reduction in maladaptive defense. On the other hand, a reduction in psychopathology as well as a reduction in interpersonal problems were not found to be persistent predictors of a reduction in maladaptive defense. Both variables predicted a decrease in maladaptive defense at one measurement timepoint only.

## DISCUSSION

The aim of the study was to analyze the associations between the ability to mentalize and psychological defense mechanisms in a clinical sample. To the best of our knowledge, this is the first study to investigate the role of mentalization in changes in defense mechanisms during and after inpatient treatment for mental disorders.

As expected, the participants significantly improved over the course of inpatient therapy. Values for interpersonal distress decreased with a medium effect size, whereas psychopathology decreased with a large effect (64). In addition, mentalization could be significantly targeted, and the patients' mentalization scores increased over the course of therapy. The results remained stable until follow-up, indicating that the treatment had continuing effects on the patients' mental well-being. The outcomes for these three variables are consistent with

**TABLE 4 |** Results of the linear regression analyses.

<b>Reduction in maladaptive defense T<sub>0</sub> to T<sub>1</sub></b>		
$R^2 = 0.176$ , adjusted $R^2 = 0.146$ , $F(3, 85) = 6.034$ , $p = 0.001$		
Increase in mentalization	Standardized $\beta = 0.280$	$p = 0.008$
Reduction in psychopathology	Standardized $\beta = 0.021$	$p = 0.845$
Reduction in interpersonal problems	Standardized $\beta = 0.252$	$p = 0.019$
<b>Reduction in maladaptive defense T<sub>0</sub> to T<sub>2</sub></b>		
$R^2 = 0.297$ , adjusted $R^2 = 0.272$ , $F(3, 85) = 11.960$ , $p < 0.001$		
Increase in mentalization	Standardized $\beta = 0.387$	$p = 0.002$
Reduction in psychopathology	Standardized $\beta = 0.204$	$p = 0.047$
Reduction in interpersonal problems	Standardized $\beta = 0.054$	$p = 0.641$

a variety of previous results and confirm that inpatient therapy promotes mental health, with the promoting effect persisting after discharge from the hospital [e.g., (11, 13, 65, 66)]. Regarding psychological defense, maladaptive defense mechanisms decreased with a medium effect size during treatment and remained stable throughout follow-up. Adaptive and intermediate defense styles, however, did not change significantly over the course of inpatient therapy and post-treatment. In the comparison of these outcomes with previous studies, it is salient that some authors have reported similar results (67, 68), whereas others have reported significant improvements in more mature defense styles via therapy (28, 69, 70). A more comprehensive evaluation of previous investigations reveals that changes in more mature defense styles are linked to treatment with a long duration, which was not implemented in the current study. Therefore, longer inpatient therapy or structured ambulatory aftercare may have led to significant improvements in the patients' intermediate and/or adaptive defense styles.

Since adaptive and intermediate defense styles could not be targeted during the therapy, we excluded these two variables in the analyses and focused on the reduction in maladaptive defense mechanisms. According to our data, a decrease in maladaptive defense was more closely associated with an increase in mentalization rather than a reduction in interpersonal distress or symptom severity. While the latter two variables significantly predicted a reduction in maladaptive defense at one measurement period only, mentalization was found to be a significant predictor both between the beginning and the end of therapy as well as between the beginning of therapy and follow-up. This finding indicates that a more reflective view on one's own and perhaps other people's mental states, which supports the enhancement of mentalization, can enable patients to overcome hindering, immature defensive behavior. This outcome contrasts with the results of Fischer-Kern et al. (35), who did not find a significant correlation between mentalization, as measured by reflective functioning, and the use of primitive defense styles. However, in light of previous research, the associations found in our investigations can still be considered plausible given that mentalization plays a key role in determining and controlling

emotions (2) and that humans who use more rigid emotional regulation strategies are prone to maladaptive defense styles (71, 72).

Importantly, the reduction in maladaptive defense mechanisms did not accompany a significant increase in adaptive or intermediate defense mechanisms. In other words, even though maladaptive defense styles were less commonly used by the patients, we could not detect a more frequent use of more mature defense mechanisms. This finding suggests that mentalization can help patients adopt healthier ways to cope with stressful stimuli by overcoming debilitating defense styles but not by increasing their use of mature defense styles.

While it is important to interpret the results considering the associated limitations, some implications can be identified based on the comprehensive literature on the effect of defense mechanisms on quality of life (22–24). In the treatment of patients with dominant maladaptive defense styles, the promotion of mentalization may be a practicable approach for therapy progress. This strategy seems particularly appropriate if alternative treatment options have failed to produce the intended results. In general, our results support the advice to implement interventions that target an increase in the capacity to mentalize. In addition to the well-documented advantages for psychotherapy e.g. (5, 8, 11, 13, 73, 74), our results suggest that through an increase in mentalization, patients may adapt a healthier overall defense style by reducing maladaptive elements. Since numerous studies have highlighted the importance of well-performing psychological defense in the rehabilitation and preservation of mental health (22, 24, 28, 29) as well as on humans' ability to adapt to and cope with severe medical conditions (27, 30, 31) and other forms of traumatizing life events (24, 75, 76), we consider interventions to foster mentalization as necessary in the reduction of maladaptive defense styles in psychotherapy. Regarding future research on psychological defense, our results suggest taking mentalization into account. This is particularly advisable when changes in defense styles are studied in the context of psychiatric or psychotherapy research.

## Strengths and Limitations

The study combines two factors that are of particular importance in mental health, namely mentalization and psychological defense, and it is the first to empirically investigate the interaction between these factors in patients recovering from mental disorders. Further strengths are linked to the longitudinal design. First, we were able to detect and analyze changes in the main variables over the course of inpatient treatment and further after the discharge from the clinic. Second, the study design also allowed an analysis of the role of mentalization in the reduction of maladaptive defense. However, we must also acknowledge some limitations since they require a careful interpretation, especially regarding the generalizability of the results. First, the study relied on self-report measures rather than on expert ratings. This approach was chosen deliberately because we were interested in the subjective experiences of the participants. However, further studies should verify our results by augmenting self-report measures with other forms of diagnostic procedures, such as expert ratings. Another



limitation concerns the treatment conditions that were used in the hospitals. Even though the study does not claim to meet the standard of a randomized controlled trial, it is important to consider that we did not use a psychotherapy intervention that specifically focused on an increase in mentalization and that the participants were not compared to a placebo or non-treatment control group. Therefore, we cannot clearly anticipate how a structured and specific treatment program, such as mentalization-based treatment (5), may have further improved the results. Future studies that compare unspecific psychotherapy vs. mentalization-based treatment and placebo intervention or an intervention with patients on a waiting list are needed. Finally, inpatient therapy did not lead to a significant reduction in intermediate defense or a significant increase in adaptive defense. Therefore, the data suggest that there is no association of intermediate defense or adaptive defense with mentalization, but we cannot exclude this possibility with certainty. Since other studies have documented the possibility for changes in more mature defense mechanisms via psychotherapy (28, 69), it is advisable to verify our results in a study with long-term psychotherapy.

## CONCLUSION

This study is the first to empirically investigate the role of mentalization in changes in defense mechanisms over the course of rehabilitation from psychiatric disorders and during posttreatment follow-up. We detected a significant increase in mentalization and a significant reduction in maladaptive defense, psychopathology, and interpersonal problems. However, more mature defense styles did not change significantly during inpatient therapy or follow-up. Our data suggest that the reduction in maladaptive defense can be significantly predicted by an increase in mentalization both during and after inpatient therapy, whereas reductions in psychopathology and interpersonal problems appear to be less important. Mentalization appears to promote healthier ways to cope with negative stimuli, as it may reduce the prevalence of immature defense mechanisms. However, we could not find implications of the effects of mentalization on intermediate and adaptive defense mechanisms. Longer and more intense

psychotherapy approaches may be necessary to foster more mature defense styles.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The study was reviewed and approved by Ethikkommission des Landes Kärnten Klinikum Klagenfurt am Wörthersee, Feschnigstraße 11 A-9020 Klagenfurt a. W., Austria. The patients provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

MH, SA, MD, PM, and KB discussed the research question and derived the hypotheses. MH, SA, and PM designed the study. MH, RG, and BS directed the study and supervised the data collection in the hospitals. Data were collected by MH and PM. MH and KB analyzed the data and discussed the results with supervision from SA. The first draft of the manuscript was written by MH. All authors contributed and agreed to the final manuscript.

## FUNDING

This study was conducted in the context of a research project on the validation of a self-rating instrument for the assessment of mentalization. This project was funded by Köhler Stiftung (Germany).

## ACKNOWLEDGMENTS

We would like to thank the staff of the hospitals in which the study was conducted for their assistance and support in the recruitment of participants and in data collection. Furthermore, we thank Andre Baumann and Nicolas Luh for their valuable assistance with the literature search.

## REFERENCES

1. Fonagy P, Allison E. What is mentalization? The concept and its foundations in developmental research. In: N Midgley, I Vrouva, editors. *Minding the Child. Mentalization-Based Interventions with Children, Young People and their Families*. London: Routledge (2012). p. 11–34.
2. Fonagy P, Target M. The mentalization-focused approach to self pathology. *J Pers Disord*. (2006) 20:544–76. doi: 10.1521/pedi.2006.20.6.544
3. Choi-Kain LW, Gunderson JG. Mentalization: ontogeny, assessment, and application in the treatment of borderline personality disorder. *Am J Psychiatr*. (2008) 165:1127–35. doi: 10.1176/appi.ajp.2008.07081360
4. Hayden MC, Müllauer PK, Gaugeler R, Senft B, Andreas S. Mentalization as mediator between adult attachment and interpersonal distress. *Psychopathology*. (2019) 52:10–7. doi: 10.1159/000496499
5. Bateman AW, Fonagy P. Mentalization based treatment for borderline personality disorder. *World Psychiatr*. (2010) 9:11–15. doi: 10.1002/j.2051-5545.2010.tb00255.x
6. Fonagy P, Steele M, Steele H, Moran GS, Higgitt AC. The capacity for understanding mental states: the reflective self in parent and child and its significance for security of attachment. *Infant Ment Health J*. (1991) 12:201–18. doi: 10.1002/1097-0355(199123)12:3<201::AID-IMHJ2280120307>3.0.CO;2-7
7. Falkenström F, Solbakken OA, Möller C, Lech B, Sandell R, Holmqvist R. Reflective functioning, affect consciousness, and mindfulness: are these different functions? *Psychoanal Psychol*. (2014) 31:26–40. doi: 10.1037/a0034049
8. Katznelson H. Reflective functioning: a review. *Clin Psychol Rev*. (2014) 34:107–17. doi: 10.1016/j.cpr.2013.12.003

9. Luyten P, Malcorps S, Fonagy P, Ensink K. Assessment of Mentalizing. In: AW Bateman, P Fonagy, editors. *Handbook of Mentalizing in Mental Health Practice* (Washington, DC: American Psychiatric Association Publishing), p. 37–62.
10. Scandurra C, Dolce P, Vitelli R, Esposito G, Testa RJ, Balsam KF, Bochicchio V. Mentalizing stigma: reflective functioning as a protective factor against depression and anxiety in transgender and gender-nonconforming people. *J Clin Psychol.* (2020) 76:1613–30. doi: 10.1002/jclp.22951
11. Hayden MC, Müllauer PK, Gaugeler R, Senft B, Andreas S. Improvements in mentalization predict improvements in interpersonal distress in patients with mental disorders. *J Clin Psychol.* (2018) 74:2276–86. doi: 10.1002/jclp.22673
12. Berthelot N, Lemieux R, Garon-Bissonnette J, Lacharité C, Muzik M. The protective role of mentalizing: Reflective functioning as a mediator between child maltreatment, psychopathology and parental attitude in expecting parents. *Child Abuse Negl.* (2019) 95:104065. doi: 10.1016/j.chiabu.2019.104065
13. Petersen B, Toft J, Christensen NB, Foldager L, Munk-jørgensen P, Windfeld M, et al. A 2-year follow-up of mentalization-oriented group therapy following day hospital treatment for patients with personality disorders. *Personal Ment Health.* (2010) 4:294–301. doi: 10.1002/pmh.140
14. Fischer-Kern M, Fonagy P, Kapusta ND, Luyten P, Boss S, Naderer A, et al. Mentalizing in female inpatients with major depressive disorder. *J Nerv Ment Dis.* (2013) 201:202–7. doi: 10.1097/NMD.0b013e3182845c0a
15. Fonagy P, Luyten P, Strathairn L. Borderline personality disorder, mentalization, and the neurobiology of attachment. *Infant Ment Health J.* (2011) 32:47–69. doi: 10.1002/imhj.20283
16. Antonsen BT, Johansen MS, Rø FG, Kvarstein EH, Wilberg T. Is reflective functioning associated with clinical symptoms and long-term course in patients with personality disorders? *Compr Psychiatr.* (2016) 64:46–58. doi: 10.1016/j.comppsy.2015.05.016
17. Cramer P. Defense mechanisms: 40 years of empirical research. *J Pers Assess.* (2015) 97:114–22. doi: 10.1080/00223891.2014.947997
18. Freud S. Die Abwehr-Neurosen. Versuch einer psychologischen Theorie der erworbenen Hysterie, vieler Phobien und Zwangsvorstellungen und gewisser hallucinatorischer Psychosen. *Neurol Zentralblatt.* (1894) 13:402–9.
19. Freud S. Die Verdrängung. *Int Zeitschrift für Ärztliche Psychoanal.* (1915) 3:129–38.
20. Freud S. *Hemmung, Symptom und Angst.* Wien: Internationaler Psychoanalytischer Verlag (1926).
21. Freud S. Die Ichspaltung im Abwehrvorgang. *Int Zeitschrift für Psychoanal und Imago.* (1940) 25:241–4.
22. Freud A. *Das Ich und die Abwehrmechanismen.* Wien: Internationaler Psychoanalytischer Verlag (1936).
23. Vaillant G. Lifting the Field's "Repression" of Defenses. *Am J Psychiatr.* (2012) 169:885–7. doi: 10.1176/appi.ajp.2012.12050703
24. Bowins B. Psychological defense mechanisms: a new perspective. *Am J Psychoanal.* (2004) 64:1–26. doi: 10.1023/B:TAJP.0000017989.72521.26
25. Miranda B, Louzã MR. The physician's quality of life: relationship with ego defense mechanisms and object relations. *Compr Psychiatr.* (2015) 63:22–9. doi: 10.1016/j.comppsy.2015.07.012
26. Ruutu T, Pelkonen M, Holm M, Karlsson L, Kiviruusu O, Heilä H, et al. Psychometric properties of the defense style questionnaire (DSQ-40) in adolescents. *J Nerv Ment Dis.* (2006) 194:98–105. doi: 10.1097/01.nmd.0000198141.88926.2e
27. Di Giuseppe M, Ciacchini R, Micheloni T, Bertolucci I, Marchi L, Conversano C. Defense mechanisms in cancer patients: a systematic review. *J Psychosom Res.* (2018) 115:76–86. doi: 10.1016/j.jpsychores.2018.10.016
28. Perry JC, Bond M. Change in defense mechanisms during long-term dynamic psychotherapy and five-year outcome. *Am J Psychiatry.* (2012) 169:916–25. doi: 10.1176/appi.ajp.2012.11091403
29. Bond M. Empirical studies of defense style: relationships with psychopathology and change. *Harv Rev Psychiatr.* (2004) 12:263–78. doi: 10.1080/10673220490886167
30. Hyphantis TN, Taunay TC, Macedo DS, Soeiro-De-Souza MG, Bisol LW, Fountoulakis KN, et al. Affective temperaments and ego defense mechanisms associated with somatic symptom severity in a large sample. *J Affect Disord.* (2013) 150:481–9. doi: 10.1016/j.jad.2013.04.043
31. Belchev Z, Levy N, Berman I, Levinzon H, Hoofien D, Gilboa A. Psychological traits predict impaired awareness of deficits independently of neuropsychological factors in chronic traumatic brain injury. *Br J Clin Psychol.* (2017) 56:213–34. doi: 10.1111/bjc.12134
32. Araujo K, Ryst E, Steiner H. Adolescent defense style and life stressors. *Child Psychiatr Hum Dev.* (1999) 30:19–28. doi: 10.1023/A:1022666908235
33. Diehl M, Chui H, Hay EL, Lumley MA, Grün D, Labouvie-Vief G. Change in coping and defense mechanisms across adulthood: Longitudinal findings in a European American sample. *Dev Psychol.* (2014) 50:634–48. doi: 10.1037/a0033619
34. Šago D, Babić G. Roots of Alexithymia. *Arch Psychiatry Res.* (2019) 55:71–84. doi: 10.20471/may.2019.55.01.06
35. Fischer-Kern M, Buchheim A, Hörz S, Schuster P, Doering S, Kapusta ND, et al. The relationship between personality organization, reflective functioning, and psychiatric classification in borderline personality disorder. *Psychoanal Psychol.* (2010) 27:395–409. doi: 10.1037/a0020862
36. Keefe JR, Derubeis RJ. Changing character: a narrative review of personality change in psychotherapies for personality disorder. *Psychother Res.* (2019) 29:752–69. doi: 10.1080/10503307.2018.1425930
37. Zanarini MC, Frankenburg FR, Fitzmaurice G. Defense mechanisms reported by patients with borderline personality disorder and axis II comparison subjects over 16 years of prospective follow-up: description and prediction of recovery. *Am J Psychiatr.* (2013) 170:111–20. doi: 10.1176/appi.ajp.2012.12020173
38. Esposito G, Karterud S, Freda MF. Mentalizing underachievement in group counseling: analyzing the relationship between members' reflective functioning and counselors' interventions. *Psychol Serv.* (2019). doi: 10.1037/ser0000350. [Epub ahead of print].
39. Shahar G, Porcerelli JH, Kamoo R, Epperson CN, Czarkowski KA, Magriples U, et al. Defensive projection, superimposed on simplistic object relations, erodes patient-provider relationships in high-risk pregnancy: an empirical investigation. *J Am Psychoanal Assoc.* (2010) 58:953–74. doi: 10.1177/0003065110392228
40. Bodin G. Inhibiting the mentalizing capacities. *Scand Psychoanal Rev.* (1996) 19:180–95. doi: 10.1080/01062301.1996.10592369
41. Stern BL, Caligor E, Clarkin JF, Critchfield KL, Horz S, MacCornack V, et al. Structured Interview of Personality Organization. (STIPO): preliminary psychometrics in a clinical sample. *J Pers Assess.* (2010) 92:35–44. doi: 10.1080/00223890903379308
42. Pellitteri J. The relationship between emotional intelligence and ego defense mechanisms. *J Psychol.* (2002) 136:182–94. doi: 10.1080/00223890209604149
43. Brown KW, Ryan RM, Creswell JD. Mindfulness: theoretical foundations and evidence for its salutary effects. *Psychol Inq.* (2007) 18:211–37. doi: 10.1080/10478400701598298
44. Brown KW, Ryan RM, Creswell JD, Niemiec CP. Beyond me: Mindful responses to social threat. In: Wayment HA, Bauer JJ, editors. *Transcending Self-Interest: Psychological Explorations of the Quiet Ego.* Washington: American Psychological Association. (2008). p. 75–84. doi: 10.1037/11771-007
45. Emavardhana T, Tori CD. Changes in self-concept, ego defense mechanisms, and religiosity following seven-day Vipassana meditation retreats. *J Sci Study Relig.* (1997) 36:194. doi: 10.2307/1387552
46. Greenhalgh J, Long AF, Flynn R. The use of patient reported outcome measures in routine clinical practice: lack of impact or lack of theory? *Soc Sci Med.* (2005) 60:833–43. doi: 10.1016/j.socscimed.2004.06.022
47. Andrews G, Singh M, Bond M. The Defense style questionnaire. *J Nerv Ment Dis.* (1993) 181:246–56. doi: 10.1097/00005053-199304000-00006
48. Andrews G, Pollock C, Stewart G. The determination of defense style by questionnaire. *Arch Gen Psychiatr.* (1989) 46:455. doi: 10.1001/archpsyc.1989.01810050069011
49. Schauenburg H, Willenborg V, Sammet I, Ehrenthal JC. Self-reported defence mechanisms as an outcome measure in psychotherapy: A study on the German version of the Defence Style Questionnaire DSQ 40. *Psychol Psychother Theory Res Pract.* (2007) 80:355–66. doi: 10.1348/147608306X146068
50. Hausberg MC, Schulz H, Piegler T, Happach CG, Klöpper M, Brütt AL, et al. Is a self-rated instrument appropriate to assess mentalization in patients with mental disorders? Development and first validation of the

- Mentalization Questionnaire. (MZQ). *Psychother Res.* (2012) 22:699–709. doi: 10.1080/10503307.2012.709325
51. Ponti L, Stefanini MC, Gori S, Smorti M. The assessment of mentalizing ability in adolescents: the italian adaptation of the mentalization questionnaire (MZQ). *TPM - Testing, Psychom Methodol Appl Psychol.* (2019) 26:29–38. doi: 10.4473/TPM26.1.2
  52. Falconer CJ, Cutting P, Bethan Davies E, Hollis C, Stallard P, Moran P. Adjunctive avatar therapy for mentalization-based treatment of borderline personality disorder: a mixed-methods feasibility study. *Evid Based Ment Heal.* (2017) 20:123–7. doi: 10.1136/eb-2017-102761
  53. Spitzer C, Hammer S, Löwe B, Grabe HJ, Barnow S, Rose M, et al. Die Kurzform des Brief Symptom Inventory (BSI-18): erste Befunde zu den psychometrischen Kennwerten der deutschen Version. *Fortschritte der Neurol Psychiatr.* (2011) 79:517–523. doi: 10.1055/s-0031-1281602
  54. Franke GH, Jaeger S, Glaesmer H, Barkmann C, Petrowski K, Braehler E. Psychometric analysis of the brief symptom inventory 18. (BSI-18) in a representative German sample. *BMC Med Res Methodol.* (2017) 17:14. doi: 10.1186/s12874-016-0283-3
  55. Thomas A, Brähler E, Strauß B. IIP-32: Entwicklung, Validierung und Normierung einer Kurzform des Inventars zur Erfassung interpersonaler Probleme. *Diagnostica.* (2011) 57:68–83. doi: 10.1026/0012-1924/a000034
  56. Barkham M, Hardy GE, Startup M. The IIP-32: a short version of the Inventory of Interpersonal Problems. *Br J Clin Psychol.* (1996) 35:21–35. doi: 10.1111/j.2044-8260.1996.tb01159.x
  57. World Health Organization. *The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines.* Geneva: World Health Organization (1992).
  58. Little RJA. A test of missing completely at random for multivariate data with missing values. *J Am Stat Assoc.* (1988) 83:1198. doi: 10.1080/01621459.1988.10478722
  59. White IR, Royston P, Wood AM. Multiple imputation using chained equations: Issues and guidance for practice. *Stat Med.* (2011) 30:377–99. doi: 10.1002/sim.4067
  60. Levene H. Robust tests for equality of variances. In: Olkin I, Ghurye SG, Hoefding W, Madow WG, Mann HB, editors. *Contributions to Probability and Statistics: Essays in Honor of Harold Hotelling.* Palo Alto, CA: Stanford University Press (1960). p. 278–92.
  61. Girden E. ANOVA: *Repeated Measures.* Newbury Park, CA: SAGE Publications (1992). doi: 10.4135/9781412983419
  62. Urban D, Mayerl J. Entdeckung und Beseitigung von Modellverstößen. In: *Angewandte Regressionsanalyse: Theorie, Technik und Praxis* Studienskripten zur Soziologie. Wiesbaden: Springer Fachmedien Wiesbaden (2018). p. 169–299. doi: 10.1007/978-3-658-01915-0\_4
  63. Cook RD. Detection of influential observation in linear regression. *Technometrics.* (1977) 19:15. doi: 10.2307/1268249
  64. Cohen J. *Statistical Power Analysis for the Behavioral Sciences.* 2nd. ed. New Jersey, NJ: Lawrence Erlbaum Associates (1988).
  65. Hartmann A, Zeeck A, Barrett MS. Interpersonal problems in eating disorders. *Int J Eat Disord.* (2010) 43:619–27. doi: 10.1002/eat.20747
  66. Liebherz S, Rabung S. Do Patients' symptoms and interpersonal problems improve in psychotherapeutic hospital treatment in germany? - a systematic review and meta-analysis. *PLoS ONE.* (2014) 9:e105329. doi: 10.1371/journal.pone.0105329
  67. Bond M, Perry JC. Long-term changes in defense styles with psychodynamic psychotherapy for depressive, anxiety, and personality disorders. *Am J Psychiatr.* (2004) 161:1665–71. doi: 10.1176/appi.ajp.161.9.1665
  68. Heldt E, Blaya C, Kipper L, Salum GA, Otto MW, Manfro GG. Defense mechanisms after brief cognitive-behavior group therapy for panic disorder. *J Nerv Ment Dis.* (2007) 195:540–3. doi: 10.1097/NMD.0b013e318064e7c4
  69. Knijnik DZ, Salum GA, Blanco C, Moraes C, Hauck S, Mombach CK, et al. Defense style changes with the addition of psychodynamic group therapy to clonazepam in social anxiety disorder. *J Nerv Ment Dis.* (2009) 197:547–51. doi: 10.1097/NMD.0b013e3181aac833
  70. Albucher RC, Abelson JL, Nesse RM. Defense mechanism changes in successfully treated patients with obsessive-compulsive disorder. *Am J Psychiatry.* (1998) 155:558–9. doi: 10.1176/ajp.155.4.558
  71. Sala MN, Testa S, Pons F, Molina P. Emotion regulation and defense mechanisms. *J Individ Differ.* (2015) 36:19–29. doi: 10.1027/1614-0001/a000151
  72. Di Pierro R, Benzi IMA, Madeddu F. Difficulties in emotion regulation among inpatients with substance use disorders: the mediating effect of mature defenses mechanisms. *Clin Neuropsychiatr.* (2015) 12:83–9.
  73. Bateman AW, Fonagy P. 8-year follow-up of patients treated for borderline personality disorder: mentalization-based treatment versus treatment as usual. *Am J Psychiatr.* (2008) 165:631–8. doi: 10.1176/appi.ajp.2007.07040636
  74. Fonagy P, Luyten P, Bateman A. Translation: mentalizing as treatment target in borderline personality disorder. *Personal Disord Theory, Res Treat.* (2015) 6:380–92. doi: 10.1037/per0000113
  75. Fang S, Chung MC, Wang Y. The impact of past trauma on psychological distress: the roles of defense mechanisms and Alexithymia. *Front Psychol.* (2020) 11:992. doi: 10.3389/fpsyg.2020.00992
  76. Békés V, Perry JC, Starrs CJ. Resilience in holocaust survivors: a study of defense mechanisms in holocaust narratives. *J Aggress Maltreat Trauma.* (2017) 26:1072–89. doi: 10.1080/10926771.2017.1320344

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2021 Hayden, Müllauer, Beyer, Gaugeler, Senft, Dehoust and Andreas. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Defense Mechanisms and Treatment Response in Depressed Inpatients

Yves de Roten<sup>1\*</sup>, Slimane Djillali<sup>1</sup>, Fabienne Crettaz von Roten<sup>2</sup>, Jean-Nicolas Despland<sup>1</sup> and Gilles Ambresin<sup>1</sup>

<sup>1</sup> Institute of Psychotherapy, Department of Psychiatry, University Hospital Center and University of Lausanne, Lausanne, Switzerland, <sup>2</sup> Faculty of the Social and Political Sciences, University of Lausanne, Lausanne, Switzerland

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

Tommaso Boldrini,  
University of Padua, Italy  
Lawrence Josephs,  
Adelphi University, United States

### \*Correspondence:

Yves de Roten  
yves.deroten@chuv.ch

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 26 November 2020

**Accepted:** 22 February 2021

**Published:** 18 March 2021

### Citation:

de Roten Y, Djillali S,  
Crettaz von Roten F, Despland J-N  
and Ambresin G (2021) Defense  
Mechanisms and Treatment  
Response in Depressed Inpatients.  
Front. Psychol. 12:633939.  
doi: 10.3389/fpsyg.2021.633939

The study investigated the extent to which defensive functioning and defense mechanisms predict clinically meaningful symptomatic improvement within brief psychodynamic psychotherapy for recurrent and chronic depression in an inpatient setting. Treatment response was defined as a reduction in symptom severity of 46% or higher from the baseline score on the Montgomery–Asberg Depression Rating Scale (MADRS). A subsample of 41 patients (19 responders and 22 non-responders) from an RCT was included. For each case, two sessions (the second and the penultimate) of brief inpatient psychodynamic psychotherapy (a manualized 12-session therapy program developed in Lausanne) were transcribed and then coded using the Defense Mechanism Rating Scales (DMRS) and the Psychotic Defense Mechanism Rating Scales (P-DMRS), an additional scale developed to study psychotic defenses. Results showed that defensive functioning and mature and immature defense changed during psychotherapy and predicted treatment response. Patient's defenses observed throughout therapy also predicted treatment response at 12-month follow-up. The addition of psychotic defenses allows a better prediction of the treatment response. Overall, these results are in line with previous research and provide further validation of defensive functioning as a predictor of outcomes and a mechanism of change in psychotherapy.

**Keywords:** defense, depression, treatment response, inpatient, psychodynamic psychotherapy, brief psychotherapy, psychotic defense

## INTRODUCTION

From an empirical perspective, psychological defenses might be viewed either as a patient trait that determines the course and outcome of treatment, as a therapeutic outcome that evolves toward more adaptability, or as an underlying mechanism of change that explains how psychotherapy works from the psychodynamic theoretical perspective.

Studies have suggested that defenses can be associated with depression. Compared to a healthy control group, depressed individuals were found to use significantly more maladaptive and fewer adaptive defense mechanisms at baseline (Vaillant, 1986). DeFife and Hilsenroth (2005) showed that the presence and severity of depression symptoms were significantly related to lower (more maladaptive) overall defensive functioning (ODF) scores. In addition, patients who lack obsessional defenses of mental inhibition (including isolation, undoing, and intellectualization) are more severely depressed. Compared to panic disorder, Calati et al.'s (2010) meta-analysis



confirmed a specific defensive profile related to depression, characterized by a low level of mature and a high level of immature defenses.

A group of eight immature defenses, called depressive defenses (help-rejecting complaining, acting out, splitting of self-image, splitting of others' images, projective identification, devaluation of self-image, devaluation of others' images, and projection), hypothesized to play a causal role in depression, were found to predict the course of major depression in a sample of psychiatric patients. Six months after intake, immature defenses were identified more often in depressed patients who improved less than predicted by their initial functional status and one high adaptive level defense (self-observation) was identified more often in those who improved more than predicted by their initial status (Hoglund and Perry, 1998). These depressive defenses were associated with lower patient improvement on global functioning 6 months after intake (Hoglund and Perry, 1998). The group of other immature defenses (so-called non-depressive immature defenses) was not related to improvement. This confirmed the results of Bloch et al. (1993), who found that these defenses occurred more frequently in a sample of dysthymic patients compared to patients with panic disorder. Compared to patients with anxiety disorders, outpatients diagnosed with depression had significantly lower ODF and a higher proportion of maladaptive defenses at the beginning of treatment. However, depressed patients responded better to treatment, with higher increase in ODF than patients with anxiety disorders had (Babl et al., 2019).

In studies involving primarily depressed patients, defensive functioning improved with an increase in ODF during therapy. This outcome relates to a specific pattern of defense mechanism evolution, whereby the proportion of high adaptive defenses increases, and the proportion of maladaptive defenses decreases (Kneepkens and Oakley, 1996; Akkerman et al., 1999; Drapeau et al., 2003; Bond and Perry, 2004; Perry and Bond, 2009; Kramer et al., 2013; Babl et al., 2019), more specifically depressive defenses (DeFife and Hilsenroth, 2005; Perry et al., 2020). With other disorders, ODF also significantly increases but alongside other patterns of defense mechanism evolution (Perry and Bond, 2017). As suggested by Cramer's (1998) review, these results should be seen from the vantage point of adaptational processes that serve an individual's need for adaptation; defenses may be understood as an individual's way of responding to their need to adapt. In a sample of patients with personality disorders, although some individuals improved significantly after 1 year of therapy, the group did not show significant change in defenses (Perry, 2001). Longer-term treatments are commonly required to effect significant improvement in defensive functioning. Perry and Bond (2009) provided preliminary evidence on change in ODF over 2.5 years of therapy for three cases with different personality disorder types.

Relatively few studies have directly examined the extent to which defensive functioning and defense mechanisms predict outcomes in depressive disorders. In a pilot study of 12 patients with recurrent major depression, Perry et al. (2020) showed that the mean percentage score of depressive defenses significantly decreased after 20 sessions of psychotherapy (mean ES = 0.97)

and improved defensive functioning led to overall mental health improvement. However, patients had not maintained this result after 12 months of follow-up. In a sample of young adults with adjustment disorders (mainly with mixed anxiety and depressive symptoms), Kramer (2010) showed prior improvement in defensive functioning mediated change in distress. The short-term mutability of mature and immature defenses was also found in cluster C personality disorders treated with cognitive behavioral therapy (Johansen et al., 2011).

In long-term psychodynamic psychotherapy of a heterogeneous sample of patients with anxiety, depression, and personality disorders, Bond and Perry (2004) reported that defenses accounted for larger outcome-variance change than initial symptomatic severity did. Moreover, improvement in ODF score predicted improvement in observer-rated depression, even after controlling for improvement in distress. A more mature defensive functioning was highly associated with improvement in symptom levels and functioning 5 years after intake (Perry and Bond, 2012). However, these studies considered the outcome solely from a statistical point of view, which means that they sought to disprove a negative and state an event probably did not happen by chance. By contrast, clinical significance seeks to prove a positive, and state an event genuinely happened (de Roten and Crettaz von Roten, 2018). Reliance on statistical change does not directly address whether subjects improved clinically or recovered.

This paper explores the extent to which defensive functioning and defense mechanisms predict improvement and recovery in short-term dynamic psychotherapy for recurrent or chronic depression. We address whether (a) defensive functioning and defense mechanisms help improve adaptiveness or maturity with therapy, (b) defenses and change in defenses are associated with treatment response and remission, and (c) defenses and change in defenses are associated with maintenance of treatment response after 12 months of follow-up.

## MATERIALS AND METHODS

### Sample

A subsample was selected from a randomized controlled trial on the efficacy of adjunctive brief psychodynamic psychotherapy in usual inpatient treatment of depression (de Roten et al., 2017). For more detail on the design of the study, see Ambresin et al. (2012). From among the 76 patients in the psychotherapy group of the main study, 41 were included. Selection criteria required patients to have completed at least 10 sessions ( $n = 52$ ), including two sessions (the second and the penultimate) that were audio or video recorded. Univariate tests showed that the subsample's demographics and clinical variables were not different from those of the whole sample (see **Supplementary Table 1**).

To be included in the main study, patients hospitalized in the university psychiatric hospital had to (a) meet *Diagnostic and Statistical Manual of Mental Disorders IV* criteria for unipolar major depressive episode; (b) be aged 18–65 years, (c) have a Montgomery–Asberg Depression Rating Scale (MADRS; Montgomery and Asberg, 1979) score > 18, and

**TABLE 1** | Demographic and clinical characteristics of the sample.

Variable	Responders ( <i>n</i> = 19)	Non-responders ( <i>n</i> = 22)	<i>p</i>
Age	42.8 (9.5)	45.5 (9.8)	0.393
Gender (female)	13 (68.4%)	14 (63.6%)	0.829
Education (years)	11.0 (3.4)	9.3 (2.3)	0.064
<b>Marital status</b>			
Single	3 (15.8%)	4 (18.1%)	
Couple	8 (42.1%)	10 (45.5%)	
Divorced/widowed	8 (42.1%)	8 (36.4%)	0.877
Chronicity	9 (47.4%)	12 (54.5%)	0.752
Tentamen	11 (57.9%)	8 (36.4%)	0.739
Early onset	6 (31.6%)	7 (37.8%)	0.631
Duration of current episode	82.5 (101.0)	71.1 (79.7)	0.747
Childhood trauma (CTQ)	2.3 (0.4)	2.3 (1.1)	0.962
Length of hospital stay	42.5 (38.1)	45.2 (42.9)	0.829

Statistical tests were *t*-test or Fisher exact test; CTQ, Childhood Trauma Questionnaire.

(d) have sufficient command of French. Exclusion criteria were limited to bipolar disorders, psychotic disorder, and persistent substance use/abuse that might affect brain function (memory, level of consciousness, and cognitive abilities) and impair an individual from participating in and benefiting from psychotherapy.

**Table 1** shows demographic and clinical characteristics of the responders (*n* = 19) and non-responders (*n* = 22). Univariate comparisons showed no differences. The 16 therapists (10 women and six men) who participated had completed (10 senior therapists) or were in the advanced stage of completing (six junior therapists) 5 years of psychotherapy training. The junior and senior therapists had no differences in their patients' response and remission rates. They attended a weekly training seminar dedicated to inpatient brief psychodynamic psychotherapy (IBPP) for 6 months before they started their first IBPP sessions with a patient. We monitored for adherence and competence through weekly individual supervision and continued participation in the training seminar.

## Instruments

### Outcome

We used the MADRS, a clinician-rating measure that uses 10 items to provide a sensitive measure of patient change in inpatient settings. Davidson et al. (1986) demonstrated the construct validity of MADRS using an inpatient sample.

Research psychologists (master's level), who were not involved in the inpatient care and not located in the hospital, administered the MADRS. Inter-rater reliability was obtained from 15 audiotaped interviews, mean  $ICC(2,1) = 0.88$ , range = 0.68–0.96. In our study, Cronbach's  $\alpha = 0.85$ . Response and remission were suggested as the most relevant outcome criteria for the treatment of depression. In line with Riedel et al. (2010), we defined response *a priori* as a reduction in symptom severity of 46% or higher from the baseline score and remission as a score of 7 or less, based on cut-off scores determined in a

large inpatient population. Nineteen patients (46.3%) responded positively to treatment.

We also used the Quick Inventory of Depressive Symptomatology (QIDS-SR<sub>16</sub>; Corruble et al., 1999), a 16-item self-report measure, to evaluate depressive symptomatology. In our study, Cronbach's  $\alpha = 0.81$ . Response corresponded to a symptom reduction  $\geq 50\%$ , and remission to a score of score of 5 or less, according to Rush et al. (2006). **Supplementary Table 2** provides the results for this instrument. Nineteen cases were responders, according to the QIDS-SR<sub>16</sub>. Thirteen cases (68.4% of the responders) were responders, according to both MADRS and QIDS, and six cases were responders in only one measure. Three cases were responders according to MADRS but not according to QIDS, and three cases were responders according to QIDS but not according to MADRS.

### Defense Mechanisms

The Defense Mechanism Rating Scales (DMRS; Perry et al., 2004) is an observer-based method that identifies any of 30 individual defense mechanisms as they occur in verbatim transcripts of therapy sessions or interviews. These mechanisms are hierarchically arranged in seven defense levels (1–7) according to their adaptiveness, from the least adaptive to the most adaptive: action, major image distorting, disavowal, minor image distorting, neurotic, obsessional, and high adaptive. We added the Psychotic-Level Defense Mechanisms Rating Scale (P-DMRS; Berney et al., 2014). This eighth defense level includes six psychotic defense mechanisms (psychotic denial, autistic withdrawal, distortion, delusional projection, fragmentation, and concretization). As is the case in the DMRS, each defense of the P-DMRS is extensively described (i.e., definition, function, discrimination, and rating) in a manual (Berney et al., 2010). A detailed presentation of the P-DMRS with clinical examples for each defense mechanism can be found in Berney et al. (2014). The first validation was conducted on a sample of 80 patients with depressive disorder (*n* = 20), bipolar disorder (*n* = 20), personality disorder (*n* = 20), and schizophrenic disorder (*n* = 20). The validation showed that (a) psychotic defenses can be reliably identified in transcripts of psychotherapy sessions, (b) psychotic defenses can be present in a wide range of defensive functioning, and (c) the new scale has psychometric characteristics similar to those of the other subscales of the DMRS (Berney et al., 2011).

Combinations of defense level scores define mature (high adaptive defenses, including affiliation, altruism, anticipation, humor, self-assertion, self-observation, sublimation, and suppression), intermediate (obsessional and neurotic defenses), and immature defense category (psychotic, action, major image distorting, and disavowal defenses). Moreover, the depressive defense category is comprised of eight immature defenses (passive-aggressive, acting out, help-rejecting complaining, projective identification, splitting of self-images, splitting of others' images, projection, and devaluation) empirically associated with depression, whereas non-depressive defenses are comprised of autistic fantasy, rationalization, denial, idealization, and omnipotence (Hoglund and Perry, 1998).

Scores represent the relative frequency per defense level and defense category, culminating in a weighted score, referred to

as the ODF score—of the relative frequencies of all defense mechanisms by their level. Level zero has been attributed to psychotic defenses, making the ODF score comparable to other studies without considering psychotic level. For the current study, reliability coefficients on 18 transcripts (22% of the ratings) were established among four trained raters and yielded satisfactory results at the level of defense, with  $ICC(2,1)$  varying between 0.69 and 0.94 ( $M = 0.77$ ;  $SD = 0.12$ ) for the early session and between 0.71 and 0.95 ( $M = 0.78$ ;  $SD = 0.11$ ) for the late session. At the level of ODF score,  $ICC(2,1)$  were higher, with a mean of 0.85 ( $SD = 0.09$ ).

## Treatment

The IBPP is a manualized 12-session psychodynamic psychotherapy program developed in Lausanne. IBPP is based on the *Psychodynamic Treatment of Depression* manual developed by Busch et al. (2004) to help therapists focalize on relevant depression topics, as well as on the *Brief Psychodynamic Psychotherapy* manual developed by Despland et al. (2010) for work on transference, personality organization, and conflictual themes. The initial hypothesis was based on the dynamic relationship established between a therapist and a patient during the first three sessions (pre-transference), a patient's present crisis, and the dynamics that form the core of a patient's depressive episode. Subsequent sessions focus on helping the patient gain a fuller understanding of the psychological factors that led to the emergence of depressive symptoms and address their vulnerability to those dynamics. Final sessions address the patient's feelings and fantasies about termination, as well as the decision regarding a longer term therapy or ongoing psychiatric treatment if necessary. Treatment integrity was checked (de Roten et al., 2017).

## Procedure and Analysis

All psychotherapy sessions were audio- or videotaped. From each case, two sessions (the second and the penultimate) were transcribed, according to the method defined by Mergenthaler and Stigler (1997). Five fully trained raters carried out DMRS and P-DMRS ratings. The first author provided initial weekly group-training sessions that lasted 12 weeks and subsequent calibration of raters over 3 months.

Analysis was performed using SPSS version 26. Effect sizes were within-condition, taking the correlation between the pre- and posttest into account (Morris and DeShon, 2002). We used linear mixed models (LMM) to study the effect of time, treatment response, and the interaction (Time  $\times$  Response), which were treated as fixed effects for each defense category and each defense level, with the MADRS score at intake as covariate. Linear regressions were used to evaluate the relation between defenses and MADRS at the same session, using forward stepwise selection due to sample size.

## RESULTS

### Do Defenses Evolve During the Therapy?

Table 2 shows changes in defensive functioning, defense categories, and defense levels after the psychotherapy. ODF

**TABLE 2 |** Change in defenses.

Defenses	<i>d</i>	95% CI	
		LL	UL
Overall defensive functioning	0.727	0.348	1.248
<b>Defense categories</b>			
Mature	0.510	0.147	1.031
Intermediate	0.405	−0.016	0.859
Immature	−0.543	−1.017	−0.134
Depressive	−0.559	−1.015	−0.131
<b>Defense levels</b>			
High adaptive	0.510	0.147	1.031
Obsessional	0.382	−0.010	0.865
Neurotic	0.116	−0.313	0.533
Minor image-distorting	−0.340	−0.803	0.070
Disavowal	−0.240	−0.652	0.216
Major image-distorting	−0.417	−0.783	0.089
Action	−0.146	−0.586	0.281
Psychotic	0.055	−0.381	0.485

*Immature category, psychotic + action + major image-distorting + disavowal levels; CI, confidence interval; LL, lower limit; UL, upper limit.*

increased throughout therapy, yielding a large effect size. Changes in the mature defense category indicated an increase of mature defensive behaviors in therapy sessions by the end of therapy, as indicated by a moderate positive effect size. Immature and depressive defense categories decreased, as shown by moderate negative effect sizes. Concerning defense levels, the high adaptive level increased in frequency, as indicated by a moderate positive effect size.

### Do Defenses Predict Response and Remission?

We first looked at the relation between defenses and depression in the same session. Depressive symptom severity was not significantly correlated with depressive defenses ( $r = 0.083$  for the second session and 0.255 for the penultimate session). For the eight defensive levels, a forward stepwise regression showed, for the second session, an adjusted  $R^2$  of 0.277, and three defensive levels included in the final step (obsessional, narcissistic, and major image distorting), all significant ( $p = 0.005$ , 0.011, and 0.011, respectively). For the penultimate session, the adjusted  $R^2$  was 0.092, with only action level included ( $p = 0.030$ ).

Relation between defenses and treatment response and remission is presented in Table 3. Only defense categories and defense level with significant results are displayed. LMM provided strong evidence that high adaptive and psychotic defense levels were associated with the interaction between time and response, whereas moderate evidence was found for an association among ODF, immature defense category, and the interaction between time and response. Strong evidence for an association among ODF, high adaptive level, and response was found, whereas moderate evidence indicated an association between the immature category, psychotic level, and response. Intermediate and

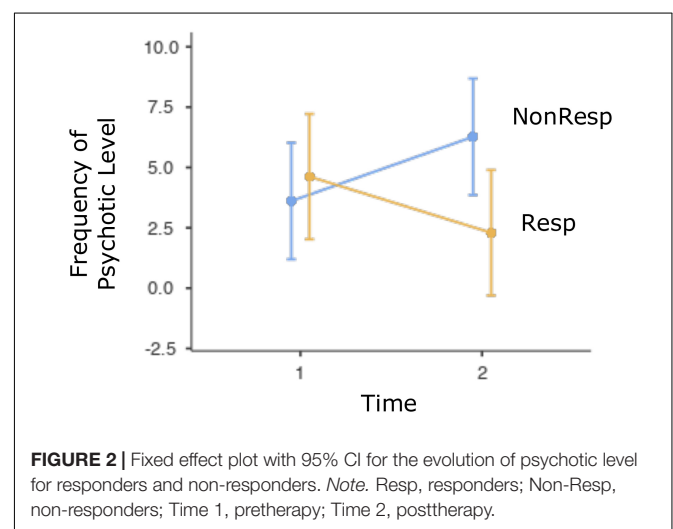
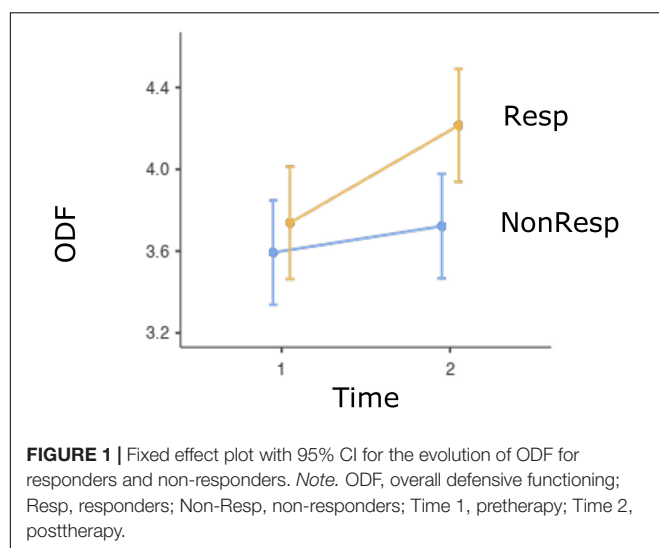
**TABLE 3 |** Relation among defenses and treatment response and remission.

Defenses	Response				Remission			
	Estimate	<i>p</i>	95% CI		Estimate	<i>p</i>	95% CI	
			LL	UL			LL	UL
Overall defensive functioning								
Time	−0.476	0.000	−0.677	−0.275	−0.457	0.005	−0.765	−0.149
Response	−0.489	0.009	−0.852	−0.126	−0.222	0.371	−0.715	0.271
Time × Response	0.348	0.014	0.073	0.622	0.214	0.222	−0.134	0.562
Mature category/high adaptive level								
Time	−6.521	0.000	−9.165	−3.877	−4.322	0.048	−8.601	−0.043
Response	−4.148	0.007	−7.138	−1.159	2.181	0.267	−1.706	6.069
Time × Response	5.857	0.002	2.248	9.467	1.210	0.616	−3.634	6.054
Psychotic level								
Time	2.326	0.078	−0.273	4.926	2.067	0.306	−1.960	6.093
Response	4.073	0.026	0.513	7.632	2.603	0.271	−2.087	7.292
Time × Response	−4.990	0.007	−8.539	−1.441	−3.098	0.177	−7.656	1.460
Immature category								
Time	−10.395	0.000	−15.127	−5.662	9.567	0.005	3.141	15.993
Response	−9.415	0.020	−17.283	−1.547	4.769	0.347	−5.329	14.866
Time × Response	6.545	0.047	0.084	13.005	−5.229	0.154	−12.503	2.045

Immature defenses include psychotic, action, borderline, and disavowal levels; CI, confidence interval; LL, lower limit; UL, upper limit.

depressive defense categories, as well as neurotic, minor image-distorting, disavowal, and major image-distorting defense levels were not significantly related to response or the interaction between time and response. **Figure 1** illustrates the increase in ODF associated with response. **Figure 2** displays the decrease in frequency of psychotic defenses associated with response.

Nine cases (22.0%) were remitted at the end of the psychotherapy. No defense category or defense level showed significant results in terms of treatment response or the interaction of time and response (Time × Response).



## Do Defenses Predict Response and Remission at Follow-Up?

Sixteen cases (39.0%) were responders at 12-month follow-up. Thirteen cases were also remitters at the end of the psychotherapy. All significant results for defense categories and levels are presented in **Table 4**. Very strong evidence for an association among ODF, mature defense category, and response was found, whereas moderate evidence for an association between the immature defense category and response was found. Regarding the interaction between time and response, very strong evidence was found for an association with the mature defense category, whereas strong evidence for an association with ODF



**TABLE 4 |** Relation among defenses and treatment response and remission after 12-month follow-up.

Defenses	Response				Remission			
	Estimate	<i>p</i>	95% CI		Estimate	<i>p</i>	95% CI	
			LL	UL			LL	UL
Overall defensive functioning								
Time	−0.473	0.001	−0.690	−0.255	−0.499	0.001	−0.779	−0.219
Response	−0.627	0.000	−0.995	−0.259	−0.645	0.005	−1.080	−0.209
Time × Response	0.403	0.008	0.111	−0.694	0.381	0.027	0.046	0.716
Mature category/high adaptive level								
Time	−7.475	0.000	−10.152	−4.798	−7.500	0.000	−11.279	−3.721
Response	−6.142	0.000	−9.120	−3.164	−7.162	0.000	−10.610	−3.716
Time × Response	7.925	0.000	4.333	11.517	6.722	0.005	2.196	11.248
Psychotic level								
Time	0.888	0.534	−1.984	3.759	2.310	0.191	−1.210	5.830
Response	4.095	0.022	0.623	7.568	4.099	0.051	−0.022	8.222
Time × Response	−3.253	0.095	−7.105	0.560	−5.188	0.018	−9.405	−0.972
Immature category								
Time	6.913	0.007	2.033	11.792	6.610	0.044	0.179	13.041
Response	10.237	0.014	2.169	18.306	11.978	0.010	2.969	20.987
Time × Response	−3.398	0.299	−9.944	3.149	−2.014	0.598	−9.717	5.689

Immature defenses include psychotic, action, borderline, and disavowal levels; CI, confidence interval; LL, lower limit; UL, upper limit.

was found. The immature defense category was not significantly associated with the interaction of time and response.

At 12-month follow-up, 30.3% (10 out of 33) of patients were remitted (eight missing values). Only four cases were also remitters at the end of the treatment.

## DISCUSSION

In line with previous research, our study showed that defensive functioning and high adaptive defenses significantly increased, while immature defenses decreased over the course of psychotherapy. Moreover, within the immature defense category, the group of depressive defenses changed the most ( $d = 0.56$ ), which further validates defense mechanisms as relevant and specific mechanisms of change in psychotherapy for depression. However, the effect sizes are lower than those that Perry et al. (2020) found in a sample of patients with recurrent major depression. Contrary to what was expected, the depressive defenses did not predict outcomes.

The original contribution of this study concerned the clinical significance of defenses as predictors of outcomes by examining how defenses predict treatment response and remission. Results showed that the categories of mature and immature defenses predict responses at the end of the treatment and at 12-month follow-up. The most adaptive levels of defense (high adaptive and obsessional) and maladaptive (psychotic and action) levels of defense are related to response and/or interaction between time and response, as seen at the end of the treatment but not at follow-up. Finally, defensive functioning and defense mechanisms are not predictors of remission. These results confirm previous research findings and extend them to the specific context of

very brief dynamic psychotherapy for recurrently and chronically depressed inpatients. A great need exists to identify predictors of treatment response, and these results clearly showed that defense mechanisms represent a promising approach.

At the end of the treatment, defenses predicted response but not remission, whereas a stronger effect would have been expected. This may be due to a lack of statistical power. The rate of remission was relatively low: 24% at the end of the therapy and 25% after 12-month follow-up. An alternative explanation is that the remission rate may be related to the duration and goal of the treatment. IBPP is only intended as a first step, which may work as an initial insight facilitating a longer course of psychotherapy after hospitalization. Within the IBPP, remission was not a therapeutic objective and mainly extratherapeutic reasons facilitated it. Results at 12-month follow-up tend to confirm this hypothesis. After discharge from the hospital, 95% of patients included in this study were in psychotherapy. Depressive defenses evolved the most during therapy, but they did not predict response. Thus, change in depressive defenses cannot be considered as an outcome measure. Drapeau et al. (2003) showed that changes in defense mechanisms in very short interventions are likely related to clinical processes reflecting a state-dependent improvement. Some studies showed change in defenses not only in psychodynamic psychotherapy but also in cognitive behavioral therapy (Babl et al., 2019; Perry et al., 2020). These depressive defenses are particularly sensitive to therapeutic work done during hospitalization, and therapeutic progress stems from the goal of the psychotherapy and hospitalization, which is to reduce patients' acute states of distress. These defenses are particularly strained because of the problems these patients have with recurrent or chronic depression. We may hypothesize that change in these defenses as a trait change occurs only after

long-term psychotherapy and the acquisition of adaptive skills (Johansen et al., 2011), as seen with personality disorders (Perry and Bond, 2009). Contrary to previous studies, these defenses were not associated with depression in our sample. This may be due to the clinical characteristics of our inpatient sample such as treatment resistance, chronicity, and high comorbidity. Compared to Perry et al.'s (2020) study on outpatients with recurrent depression, the proportion of depressive defenses was higher in our sample at intake (17.1 vs 26.8) and after the psychotherapy (8.5 vs 20.1).

In line with our previous work (Berney et al., 2011), psychotic level showed the same inter-rater reliability as the other defense levels of the DMRS. Measuring psychotic defenses proved a useful supplementary approach to examining changes in defenses over the course of psychoanalytic therapies. In our study, psychotic defense level is the most predictive level of maladaptive defense related to outcomes. Moreover, if a patient's psychological defenses do not evolve during treatment, then an interaction effect between time and response may occur. Successful therapy implies a reduction of these defenses from 5 to 2.5%.

Psychotic defenses were present in 54% of the patients. Among these patients, an examination of their verbatim statements made it possible to study the context in which psychotic defenses appeared in our sample. We found that they tend to appear when the therapeutic interaction is difficult (e.g., when the therapeutic alliance is strained or when the patient is in crisis for an extratherapeutic reason). Further research should explore how patients improve or worsen these defenses seem to be particularly sensitive to how therapy evolves. Inclusion of psychotic defenses in the DMRS provides a better account of patients' defensive functioning, psychopathologically more valid defensive scores, and a more complete and valid measure of patients' progress through the course of treatment. From a clinical point of view, training clinicians to detect psychotic defenses as early as possible seems to be important to being responsive to patients' levels of functioning.

In our sample, inpatients did not present psychotic symptoms that would be coded in phenomenological psychiatric diagnoses. Use of psychotic defenses does not imply the presence of psychotic symptoms (Berney et al., 2014). Inpatients in our sample used unconscious psychotic defense mechanisms to mediate their reaction to emotional conflicts arising from internal and external stressors. Our results suggest that psychotic defense mechanisms is important to consider when studying severe depression in an inpatient setting, alongside its importance in the study of severe personality, bipolar, paranoid, and schizophrenic disorders. Measuring psychotic defense level may capture psychotic psychological functioning in severely depressed inpatients presenting with extreme features of depression reminiscent of the clinical condition formerly known as *melancholia*. Patients often intertwine and mobilize individual psychotic defense mechanisms together. These mechanisms are difficult to disentangle and often appear in narratives to various degrees in narratives (see Berney et al., 2009). The P-DMRS is comprised of six psychotic defense mechanisms: psychotic denial, autistic withdrawal, distortion, delusional projection, fragmentation, and concretization. Although our results provided evidence that supports the measurement of

psychotic level as a whole, below, we provide examples of a few individual psychotic defense mechanisms to illustrate their function in session conditions.

One particular difficulty in treating patients with severe chronic depression is approaching psychic pain and helping them face the unbearable thoughts that often underlie depression (Leuzinger-Bohleber et al., 2019). Clinicians turning their attention to this psychological pain certainly help patients strengthen the self and regain a sense of self-agency. However, therapists can be tempted to avoid addressing defense mechanisms, thereby resounding with their patients' defense mechanisms. Defending themselves against the reviviscence of traumatic internal or external experiences, severely depressed inpatients can turn mute, cutting themselves off from the distressing reviviscence that the clinical encounter elicits (autistic withdrawal). One of the participants reported: *"I stand in calmness, I shut myself, I close the blinds, I'm in the dark and then, that's it, I'm fine like this, in the dark. Lying down, I can spend a fortnight like that in my room."* This excerpt appeared in the penultimate session when the therapist and the patient were exploring the patient's difficulty coming to therapy: *"I did not want to leave my house, I wanted to stay locked inside the house..."* Therapy was close to its end, and the therapist and the patient were soon to part. The session's rhythm was slow, and the patient emitted heavy sighs. The narrative of the session started with the patient's daughter entering a foster home and the difficulty of being separated from her. The patient could hardly speak, and the therapist uttered the following words, adopting the patient's behavior: *"To do nothing, to avoid any tension inside... I prefer to lie down calmly to avoid any tension and pain... to be free of conflicts..."* Finally, the patient agreed: *"Yes, I... I act like this."* The excerpt above suggests listening to and working through the psychic pain helped the patient to overcome the flood of painful parting sensation leading to autistic withdrawal, helping her access representations of the blunt pain that had hitherto been indescribable.

Session narratives also suggest that severely depressed inpatients mobilized distortion, understood as a gross altering or reshaping of internal or external reality. Inpatients may modify the representation of reality in a depressive way, reminding us of Freud's (1917) "Mourning and Melancholia" (p. 245): *"The [melancholic] patient represents his ego to us as worthless, incapable of any achievement and morally despicable: he reproaches himself, vilifies himself and expects to be cast out and punished."* Freud (1917) qualified this distortion as *"a delusion of (mainly moral) inferiority"* (p. 245). In Margo et al.'s (1993) study on defensive styles, depression severity was associated with the amount of negatively biased self-perception in depressed inpatients. As shown in the following example, a patient used distortion in a similar way when she considered herself a *"crazy depressive."* The patient started the first session of therapy saying she was an illegal immigrant and condemned herself as guilty of her brother's suicide. Later in the session, she thought of herself as a murderer: *"I read books where someone killed someone... These are the books I am interested in... It gives me ideas, I could plan a murder."* The therapist voiced the anger present in the patient and the patient completed the sentence: "...

*everything I try to do leads me there, too. . . . Indeed, I am crazy [mumbling]. I am a crazy depressive.”*

Our findings are likely to measure state changes in psychotic defenses in a way that is similar to depressive defenses throughout a brief and intensive psychoanalytic therapy during a particular phase of the overall depressive course, namely, a crisis leading to hospitalization. Trait changes are likely to need a longer course of therapy. However, our findings may indicate that a decrease in psychotic level can be a first therapeutic step; whether this step occurs by addressing individual defenses or by containing them is still unknown and remains an open research question.

These results must be interpreted in light of several potential limitations. The small sample size limits the statistical power to detect change, meaning that small or medium effects of the treatment response may have been missed. Only cases with available recordings of the two sessions were included. The possibility that this represents a selection bias, in particular because the management of the recording was left to the therapist, could not be ruled out. However, we verified that the cases selected for this study are no different from the other cases in the research.

The study is heterogeneous in multiple ways. Different subtypes of depression and comorbidity were included. At intake, MADRS depression severity scores varied from 17 to 49. Controlling the additional treatment received during the hospitalization was not possible. Therefore, other unmeasured variables or variables that could not be included in the model, due to the sample size, may moderate the link between defense and outcome.

The short duration of the treatment and follow-up for problems that tend to be chronic do not reveal whether patients developed sustained improvement. Outcome measurement tends to “evaluate a particular moment in time rather than an ongoing experience” (Bond and Perry, 2004, p. 1666). Further study should examine longer treatment to improve the understanding of the mediating role of defensive functioning and defense mechanisms in therapy response and remission. Finally, change in defensive functioning was evaluated by comparing ratings of only two sessions (the second and the penultimate). Previous research has shown that the rating of more sessions may give a more representative measure of defensive functioning, particularly in terms of a relatively stable trait (Perry, 2001).

The assessment of defenses was only done at the beginning and end of the brief psychodynamic psychotherapy during hospitalization. Assessing defenses after 12 months of follow-up, which would have required interviews, was not possible. Therefore, the extent to which defenses change in the long term is not known. The study only assessed whether early changes in defenses predicted symptomatic improvement in our sample a year later. We did not also have a measure of structural change at follow-up, which makes interpreting these results beyond depressive vulnerability impossible, in terms of structural personality functioning change.

Another limitation is that the study does not address causal relationships. The psychoanalytic theory is that beneficial changes in defensive functioning result in symptomatic improvement. However, changes in defensive functioning and improvement of symptoms might be the effects of some other

sort of therapeutic process, such as increases in attachment security due to a good therapeutic relationship. Improvement in defensive functioning could be a function of a common factor (e.g., the therapeutic alliance) that appears to predict improvement in all psychotherapeutic approaches.

This study complements previous work on how defenses predict outcomes in depressive disorders by examining the clinical significance of the results and by including psychotic defenses. As expected, ODF and specific low- and high-adaptive levels of defense changed during short psychodynamic psychotherapy and predicted treatment response. We showed that the addition of psychotic defenses allows a better prediction of the treatment response. As Babl et al. (2019) showed, future research must measure defensive functioning and defense mechanisms longitudinally to disentangle within- and between-patient effects of defenses and to achieve unbiased estimates that are more robust.

## DATA AVAILABILITY STATEMENT

The data analyzed in this study are subject to the following licenses/restrictions: Data are only available for the first author and the third author (the statistician). Requests to access these datasets should be directed to yves.deroten@chuv.ch.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Lausanne Ethical Committee (April 12, 2010). The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

YR designed the study, collected and coded the data, interpreted the results, and wrote the manuscript. SD coded the data and wrote the manuscript. FC did the statistical analysis and supported the interpretation of the results. J-ND designed the study and supported the interpretation of the results. GA designed the study, collected the data, and wrote the manuscript. All authors contributed to the article and approved the submitted version.

## FUNDING

This work was supported by the Swiss National Science Foundation (Grant 135098).

## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.633939/full#supplementary-material>

## REFERENCES

- Akkerman, K., Lewin, T., and Carr, V. (1999). Long-term changes in defense style among patients recovering from major depression. *J. Nerv. Ment. Dis.* 187, 80–87. doi: 10.1097/00005053-199902000-00003
- Ambresin, G., Despland, J.-N., Preisig, M., and de Roten, Y. (2012). Efficacy of an adjunctive brief psychodynamic psychotherapy to usual inpatient treatment of depression: rationale and design of a randomized controlled trial. *BMC Psychiatry* 12:182. doi: 10.1186/1471-244X-12-182
- Babl, A., Grosse Holforth, M., Perry, J. C., Schneider, N., Domman, E., Heer, S., et al. (2019). Comparison and change of defense mechanisms over the course of psychotherapy in patients with depression or anxiety disorder: evidence from a randomized controlled trial. *J. Affect. Disord.* 252, 212–220. doi: 10.1016/j.jad.2019.04.021
- Berney, S., Constantinides, P., de Roten, Y., Kramer, U., Beretta, V., Beck, S., et al. (2011). *Validation of the Psychotic Defense Mechanisms Rating Scale–Lausanne Montreal (P-DMRS-LM) [Paper presentation]*. Bern: Society for Psychotherapy Research Annual International Meeting.
- Berney, S., de Roten, Y., Beretta, V., Kramer, U., and Despland, J.-N. (2014). Identifying psychotic defenses in clinical interview. *J. Clin. Psychol.* 70, 428–439. doi: 10.1002/jclp.22087
- Berney, S., de Roten, Y., Beretta, V., Kramer, U., Despland, J.-N., Constantinides, P., et al. (2010). *Psychotic Defense Mechanisms Rating Scale Lausanne-Montreal [Unpublished Manuscript]*. London: University Institute for Psychotherapy.
- Berney, S., de Roten, Y., Soderström, D., and Despland, J.-N. (2009). L'étude des mécanismes de défenses psychotiques: un outil pour la recherche en psychothérapie. *Psychothérapies* 29, 133–144. doi: 10.3917/psys.093.0133
- Bloch, A. L., Shear, M. K., Markowitz, J. C., Leon, A. C., and Perry, J. C. (1993). An empirical study of defense mechanisms in dysthymia. *Am. J. Psychiatry* 150, 1194–1198. doi: 10.1176/ajp.150.8.1194
- Bond, M., and Perry, J. C. (2004). Long-term changes in defense styles with psychodynamic psychotherapy for depressive, anxiety and personality disorders. *Am. J. Psychother.* 161, 1665–1671. doi: 10.1176/appi.ajp.161.9.1665
- Busch, F., Rudden, M., and Shapiro, T. (2004). *Psychodynamic Treatment of Depression*. Washington, DC: American Psychiatric Publishing.
- Calati, R., Oasi, O., De Ronchi, D., and Serretti, A. (2010). The use of the defence style questionnaire in major depressive and panic disorders: a comprehensive meta-analysis. *Psychol. Psychother. Theory Res. Pract.* 83, 1–13. doi: 10.1348/147608309X464206
- Corruble, E., Legrand, J. M., Duret, C., Charles, G., and Guelfi, J. D. (1999). IDS-C and IDS-sr: psychometric properties in depressed inpatients. *J. Affect. Disord.* 56, 95–101. doi: 10.1016/S0165-0327(99)00055-5
- Cramer, P. (1998). Defensiveness and defense mechanisms. *J. Pers.* 66, 879–894. doi: 10.1111/1467-6494.00035
- Davidson, J., Turnbull, C. D., Strickland, R., Miller, R., and Graves, K. (1986). The Montgomery-Åsberg depression scale: reliability and validity. *Acta Psychiatr. Scand.* 73, 544–548. doi: 10.1111/j.1600-0447.1986.tb02723.x
- de Roten, Y., Ambresin, G., Herrera, F., Ortega, D., Preisig, M., and Despland, J.-N. (2017). Efficacy of an adjunctive brief psychodynamic psychotherapy to usual inpatient treatment of depression: results of a randomized controlled trial. *J. Affect. Disord.* 209, 105–113. doi: 10.1016/j.jad.2016.11.013
- de Roten, Y., and Crettaz von Roten, F. (2018). Comment lire les résultats de recherche en psychothérapie : petit guide de survie [How to read psychotherapy research results: a brief survival guide]. *Rev. Francophone Clin. Comportementale Cogn.* 23, 10–22.
- DeFife, J. A., and Hilsenroth, M. J. (2005). Clinical utility of the Defensive Functioning Scale in the assessment of depression. *J. Nerv. Ment. Dis.* 193, 176–182. doi: 10.1097/01.nmd.0000154839.43440.35
- Despland, J.-N., Michel, L., and de Roten, Y. (2010). *Intervention Psychodynamique Brève [Brief Psychodynamic Intervention]*. Amsterdam: Elsevier-Masson.
- Drapeau, M., de Roten, Y., Perry, J. C., and Despland, J.-N. (2003). A study of stability and change in defense mechanisms during a brief psychodynamic investigation. *J. Nerv. Ment. Dis.* 191, 496–502. doi: 10.1097/01.nmd.0000082210.76762.ec
- Freud, S. (1917). Mourning and melancholia. *Stand. Ed. Complete Psychol. Works Sigmund Freud* 16, 237–258.
- Hoglund, P., and Perry, J. C. (1998). Defensive functioning predicts improvement in major depressive episodes. *J. Nerv. Ment. Dis.* 186, 238–243. doi: 10.1097/00005053-199804000-00006
- Johansen, P. O., Krebs, T. S., Svartberg, M., Stiles, T. C., and Holen, A. (2011). Change in defense mechanisms during short-term dynamic and cognitive therapy in patients with cluster C personality disorders. *J. Nerv. Ment. Dis.* 199, 712–715. doi: 10.1097/NMD.0b013e318292d6a7
- Kneepkens, R. G., and Oakley, L. D. (1996). Rapid improvement in the defense style of depressed woman and men. *J. Nerv. Ment. Dis.* 184, 358–361.
- Kramer, U. (2010). Defense and coping in bipolar affective disorder: stability and change of adaptational processes. *Br. J. Clin. Psychol.* 49, 291–306. doi: 10.1348/014466509X457397
- Kramer, U., de Roten, Y., Perry, J. C., and Despland, J.-N. (2013). Change in defense mechanisms and coping patterns during the course of 2-year-long psychotherapy and psychoanalysis for recurrent depression: a pilot study of a randomized controlled trial. *J. Nerv. Ment. Dis.* 201, 614–620. doi: 10.1097/NMD.0b013e3182928292
- Leuzinger-Bohleber, M., Kaufhold, J., Kallenbach, L., Negele, A., Ernst, M., Keller, W., et al. (2019). How to measure sustained psychic transformations in long-term treatments of chronically depressed patients: symptomatic and structural changes in the LAC Depression Study of the outcome of cognitive-behavioural and psychoanalytic long-term treatments. *Int. J. Psychoanal.* 100, 99–127. doi: 10.1080/00207578.2018.1533377
- Margo, G. M., Greenberg, R. P., Fisher, S., and Dewan, M. (1993). A direct comparison of the defense mechanisms of nondepressed people and depressed psychiatric inpatients. *Compr. Psychiatry* 34, 65–69. doi: 10.1016/0010-440X(93)90038-6
- Mergenthaler, E., and Stigler, M. (1997). Règles de transcription pour la recherche en psychothérapie [Transcribing rules for psychotherapy research]. *Psychothérapies* 17, 97–103.
- Montgomery, S. A., and Åsberg, M. (1979). A new depression scale designed to be sensitive to change. *Br. J. Psychiatry* 134, 382–389. doi: 10.1192/bjp.134.4.382
- Morris, S. B., and DeShon, R. P. (2002). Combining effect size estimates in meta-analysis with repeated measures and independent-groups designs. *Psychol. Methods* 7, 105–125. doi: 10.1037/1082-989x.7.1.105
- Perry, J. C. (2001). A pilot study of defenses in adults with personality disorder. *J. Nerv. Ment. Dis.* 189, 651–660. doi: 10.1097/00005053-200110000-00001
- Perry, J. C., Banon, E., and Bond, M. (2020). Change in defense mechanisms and depression in a pilot study of antidepressive medication plus 20 sessions of psychotherapy for recurrent major depression. *J. Nerv. Ment. Dis.* 208, 261–268. doi: 10.1097/NMD.0000000000001112
- Perry, J. C., and Bond, M. (2009). The sequence of recovery in long-term dynamic psychotherapy. *J. Nerv. Ment. Dis.* 197, 930–937. doi: 10.1097/NMD.0b013e3181c29a0f
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-year outcome. *Am. J. Psychiatry* 169, 916–925. doi: 10.1176/appi.ajp.2012.11091403
- Perry, J. C., and Bond, M. (2017). Addressing defenses in psychotherapy to improve adaptation. *Psychoanal. Inq.* 37, 153–166. doi: 10.1080/07351690.2017.1285185
- Perry, J. C., Guelfi, J.-D., Despland, J.-N., and Hanin, B. (2004). *Echelles D'évaluation Des Mécanismes De Défense [Defense Mechanisms Rating Scales]*. Paris: Masson.



- Riedel, M., Moller, H. J., Obermeier, M., Schennach-Wolff, R., Bauer, M., Adli, M., et al. (2010). Response and remission criteria in major depression—a validation of current practice. *J. Psychiatr. Res.* 44, 1063–1068. doi: 10.1016/j.jpsychires.2010.03.006
- Rush, A. J., Bernstein, I. H., Trivedi, M. H., Carmody, T. J., Wisniewski, S., Mundt, J. C., et al. (2006). An evaluation of the quick inventory of depressive symptomatology and the hamilton rating scale for depression: a sequenced treatment alternatives to relieve depression trial report. *Biol. Psychiatry* 59, 493–501. doi: 10.1016/j.biopsych.2005.08.022
- Vaillant, G. E. (1986). *Empirical Studies of Ego Mechanisms of Defense*. Washington, DC: American Psychiatric Press.

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2021 de Roten, Djillali, Crettaz von Roten, Despland and Ambresin. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Alexithymia, Emotional Distress, and Perceived Quality of Life in Patients With Hashimoto's Thyroiditis

**Gabriella Martino<sup>1\*</sup>, Andrea Caputo<sup>2</sup>, Carmelo M. Vicario<sup>3</sup>, Ulla Feldt-Rasmussen<sup>4,5</sup>, Torquil Watt<sup>4,5</sup>, Maria C. Quattropani<sup>1</sup>, Salvatore Benvenga<sup>1,6,7</sup> and Roberto Vita<sup>1</sup>**

<sup>1</sup> Department of Clinical and Experimental Medicine, University of Messina, Messina, Italy, <sup>2</sup> Department of Dynamic and Clinical Psychology, and Health Studies, Sapienza University of Rome, Rome, Italy, <sup>3</sup> Department of Cognitive Sciences, Psychological, Pedagogical and Cultural Studies, University of Messina, Messina, Italy, <sup>4</sup> Department of Medical Endocrinology, Rigshospitalet, Copenhagen University Hospital, Copenhagen, Denmark, <sup>5</sup> Department of Clinical Medicine, Faculty of Health and Clinical Sciences, University of Copenhagen, Copenhagen, Denmark, <sup>6</sup> Master Program on Childhood, Adolescent and Women's Endocrine Health, University of Messina, Messina, Italy, <sup>7</sup> Interdepartmental Program of Molecular and Clinical Endocrinology and Women's Endocrine Health, University Hospital, AOU Policlinico "G. Martino," Messina, Italy

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

Rebecca Ciacchini,  
University of Pisa, Italy  
Daniela Marchetti,  
University of Studies G. d'Annunzio  
Chieti and Pescara, Italy

### \*Correspondence:

Gabriella Martino  
martinog@unime.it

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 12 February 2021

**Accepted:** 23 March 2021

**Published:** 11 May 2021

### Citation:

Martino G, Caputo A, Vicario CM,  
Feldt-Rasmussen U, Watt T,  
Quattropani MC, Benvenga S and  
Vita R (2021) Alexithymia, Emotional  
Distress, and Perceived Quality of Life  
in Patients With Hashimoto's  
Thyroiditis.  
Front. Psychol. 12:667237.  
doi: 10.3389/fpsyg.2021.667237

Emotion-processing impairment represents a risk factor for the development of somatic illness, affecting negatively both health-related quality of life (HRQoL) and disease management in several chronic diseases. The present pilot study aims at (i) investigating the associations between alexithymia and depression, anxiety, and HRQoL in patients with Hashimoto's thyroiditis (HT); (ii) examining the association between these three psychological conditions together with HRQoL, and thyroid autoantibodies status as well as thyroid echotexture in patients with HT; and (iii) comparing the intensity of all these clinical psychological features in patients with HT versus controls. Twenty-one patients with serologically or ultrasonographically verified HT and 16 controls with non-toxic goiter or postsurgical hypothyroidism were recruited for this study. Serum thyrotropin (TSH) and free thyroxine, as well as thyroid autoantibodies (thyroglobulin antibodies and thyroid peroxidase antibodies), were assayed. Alexithymia, depression, anxiety, and HRQoL were assessed with Toronto Alexithymia Scale; Beck Depression Inventory, second edition; Hamilton Anxiety Rating Scale; and Health Survey Short-Form 36, respectively. A negative relationship between the difficulty to describe feelings and the cognitive component of depression was found ( $r = -0.46$ ,  $p = 0.04$ ). Besides, patients with seronegative HT had lower somatic anxiety than patients with HT who tested positive ( $r = -0.68$ ,  $p = 0.01$  and  $r = -0.59$ ,  $p = 0.04$ , respectively). Besides, no statistically significant difference was found between patients with HT and controls with regard to somatic anxiety. The present study suggests the relevance of alexithymia in patients suffering from HT, which may be intertwined with a possible state of underreported depression that is mainly expressed through physical complaints. Promoting the capability to describe and communicate feelings could contribute to psychological elaboration and coping with the disease and, consequently, to the improvement of self-management and perceived HRQoL.

**Keywords:** alexithymia (TAS-20), clinical psychology and health, depression, anxiety, quality of life, HR-QoL, Hashimoto's thyroiditis, emotional distress

## INTRODUCTION

Increasing interest exists regarding the crucial role of psychological factors predicting somatic diseases and influencing the management of chronic illness (Caputo, 2014; Van Houtum et al., 2015; Catalano et al., 2017, 2018, 2019, 2020; Martino et al., 2018a,b, 2020c,d; Conversano, 2019; Kelly et al., 2019; Merlo, 2019; Lenzo et al., 2020; Conversano and Di Giuseppe, 2021). Indeed, chronic disorders pose relevant challenges to patients with specific regard to compliance and adherence, such as entrusting care relationships, taking medications properly, adjusting to new limitations, and changing lifestyle (Castelnuovo et al., 2015; Tomai et al., 2018; Rosa et al., 2019; Aimé et al., 2020; Gugliandolo et al., 2020). This overall requires a better handling of the psychosocial impact of chronic diseases and a paradigm shift in healthcare provision (Caputo, 2015; Van Houtum et al., 2015; Cicero et al., 2017; Conversano et al., 2020; Martino et al., 2020d). Moreover, depression and anxiety are commonly considered two main psychological consequences of chronic disorders, their progression being favored by worsened mental health and perceived health-related quality of life (HRQoL) (Carr-Hill, 1992; Patron et al., 2017; Martino et al., 2019b; Quattropiani et al., 2019; Vita et al., 2020) and thus requiring specific clinical psychological treatments (Tomaro et al., 2017; Gangemi et al., 2018; Vicario et al., 2019). Failures in emotion regulation, such as high use of maladaptive defense mechanisms, may in turn contribute to enhance feelings of powerlessness and distress negatively affecting self-care behaviors (Settineri et al., 2019).

In this regard, the conceptual construct of alexithymia—defined as the inability to identify and describe feelings, accompanied by an externally oriented thinking—is of primary importance (Taylor et al., 1999), because an emotion-processing impairment is acknowledged to be a risk factor for the development of somatic diseases, especially in persons affected by physical symptoms of unknown origin (Lumley et al., 1996, 2007; Willemsen et al., 2008; Castelli et al., 2012; Mazaheri et al., 2012; Craparo et al., 2016; Torrado et al., 2018; Marchi et al., 2019; Martino et al., 2020b,c; Prout et al., 2020). The relevance of alexithymia is also supported by the scientific research about the defensive patterns that may emerge in recognizing and elaborating on their illness when patients are not in tune with their affective experience (Di Giuseppe et al., 2014, 2019; Perry et al., 2015; Tesio et al., 2018; Martino et al., 2020a). Also, negative emotional experiences in patients with metabolic syndrome and cardiovascular risk factors have been demonstrated (Bell et al., 2007; Goldbacher and Matthews, 2007).

Among the most frequent endocrinologic pathologies, it is known that hypothyroidism, which is characterized by failure of the thyroid to produce adequate amounts of thyroid hormones, affects approximately 5% of the adult population (Cooper and Biondi, 2012). Hypothyroidism is associated with psychopathological disturbances, such as depression, anxiety, and even poor HRQoL (Crisanti et al., 2001; Cooper and Biondi, 2012; Vita et al., 2013; Winther et al., 2016). Furthermore, patients with hypothyroidism still report residual complaints after replacement treatment with levothyroxine and restoration

of euthyroidism. These residual symptoms, including rapid mood changes, depression (fatigue, tearfulness, disturbed sleep, and loss of appetite), and anxiety (concentration problems, mental alertness, and irritability) (Bauer et al., 2001; Grabe et al., 2005; Bell et al., 2007; Samuels, 2008; Bathla et al., 2016; Rieben et al., 2016), may overlap with typical symptoms of psychosomatic disorders (Moncayo and Moncayo, 2014). As a result, HRQoL can be further reduced (Nexo et al., 2014; Boesen et al., 2018a,b). The relevance of these psychological residual symptoms has been highlighted also in patients with Hashimoto's thyroiditis (HT) (Watt et al., 2012; Moncayo and Moncayo, 2014; Montagna et al., 2016), which is the most common autoimmune thyroid disease and the most common cause of thyroid failure, with hypothyroidism occurring in approximately half of patients with HT (Benvenega and Trimarchi, 2008). Indeed, a high prevalence of psychopathological disorders has been demonstrated in patients with HT (Broniarczyk-Czarniak, 2017), suggesting the importance of personality features and coping strategies of such patients, who could benefit from clinical psychological counseling and support (Yıldız et al., 2017).

To the best of our knowledge, only three studies focused on the relationship between alexithymia and thyroid diseases, one of them including women in the postpartum setting (Le Donne et al., 2012) and two studies including patients with autoimmune thyroid diseases (Ivanova and Gorobets, 2011; Hasegawa et al., 2019). Particularly, Ivanova and Gorobets (2011) concluded that alexithymia is both a risk factor for HT development and a predictor of HT course.

The present cross-sectional, pilot study aims at (i) investigating the associations between alexithymia and depression, anxiety, and HRQoL in patients with HT; (ii) examining the association between these three psychological conditions and HRQoL, and both thyroid autoantibodies status and thyroid echotexture in patients with HT; and (iii) comparing the intensity of such psychological conditions and HRQoL scores in patients with HT versus controls.

## MATERIALS AND METHODS

### Participants

Hashimoto's thyroiditis patients and controls were consecutively enrolled from December 2019 through March 2020 at the Department of Clinical and Experimental Medicine of the University Hospital "G. Martino" of Messina, Italy. HT patients had serological and/or ultrasonographic evidence of autoimmune thyroiditis, the first consisting of positivity for one or both thyroid autoantibodies [thyroglobulin antibodies (TgAb) and thyroid peroxidase antibodies (TPOAb)], whereas the second consisted of ultrasonographic evidence of hypoechoic and inhomogeneous echotexture of the thyroid. All patients with HT were on replacement therapy with levothyroxine. Patients with nodular goiter or with levothyroxine-replaced postsurgical hypothyroidism were enrolled as controls. All patients with nodular goiter were euthyroid (i.e., they took neither levothyroxine nor antithyroid drugs), tested negative for both TgAb and TPOAb, and had normal thyroid

echogenicity at ultrasound, whereas all patients who had been thyroidectomized were necessarily on levothyroxine. Patients who were thyroidectomized for thyroid nodules, whose serum TgAb and TPOAb were both negative prior to surgery, and whose thyroid histology demonstrated benignity of the nodule and histological absence of lymphocytic thyroiditis were eligible as controls. Exclusion criteria for both HT patients and controls were age <18 years; neuropsychiatric disturbances according to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5)* diagnostic criteria (American Psychiatric Association, 2013); and serum thyrotropin (TSH)  $\leq 0.4$  or  $\geq 4.0$  mU/L. In this regard, controls with nodular goiter and with serum TSH between 0.4 and 1 mU/L or underwent a  $^{99m}\text{Tc}$  pertechnetate scan were excluded if hyperfunctioning nodules were confirmed (Haugen et al., 2016). Finally, based on the mentioned exclusion criteria, only 21 patients with HT and 16 age-matched controls were eligible and entered the study. Both HT patients and controls underwent blood sampling a few days prior to the visit to detect serum parameters and clinical psychological evaluation at the visit performed by a researcher in clinical psychology.

## Clinical Data and Biochemical Variables

Blood was drawn in the morning (8–9 AM) after an overnight fasting a few days prior to the visit. Serum TSH, thyroxine (FT4), and thyroid autoantibodies were assayed by an immunometric method in patients with HT and controls and evaluated by a physician. Demographics (gender, age, and education level) and body mass index (BMI) were collected during the visit.

## Psychological Assessment

Psychological assessment was conducted by a researcher in clinical psychology, in a confidential setting, performing a gold-standard clinical psychological interview and a psychodiagnostic examination (Rafanelli et al., 2003; Fava et al., 2012), through the Structured Clinical Interview for *DSM-5*—Research Version (SCID-5, Research Version) (First et al., 2015).

The Italian version of the Toronto Alexithymia Scale (TAS-20) (Bressi et al., 1996) was used to measure alexithymic traits. TAS-20 is a self-administered questionnaire comprising 20 items scored on a five-point Likert scale, with a total score  $\geq 61$ , 60–52, or  $\leq 52$  indicating frank alexithymia, possible alexithymia, or normality, respectively. TAS-20 consists of three subscales addressing three main features of alexithymia (Taylor, 2000; Taylor et al., 2003): (i) the difficulty identifying feelings (DIF) subscale, which measures the difficulty in distinguishing between specific emotions and/or bodily sensations related to emotional arousal and contains seven items; (ii) the difficulty describing feelings (DDF) subscale, which indicates the inability to verbalize perceived emotions and contains five items; (iii) the externally oriented thinking (EOT) subscale, which suggests the tendency to focus attention externally instead of considering interior emotional experience and contains eight items. In the present study, the reliability (Cronbach's  $\alpha$ ) was 0.75 for the total score, and 0.69, 0.72, and 0.66 for DIF, DDF, and EOT subscales, respectively (Taylor, 2000; Taylor et al., 2003).

The Beck Depression Inventory, second edition (BDI-II), was administered to measure depressive symptoms. It consists of 21 items scored on a four-point Likert scale from 0 (not present) to 3 (severe) (Beck et al., 1996; Ghisi et al., 2006), allowing the detection of somatic–affective depressive symptoms (e.g., agitation, loss of interest, and loss of energy) and cognitive depressive symptoms (e.g., pessimism, guilty feelings, and self-dislike). Total scores of 0–13, 14–19, 20–28, and 29–63 indicate minimal, mild, moderate, and severe depression, respectively. In the present study, the reliability (Cronbach's  $\alpha$ ) of the measure was 0.77 for the total score, and 0.69 and 0.70 for the somatic–affective and the cognitive components, respectively (Beck et al., 1996; Ghisi et al., 2006).

The Hamilton Anxiety Rating Scale (HAM-A) was employed to measure anxiety symptoms. It consists of 14 items scored on a five-point Likert scale from 0 (not present) to 4 (severe) (Hamilton, 1959), allowing the detection of psychological symptoms (e.g., anxious and depressed mood, fears, and tension) and somatic symptoms (e.g., cardiovascular, respiratory, or gastrointestinal symptoms). Total scores of 0–13, 14–17, 18–24, and 25–30 indicate minimal, mild, moderate, and severe anxiety, respectively. In the present study, the reliability (Cronbach's  $\alpha$ ) of the measure was 0.69 for the total score, and 0.66 and 0.61 for the psychic and the somatic components, respectively (Hamilton, 1959).

The Italian version of the Health Survey Short-Form 36 (SF-36) (Ware and Sherbourne, 1992; Apolone and Mosconi, 1998) was used to measure patients' perceived HRQoL. SF-36 is a self-report questionnaire comprising eight domains (perceived mental health, emotional role, social functioning, vitality, general health, bodily pain, physical role, and physical functioning). SF-36 total scores range from 0 to 100 points; the lower the scores, the poorer the perceived HRQoL (score of 0 = maximum disability, score of 100 = no disability). SF-36 evaluates patients' health status by two synthetic indexes, the physical component summary (PCS) and the mental component summary (MCS), which reflect physical and mental well-being, respectively (Ware and Sherbourne, 1992; Apolone and Mosconi, 1998). PCS and MCS values are generally expressed in *t* scores with a general population mean of 50 and a standard deviation (SD) of 10, with highest values indicating better perceived HRQoL. In the present study, the reliability (Cronbach's  $\alpha$ ) of the measure was 0.71 and 0.79 for PCS and MCS, respectively (Ware and Sherbourne, 1992; Apolone and Mosconi, 1998).

## Statistical Analysis

Statistical analysis was performed using IBM SPSS, version 25, for Windows. Thyroid autoantibodies and thyroid echotexture were treated as dichotomic variables (positive/negative or altered/normal, respectively). Categorical variables were analyzed by the  $\chi^2$  test or the Fisher exact test, as appropriate. The independent-samples Mann–Whitney *U* test was conducted to compare patients with HT versus controls. Spearman  $\rho$  was run to examine the correlations between TAS-20 scores and BDI-II, HAM-A, SF-36 PCS, and SF-36 MCS scores, and between these scores and thyroid autoantibodies status and thyroid echotexture in patients with HT. As the multiple comparisons that we run



could inflate type I error (false positives), we further considered the effect size [and relative confidence intervals (CIs)] of the observed relationships, using the following cutoffs:  $r$  values of 0.1, 0.3, and 0.5 to test the strength of associations (Cohen, 1988). Finally,  $p < 0.05$  was considered significant, whereas  $p$ -values between 0.05 and 0.10 were considered borderline significant.

## Ethics Statement

The study was approved by the Ethical Committee of the University Hospital "G. Martino," Messina, Italy, protocol identifying number 80/19, 16/09/2019. This study complies with the 1964 Helsinki Declaration and its later amendments. All participants were adequately informed about the scientific purpose of the study and gave their informed written consent. All data were analyzed anonymously.

## RESULTS

### Clinical Data

Women outnumbered men both in HT patients and in controls with a greater preponderance in the first group [19/21 (90.5%) vs. 10/16 (62.5%),  $p = 0.055$ ]. Age and BMI were similar in the two groups ( $57.6 \pm 13.9$  vs.  $58.8 \pm 10.4$  years,  $p = 0.862$ ; and  $27.2 \pm 5.7$  vs.  $26.7 \pm 4.7$  kg/m<sup>2</sup>,  $p = 0.946$ ). Finally, most of participants had secondary or higher education level, with no difference between HT patients and controls [16/21 (76.2%) vs. 13/16 (81.2%),  $p = 0.898$ ].

### Biochemical Variables

Serum TSH and FT4 levels did not differ between patients with HT and controls ( $1.7 \pm 1.0$  vs.  $1.5 \pm 0.8$  mU/L,  $P = 0.70$ ; and  $15.4 \pm 3.9$  vs.  $15.4 \pm 3.9$  pmol/L,  $P = 0.96$ ). Of the 21 patients with HT, 14 (66.7%) were positive for both antibodies (TgAb and TPOAb), six patients (28.6%) were negative for both TgAb and TPOAb, and one patient (4.8%) for only TgAb. All the recruited

21 patients had the typical ultrasound features of HT, namely, a hypoechoic and inhomogeneous thyroid parenchyma, except for three patients who were positive for both antibodies.

## Psychological Assessment

Descriptive statistics of the psychological measures for all the 37 participants, as well as for HT and control groups, are shown in **Table 1**. Regarding alexithymia, 17 patients (46%) scored  $>60$  at TAS-20, thus being alexithymic; 16 patients (43.2%) scored 52–60, thus being possibly alexithymic; and four patients (10.8%) scored  $<52$ , thus being non-alexithymic. On average, alexithymia scores were comparable across HT and control groups. All 37 patients (both those with HT and controls) had mild depression (with an overall score between 13 and 19) according to the Italian norms for the BDI-II (**Table 1**; Ghisi et al., 2006). In contrast, overall anxiety levels were from moderate to severe, as the mean HAM-A score was  $>17$  for HT group and  $>24$  for controls (**Table 1**). Concerning HRQoL, compared to the Italian norm ( $50 \pm 10$ ) (Apolone and Mosconi, 1998), MCS ( $33.8 \pm 12.4$ ) and PCS ( $42.4 \pm 11.3$ ) scores were generally lower, with a mean difference greater than 1 SD in MCS.

TAS-20 did not correlate with the other scores in patients with HT, except for DDF, which correlated negatively and moderately with the cognitive component of BDI-II [ $r = -0.46$ ,  $p < 0.05$ , 95% CI (-0.03, -0.74)] (**Table 2**).

In patients with HT, thyroid autoantibodies status was associated with anxiety levels. Indeed, TgAb negativity correlated with lower somatic anxiety levels ( $U = 15.50$ ,  $p = 0.013$ ,  $r = -0.68$ ) (**Table 3**). As expected, TgAb-positive patients had higher scores of the somatic component of HAM-A compared with TgAb-negative patients (median = 12.5 vs. 7). A negative relationship was also found between TPOAb positivity and somatic anxiety levels ( $U = 18.50$ ,  $p = 0.042$ ,  $r = -0.59$ ) (**Table 4**), with TPOAb-positive patients having higher somatic HAM-A score than their negative counterparts (median = 12.0 vs. 8.0). Finally, the typical

**TABLE 1 |** Descriptive statistics (scores) of the psychological measures studied ( $N = 37$ ).

Measure	HT group ( $n = 21$ )		Control group ( $n = 16$ )		Overall ( $N = 37$ )	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
TAS-20	59.58	10.33	59.88	6.74	59.70	8.85
TAS-20 (DIF)	17.14	6.18	16.31	5.45	16.78	5.81
TAS-20 (DDF)	14.67	4.82	16.13	4.22	15.30	4.57
TAS-20 (EOT)	27.76	3.45	27.44	3.12	27.62	3.27
BDI-II (total)	17.95	7.54	19.56	9.32	18.65	8.27
BDI-II (somatic-affective)	12.95	5.30	13.69	6.16	13.27	5.62
BDI-II (cognitive)	5.00	3.70	5.87	4.33	5.38	3.95
HAM-A (total)	23.90	7.47	25.00	6.40	24.38	6.95
HAM-A (psychic)	12.43	4.64	13.19	4.04	12.76	4.35
HAM-A (somatic)	11.48	4.30	11.81	3.47	11.62	3.91
PCS	42.90	12.48	41.69	9.78	42.38	11.26
MCS	32.81	12.97	35.06	11.97	33.78	12.43

TAS-20, Toronto Alexithymia Scale 20-item version; DIF, difficulty identifying feelings; DDF, difficulty describing feelings; EOT, externally oriented thinking; BDI-II, Beck Depression Inventory II version; HAM-A, Hamilton Anxiety Rating Scale; PCS, physical component summary; MCS, mental component summary.

**TABLE 2 |** Correlations between alexithymia and depression, anxiety, and perceived health-related QoL measures in patients with HT ( $n = 21$ ).

		TAS-20	TAS-20 (DIF)	TAS-20 (DDF)	TAS-20 (EOT)
BDI-II (total)	Spearman $\rho$	-0.16	0.22	-0.29	-0.13
	$p$ -value	0.480	0.334	0.203	0.567
BDI-II (somatic-affective)	Spearman $\rho$	-0.10	0.18	-0.07	-0.19
	$p$ -value	0.656	0.434	0.768	0.409
BDI-II (cognitive)	Spearman $\rho$	-0.16	0.18	-0.46	0.04
	$p$ -value	0.499	0.440	<b>0.037</b>	0.875
HAM-A (total)	Spearman $\rho$	0.08	0.15	0.05	0.07
	$p$ -value	0.728	0.514	0.812	0.762
HAM-A (psychic)	Spearman $\rho$	0.12	0.23	0.07	0.18
	$p$ -value	0.595	0.323	0.777	0.433
HAM-A (somatic)	Spearman $\rho$	-0.10	-0.06	-0.03	-0.13
	$p$ -value	0.660	0.793	0.887	0.584
PCS	Spearman $\rho$	-0.23	-0.03	-0.35	0.03
	$p$ -value	0.313	0.911	0.119	0.892
MCS	Spearman $\rho$	0.07	-0.28	0.29	0.25
	$p$ -value	0.756	0.221	0.203	0.272

TAS-20, Toronto Alexithymia Scale 20-item version; DIF, difficulty identifying feelings; DDF, difficulty describing feelings; EOT, externally oriented thinking; BDI-II, Beck Depression Inventory II version; HAM-A, Hamilton Anxiety Rating Scale; PCS, physical component summary; MCS, mental component summary. Statistically significant  $p$ -values ( $p < 0.05$  minimum) are indicated by the boldface print.

thyroid echotexture of HT was not associated with any of the psychometric tests (Table 5).

No significant difference was found in scores obtained from the psychodiagnostic evaluation between patients with HT and controls (Table 6).

## DISCUSSION

Although autoimmune thyroid diseases are considered risk factors for both depression and anxiety (Bauer et al., 2001; Grabe et al., 2005; Bell et al., 2007; Samuels, 2008; Bathla et al., 2016;

**TABLE 3 |** Associations between TgAb and psychological measures in patients with HT ( $n = 21$ ).

			95% CI for rank-biserial correlation		
	$U$	$p$	Rank-biserial correlation	Lower	Upper
TAS-20	59.50	0.455	0.21	-0.31	0.64
TAS-20 (DIF)	56.00	0.626	0.14	-0.37	0.59
TAS-20 (DDF)	58.50	0.500	0.19	-0.33	0.62
TAS-20 (EOT)	48.00	0.970	-0.02	-0.50	0.47
BDI-II (total)	53.00	0.794	0.08	-0.42	0.55
BDI-II (somatic-affective)	46.50	0.880	-0.05	-0.53	0.45
BDI-II (cognitive)	53.00	0.792	0.08	-0.42	0.55
HAM-A (total)	29.00	0.144	-0.41	-0.75	0.10
HAM-A (psychic)	42.50	0.653	-0.13	-0.58	0.38
HAM-A (somatic)	15.50	<b>0.013</b>	-0.68	-0.88	-0.29
PCS	56.00	0.627	0.14	-0.37	0.59
MCS	49.00	1.000	0.00	-0.49	0.49

TAS-20, Toronto Alexithymia Scale 20-item version; DIF, difficulty identifying feelings; DDF, difficulty describing feelings; EOT, externally oriented thinking; BDI-II, Beck Depression Inventory II version; HAM-A, Hamilton Anxiety Rating Scale; PCS, physical component summary; MCS, mental component summary. Rank-biserial correlation indicates the difference between TgAb negativity and positivity. Statistically significant  $p$ -values ( $p < 0.05$  minimum) are indicated by the boldface print.

**TABLE 4 |** Associations between TPOAb and psychological measures in patients with HT ( $n = 21$ ).

				95% CI for rank-biserial correlation	
	<i>U</i>	<i>p</i>	Rank-biserial correlation	Lower	Upper
TAS-20	63.5	0.160	0.41	−0.12	0.76
TAS-20 (DIF)	58.00	0.329	0.29	−0.26	0.69
TAS-20 (DDF)	64.00	0.148	0.42	−0.11	0.77
TAS-20 (EOT)	37.00	0.555	−0.18	−0.63	0.36
BDI-II (total)	40.50	0.755	−0.10	−0.58	0.43
BDI-II (somatic–affective)	37.00	0.556	−0.18	−0.63	0.36
BDI-II (cognitive)	41.00	0.783	−0.09	−0.57	0.44
HAM-A (total)	32.50	0.348	−0.28	−0.69	0.27
HAM-A (psychic)	45.50	1.000	0.01	−0.50	0.52
HAM-A (somatic)	18.50	<b>0.042</b>	−0.59	−0.84	−0.12
PCS	47.00	0.907	0.04	−0.47	0.54
MCS	48.00	0.845	0.07	−0.46	0.56

TAS-20, Toronto Alexithymia Scale 20-item version; DIF, difficulty identifying feelings; DDF, difficulty describing feelings; EOT, externally oriented thinking; BDI-II, Beck Depression Inventory II version; HAM-A, Hamilton Anxiety Rating Scale; PCS, physical component summary; MCS, mental component summary. Rank-biserial correlation indicates the difference between TPOAb negativity and positivity. Statistically significant  $p$ -values ( $p < 0.05$  minimum) are indicated by the boldface print.

**TABLE 5 |** Associations between the echotexture of the thyroid and psychological measures in patients with HT ( $n = 21$ ).

	<i>U</i>	<i>p</i>	Rank-biserial correlation	95% CI for rank-biserial correlation	
				Lower	Upper
TAS-20	25.50	0.920	−0.06	−0.65	0.58
TAS-20 (DIF)	13.50	0.190	−0.50	−0.85	0.17
TAS-20 (DDF)	32.00	0.650	0.18	−0.49	0.72
TAS-20 (EOT)	40.00	0.204	0.48	−0.19	0.85
BDI-II (total)	9.50	0.087	−0.65	−0.90	−0.05
BDI-II (somatic-affective)	12.50	0.156	−0.54	−0.87	0.12
BDI-II (cognitive)	8.50	0.068	−0.68	−0.92	−0.12
HAM-A (total)	33.00	0.579	0.22	−0.46	0.74
HAM-A (psychic)	23.00	0.724	−0.15	−0.70	0.52
HAM-A (somatic)	44.00	0.096	0.63	0.02	0.90
PCS	25.50	0.920	−0.06	−0.65	0.58
MCS	39.50	0.227	0.46	−0.22	0.84

TAS-20, Toronto Alexithymia Scale 20-item version; DIF, difficulty identifying feelings; DDF, difficulty describing feelings; EOT, externally oriented thinking; BDI-II, Beck Depression Inventory II version; HAM-A, Hamilton Anxiety Rating Scale; PCS, physical component summary; MCS, mental component summary. Rank-biserial correlation indicates the difference between normal and hypoechoic and inhomogeneous echotexture of the thyroid.

**TABLE 6 |** Differences between patients with HT and controls concerning the psychological measures ( $n = 37$ ).

	<i>U</i>	<i>p</i>	Rank-biserial correlation	95% CI for rank-biserial correlation	
				Lower	Upper
TAS-20	174.00	0.866	0.04	−0.33	0.39
TAS-20 (DIF)	153.50	0.667	−0.09	−0.44	0.29
TAS-20 (DDF)	202.00	0.303	0.20	−0.17	0.53
TAS-20 (EOT)	165.00	0.939	−0.02	−0.38	0.35
BDI-II (total)	182.00	0.679	0.08	−0.29	0.43
BDI-II (somatic-affective)	185.00	0.611	0.10	−0.27	0.45
BDI-II (cognitive)	184.00	0.633	0.09	−0.28	0.44
HAM-A (total)	183.00	0.656	0.09	−0.28	0.44
HAM-A (psychic)	184.00	0.634	0.09	−0.28	0.44
HAM-A (somatic)	185.50	0.601	0.10	−0.27	0.45
PCS	162.00	0.866	−0.04	−0.39	0.33
MCS	185.00	0.612	0.10	−0.27	0.45

TAS-20, Toronto Alexithymia Scale 20-item version; DIF, difficulty identifying feelings; DDF, difficulty describing feelings; EOT, externally oriented thinking; BDI-II, Beck Depression Inventory II version; HAM-A, Hamilton Anxiety Rating Scale; PCS, physical component summary; MCS, mental component summary.

Rieben et al., 2016), the relationship between autoimmune and non-autoimmune thyroid diseases and alexithymia has been poorly studied so far (Ivanova and Gorobets, 2011; Le Donne et al., 2012; Hasegawa et al., 2019).

In our study, we found an overall prevalence of frank or possible alexithymia in 89.2% of cases, supporting the hypothesis that patients with HT and controls (patients with thyroid diseases in general) may be affected by difficulty in identifying and describing feelings to a significant extent, thus focusing on external events rather than on inner experiences (Hasegawa et al., 2019). Mean BDI-II, HAM-A, and SF-36 scores revealed mild depression, severe anxiety, and lower mental HRQoL compared to the normative Italian samples. By and large, a significant degree of psychological suffering accompanied by the perception of lacking personal resources to face emotional challenges has emerged in patients with thyroid diseases (Bianchi et al., 2004; Dayan and Panicker, 2013). From such a perspective, the overwhelming emotions related to chronic disease may threaten/affect integration, thus becoming undifferentiated and unmodulated (Luminet et al., 2018). This hypothesis is supported by the negative association between the difficulty in describing feelings and depression, especially the cognitive component, found in HT patients. Therefore, the impaired emotional competence may have a role in elaborating on illness experience and managing thyroid diseases, as also found in previous studies about other chronic conditions, such as type 2 diabetes, inflammatory bowel diseases, and psoriasis (Porcelli et al., 1996;

Pollatos et al., 2011; Avci and Kelleci, 2016; Talamonti et al., 2016; Amiri and Behnezhad, 2019; Martino et al., 2019a,c). However, the negative association between the difficulty in describing feelings and depression seems apparently counterintuitive as previous research has demonstrated that higher alexithymia makes patients more vulnerable to experience depression (Hemming et al., 2019). Indeed, as shown in the current study, the less patients with HT are able to express their emotions, the less they experience cognitive depressive symptoms. This association may suggest a possible underreporting of depression (which is mainly expressed through physical complaints) in patients with HT, who could live with unrecognized feelings of pessimism, guilt, or self-dislike, as their levels of depression could be emotionally denied. From a psychodynamic perspective, their difficulty in emotion recognition and processing may be a defensive response aimed at preventing painful experiences of grief and loss, with consequent impaired psychological mourning elaboration (Caputo, 2013, 2019; Shahar and Lerman, 2013; Marchini et al., 2018). Indeed, poor symbolic and emotional capacity has been found to positively correlate with maladaptive and less mature defense mechanisms, which could suppress negative emotions as an unconscious ego's function to protect the self (Marchini et al., 2020).

Another interesting finding was the positive correlation between somatic anxiety and thyroid autoantibodies status in patients with HT, assessed through TgAb and TPOAb levels that provide serological evidence of autoimmune thyroiditis.

This appears in line with a previous study showing that thyroid autoimmunity may be a high risk factor for anxiety disorders, as psychopathological disturbances and the autoimmune reaction are hypothesized to be rooted in the same aberrancy in the immunoendocrine system (Carta et al., 2004). From a psychosomatic perspective, residual symptoms despite replacement therapy with levothyroxine in patients with HT might result from somatization in response to physical and psychological stressors (Mizokami et al., 2004; Moncayo and Moncayo, 2014). Indeed, stress is considered as one of the environmental factors potentially affecting immune system directly and indirectly through the nervous and endocrine systems, respectively. Therefore, anxiety experienced at a somatic level can induce immune modulations, in turn contributing to trigger or worsen autoimmune disease, especially in genetically predisposed individuals (Mizokami et al., 2004; Moncayo and Moncayo, 2014).

Finally, no significant difference was found between patients with HT and controls in all the assessed psychological factors (alexithymia, depression, anxiety, and HRQoL). In this regard, we should hypothesize that the small size of both groups may have prevented to reach statistical significance. Another limitation of the present pilot study is its cross-sectional design, which can limit generalizability of our findings. Consequently, no causal relationships can be inferred about the found association between the participants' psychological status and thyroid autoantibodies. Finally, the use of self-report measures could represent another limitation, despite the gold-standard clinical psychological interview, which conferred a specific objectivity to the performed surveys.

Future larger, longitudinal studies could provide more robust evidence, which is what we aim at performing in perspective research, considering also variables such as disease duration and thyroid-specific HRQoL questionnaires in order to provide more accurate disease-specific information (Watt et al., 2009, 2014, 2015; Wong et al., 2016, 2018). As well, further empirical investigation is needed linking the construct of alexithymia to the construct of defense mechanisms, given the salience of emotion regulation as underlying both such psychological factors, thus contributing to plan and deliver tailored interventions (Lingiardi et al., 2010) in the context of chronic diseases.

## REFERENCES

- Aimé, A., Fuller-Tyszkiewicz, M., Dion, J., Markey, C. H., Strodl, E., McCabe, M., et al. (2020). Assessing positive body image, body satisfaction, weight bias, and appearance comparison in emerging adults: a cross-validation study across eight countries. *Body Image* 35, 320–332. doi: 10.1016/j.bodyim.2020.09.014
- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)*. Washington, DC: American Psychiatric Pub.
- Amiri, S., and Behnezhad, S. (2019). Diabetes and anxiety symptoms: a systematic review and meta-analysis. *Intern. J. Psychiatry Med.* 1–14. doi: 10.1177/0091217419837407

## CONCLUSION

Our study shows that the majority of patients with thyroid diseases—including both those with HT and controls—are alexithymic or potentially alexithymic and that patients with HT may harbor a possible underreporting of depression. Hence, potential benefits may derive from clinical psychological interventions in these patients. Promoting the capability to describe and communicate feelings could contribute to psychological elaboration and coping with thyroid diseases and, consequently, to the improvement of self-management and perceived HRQoL.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The study was approved by the Ethical Committee of the University Hospital “G. Martino,” Messina, Italy, protocol identifying number 80/19, 16/09/2019. This study complies with the 1964 Helsinki Declaration and its later amendments. All participants were adequately informed about the scientific purpose of the study and gave their informed written consent. All data were analyzed anonymously.

## AUTHOR CONTRIBUTIONS

GM made significant contributions to the design of the research study, drafting of the manuscript, interpretation of the data, and revision of the manuscript. AC performed the statistical analysis, provided the interpretation of data, and gave significant contribution to the draft part of the manuscript. CV, UF-R, and TW provided substantial contribution in the drafting part of the manuscript and revised it critically. MQ and SB critically revised the manuscript. RV provided significant contribution in participants' recruitment, drafting part, and revision of the manuscript. All authors gave their final approval of the manuscript to be submitted.

- Apolone, G., and Mosconi, P. (1998). The Italian SF-36 Health Survey: translation, validation and norming. *J. Clin. Epidemiol.* 51, 1025–1036.
- Avcı, D., and Kelleci, M. (2016). Alexithymia in patients with type 2 diabetes mellitus: the role of anxiety, depression, and glycemic control. *Pat. Prefer. Adher.* 10, 1271–1277.
- Bathla, M., Singh, M., and Relan, P. (2016). Prevalence of anxiety and depressive symptoms among patients with hypothyroidism. *Indian J. Endocrinol. Metab.* 20, 468–474.
- Bauer, M., Pribe, S., Berghöfer, A., Bschor, T., Kiesslinger, U., and Whybrow, P. C. (2001). Subjective response to and tolerability of long-term supraphysiological doses of levothyroxine in refractory mood disorders. *J. Affect. Disord.* 64, 35–42. doi: 10.1016/S0165-0327(00)00215-9



- Beck, A. T., Steer, R. A., and Brown, G. K. (1996). *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation.
- Bell, R. J., Rivera-Woll, L., Davison, S. L., Topliss, D. J., Donath, S., and Davis, S. R. (2007). Well-being, health-related quality of life and cardiovascular disease risk profile in women with subclinical thyroid disease - a community-based study. *Clin. Endocrinol.* 66, 548–556. doi: 10.1111/j.1365-2265.2007.02771.x
- Benvenga, S., and Trimarchi, F. (2008). Changed presentation of Hashimoto's thyroiditis in North-Eastern Sicily and Calabria (Southern Italy) based on a 31-year experience. *Thyroid* 18, 429–441. doi: 10.1089/thy.2007.0234
- Bianchi, G. P., Zaccheroni, V., Solaroli, E., Vescini, F., Cerutti, R., Zoli, M., et al. (2004). Health-related quality of life in patients with thyroid disorders. *Q. Life Res.* 13, 45–54. doi: 10.1023/B:QURE.0000015315.35184.66
- Boesen, V. B., Feldt-Rasmussen, U., Bjorner, J. B., Cramon, P., Groenvold, M., Nygaard, B., et al. (2018a). How should thyroid-related quality of life be assessed? Recalled patient-reported outcomes compared to here-and-now measures. *Thyroid* 28, 1561–1570. doi: 10.1089/thy.2018.0210
- Boesen, V. B., Nissen, S. B., Groenvold, M., Bjorner, J. B., Hegedüs, L., Bonnema, S. J., et al. (2018b). Conversion of standard retrospective patient-reported outcomes to momentary versions: cognitive interviewing reveals varying degrees of momentary compatibility. *Q. Life Res.* 27, 1065–1076. doi: 10.1007/s11136-017-1762-7
- Bressi, C., Taylor, G., Parker, J., Bressi, S., Brambilla, V., Aguglia, E., et al. (1996). Cross validation of the factor structure of the 20-item Toronto Alexithymia Scale: an Italian multicenter study. *J. Psychosom. Res.* 41, 551–559. doi: 10.1016/S0022-3999(96)00228-0
- Broniarczyk-Czarniak, M. (2017). Zaburzenia psychiczne współistniejące z chorobą Hashimoto—przegląd piśmiennictwa [The prevalence of psychiatric disorders in patients with Hashimoto's thyroiditis: a literature review]. *Psychiatria* 14, 209–216.
- Caputo, A. (2013). Health demand in primary care context: what do people think about physicians? *Psychol. Health Med.* 18, 145–154. doi: 10.1080/13548506.2012.687828
- Caputo, A. (2014). Exploring quality of life in Italian patients with rare disease: a computer-aided content analysis of illness stories. *Psychol. Health Med.* 19, 211–221. doi: 10.1080/13548506.2013.793372
- Caputo, A. (2015). Trends of psychology-related research on euthanasia: a qualitative software-based thematic analysis of journal abstracts. *Psychol. Health Med.* 20, 858–869. doi: 10.1080/13548506.2014.993405
- Caputo, A. (2019). Psychodynamic insights from narratives of people with amyotrophic lateral sclerosis: a qualitative phenomenological study. *Mediterran. J. Clin. Psychol.* 7:2009. doi: 10.6092/2282-1619/2019.7.2009
- Carr-Hill, R. A. (1992). Health related quality of life measurement—Euro style. *Health Policy* 20, 321–328. doi: 10.1016/0168-8510(92)90164-7
- Carta, M. G., Loviselli, A., Hardoy, M. C., Massa, S., Cadeddu, M., Sardu, C., et al. (2004). The link between thyroid autoimmunity (antithyroid peroxidase autoantibodies) with anxiety and mood disorders in the community: a field of interest for public health in the future. *BMC Psychiatry* 4:25. doi: 10.1186/1471-244X-4-25
- Castelli, L., Tesio, V., Colonna, F., Molinaro, S., Leombruni, P., Bruzzzone, M., et al. (2012). Alexithymia and psychological distress in fibromyalgia: prevalence and relation with quality of life. *Clin. Exp. Rheumatol.* 30(6 Suppl. 74), 70–77.
- Castelnuovo, G., Pietrabissa, G., Manzoni, G. M., Corti, S., Ceccarini, M., Borrello, M., et al. (2015). Chronic care management of globesity: promoting healthier lifestyles in traditional and mHealth based settings. *Front. Psychol.* 6:1557. doi: 10.3389/fpsyg.2015.01557
- Catalano, A., Martino, G., Bellone, F., Gaudio, A., Lasco, C., Langher, V., et al. (2018). Anxiety levels predict fracture risk in postmenopausal women assessed for osteoporosis. *Menopause* 25, 1110–1115. doi: 10.1097/GME.0000000000001123
- Catalano, A., Martino, G., Bellone, F., Papalia, M., Lasco, C., Basile, G., et al. (2019). Neuropsychological assessment in elderly men with benign prostatic hyperplasia treated with dutasteride. *Clin. Drug Invest.* 39, 97–102. doi: 10.1007/s40261-018-0720-7
- Catalano, A., Martino, G., Morabito, N., Scarcella, C., Gaudio, A., Basile, G., et al. (2017). Pain in osteoporosis: from pathophysiology to therapeutic approach. *Drugs Aging* 34, 755–765. doi: 10.1007/s40266-017-0492-4
- Catalano, A., Sardella, A., Bellone, F., Lasco, C. G., Martino, G., and Morabito, N. (2020). Executive functions predict fracture risk in postmenopausal women assessed for osteoporosis. *Aging Clin. Exper. Res.* 32, 2251–2257. doi: 10.1007/s40520-019-01426-w
- Cicero, G., De Luca, R., Dorangricchia, P., Coco, G. L., Guarnaccia, C., Fanale, D., et al. (2017). Risk perception and psychological distress in genetic counselling for hereditary breast and/or ovarian cancer. *J. Genet. Counsel.* 26, 999–1007. doi: 10.1007/s10897-017-0072-0
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences*, 2nd Edn, Hillsdale, NJ: Lawrence Erlbaum.
- Conversano, C. (2019). Psychological common factors in chronic diseases. *Front. Psychol.* 10:2727. doi: 10.3389/fpsyg.2019.02727
- Conversano, C., and Di Giuseppe, M. (2021). Psychological factors as determinants of chronic conditions: clinical and psychodynamic advances. *Front. Psychol.* 12:635708. doi: 10.3389/fpsyg.2021.635708
- Conversano, C., Di Giuseppe, M., Miccoli, M., Ciacchini, R., Di Silvestre, A., Lo Sterzo, R., et al. (2020). Retrospective analyses of psychological distress and defense style among cancer patients. *Clin. Neuropsychiatry* 17, 217–224. doi: 10.36131/cnfioritieditore20200403
- Cooper, D. S., and Biondi, B. (2012). Subclinical thyroid disease. *Lancet* 379, 1142–1154. doi: 10.1016/S0140-6736(11)60276-6
- Craparo, G., Gori, A., Dell'Aera, S., Costanzo, G., Fasciano, S., Tomasello, A., et al. (2016). Impaired emotion recognition is linked to alexithymia in heroin addicts. *PeerJ* 4:e1864. doi: 10.7717/peerj.1864
- Crisanti, P., Omri, B., Hughes, E. J., Meduri, G., Hery, C., Clauser, E., et al. (2001). The expression of thyrotropin receptor in the brain. *Endocrinology* 142, 812–822. doi: 10.1210/endo.142.2.7943
- Dayan, C. M., and Panicker, V. (2013). Hypothyroidism and depression. *Eur. Thyroid J.* 2, 168–179. doi: 10.1159/000353777
- Di Giuseppe, M., Di Silvestre, A., Lo Sterzo, R., Hitchcott, P., Gemignani, A., and Conversano, C. (2019). Qualitative and quantitative analysis of the defensive profile in breast cancer women: a pilot study. *Health Psychol. Open* 6:20. doi: 10.1177/2055102919854667
- Di Giuseppe, M., Perry, J. C., Petraglia, J., Janzen, J., and Lingardi, V. (2014). Development of a Q-sort version of the defense mechanisms rating scales (DMRS-Q) for clinical use. *J. Clin. Psychol.* 70, 452–465. doi: 10.1002/jclp.22089
- Fava, G. A., Tomba, E., and Sonino, N. (2012). Clinimetrics: the science of clinical measurements. *Intern. J. Clin. Pract.* 66, 11–15. doi: 10.1111/j.1742-1241.2011.02825.x
- First, M. B., Williams, J. B., Karg, R. S., and Spitzer, R. L. (2015). *Structured Clinical Interview for DSM-5 Disorders*. Washington, DC: American Psychiatric Publishing.
- Gangemi, A., Capri, T., Fabio, R. A., Puggioni, P., Falzone, A. M., and Martino, G. (2018). Transcranial direct current stimulation (tdcs) and cognitive empowerment for the functional recovery of diseases with chronic impairment and genetic etiopathogenesis. *Adv. Genet. Res.* 18, 179–196.
- Ghisi, M., Flebus, G. B., Montano, A., Sanavio, E., and Sica, C. (2006). "Ladattamento italiano del BDI-II [Italian adaptation of BDI-II]," in *Beck Depression Inventory-II*, eds A. T. Beck, R. A. Steer, and G. K. Brown (Firenze: Organizzazioni Speciali).
- Goldbacher, E. M., and Matthews, K. A. (2007). Are psychological characteristics related to risk of the metabolic syndrome? A review of the literature. *Ann. Behav. Med.* 34, 240–252.
- Grabe, H. J., Völzke, H., Lüdemann, J., Wolff, B., Schwahn, C., John, U., et al. (2005). Mental and physical complaints in thyroid disorders in the general population. *Acta Psychiatr. Scand.* 112, 286–293. doi: 10.1111/j.1600-0447.2005.00586.x
- Gugliandolo, M. C., Costa, S., Cuzzocrea, F., Larcan, R., and Martino, G. (2020). Adolescents and body uneasiness: the contribution of supportive parenting and trait emotional intelligence. *J. Child Fam. Stud.* 29, 2453–2462. doi: 10.1007/s10826-020-01779-1
- Hamilton, M. A. X. (1959). The assessment of anxiety states by rating. *Br. J. Med. Psychol.* 32, 50–55. doi: 10.1111/j.2044-8341.1959.tb00467.x
- Hasegawa, C., Kawai, T., Tanaka, M., and Fukao, A. (2019). Psychological characteristics of surgical patients with thyroid disease. *Psychologia* 60, 217–232. doi: 10.2117/psysoc.2019-B006
- Haugen, B. R., Alexander, E. K., Bible, K. C., Doherty, G. M., Mandel, S. J., Nikiforov, Y. E., et al. (2016). 2015 American Thyroid Association management guidelines for adult patients with thyroid nodules and differentiated thyroid cancer: the American Thyroid Association guidelines task force on thyroid

- nodules and differentiated thyroid cancer. *Thyroid* 26, 1–133. doi: 10.1089/thy.2015.0020
- Hemming, L., Haddock, G., Shaw, J., and Pratt, D. (2019). Alexithymia and its associations with depression, suicidality and aggression: an overview of the literature. *Front. Psychiatry* 10:203. doi: 10.3389/fpsy.2019.00203
- Ivanova, G. P., and Gorobets, L. N. (2011). Psychological aspects of systemic approach to diagnostics of mental and immunological disorders in diffuse-nodular form of Hashimoto's thyroiditis. *Zh. Nevrol. Psikiatr. Im. S. S. Korsakova* 111(11 Pt 1), 10–16.
- Kelly, R. R., McDonald, L. T., Jensen, N. R., Sidles, S. J., and LaRue, A. C. (2019). Impacts of psychological stress on osteoporosis: clinical implications and treatment Interactions. *Front. Psychiatry* 10:200. doi: 10.3389/fpsy.2019.00200
- Le Donne, M., Settineri, S., and Benvenaga, S. (2012). Early postpartum alexithymia and risk for depression: relationship with serum thyrotropin, free thyroid hormones and thyroid autoantibodies. *Psychoneuroendocrinology* 37, 519–533. doi: 10.1016/j.psychneuen.2011.08.001
- Lenzo, V., Sardella, A., Martino, G., and Quattropiani, M. C. (2020). A systematic review of metacognitive beliefs in chronic medical conditions. *Front. Psychol.* 10:2875. doi: 10.3389/fpsyg.2019.02875
- Lingiardi, V., Gazzillo, F., Colli, A., De Bei, F., Tanzilli, A., Di Giuseppe, M., et al. (2010). Diagnosis and assessment of personality, therapeutic alliance and clinical exchange in psychotherapy research. *Res. Psychother.* 2, 97–124.
- Luminet, O., Bagby, R. M., and Taylor, G. J. (eds) (2018). *Alexithymia: Advances in Research, Theory, and Clinical Practice*. Cambridge: Cambridge University Press.
- Lumley, M. A., Neely, L. C., and Burger, A. J. (2007). The assessment of alexithymia in medical settings: implications for understanding and treating health problems. *J. Pers. Assess.* 89, 230–246. doi: 10.1080/00223890701629698
- Lumley, M. A., Stettner, L., and Wehmer, F. (1996). How are alexithymia and physical illness linked? A review and critique of pathways. *J. Psychosom. Res.* 41, 505–518. doi: 10.1016/S0022-3999(96)00222-X
- Marchi, L., Marzetti, F., Orrù, G., Lemmetti, S., Miccoli, M., Ciacchini, R., et al. (2019). Alexithymia and psychological distress in patients with fibromyalgia and rheumatic disease. *Front. Psychol.* 10:1735. doi: 10.3389/fpsyg.2019.01735
- Marchini, F., Caputo, A., Balonan, J. T., Fedele, F., Langher, V., and Napoli, A. (2020). Emotional dynamics of persons with Type 2 diabetes and their potential role in treatment adherence: insights from a clinical psychodynamic perspective. *Psychol. Hub.* 37, 23–30. doi: 10.13133/2724-2943/17160
- Marchini, F., Caputo, A., Napoli, A., Balonan, J. T., Martino, G., Nannini, V., et al. (2018). Chronic illness as loss of good self: underlying mechanisms affecting diabetes adaptation. *Mediterranean J. Clin. Psychol.* 6:1981. doi: 10.6092/2282-1619/2018.6.1981
- Martino, G., Bellone, F., Langher, V., Caputo, A., Catalano, A., Quattropiani, M. C., et al. (2019a). Alexithymia and psychological distress affect perceived quality of life in patients with type 2 diabetes mellitus. *Mediterranean J. Clin. Psychol.* 7:2328. doi: 10.6092/2282-1619/2019.7.2328
- Martino, G., Catalano, A., Bellone, F., Russo, G. T., Vicario, C. M., Lasco, A., et al. (2019b). As time goes by: anxiety negatively affects the perceived quality of life in patients with Type 2 diabetes of long duration. *Front. Psychol.* 10:1779. doi: 10.3389/fpsyg.2019.01779
- Martino, G., Langher, V., Cazzato, V., and Vicario, C. M. (2019c). Psychological factors as determinants of medical conditions. *Front. Psychol.* 10:2502. doi: 10.3389/fpsyg.2019.02502/full
- Martino, G., Sardella, A., Bellone, F., Lasco, C., Langher, V., Cazzato, V., et al. (2019d). Executive functions and bone health: a focus on cognitive impulsivity and bone mineral density. *Mediterranean J. Clin. Psychol.* 11, 706–713. doi: 10.6092/2282-1619/2019.7.2167
- Martino, G., Caputo, A., Bellone, F., Quattropiani, M. C., and Vicario, C. M. (2020a). Going beyond the visible in Type 2 diabetes mellitus: defense mechanisms and their associations with depression and health-related quality of life. *Front. Psychol.* 11:267. doi: 10.3389/fpsyg.2020.00267
- Martino, G., Caputo, A., Schwarz, P., Bellone, F., Fries, W., Quattropiani, M. C., et al. (2020b). Alexithymia and inflammatory bowel disease: a systematic review. *Front. Psychol.* 11:1763. doi: 10.3389/fpsyg.2020.01763
- Martino, G., Caputo, A., Vicario, C. M., Catalano, A., Schwarz, P., and Quattropiani, M. C. (2020c). The relationship between alexithymia and type 2 diabetes: a systematic review. *Front. Psychol.* 11:2026. doi: 10.3389/fpsyg.2020.02026
- Martino, G., Catalano, A., Agostino, R. M., Bellone, F., Morabito, N., Lasco, C. G., et al. (2020d). Quality of life and psychological functioning in postmenopausal women undergoing aromatase inhibitor treatment for early breast cancer. *PLoS One* 15:e0230681. doi: 10.1371/journal.pone.0230681
- Martino, G., Catalano, A., Bellone, F., Langher, V., Lasco, C., Penna, A., et al. (2018a). Quality of life in postmenopausal women: which role for D? *Mediterranean J. Clin. Psychol.* 6, 1–14. doi: 10.6092/2282-1619/2018.6.1875
- Martino, G., Catalano, A., Bellone, F., Sardella, A., Lasco, C., Capri, T., et al. (2018b). Vitamin D status is associated with anxiety levels in postmenopausal women evaluated for osteoporosis. *Mediterranean J. Clin. Psychol.* 6, 1–16. doi: 10.6092/2282-1619/2018.6.1740
- Mazaheri, M., Afshar, H., Weinland, S., Mohammadi, N., and Adibi, P. (2012). Alexithymia and functional gastrointestinal disorders (FGID). *Med. Arh.* 66, 28–32. doi: 10.5455/medarh.2012.66.28-32
- Merlo, E. M. (2019). Opinion article: The role of psychological features in chronic diseases, advances and perspectives. *Mediterranean J. Clin. Psychol.* 7, 1–6.
- Mizokami, T., Wu, L. A., El-Kaissi, S., and Wall, J. R. (2004). Stress and thyroid autoimmunity. *Thyroid* 14, 1047–1055. doi: 10.1089/thy.2004.14.1047
- Moncayo, R., and Moncayo, H. (2014). Exploring the aspect of psychosomatics in hypothyroidism: the WOMED model of body-mind interactions based on musculoskeletal changes, psychological stressors, and low levels of magnesium. *Woman Psychosom. Gynaecol. Obstetr.* 1, 1–11. doi: 10.1016/j.woman.2014.02.001
- Montagna, G., Imperiali, M., Agazzi, P., D'Aurizio, F., Tozzoli, R., Feldt-Rasmussen, U., et al. (2016). Hashimoto's encephalopathy: a rare proteiform disorder. *Autoimmun. Rev.* 15, 466–476. doi: 10.1016/j.autrev.2016.01.014
- Nexo, M. A., Watt, T., Pedersen, J., Bonnema, S. J., Hegedüs, L., Rasmussen, A. K., et al. (2014). Increased risk of long-term sickness absence, lower rate of return to work, and higher risk of unemployment and disability pensioning for thyroid patients: a Danish register-based cohort study. *J. Clin. Endocrinol. Metab.* 99, 3184–3192. doi: 10.1210/jc.2013-4468
- Patron, E., Benvenuti, S. M., Lopriore, V., Aratari, J., and Palomba, D. (2017). Somatic-affective, but not cognitive-depressive symptoms are associated with reduced health-related quality of life in patients with congestive heart failure. *Psychosomatics* 58, 281–291. doi: 10.1016/j.psych.2017.01.001
- Perry, J. C., Metzger, J., and Sigal, J. J. (2015). Defensive functioning among women with breast cancer and matched community controls. *Psychiatry* 78, 156–169. doi: 10.1080/00332747.2015.1051445
- Pollatos, O., Werner, N. S., Duschek, S., Schandry, R., Matthias, E., Traut-Mattausch, E., et al. (2011). Differential effects of alexithymia subscales on autonomic reactivity and anxiety during social stress. *J. Psychosom. Res.* 70, 525–533. doi: 10.1016/j.jpsychores.2010.12.003
- Porcelli, P., Leoci, C., Guerra, V., Taylor, G. J., and Bagby, R. M. (1996). A longitudinal study of alexithymia and psychological distress in inflammatory bowel disease. *J. Psychosom. Res.* 41, 569–573. doi: 10.1016/S0022-3999(96)00221-8
- Prout, T. A., Zilcha-Mano, S., Aafjes-van Doorn, K., Békés, V., Christman-Cohen, I., Whistler, K., et al. (2020). Identifying predictors of psychological distress during COVID-19: A machine learning approach. *Front. Psychol.* 11:586202. doi: 10.3389/fpsy.2020.586202
- Quattropiani, M. C., Lenzo, V., Filastro, A., and Fries, W. (2019). Metacognitions and basic emotions in patients with irritable bowel syndrome and inflammatory bowel disease. *Psicoterap. Cogn. Comportament.* 25, 35–51.
- Rafanelli, C., Roncuzzi, R., Finos, L., Tossani, E., Tomba, E., Mangelli, L., et al. (2003). Psychological assessment in cardiac rehabilitation. *Psychother. Psychosom.* 72, 343–349. doi: 10.1159/000073031
- Rieben, C., Segna, D., da Costa, B. R., Collet, T. H., Chaker, L., Aubert, C. E., et al. (2016). Subclinical thyroid dysfunction and the risk of cognitive decline: a meta-analysis of prospective cohort studies. *J. Clin. Endocrinol. Metab.* 101, 4945–4954. doi: 10.1210/jc.2016-2129
- Rosa, V., Tomai, M., Lauriola, M., Martino, G., and Di Trani, M. (2019). Body mass index, personality traits, and body image in Italian pre-adolescents: an opportunity for overweight prevention. *Psihologija* 52, 379–393. doi: 10.2298/PSI181121009R

- Samuels, M. H. (2008). Cognitive function in untreated hypothyroidism and hyperthyroidism. *Curr. Opin. Endocrinol. Diabetes Obes.* 15, 429–433. doi: 10.1097/MED.0b013e32830eb84c
- Settineri, S., Frisone, F., Merlo, E. M., Geraci, D., and Martino, G. (2019). Compliance, adherence, concordance, empowerment, and self-management: five words to manifest a relational maladjustment in diabetes. *J. Multidiscipl. Healthc.* 12, 299–314. doi: 10.2147/JMDH.S193752
- Shahar, G., and Lerman, S. F. (2013). The personification of chronic physical illness: Its role in adjustment and implications for psychotherapy integration. *J. Psychother. Integrat.* 23, 49–58. doi: 10.1037/a0030272
- Talamonti, M., Galluzzo, M., Servoli, S., D'Adamio, S., and Bianchi, L. (2016). Alexithymia and plaque psoriasis: preliminary investigation in a clinical sample of 250 patients. *Dermatology* 232, 648–654. doi: 10.1159/000453661
- Taylor, G. J. (2000). Recent developments in alexithymia theory and research. *Can. J. Psychiatry* 45, 134–142. doi: 10.1177/070674370004500203
- Taylor, G. J., Bagby, R. M., and Parker, J. D. (1999). *Disorders of Affect Regulation: Alexithymia in Medical and Psychiatric Illness*. Cambridge: Cambridge University Press.
- Taylor, G. J., Bagby, R. M., and Parker, J. D. (2003). The 20-Item Toronto Alexithymia Scale: IV. Reliability and factorial validity in different languages and cultures. *J. Psychosom. Res.* 55, 277–283. doi: 10.1016/S0022-3999(02)00601-3
- Tesio, V., Di Tella, M., Ghiggia, A., Romeo, A., Colonna, F., Fusaro, E., et al. (2018). Alexithymia and depression affect quality of life in patients with chronic pain: a study on 205 patients with fibromyalgia. *Front. Psychol.* 9:442. doi: 10.3389/fpsyg.2018.00442
- Tomai, M., Lauriola, M., and Caputo, A. (2018). Are social support and coping styles differently associated with adjustment to cancer in early and advanced stages? *Mediterranean J. Clin. Psychol.* 7, 1–24. doi: 10.6092/2282-1619/2019.7.19831981
- Tomaro, E. S., Pippi, R., Reginato, E., Aiello, C., Buratta, L., Mazzeschi, C., et al. (2017). Intensive lifestyle intervention is particularly advantageous in poorly controlled type 2 diabetes. *Nutrit. Metab. Cardiovasc. Dis.* 27, 688–694. doi: 10.1016/j.numecd.2017.06.009
- Torrado, M., Eusébio, S., and Ouakinin, S. (2018). *Alexithymia and Illness: Towards a Psychosomatic Perspective of Emotion Regulation Deficits*. New York, NY: Nova Science Publishers.
- Van Houtum, L., Rijken, M., and Groenewegen, P. (2015). Do everyday problems of people with chronic illness interfere with their disease management? *BMC Public Health* 15:1000. doi: 10.1186/s12889-015-2303-3
- Vicario, C. M., Salehinejad, M. A., Felmingham, K., Martino, G., and Nitsche, M. A. (2019). A systematic review on the therapeutic effectiveness of non-invasive brain stimulation for the treatment of anxiety disorders. *Neurosci. Biobehav. Rev.* 96, 219–231. doi: 10.1016/j.neubiorev.2018.12.012
- Vita, R., Caputo, A., Quattropiani, M. C., Watt, T., Feldt-Rasmussen, U., Puleio, P., et al. (2020). Quality of life in patients with hyperthyroidism: where do we stand? *Mediterranean J. Clin. Psychol.* 8, 1–28. doi: 10.6092/2282-1619/2019.7.2328
- Vita, R., Mazzi, V., Antonelli, A., and Benvenaga, S. (2013). Antithyroid medications and psychosis. *Expert Opin. Drug Saf.* 12, 865–872. doi: 10.1517/14740338.2013.823397
- Ware, J. E., and Sherbourne, C. D. (1992). The MOS 36-item short-form health survey (SF-36): I. conceptual framework and item selection. *Med. Care* 30, 473–483. doi: 10.1097/00005650-199206000-00002
- Watt, T., Bjorner, J. B., Groenvold, M., Cramon, P., Winther, K. H., Hegedüs, L., et al. (2015). Development of a short version of the thyroid-related patient-reported outcome ThyPRO. *Thyroid* 25, 1069–1079. doi: 10.1089/thy.2015.0209
- Watt, T., Bjorner, J. B., Groenvold, M., Rasmussen, ÅK., Bonnema, S. J., Hegedüs, L., et al. (2009). Establishing construct validity for the thyroid-specific patient reported outcome measure (ThyPRO): an initial examination. *Q. Life Res.* 18, 483–496. doi: 10.1007/s11136-009-9460-8
- Watt, T., Cramon, P., Hegedüs, L., Bjorner, J. B., Bonnema, S. J., Rasmussen, ÅK., et al. (2014). The thyroid-related quality of life measure ThyPRO has good responsiveness and ability to detect relevant treatment effects. *J. Clin. Endocrinol. Metab.* 99, 3708–3717. doi: 10.1210/jc.2014-1322
- Watt, T., Hegedüs, L., Bjorner, J. B., Groenvold, M., Bonnema, S. J., Rasmussen, ÅK., et al. (2012). Is thyroid autoimmunity per se a determinant of quality of life in patients with autoimmune hypothyroidism? *Eur. Thyroid J.* 1, 186–192. doi: 10.1159/000342623
- Willemsen, R., Roseeuw, D., and Vanderlinden, J. (2008). Alexithymia and dermatology: the state of the art. *Intern. J. Dermatol.* 47, 903–910. doi: 10.1111/j.1365-4632.2008.03726.x
- Winther, K. H., Cramon, P., Watt, T., Bjorner, J. B., Ekholm, O., Feldt-Rasmussen, U., et al. (2016). Disease-specific as well as generic quality of life is widely impacted in autoimmune hypothyroidism and improves during the first six months of levothyroxine therapy. *PLoS One* 11:e0156925. doi: 10.1371/journal.pone.0156925
- Wong, C. K., Choi, E. P., Woo, Y. C., and Lang, B. H. (2018). Measurement properties of ThyPRO short-form (ThyPRO-39) for use in Chinese patients with benign thyroid diseases. *Q. Life Res.* 27, 2177–2187. doi: 10.1007/s11136-018-1857-9
- Wong, C. K., Lang, B. H., and Lam, C. L. (2016). A systematic review of quality of thyroid-specific health-related quality-of-life instruments recommends ThyPRO for patients with benign thyroid diseases. *J. Clin. Epidemiol.* 78, 63–72. doi: 10.1016/j.jclinepi.2016.03.006
- Yıldız, M., Şahin, Ş., Batmaz, S., Songur, E., and Kutlutürk, F. (2017). The relationship between depression, anxiety, personality traits and coping strategies of patients with euthyroid Hashimoto's Thyroiditis. *Eur. J. Psychiatry* 31, 113–118. doi: 10.1016/j.ejpsy.2017.06.001

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2021 Martino, Caputo, Vicario, Feldt-Rasmussen, Watt, Quattropiani, Benvenaga and Vita. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# The Role of Suppression and the Maintenance of Euthymia in Clinical Settings

Emanuele Maria Merlo<sup>1\*</sup>, Anca Pantea Stoian<sup>2,3</sup>, Ion G. Motofei<sup>2</sup> and Salvatore Settineri<sup>4</sup>

<sup>1</sup> Department of Adult and Childhood Human Pathology "Gaetano Barresi," University of Messina, Messina, Italy, <sup>2</sup> Carol Davila University of Medicine and Pharmacy, Bucharest, Romania, <sup>3</sup> National Institute of Diabetes, Nutrition and Metabolic Diseases "N. C. Paulescu," Bucharest, Romania, <sup>4</sup> Department of Biomedical and Dental Sciences and Morphofunctional Imaging, University of Messina, Messina, Italy

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

Elisabeth Punzi,  
University of Gothenburg, Sweden  
Mario Miniati,  
University of Pisa, Italy

### \*Correspondence:

Emanuele Maria Merlo  
emerlo@unime.it

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 08 March 2021

**Accepted:** 08 April 2021

**Published:** 20 May 2021

### Citation:

Merlo EM, Stoian AP, Motofei IG  
and Settineri S (2021) The Role  
of Suppression and the Maintenance  
of Euthymia in Clinical Settings.  
Front. Psychol. 12:677811.  
doi: 10.3389/fpsyg.2021.677811

**Background:** Defense mechanisms serve as mediators referred to the subjects' attempt to manage stressors capable of threatening their integrity. Mature defense mechanisms represent the high adaptive group, including suppression, which allows the subject to distance disturbing contents from consciousness. In line with general defensive intents, suppression would preserve stable mood states, as in the case of euthymia. Clinical issues usually disturb *homeorhesis*, so that the study of subjects' suppressive tendencies would suggest possible existing relations among defense mechanisms, mood states, and clinical issues. The study highlighted the significant existing relations among factors such as suppression, euthymia, mood states, and clinical psychological phenomena.

**Methods:** The observation group was composed of 150 participants, 51 males (34%) and 99 females (66%), aged from 25 to 30 years old, with a mean age of 26.63 years old (SD = 1.51). The study was conducted through the use of measures related to subjects' characteristics, euthymia, psychological flexibility and psychological well-being (Euthymia Scale), suppression (Suppression Mental Questionnaire), well-being (Who-5), and compassion (ProQol-5).

**Results:** The performed analyses consisted of descriptive statistics, correlations, differences, and regressions among the considered variables. Starting from the first hypothesis, SMQ factors appeared to be significantly and positively correlated with Euthymia factors, rather than Regression in the Ego service (-). In line with the previous result, significant and positive correlations emerged among SMQ and Well-being (WHO-5) variables, maintaining an inverse relation with Regression in the Ego service. Significant differences emerged between male and female groups concerning SMQ total score and rationalization, with higher male group scores. Finally, significant dependencies emerged among the selected predictors (SMQ variables) and Compassion satisfaction.

**Conclusion:** The emerged results highlighted significant relations among the considered variables so that it was possible to highlight the common directions assumed



by suppression variables, well-being, and euthymia. Moreover, suppression appeared as a significant predictor with a causal role in clinical satisfaction. The results that have emerged allow us to consider defenses through an empirical perspective, useful to suggest an extension to other groups, phenomena, and conditions.

**Keywords:** clinical psychology, defense mechanisms, emotional distress, euthymia, suppression

## INTRODUCTION

The maintenance of a stable mood can be influenced by different factors, including defense mechanisms whose role can be understood starting from classical contributions due to Sigmund Freud's efforts. In these terms, the concept of a defense mechanism has appeared since 1894, regarding the origin of hysteric symptomatology and manifestations. Some relevant contributions treated the defense mechanisms referring to their origins, impact on clinical practice, and future directions. In line with Vaillant's (1992) perspective, the theme of defense mechanisms can be considered as historically directed to modern methods, directed to the fields of clinical practice. Defense mechanisms can be considered as predominantly unconscious. Their use can refer to specific psychopathological domains, although their appearance is strongly linked to the subject's developmental stages. According to Anna Freud (1936), their use can be considered as reversible, strictly linked to subject's structure and environmental conditions.

Current research considers the possibility of involving defense mechanisms in empirical terms. It is always more fruitful to deal with high validity instruments adherent to classical contributions and new perspectives. In 1994, APA defined the defense mechanisms as unconscious operations, whose role is linked to protecting the individual from thoughts, feelings, internal, or external conflicts. This definition respects the theme of defense, since its use is strongly related to the use of defenses in avoiding conflicts properly referred to internal/external stressful issues. The anguish derived from these types of disputes puts the subject in a condition useful to react, depending on structure.

The research on defense mechanisms allowed Vaillant (1977) to propose a hierarchical model considering defenses organized at different levels so that archaic defenses were distinguished from neurotic and high adaptive/mature defenses. Different levels were provided and involved in developing empirical instruments useful to compare theoretical issues to research, clinical practice, and future possibilities (Perry and Henry, 2004).

As suggested by recent research (Di Giuseppe et al., 2020a), the effort to develop valid instruments was referred both to clinical and healthy populations, so that it would be possible to keep the transversal relevance of defenses (Merlo et al., 2021). In literature, many studies expressed the need to extend the study of defensive patterns to different clinical conditions and developmental stages (Di Riso et al., 2015; Di Giuseppe et al., 2019; Gugliandolo et al., 2020). The stressors' incidence on the onset of lesions and functional maladjustment, can derive from specific psychological factors (Lingiardi et al., 2010; Perry et al., 2015; Porcerelli et al., 2017; Gangemi et al., 2018; Catalano et al., 2019; Conversano, 2019; Fiegl et al., 2019; Kelly et al., 2019; Martino et al., 2019,

2020a,b,c; Merlo, 2019; Vita et al., 2020). Clearly, the possibility to obtain data from research studies dedicated to the mentioned themes took place through the efforts to operationalize the theoretical basis, constructing empirical instruments, as in the case of Perry's DMRS (Perry's 1990; Di Giuseppe et al., 2020b), of Bond's DSQ-40 (Bond et al., 1983; Farma and Cortinovis, 2000; Perry and Bond, 2012) and other valuable instruments.

In these terms, according to Berney et al. (2014), clinical and empirical aspects of defense mechanisms provide knowledge about affective dynamics and tendencies occurring in all individuals, both clinical and non-clinical populations. In their hierarchical organization, defense mechanisms present different features, so that archaic defenses differ from neurotic and adaptive ones. Vaillant (1994) therefore introduced humor, sublimation, suppression, altruism, and anticipation in the IV category, respectively, named mature defenses. In terms of adaptive tendencies and dynamics, repression has been considered as a high adaptive defense (Metzger, 2014), included among mature defenses and considered by Vaillant as follows: "*When used effectively [...] suppression is analogous to a well-trimmed sail*" (2000, p.94). Suppression can be considered as a predominantly conscious defense mechanism, whose use is close to the subject's conscious need to avoid disturbing contents. Although the role of this defense can be considered as similar to repression, this last represents a predominantly unconscious dynamic. The main difference between these two defense mechanisms is based on the level of subject's consciousness during the use of the defenses. Through suppression, the individual overcomes internal/external issues, replacing the disturbing contents with more adaptive themes and tasks.

When considering the role of defense mechanisms in avoiding anguish and maladjustment, it is fundamental to mention what can be regarded as directly deriving from their adaptive or excessive use. Affective dynamics result as indirectly involved but still present. In these terms, although defense mechanisms act in the regard to affectivity and representations, their role does not disappear. Most of the psychosomatic issues in fact represent the final stage of excessive defensive tendencies. Beside displacing disturbing contents from consciousness, regressions to fantasy are often included (Kris and Kaplan, 1952; Kris, 1952a,b,c; Knafo, 2002) defined this tendency as "Regression in the Service of the Ego," in order to describe short regressions useful to avoid anguish and to manage representations without reality limits. Thus, empirical research demonstrated how alexithymia does not correspond to the absence of emotions, rather than in a lack of mentalization. Some concepts tend to attract more attention depending on literature trends, but understanding basic phenomena producing comprehensive

definitions is fundamental (as in the case of resilience and well-being). Over the years, the concept of well-being has undergone numerous changes and extensions that have led to a broader and more complete vision of the term, no longer focused on the absence of pathologies, suffering, or discomfort, but on a condition of balance between the person and the environment. Connected to this construct is the concept of *euthymia*.

In the psychiatric literature, the term *euthymia* essentially indicates the lack of significant distress. In psychology, “*euthymia*” shows the typical mood of the non-depressed individual, who experiences a serene or neutral mood. In clinical settings, *euthymia* is often defined only in negative terms as the absence of symptoms related to mood, neglecting the positive aspects of curing. In 1958, psychologist Marie Jahoda created a model of psychological well-being made up of various dimensions, such as regulating behavior (internal), environmental control, satisfying and positive relationships with others, and the degree of personal growth, self-realization, and self-acceptance.

Jahoda also underlines a characteristic linked to the concept of *euthymia*: “integration,” a balance of psychic forces that corresponds to the concept of “psychological flexibility,” an ability useful to maintain individual balance and resist stress (greater resilience and tolerance to frustration). Based on these terms, some research contributions offered the possibility to operationalize the concepts in order to reach empirical validity and reliable instruments. Starting from these concepts, (Guidi and Fava, 2020; Fava and Bech, 2016) pointed out that the purpose of clinical evaluation is to explore the presence of positive affectivity, psychological well-being, and their interactions with the course of symptoms. To analyze these features in an integrative way, a clinimetric perspective is necessary.

The term clinimetric indicates an area interested in measuring clinical problems with no place in the standard clinical taxonomy. These problems include types, severity and sequence of symptoms, disease progression rate (staging), severity of the comorbidity, functional capacity problems, reasons for medical decisions (e.g., therapeutic choices), and many other aspects of daily life, such as well-being and distress. Directly related to this path, several research contributions arose from the commitment to measure empirically clinical issues through a clinimetric perspective (Carrozzino et al., 2019; Guidi and Fava, 2021), with a look toward well-being, psychopathology and psychotherapy (Fava et al., 2017).

Considering the figures mentioned above, we stated four hypotheses to highlight common directions, differences, and dependencies among the included phenomena (alexithymia, well-being, suppression, and compassion). In detail, the following paragraph describes the relationships and implications of potential variables.

## The Current Study

Four hypotheses were stated in order to allow the relations to emerge according to the methodology.

Hypothesis 1: We hypothesize that suppression assumes similar directions with *euthymia*. In particular, we hypothesize positive correlations with *euthymia*, rather than Regression in the Ego service.

Hypothesis 2: We hypothesize coherent directions assumed by suppression and well-being, except for Regression in the Ego service.

Hypothesis 3: We hypothesize significant differences between male and female groups concerning *Euthymia*, Suppression, and Well-being.

Hypothesis 4: We hypothesize the existence of significant dependencies among suppression variables and clinical commitment variables, highlighting the causal role of suppression linked to adaptation.

## MATERIALS AND METHODS

### Procedure and Participants

The observation group consisted of 150 healthy participants, 51 males (34%) and 99 females (66%). The age of the participants included in the study was between 25 and 30 years old, with a mean age of 26.63 years old ( $SD = 1.51$ ). The research was carried out at the University of Messina, Italy with the aim of exploring clinical psychological issues strictly related to clinical practice. All participants were involved in clinical assistance.

Every participant fully completed the questionnaires, including information regarding their activities, studies, gender, and age. Each participant fully completed a checklist referred to health status, in order to be considered admissible for the final group. Health subjects were selected in order to complete the questionnaire. The checklist was both referred to psychological and physical domains. The compilation of the questionnaires was an online form due to the current COVID-19 pandemic.

Before adhering to informed consent, each participant was informed about the anonymous nature of the methods of data processing, as required by the procedures of the ethical committee evidenced by the approval (University of Messina COSPECS Ethical Committee, Ethical committee number: COSPECS\_14\_2020).

### Statistical Analysis

The data were expressed as a mean and a standard deviation, and the categorical variables as number and percentage.

According to the study hypotheses, the “Spearman test” was applied to evaluate the correlations among variables of the following instruments.

The Student’s *t* test compared gender groups, referring to *euthymia*, well-being, and suppression.

Multivariate linear regression was used to assess each of the ProQol clinical outcomes’ dependence on a set of independent predictors (SMQ Total Score and related factors).

Statistical analyses were performed using SPSS 26.0 for the Window package.

A *P* value smaller than 0.050 was considered to be statistically significant.

## Instruments

### Suppression Mental Questionnaire

The Suppression Mental Questionnaire (Settineri et al., 2019a,b) consists of 18 items assessing the use of the mature defense mechanism named suppression, based on a five-point Likert scale. SMQ is a self-report instrument validated in both paper-and-pencil and app version, whose validation highlighted the existence of three main factors, namely, Repressive function, Regression in the service of the Ego, and Rationalization.

According to classical literature, suppression is meant as the capacity to banish disturbing contents from consciousness. This capacity is related to a consistent, conscious effort, useful to let the subject direct his/her resources toward adaptive activities avoiding anguish deriving from disturbing contents.

The validation of the instrument showed good sampling adequacy ( $K.M.O. = 0.648$ ) and the following Cronbach coefficients: Repressive function = 0.742; Regression in the service of the Ego = 0.804; Rationalization = 0.698. In order to describe the inner structure of the instrument, the following items appeared as belonging, respectively, to each factor: Repressive function composed by items 3, 4, 7, 8, 10, 14, 15, 16, 17, and 18; Regression in the service of the Ego, items 5, 6, 9, 11, and 12; Rationalization, items 1, 2, 7, and 13. In line with the paper-and-pencil version, the instrument's app adaptation provided for the following alpha coefficients: 0.74–0.73 for the first factor, 0.80–0.77 for the second, and 0.70–0.76 for the third one.

### WHO-5

World Health Organization (Five) Well-being Index [World Health Organization (WHO), 1998], composed of five items assessing well-being, evaluated using a six-point Likert scale from 5 (always) to 0 (never). According to the validation study [World Health Organization (WHO), 1998] and with several other research items (Topp et al., 2015), the scale appeared as a valid instrument useful for assessing subjects' well-being. As a generic scale, its properties are related to the possibility to evaluate mental well-being through a limited number of items (Hall et al., 2011; Bech, 2012).

### Euthymia Scale

Through their clinimetric analysis, Carrozzino et al. (2019) showed that a good definition for Euthymia (provided by Fava and Bech, 2016) has been considered as the preliminary step to build up a scale useful for the evaluation of the selected phenomenon. Fava and Bech (2016) incorporated Jahoda's definition of euthymia Jahoda's (1958) to develop a self-report rating scale named Euthymia Scale. In these terms, the purpose regarded the absence of affective disorders and the presence of psychological flexibility and resistance to stressors. Their clinimetric study, directly linked to this definition, provided two dimensions: Psychological flexibility and Psychological well-being. The analysis showed the scale's validity and its two dimensions through two main clinimetric parameters, known as scalability and incremental validity (respectively, assessed through Mokken and hierarchical linear regression analyses). The study on healthy subjects produced the following indexes,

referred to Mokken analysis: 0.25 for the total score of the 10-item Euthymia Scale, 0.28 for Psychological flexibility, and 0.30 for Psychological well-being.

### ProQol-5

The Professional Quality of Life Scale (ProQol-5) is a self-report instrument dedicated to studying adaption and maladjustment deriving from clinical practice. The scale was validated by Stamm (2005, 2009) and adapted in Italian by Palestirini et al. in Palestirini et al., 2009. The scale consists of 30 items supported by a five-point Likert scale.

The factorial analysis showed three different factors, respectively, Compassion satisfaction, Burnout, and Secondary traumatic stress. Each factor consists, respectively of the following items: Factor 1, items 3, 6, 12, 16, 18, 20, 22, 24, 27, and 30; Factor 2, items 1\*, 4\*, 8, 10, 15\*, 17\*, 19, 21, 26, and 29 (\* for inverted scores); Factor 3, items 2, 5, 7, 9, 11, 13, 14, 23, 25, and 28. Reliability indexes provided by the authors were as follows: Compassion Satisfaction, alpha scale reliability = 0.88; Burnout, alpha scale reliability = 0.75; Secondary traumatic stress, alpha scale reliability = 0.81.

## RESULTS

Descriptive statistics (mean and the standard deviation) are reported in **Table 1** in order to highlight the presence of considered phenomena.

Hypothesis 1:

Hypothesis 1 (**Table 2**) concerned the directions assumed by the considered phenomena in correlational terms so that the factors of Euthymia and Suppression Questionnaire were involved. As it is possible to assume, according to the values reported in **Table 2**, all correlational relationships emerged among SMQ factors, Euthymia Scale Total Score, and Euthymia Scale Psychological Flexibility were significant. Six of the relationships, as mentioned earlier, emerged as significant and positive, two as significant and inverse. In detail, the positive relations were referred to Euthymia Total Score and Psychological Flexibility with SMQ Total Score, SMQ Repressive

**TABLE 1** | Descriptive statistics for study variables.

	Mean	Standard deviation
Years of Study	14.41	2.30
Euthymia Scale	6.70	2.19
Euthymia Scale Psychological Flexibility	3.58	1.22
Euthymia Scale Psychological Well-Being	3.12	1.43
SMQ Total Score	52.52	8.42
SMQ Repressive function	24.56	6.58
SMQ Regression in the service of the Ego	18.21	4.07
SMQ Rationalization	13.71	2.57
WHO-5	14.34	4.02
Compassion satisfaction	39.84	5.41
Burnout	23.26	4.98
Secondary traumatic scale	23.90	6.05

**TABLE 2 |** Correlation coefficients among SMQ and Euthymia Scale variables.

	Euthymia Scale Total Score	Euthymia Scale Psychological Flexibility	Euthymia Scale Psychological Well-Being
SMQ Total Score	<b>0.321**</b>	<b>0.378**</b>	<b>0.187**</b>
SMQ Repressive function	<b>0.468**</b>	<b>0.474**</b>	<b>0.315**</b>
SMQ Regression in the service of the Ego	<b>-0.238**</b>	<b>-0.226**</b>	-0.159
SMQ Rationalization	<b>0.297**</b>	<b>0.432**</b>	0.110

\* $p < 0.05$  (two-tailed); \*\* $p < 0.01$  (two-tailed). Bold values were the significant values.

**TABLE 3 |** Correlation coefficients among SMQ and WHO-5 factors.

	WHO-5
SMQ Total Score	<b>0.260**</b>
SMQ Repressive function	<b>0.365**</b>
SMQ Regression in the service of the Ego	<b>-0.181*</b>
SMQ Rationalization	0.149

\* $p < 0.05$  (two-tailed); \*\* $p < 0.01$  (two-tailed). Bold values were the significant values.

**TABLE 4 |** Comparison between male and female groups.

Variables	Male	Female	$p$ value
Euthymia Scale	6.88 $\pm$ 2.10	6.61 $\pm$ 2.24	0.475
SMQ Total score	54.43 $\pm$ 6.47	51.54 $\pm$ 9.14	<b>0.027*</b>
SMQ Repressive function	25.86 $\pm$ 5.46	23.88 $\pm$ 7.02	0.060
SMQ Regression in the service of the Ego	18.17 $\pm$ 3.86	18.23 $\pm$ 4.20	0.935
SMQ Rationalization	14.41 $\pm$ 2.42	13.35 $\pm$ 2.58	<b>0.015*</b>
WHO-5	14.82 $\pm$ 3.66	14.10 $\pm$ 4.19	0.279

\* $p < 0.05$ . Bold values were the significant values.

function, and SMQ Rationalization. In our perspective and line with the considered literature, Suppression appeared to assume the same direction of Euthymia, highlighting a positive relation. It is meant as a positive role deriving from mature defense and adaptation mechanisms, in line with classical studies and recent empirical research contributions. Suppression appeared to be correlated significantly and positively, confirming the role of high mature defenses on mood states.

Concerning Regression in the Ego service, it appeared to be significantly and inversely correlated to Euthymia Total Score and Psychological Flexibility showing as the regression to phantasies and phantasmatic atmospheres is closely related to archaic-type functioning built on the necessity to avoid reality limitations and lows. In compliance with the performed analyses, suppressive tendencies appeared as mainly directed to maintaining a stable mood. Concerning Psychological Well-Being (Euthymia Scale's second dimension), the two significant and positive relations that emerged were referred to SMQ Total Score and Repressive functions. In these terms, the significant correlations that emerged

highlighted the directions assumed by the variables so that suppressive necessities showed a higher propensity to take the same direction of stable mood maintenance. In clinical terms, suppression had a crucial role in favoring the adaptation of the subjects. The correlational analysis provided for relevant significant relations, so that increasing suppressive tendencies corresponded to higher levels of euthymia. In terms of mood balance and adhering to classical and empirical literature, suppression demonstrated his adaptive direction.

#### Hypothesis 2:

Hypothesis 2 (Table 3) referred to the occurring relationships among suppressive tendencies and subjects' well-being. The used instruments provided for different factors involved. Correlational analyses were performed in order to highlight common directions among the considered phenomena, so that significant relations emerged among SMQ Total Score, SMQ Repressive function, SMQ Regression in the service of Ego, and WHO-5 Well-being scale. No significant association emerged regarding SMQ Rationalization.

Two of the three significant relations were positive, rather than SMQ Regression in the service of the Ego. No significant relation emerged concerning SMQ Rationalization. The first two significant and positive relations showed the same direction of suppressive tendencies and well-being, in line with previous results referred to euthymia.

Moreover, in the previous correlational analysis, Regression in the service of the Ego emerged significantly but inversely related to well-being. Generally, as for euthymia, the increase of well-being corresponded to the rise of suppression. This fact appears as confirmatory of the theoretical aspects of mature defense mechanisms. As emerged with reference to mood balance and euthymia, the increase of the suppressive tendency corresponded to higher scores in the well-being domain. This fact highlighted how in clinical terms defenses maintain their role, in this case with direct reference to adaptation.

#### Hypothesis 3:

Hypothesis 3 (Table 4) refers to the emergence of possible significant differences between the two groups, respectively, male and female subjects. The analysis performed through the Student's  $t$  test involved parametric variables, meant as factors related to Euthymia, SMQ Total Score, Repressive function, Regression in the Ego service, Rationalization, and WHO-5 well-being. Significant differences emerged regarding SMQ Total Score and Rationalization. Considering the highest mean scores, they were both referred to male groups, highlighting a greater score in the use of mature defense mechanisms such as Suppression, with rationalization tendencies.

#### Hypothesis 4:

Hypothesis 4 (Table 5) was aimed at highlighting the emergence of possible dependencies among the set of predictors, namely, SMQ Total Score, SMQ Repressive Function, SMQ Regression in the service of the Ego, SMQ Rationalization, and three dependent variables contained into ProQol-5 Scale, specifically Compassion satisfaction, Burnout, and Secondary traumatic stress.



**TABLE 5 |** Multivariate linear regressions analysis.

	SMQ Total Score		Repressive function		Regression in the service of the Ego		Rationalization	
	B (CI)	P	B (CI)	P	B (CI)	P	B (CI)	P
Compassion satisfaction	-1.90 (-3.36; -0.438)	<b>0.011*</b>	2.07 (0.661; 3.49)	<b>0.004*</b>	2.13 (0.680; 3.59)	<b>0.004*</b>	1.36 (0.109; 2.63)	<b>0.033*</b>
Burnout	1.11 (-0.260; 2.48)	0.112	-1.22 (-2.55; 0.105)	0.071	-0.857 (-2.22; 0.511)	0.218	-0.857 (-2.01; 0.511)	0.165
Secondary traumatic stress	-0.902 (-2.51; 0.710)	0.271	0.720 (-0.843; -2.28)	0.364	1.36 (-0.244; 2.97)	0.096	0.691 (-696; 2.07)	0.326

B = Beta coefficient; CI = confidence Interval; \* $p < 0.05$  was considered as significant for the multivariate linear regression analyses.

The significant dependencies were referred to Compassion satisfaction, with reference to the whole set of independent variables.

The emerged dependence relationships highlighted the role of defensive paths on clinical commitment in terms of the usefulness of high adaptive defenses. In particular, repression appeared as directly responsible for SMQ factors' increase.

These data have placed the present findings in line with previously performed analyses and research, referring to the employment of defense mechanisms to reach an adaptive tendency and stable object relations in clinical terms. Finally, in clinical terms, the high adaptive role of suppression took place with direct reference to causal relations. In the current study, suppression assumed coherent directions with mood balance and well-being. In causal terms, suppression demonstrated to directly influence clinical satisfaction.

## DISCUSSION

The present study highlighted the existing relations among relevant phenomena such as defense mechanisms, mood states, and clinical issues. In particular, the study hypotheses included the abovementioned phenomena in order to study their directions, differences, and dependence relations.

Starting from the considered defense mechanism, suppression emerged as a consistent way to manage internal/external stressors, as in the case of adaptation, pathological psychosomatic issues, and medical conditions due to psychological phenomena (Warnes, 1982; Cramer, 2000; De Burge, 2001; Szwec, 2018; Settineri et al., 2019a; Conversano et al., 2020b; Conversano and Di Giuseppe, 2021).

In particular, the first statistical analysis was performed regarding the existing relations among suppression and euthymia, explaining significant associations. The protective role of suppression appeared as linked to euthymia, so that higher levels of suppression corresponded to higher scores related to euthymia. Therefore, suppression represents a conscious dynamic steaming from of the need to remove disturbing contents from cognition. We are aware of this fact in the subject's attempts to reach adaptation, where personal facts, representations, and adverse affectivity are spaced out in order to pursue tasks. Distress arising from inappropriate emotions, feelings, and images is thus avoided by the mechanism of suppression.

The significant and positive relations were referred to general terms (meant as suppressive functioning) and strictly

related factors. In opposite terms, regression to fantasy emerged aversive instead of the maintenance of positive mood and affective stability.

The link between defensive structure, coping, and mood regulation appears more and more precise, directly supported by recent literature (Brockman et al., 2017; Compas et al., 2017; Schäfer et al., 2017; Weissman et al., 2019). The need to avoid unsatisfying and adverse consequences due to representations and emotions accounts for one of the main themes in defenses. In these terms, our study described a continuity with previously emerged studies.

As a consequence of this emerged result, well-being appeared as significantly associated with suppression. Even in this case, Regression in the service of the Ego occurred as significantly and inversely directed. In most of the classical works, it appeared as mainly related to creativity and action, close to fantasies and regressive moves (Wild, 1965; Fitzgerald, 1966; Bush, 1969; Knafo, 2002), in our case far from rational and adaptive behaviors tending to consider needs strictly related to reality.

In our experience, the suppressive tendency was shown as the adaptation process stems as strong as directed to adjustment. Higher levels were detected in male subjects, referring to the emerged significant differences, statistically performed in our analysis.

Recent literature highlighted how subject structures influence the course of cure (Eglington and Chung, 2011; Lomas et al., 2019; Conversano et al., 2020a; Kinsella et al., 2020), with particular reference to compassion (McNally et al., 2019; Merlo et al., 2020a,b).

In our results, dependence relations emerged concerning compassion satisfaction and all suppression factors. Even in this case, the significant dependences highlighted the role of suppression with reference to the opportunity to experience compassionate clinical circumstances (Zeidner et al., 2013; Ivicic and Motta, 2017; Singh et al., 2020). The role of compassion is currently emerging as a high influencing factor, both related to clinicians and patients and extended to several conditions such as psychopathology, therapy, mental health, image concerns, neurovegetative phenomena, and general health outcomes (Mincă et al., 2013; Rosa et al., 2019; Carter et al., 2021; Kim et al., 2021; McKay and Walker, 2021; Turk et al., 2021).

From our results, it was possible to show how phenomena treated through different models can be analyzed in terms of assumed directions and dependencies. Both in terms of defense mechanism and mood states, it was possible to highlight how mature defenses intervene in mood states to manage internal/external stressors deriving from clinical settings and

practice. With particular reference to mood states, euthymia appeared significantly directed in the same direction of mature defensive processes.

This fact highlights a strong continuity with classical models and current empirical research on defense mechanisms, extended to the other main direction related to consciousness and coping. Our results suggested being compliant with current research, involving instruments of recent development, adherent to confirming previous speculative research through objective methods. Finally, the possibility offered by empirical research in our perspective represents the link between previous research and current needs to import, discuss, confirm, and possibly disconfirm data steamed from historical periods in which, from the beginning, the aim of reaching intersubjective validity was not neglected.

## IMPLICATIONS OF THE STUDY

Current research in the clinical field presents the need to improve empirical studies, involving and exporting classical clinical themes into valid tools. This need can be extended to the role of defense mechanisms and the maintenance of stable mood so that the current study provided empirical research based on suppression and euthymia.

Through the use of recently validated instruments, high adaptive defense and euthymia have been examined in terms of correlations, differences, and dependencies. Through the performed analyses, several significant relations emerged, highlighting congruent directions, dependencies, and differences useful to understand the role of suppression regarding mood.

According to the used instruments, the emerged results would serve as a previous basis useful to extend the results on other samples to confirm and discuss further developments. The aim to detect existent relations must be extended to further samples and clinical conditions, close to the aim of deepening defenses' impact on mood stability. The emerged results were strictly related to clinical psychological dynamics, highlighting how the use of mature defense assumed coherent directions with mood balance and well-being, beside specific gender differences. In clinical psychological terms, these data represent relevant information, useful to understand how conscious phenomena bring the subjects closer to adaptive dynamics. In particular, a clear reference to satisfaction emerged, demonstrating the adaptive role of certain defenses in increasing assistance quality and efficacy.

## REFERENCES

- Bech, P. (2012). *Clinical psychometrics*, URL: <https://onlinelibrary.wiley.com/doi/book/10.1002/9781118511800>.
- Berney, S., de Roten, Y., Beretta, V., Kramer, U., and Despland, J. N. (2014). Identifying psychotic defenses in a clinical interview. *J. Clin. Psychol.* 70, 428–439. doi: 10.1037/0003-066X.55.1.89
- Bond, M., Gardner, S. T., Christian, J., and Sigal, J. J. (1983). Empirical study of self-rated defense styles. *Arch. Gener. Psych.* 40, 333–338. doi: 10.1001/archpsyc.1983.01790030103013

## LIMITATIONS AND CONCLUSION

The present study has several limitations highlighting the need to support the emerged results through further research. The considered subjects were involved in clinical settings, so it would be necessary to extend the number of participants to better reflect the population. Despite the emergence of significant relations, the data should be extended and compared with more extended samples.

Moreover, the number of female subjects was higher than males. This fact recalls the need to reach a gender sample balance useful to better compare groups. The participants' age ranged from 25 and 30 years old, suggesting the purpose to include other age groups.

Although these references constitute limitations, the study was aimed at improving knowledge about the considered phenomena. This cross-sectional study can be regarded as an example of a knowledge extension on the themes mentioned earlier and clinical issues.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethical Committee, Department of Cognitive Sciences, Psychology, Educational and Cultural Studies (COSPECS), University of Messina, Italy. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

EM made a significant contribution to design the research study, administer the protocol, draft the manuscript, revise it critically, perform the statistical analysis, and provide data interpretation. IM and AS made a significant contribution to design and revise the research study, and SS gave the final approval. All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

- Brockman, R., Ciarrochi, J., Parker, P., and Kashdan, T. (2017). Emotion regulation strategies in daily life: mindfulness, cognitive reappraisal and emotion suppression. *Cogn. Behav. Ther.* 46, 91–113. doi: 10.1080/16506073.2016.1218926
- Bush, M. (1969). Psychoanalysis and scientific creativity: with special reference to regression in the service of the ego. *J. Am. Psych. Assoc.* 17, 136–190. doi: 10.1177/000306516901700108
- Carrozzino, D., Svicher, A., Patierno, C., Berrocal, C., and Cosci, F. (2019). The euthymia scale: a clinimetric analysis. *Psychother. Psychosom.* 88, 119–122. doi: 10.1159/000496230

- Carter, A., Gilbert, P., and Kirby, J. N. (2021). Compassion—focused therapy for body weight shame: a mixed methods pilot trial. *Clin. Psychol. Psychother.* 28, 93–108. doi: 10.1002/cpp.2488
- Catalano, A., Martino, G., Bellone, F., Papalia, M., Lasco, C., Basile, G., et al. (2019). Neuropsychological assessment in elderly men with benign prostatic hyperplasia treated with dutasteride. *Clin. Drug Invest.* 39, 97–102. doi: 10.1007/s40261-018-0720-7
- Compas, B. E., Jaser, S. S., Bettis, A. H., Watson, K. H., Gruhn, M. A., Dunbar, J. P., et al. (2017). Coping, emotion regulation, and psychopathology in childhood and adolescence: a meta-analysis and narrative review. *Psychol. Bull.* 143:939. doi: 10.1037/bul0000110
- Conversano, C. (2019). Common psychological factors in chronic diseases. *Front. Psychol.* 10:2727. doi: 10.3389/fpsyg.2019.02727
- Conversano, C., Ciacchini, R., Orrù, G., Di Giuseppe, M., Gemignani, A., and Poli, A. (2020a). Mindfulness, Compassion, and Self-Compassion Among Health Care Professionals: what's New? A Systematic Review. *Front. Psychol.* 11:1683. doi: 10.3389/fpsyg.2020.01683
- Conversano, C., Di Giuseppe, M., Miccoli, M., Ciacchini, R., Di Silvestre, A., Lo Sterzo, R., et al. (2020b). Retrospective Analyses of Psychological Distress and Defense Style Among Cancer Patients. *Clin. Neuropsych.* 17, 217–224. doi: 10.36131/cnforitieditore20200403
- Conversano, C., and Di Giuseppe, M. (2021). Psychological Factors as Determinants of Chronic Conditions: clinical and Psychodynamic Advances. *Front. Psychol.* 12:635708. doi: 10.3389/fpsyg.2021.635708
- Cramer, P. (2000). Defense mechanisms in psychology today: further processes for adaptation. *Am. Psychol.* 55:637. doi: 10.1037/0003-066X.55.6.637
- De Burge, A. (2001). La levée de la suppression en psychosomatique. *Rev. Fr. Psychanal.* 1, 11–27. doi: 10.3917/rfp.651.0011
- Di Giuseppe, M., Di Silvestre, A., Lo Sterzo, R., Hitchcott, P., Gemignani, A., and Conversano, C. (2019). Qualitative and quantitative analysis of the defensive profile in breast cancer women: a pilot study. *Health Psychol. Open* 6:2055102919854667. doi: 10.1177/2055102919854667
- Di Giuseppe, M., Miniati, M., Miccoli, M., Ciacchini, R., Orrù, R., Lo Sterzo, R., et al. (2020a). Defensive responses to stressful life events associated with cancer diagnosis. *Med. J. Clin. Psychol.* 8:20. doi: 10.6092/2282-1619/mjcp-2384
- Di Giuseppe, M., Perry, J. C., Lucchesi, M., Michelini, M., Vitiello, S., Piantanida, A., et al. (2020b). Preliminary reliability and validity of the DMRS-SR-30, a novel self-report measure based on the Defense Mechanisms Rating Scales. *Front. Psych.* 11:870. doi: 10.3389/fpsyg.2020.00870
- Di Riso, D., Gennaro, A., and Salcuni, S. (2015). Defensive mechanisms and personality structure in an early adolescent boy: process and outcome issues in a non-intensive psychoanalytically oriented psychotherapy. *Res. Psychother.* 18, 114–128. doi: 10.4081/ripppo.2015.176
- Eglinton, R., and Chung, M. C. (2011). The relationship between posttraumatic stress disorder, illness cognitions, defence styles, fatigue severity and psychological wellbeing in chronic fatigue syndrome. *Psych. Res.* 188, 245–252. doi: 10.1016/j.psychres.2011.04.012
- Farma, T., and Cortinovis, I. (2000). Misurare i meccanismi di difesa attraverso il "Defense Style Questionnaire" a 40 item. Attendibilità dello strumento e suo utilizzo nel contesto Italiano. *Ric. Psicol.* 24, 127–144.
- Fava, G. A., and Bech, P. (2016). The concept of euthymia. *Psychother. Psychos.* 85, 1–5. doi: 10.1159/000441244
- Fava, G. A., Cosci, F., Guidi, J., and Tomba, E. (2017). Wellbeing therapy in depression: new insights into the role of psychological wellbeing in the clinical process. *Depr. Anxiety* 34, 801–808. doi: 10.1002/da.22629
- Fiegl, S., Lahmann, C., O'Rourke, T., Probst, T., and Pieh, C. (2019). Depression according to ICD-10 clinical interview vs. depression according to the Epidemiologic Studies Depression Scale to predict pain therapy outcomes. *Front. Psychol.* 10:1862. doi: 10.3389/fpsyg.2019.01862
- Fitzgerald, E. T. (1966). Measurement of openness to experience: a study of regression in the service of the ego. *J. Person. Soc. Psychol.* 4, 655–663. doi: 10.1037/h0023980
- Freud, A. (1936). The ego and the defense mechanisms. *Writings* 2, 1–176.
- Gangemi, A., Capri, T., Fabio, R. A., Puggioni, P., Falzone, A. M., and Martino, G. (2018). Transcranial direct current stimulation (tdcs) and cognitive empowerment for the functional recovery of diseases with chronic impairment and genetic etiopathogenesis. *Adv. Genet. Res.* 18, 179–196.
- Gugliandolo, M. C., Costa, S., Cuzzocrea, F., Larcán, R., and Martino, G. (2020). Adolescents and Body Uneasiness: the Contribution of Supportive Parenting and Trait Emotional Intelligence. *J. Child Fam. Stud.* 29, 2453–2462. doi: 10.1007/s10826-020-01779-1
- Guidi, J., and Fava, G. A. (2020). The emerging role of euthymia in psychotherapy research and practice. *Clin. Psychol. Rev.* 82:101941. doi: 10.1016/j.cpr.2020.101941
- Guidi, J., and Fava, G. A. (2021). Conceptual and Clinical Innovations of Well-being Therapy. *Int. J. Cogn. Ther.* 14, 196–208. doi: 10.1007/s41811-021-00101-1
- Hall, T., Krahn, G. L., Horner-Johnson, W., and Lamb, G. (2011). Examining functional content in widely used Health-Related Quality of Life scales. *Rehabil. Psychol.* 56:94. doi: 10.1037/a0023054
- Ivicic, R., and Motta, R. (2017). Variables associated with secondary traumatic stress among mental health professionals. *Traumatology* 23, 196–204. doi: 10.1037/trm0000065
- Jahoda, M. (1958). *Current Concepts of Positive Mental Health*. New York: Basic Books.
- Kelly, R. R., McDonald, L. T., Jensen, N. R., Sidles, S. J., and LaRue, A. C. (2019). Impacts of psychological stress on osteoporosis: clinical implications and treatment interactions. *Front. Psych.* 10:200. doi: 10.3389/fpsyg.2019.00200
- Kim, J. J., Oldham, M., Fernando, A. T., and Kirby, J. N. (2021). Compassion Mediates Poor Sleep Quality and Mental Health Outcomes. *Mindfulness* 12, 1252–1261. doi: 10.1007/s12671-021-01595-8
- Kinsella, E. A., Smith, K., Bhanji, S., Shepley, R., Modor, A., and Bertrim, A. (2020). Mindfulness in allied health and social care professional education: a scoping review. *Disab. Rehabil.* 42, 283–295. doi: 10.1080/09638288.2018.1496150
- Knafo, D. (2002). Revisiting Ernst Kris's concept of Regression in the service of the ego in art. *Psychoanalytic Psychol.* 19:24. doi: 10.1037/0736-9735.19.1.24
- Kris, E., and Kaplan, A. (1952). *Aesthetic ambiguity*. In *Psychoanalytic explorations in art*. New York: International Universities Press, 243–264.
- Kris, E. (1952a). *Approaches to art*. In *Psychoanalytic explorations in art*. New York: International Universities Press, 13–63.
- Kris, E. (1952b). *The psychology of caricature*. In *Psychoanalytic explorations in art*. New York: International Universities Press, 173–188.
- Kris, E. (1952c). *Psychoanalytic explorations in art*. New York: International Universities Press.
- Lingiardi, V., Gazzillo, F., Colli, A., De Bei, F., Tanzilli, A., Di Giuseppe, M., et al. (2010). Diagnosis and assessment of personality, therapeutic alliance and clinical exchange in psychotherapy research. *Res. Psychother.* 2, 97–124. doi: 10.4081/ripppo.2010.36
- Lomas, T., Medina, J. C., Ivztan, I., Rupprecht, S., and Eiroa-Orosa, F. J. (2019). Mindfulness-based interventions in the workplace: An inclusive systematic review and meta-analysis of their impact upon wellbeing. *J. Posit. Psychol.* 14, 625–640. doi: 10.1080/17439760.2018.1519588
- Martino, G., Caputo, A., Schwarz, P., Bellone, F., Fries, W., Quattropani, M. C., et al. (2020c). Alexithymia and inflammatory bowel disease: a systematic review. *Front. Psychol.* 11:1763. doi: 10.3389/fpsyg.2020.01763
- Martino, G., Caputo, A., Vicario, C. M., Catalano, A., Schwarz, P., and Quattropani, M. C. (2020b). The relationship between alexithymia and type 2 diabetes: a systematic review. *Front. Psychol.* 11:2026. doi: 10.3389/fpsyg.2020.02026
- Martino, G., Catalano, A., Agostino, R. M., Bellone, F., Morabito, N., Lasco, C. G., et al. (2020a). Quality of life and psychological functioning in postmenopausal women undergoing aromatase inhibitor treatment for early breast cancer. *PLoS One* 15:e0230681. doi: 10.1371/journal.pone.0230681
- Martino, G., Sardella, A., Bellone, F., Lasco, C., Langher, V., Cazzato, V., et al. (2019). Executive functions and bone health: a focus on cognitive impulsivity and bone mineral density. *Mediterr. J. Clin. Psychol.* 7:2167. doi: 10.6092/2282-1619/2019.7.2167
- McKay, T., and Walker, B. R. (2021). Mindfulness, self-compassion and wellbeing. *Person. Individ. Diff.* 168:110412. doi: 10.1016/j.paid.2020.110412
- McNally, P. J., Charlton, R., Ratnapalan, M., and Dambha-Miller, H. (2019). Empathy, transference and compassion. *J. Roy. Soc. Med.* 112, 420–423. doi: 10.1177/0141076819875112
- Merlo, E., Sicari, F., Frisone, F., Costa, G., Alibrandi, A., Avena, G., et al. (2021). Uncertainty, alexithymia, suppression and vulnerability during the COVID-19 pandemic in Italy. *Health Psychol. Rep.* 9:104078. doi: 10.5114/hpr.2021.104078

- Merlo, E. M. (2019). Opinion Article: The role of psychological features in chronic diseases, advancements and perspectives. *Mediterr. J. Clin. Psychol.* 7:607783. doi: 10.6092/2282-1619/2019.7.2341
- Merlo, E. M., Sicari, F., Frisone, F., Alibrandi, A., and Settineri, S. (2020a). Personality types and dreaming in future health professionals: Effect of age and gender. *Int. J. Dream Res.* 13, 160–172. doi: 10.11588/ijodr.2020.2.70571
- Merlo, E. M., Stoian, A. P., Motofei, I. G., and Settineri, S. (2020b). Clinical Psychological Figures in Healthcare Professionals: Resilience and Maladjustment as the “Cost of Care”. *Front. Psychol.* 11:607783. doi: 10.3389/fpsyg.2020.607783
- Metzger, J. A. (2014). Adaptive defense mechanisms: function and transcendence. *J. Clin. Psychol.* 70, 478–488. doi: 10.1002/jclp.22091
- Mincă, D. G., Furtunescu, F., Calinoiu, G., Domnariu, C., and Costea, R. (2013). Profile of persons involved in traffic accidents in Romania. *Rom. J. Leg. Med.* 21, 155–160. doi: 10.4323/rjlm.2013.155
- Palestrini, L., Prati, G., Pietrantoni, L., and Cicognani, E. (2009). La qualità della vita professionale nel lavoro di soccorso: Un contributo alla validazione italiana della Professional Quality of Life Scale (ProQOL). *Psicoter. Cogn. Comport.* 15, 205–227.
- Perry, J. C. (1990). *Defense Mechanism Rating Scale*. Cambridge, MA: Harvard School of Medicine Publ.
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-years outcome. *Am. J. Psych.* 169, 916–925. doi: 10.1176/appi.ajp.2012.11091403
- Perry, J. C., and Henry, M. (2004). “Studying defense mechanisms in psychotherapy using the Defense Mechanism Rating Scales,” in *Advances in psychology*, 136. *Defense mechanisms: Theoretical, research and clinical perspectives*, eds U. Hentschel, G. Smith, J. G. Draguns, and W. Ehlers, (Amsterdam: Elsevier), 165–192. doi: 10.1016/S0166-4115(04)80034-7
- Perry, J. C., Metzger, J., and Sigal, J. J. (2015). Defensive Functioning Among Women With Breast Cancer and Matched Community Controls. *Psychiatry* 78, 156–169. doi: 10.1080/00332747.2015.1051445
- Porcerelli, J. H., Cramer, P., Porcerelli, D. J., and Arterbery, V. E. (2017). Defense Mechanisms and Utilization in Cancer Patients Undergoing Radiation Therapy. A Pilot Study. *J. Nerv. Ment. Dis.* 205, 466–470. doi: 10.1097/NMD.0000000000000674
- Rosa, V., Tomai, M., Lauriola, M., and Martino, G. (2019). Body mass index, personality traits, and body image in Italian pre-adolescents: An opportunity for overweight prevention. *Psihologija* 52, 379–393. doi: 10.2298/PSI181121009R
- Schäfer, J. Ö., Naumann, E., Holmes, E. A., Tuschen-Caffier, B., and Samson, A. C. (2017). Emotion regulation strategies in depressive and anxiety symptoms in youth: A meta-analytic review. *J. Youth Adolesc.* 46, 261–276. doi: 10.1007/s10964-016-0585-0
- Settineri, S., Frisone, F., Alibrandi, A., and Merlo, E. M. (2019a). Emotional suppression and oneiric expression in psychosomatic disorders: early manifestations in emerging adulthood and young patients. *Front. Psychol.* 10:1897. doi: 10.3389/fpsyg.2019.01897
- Settineri, S., Merlo, E. M., Frisone, F., Alibrandi, A., Carrozzino, D., Diaconu, C. C., et al. (2019b). Suppression Mental Questionnaire App: a mobile web service-based application for automated real-time evaluation of adolescent and adult suppression. *Mediterr. J. Clin. Psychol.* 7:2056. doi: 10.6092/2282-1619/2019.7.2056
- Singh, J., Karanika-Murray, M., Baguley, T., and Hudson, J. (2020). A Systematic Review of Job Demands and Resources Associated with Compassion Fatigue in Mental Health Professionals. *Int. J. Environ. Res. Publ. Health* 17:6987. doi: 10.3390/ijerph17196987
- Stamm, B. H. (2005). *The ProQOL manual: The professional quality of life scale: Compassion satisfaction, burnout & compassion fatigue/secondary trauma scales*. Baltimore, MD: Sidran.
- Stamm, B. H. (2009). *Professional quality of life: Compassion satisfaction and fatigue version 5 (ProQOL)*. Baltimore, MD: Sidran.
- Szwec, G. (2018). “The capacity to say no and psychosomatic disorders in childhood,” in *Psychosomatics Today*, eds M. Aisenstein, and E. R. de Aisemberg, (Abingdon: Routledge), 163–179. doi: 10.4324/9780429479229-9
- Topp, C. W., Østergaard, S. D., Søndergaard, S., and Bech, P. (2015). The WHO-5 Well-Being Index: a systematic review of the literature. *Psychother. Psychos.* 84, 167–176. doi: 10.1159/000376585
- Turk, F., Kellett, S., and Waller, G. (2021). Determining the potential links of self-compassion with eating pathology and body image among women and men: A cross-sectional mediational study. *Body Image* 37, 28–37. doi: 10.1016/j.bodyim.2021.01.007
- Vaillant, G. E. (1977). *Adaptation to life*. Abingdon: Routledge.
- Vaillant, G. E. (1992). *Ego Mechanisms of Defense: A Guide for Clinicians and Researchers*. Philadelphia: American Psychiatric Association.
- Vaillant, G. E. (1994). Ego mechanisms of defense and personality psychopathology. *J. Abnor. Psychol.* 103:44.
- Vita, R., Caputo, A., Quattropani, M. C., Watt, T., Feldt-Rasmussen, U., Puleio, P., et al. (2020). Quality of Life in Patients with Hyperthyroidism: Where do we stand? *Mediterr. J. Clin. Psychol.* 8, 1–28. doi: 10.6092/2282-1619/mjcp-2521
- Warnes, H. (1982). The dream specimen in psychosomatic medicine in the light of clinical observations. *Psychother. Psychos.* 38, 154–164. doi: 10.1159/000287623
- Weissman, D. G., Bitran, D., Miller, A. B., Schaefer, J. D., Sheridan, M. A., and McLaughlin, K. A. (2019). Difficulties with emotion regulation as a transdiagnostic mechanism linking child maltreatment with the emergence of psychopathology. *Devel. Psychopathol.* 31:899. doi: 10.1017/S0954579419000348
- Wild, C. (1965). Creativity and adaptive regression. *J. Person. Soc. Psychol.* 2, 161–169. doi: 10.1037/h0022404
- World Health Organization (WHO), (1998). *Wellbeing Measures in Primary Health Care/the DEPCARE Project: Report on a WHO Meeting. STOCKHOLM, Sweden 12-13 February 1998*. Geneva: World Health Organization.
- Zeidner, M., Hadar, D., Matthews, G., and Roberts, R. D. (2013). Personal factors related to compassion fatigue in health professionals. *Anx. Stress Coping* 26, 595–609. doi: 10.1080/10615806.2013.777045

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2021 Merlo, Stoian, Motofei and Settineri. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.





# It's Not That Great Anymore: The Central Role of Defense Mechanisms in Grandiose and Vulnerable Narcissism

Leonie Kampe<sup>1,2\*</sup>, Johannes Bohn<sup>3</sup>, Carina Remmers<sup>4</sup> and Susanne Hörz-Sagstetter<sup>1</sup>

<sup>1</sup> Department of Clinical Psychology and Psychotherapy, Psychologische Hochschule Berlin, Berlin, Germany, <sup>2</sup> Department of Psychiatry, Psychotherapy and Psychosomatic Medicine, Psychosoziales Zentrum Itzehoe, Itzehoe, Germany,

<sup>3</sup> Department of Education and Psychology, Freie Universität Berlin, Berlin, Germany, <sup>4</sup> Faculty of Health/School of Psychology and Psychiatry, Witten/Herdecke University, Witten, Germany

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

David Kealy,  
University of British Columbia, Canada  
Vera Békés,  
Yeshiva University, United States

### \*Correspondence:

Leonie Kampe  
l.kampe@phb.de

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychiatry

**Received:** 31 January 2021

**Accepted:** 06 April 2021

**Published:** 11 June 2021

### Citation:

Kampe L, Bohn J, Remmers C and  
Hörz-Sagstetter S (2021) It's Not That  
Great Anymore: The Central Role of  
Defense Mechanisms in Grandiose  
and Vulnerable Narcissism.  
Front. Psychiatry 12:661948.  
doi: 10.3389/fpsy.2021.661948

**Objectives:** The concept of narcissism contains a yet unresolved paradox: Its grandiose facet depicts the psychopathological core but is often associated with life-satisfaction and overall functioning, whereas its vulnerable facet is associated with psychological distress, but still not included in the international classification systems. Our goal was to investigate the relationship between the two facets of narcissism expecting underlying defense mechanisms to be core elements. First, we aimed to identify defense mechanisms specific to grandiose and vulnerable narcissism. Second, we explored how both facets are differentially associated with psychological distress, assuming that grandiose narcissism would be associated with less psychological distress than vulnerable narcissism. Third, we investigated the mediating role of defense mechanisms between narcissism and psychological distress.

**Methods:** In a non-clinical sample of  $N = 254$  individuals, the Pathological Narcissism Inventory was used for the assessment of grandiose and vulnerable facets of narcissism, the Defense Style Questionnaire for defense mechanisms, and the Brief Symptom Inventory for psychological distress. Structural equation modeling was employed to identify distinct factors of grandiose and vulnerable narcissism. Associations between specific defense mechanisms and both facets were calculated. Furthermore, the direct association between both facets and psychological distress was examined. We finally explored whether defense mechanisms mediate the association between distress and both grandiose and vulnerable narcissism.

**Results:** A distinct pattern of defense mechanisms for each facet of narcissism could be extracted: Both facets showed significant positive correlations with specific intermediate and all maladaptive defense mechanisms. Only grandiose narcissism showed significant positive correlations with adaptive defenses. Vulnerable narcissism showed negative correlations with all adaptive defenses. Specifically, grandiose narcissism was significantly related to anticipation, pseudo-altruism, rationalization, and dissociation, whereas vulnerable narcissism was negatively related to all these defense mechanisms. While grandiose narcissism was not related to psychological distress, vulnerable narcissism showed high correlations with psychological distress. Intriguingly,

mediator analysis found that grandiose narcissism was related to psychological distress when mediated by maladaptive defense mechanisms.

**Discussion:** The role of defense mechanisms is central for a differentiated understanding of the two different faces of narcissism. The relevance of assessing defense mechanisms in clinical settings, and related empirical findings are discussed.

**Keywords:** grandiose narcissism, vulnerable narcissism, defense mechanisms, psychological distress, personality, emotion regulation, adaptive functioning, dimensional assessment

## INTRODUCTION

The concept of narcissism plays a central role in personality research as well as in clinical psychological practice. Due to the seemingly contradicting manifestations of narcissism, understanding the underlying mechanisms is of both theoretical and practical importance. On the one hand, narcissism, as a personality trait, is related to numerous positive factors such as socio-economic success, overall life satisfaction, as well as psychological health (1, 2). On the other hand, high expressions on the continuum of narcissism are associated with proneness to emotional crisis, attachment anxieties, problematic long-term relationships, and severe problems in psychotherapy such as emotional reticence, unwillingness to change, and a higher drop-out rate (3–6).

Especially in clinical diagnostic settings, narcissistic pathology is often overlooked, and treatments are classified as seemingly “going well.” Eventually, when confronted with unexpected dropout, crises about upcoming separations from the therapist, or when patients change only little over the course of the treatment (7, 8), the underlying vulnerability and dysfunctionality of narcissism becomes evident. Many controversies surrounding the concept of narcissism and its clinical manifestations may be rooted in its one-sided operationalization in the international classification systems (9–11). The current definition of pathological narcissism in DSM-5 predominantly relates to the grandiose manifestation, consisting of a sense of entitlement, an excessive need for admiration, arrogant and self-centered behaviors, a proneness to envy and devaluation of others, and a lack of empathy and exploitative behaviors (12). Emerging consensus criticizes this definition by calling out its conceptual narrowness. Specifically, the definition of narcissism in DSM-5 neglects a different, more vulnerable side of this phenomenon (9, 13, 14). Psychoanalytic theory, empirical evidence, and clinical manifestations point to another facet of narcissism that captures specific insecurities underlying grandiose manifestations (15, 16). Following this theory, grandiose narcissism is understood as a defensive shield that is rigidly and unconsciously built up to defend the conscious ego from threats to the self-esteem (17). This theoretical conceptualization helps to understand why grandiose narcissism operates as a defensive structure that is related to indicators of psychological health, whereas its underlying vulnerability is not. By calling it a character defense, the defensive structure of grandiose narcissism may itself be seen as the core of the narcissistic pathology. Following this line of thought, it becomes

essential to address defense mechanisms in psychotherapeutic treatment in order to access underlying vulnerabilities and their related psychological problems (17).

In spite of its clinical vividness, this complex psychoanalytic relationship has not yet been fully investigated empirically. To fill this gap, the current study has the goal to investigate the quality and functional role of defense mechanisms in grandiose and vulnerable manifestations of narcissism and their associations with the experience of psychological distress.

## Defense Mechanisms

The idea that specific manifestations of narcissism are related to a distinctive defensive structure has been thoroughly elaborated in psychoanalytic literature (17, 18). Defense mechanisms are conceptualized as unconscious mental operations that regulate internal and external conflicts implicitly (19, 111). Defense mechanisms that are assumed to play a central role in narcissism are related to severe anxieties (20) and shame (21). With regard to their functionality, defense mechanisms can be clustered hierarchically and spanned over a continuum ranging from adaptive, over intermediate (neurotic), to maladaptive (pathological) mechanisms (22). Adaptive defense mechanisms such as humor, anticipation, and suppression help the individual to deal with unpleasant emotional experiences such as ambivalences or distressing realities. They can be used flexibly and reduce negative affective responses successfully. For example, in a situation in which a person embarrasses herself, she may circumvent the aversive feeling of being ashamed by making a joke. Adaptive defenses are related to psychological health and negatively associated with personality pathology (22). Intermediate (or in psychoanalytic terms: neurotic) defenses are also unconsciously applied to regulate emotional distress. Unlike adaptive defenses, they are used more rigidly and aim to avoid the experience of upsetting emotions. One of the functions of intermediate/neurotic defense mechanisms can be seen to keeping aggression away from important relationships. For example, a person who feels attacked by a colleague may hug her effusively at the next encounter and hereby transform the initial anger into its opposite, an unconscious mental transformation also called reaction formation. Examples for intermediate/neurotic defenses are turning against the self, pseudo-altruism or reaction formation. They can be helpful when applied with flexibility but are moderately related to the internal experience of psychological distress (22).

Maladaptive defenses, on the other end of the spectrum, are mechanisms to exclude potentially threatening emotional negative affects from the self by, for example, projecting them on other people or by dissociating from them. Examples are projection, splitting, and projective identification. In contrast to more adaptive defenses, that operate on an intrapsychic level, maladaptive defenses are employed mainly interpersonally, hence using others to (unconsciously) regulate one's own emotional distress. The dominant use of these defense mechanisms is strongly related to relationship problems, psychiatric disorders, and personality pathology (23–28).

## Narcissism and Defenses

From an etiologic point of view, defense mechanisms in narcissism are understood as a developmental consequence from early experiences of rejection and devaluation by primary caregivers (29, 30). In this context, it is argued that the grandiose manifestation of narcissism result from an unconscious compensatory process to defend oneself against severe anxieties, shame, and threats to the self-esteem (18, 20, 21). By coining the term “character defense”, Kernberg (17) argues that the core of the narcissistic pathology can be seen in a defensive operation to sustain the ego by splitting based, projective and reality-exceeding defensive operations such as grandiose fantasies, omnipotence, devaluation and idealization of the self and others, denial and externalization. To date, there are only few empirical studies that have investigated mechanisms that are specifically related to narcissism: Perry and Perry (31) found devaluation, omnipotence, idealization, and mood-incongruent denial as specific narcissistic defensive operations. Hilsenroth et al. (32) found idealization, and Raskin and Novacek (33) identified grandiose fantasies as defense mechanisms as specifically related to narcissism. The unconscious use of these mechanisms has the goal of preventing unpleasant realities from the consciousness to sustain the world of omnipotence, importance, and grandiose fantasy (17).

## Grandiose and Vulnerable Narcissism

The concept of narcissism has widely been formed by the grandiose phenotype which, to date, still is the underlying concept in the international classification systems of psychiatric diseases (34, 35). Due to criterion problems and related inconsistencies (36), the mere focus on the grandiose side of narcissism was criticized and subsequently investigated and revised (9). In spite of former differentiations between normal and pathological narcissism, there is a growing consensus toward a dimensional conceptualization with normal and pathological narcissisms as two poles of the spectrum (14). Furthermore, research on underlying factors of narcissism has emerged: Numerous studies found different factor structures in narcissism: Besides five (37), and three (16, 38, 39) factor solutions, prevailing evidence supports the assumption of two distinct factors in narcissism, namely grandiose (GN) and vulnerable (VN) narcissism (9, 16, 40–45).

While psychoanalytic theory suggests VN to be the underlying insecurity of GN, empirical research suggests that both are distinct factors of narcissism with fluctuating expressions (41, 46–48). Intriguingly, the two facets of narcissism show very

distinct clinical appearances. GN is linked to higher self-esteem, self-construal, and extraversion (2, 41, 49) and associated with higher sensibility to achievement setbacks (50). It is furthermore related to a hedonistic orientation and risk-taking behavior, impulsivity, and little consideration for future consequences (48) and also related to less treatment utilization and more drop-out (4). VN on the contrary is related to lower self-esteem, interdependent self-construal, attachment anxiety (49), introversion (41), sensitivity to shaming interpersonal experiences (50), a fatalistic and negative life perspective (48), and a hostile attribution bias (112).

While GN is generally associated with better psycho-social functioning, life satisfaction, and psychological health (1, 2), VN is related to neuroticism (51), higher psychological distress and depressive symptoms (1, 52), and less life satisfaction (2). It is also associated with difficulties in accessing adaptive emotion regulation strategies (53) and overall considered to be more dysfunctional. While GN is related to narcissistic personality disorder, VN is related to borderline personality disorder with severe impairments in psychological functioning (54).

Due to the clinical relevance and the particular relationship between narcissistic features and clinical challenges, treatment difficulties and lack of therapeutic response (3, 6, 7), the concept of narcissism has gained increasing attention in clinical conceptualizations and empirical research. The role of emotion regulation strategies related to narcissism has thereby shown to be of central clinical relevance. Recent studies have examined the relationship between dimensions of pathological narcissism and depressive symptoms, finding a consistent association between pathological narcissism and depressive symptoms in a longitudinal design (55), discussing emotional processing abilities as possible mediator (in VN) (56), and the role of dysfunctional attitudes like perfectionism in explaining the link between VN and depression (57).

Another avenue of research is the finding of a robust and projective defensive structure as a central factor in complications, refusals of change, drop-outs or stagnating treatment courses (3, 7, 8, 20, 58, 59). A study with narcissistic psychiatric outpatients showed an association between high levels of narcissism and greater interpersonal impairment by engaging in domineering, vindictive, and intrusive behaviors and a failure to complete treatment (5, 60). Mielimaka et al. (61) later found that the defensive style mediated the relationship between narcissism and interpersonal problems: Albeit narcissism was not directly related to interpersonal problems, they found an indirect effect when mediated by neurotic defense mechanisms. Ultimately, the differentiation between GN and VN has shown to be of informative value: Studies on the relationship between pathological narcissism (GN and VN), defensive functioning, and coping abilities have shown that GN and VN are associated with diverging coping strategies (62). VN, but not GN, is associated with hostile attribution bias, which could be interpreted as projective processes (63), and VN was strongly associated with narcissistic rage, hostility and aggressive behavior (64). The diverging relationships of GN and VN with emotion regulation strategies hence seem to be of high clinical relevance and deserve further investigation.

## Aims of the Current Study

Our aim was to further elucidate this issue by considering the role that defense mechanisms play in the paradoxical relationship between narcissism and psychological distress. Firstly, we aimed to explore specific defense mechanisms that are used in GN and in VN, respectively. Secondly, we aimed to explore the differential associations between GN and VN and psychological distress. Thirdly, we assumed that taking defense mechanisms into consideration might shed light on the relationship between narcissism and distress and may thus help to resolve the contradictions between grandiose narcissism and its ambiguous association with psychological distress. For this we conducted a cross-sectional study in which we assessed GN, VN, defense mechanisms and indicators of psychological distress in a non-clinical sample.

## MATERIALS AND METHODS

Our study has been preregistered at Open Science Forum (OSF). A detailed description of the research project and the full study plan can be accessed via the following link <https://osf.io/9tuqd/>.

### Participants

A non-clinical sample of  $N = 254$  (192 females, 59 males, and three with no specified gender) individuals was recruited via university and general mailing lists and assessed by an online survey as part of a larger study on personality, defenses and attachment (not relevant for the current thrust). Approval of the ethics committee of the Psychologische Hochschule Berlin was obtained. Inclusion criteria was a minimum age of 18 years and sufficient German language skills. A descriptive analysis of the sample is given in **Table 1**.

### Measures

#### Narcissism

For the assessment of grandiose and vulnerable narcissism, we used the German version of the Pathological Narcissism Inventory [PNI, (65); English original version: (44)]. The German PNI is a multidimensional measure for grandiose and vulnerable features of pathological narcissism and contains 54 items. It includes a translation of the 52 items of the original English PNI plus two additional items for the exploitative subscale, constructed and validated by the authors of the German version. The PNI consists of the following seven subscales: exploitativeness (EXP, seven items, e.g., item 15: “I find it easy to manipulate people”), grandiose fantasy (GF, seven items, e.g., item 42: “I often fantasize about performing heroic deeds”), self-sacrificing self-enhancement (SSSE, six items, e.g., item 22: “I feel important when others rely on me”), entitlement rage (ER, eight items, e.g., item 29: “I get angry when criticized”), devaluing (DEV, seven items, e.g., item 17: “Sometimes I avoid people because I’m concerned that they’ll disappoint me”), contingent self-esteem (CSE, 12 items, e.g., item 36: “It’s hard to feel good about myself unless I know other people like me”), and hiding the self (HS, seven items, e.g., item 9: “I often hide my needs for fear that others will see me as needy and dependent”). Items are scored on a 6-point Likert scale

**TABLE 1 |** Descriptive statistics.

	Mean	SD	Min	Max
Age	33.56	15.03	18	73
Psychological distress	1.73	0.63	1.00	4.28
Grandiose narcissism	3.19	0.75	1.40	5.15
Vulnerable narcissism	3.04	0.79	1.00	5.56
<b>Adaptive defense mechanisms</b>				
Suppression	4.21	1.75	1	9
Anticipation	5.36	1.69	1	9
Humor	5.52	1.76	1	9
Sublimation*	3.70	2.23	1	9
Rationalization*	6.23	1.58	2	9
Denial*	2.46	1.73	1	9
Dissociation	3.10	1.58	1	7.5
<b>Intermediate/neurotic defense mechanisms</b>				
Pseudo-altruism	4.96	1.44	1	8.5
Undoing	4.08	1.75	1	9
Reaction formation*	4.45	2.21	1	9
Acting out	3.53	1.75	1	8.5
<b>Maladaptive defense mechanisms</b>				
Splitting	2.68	1.64	1	7.5
Autistic fantasy	3.11	2.06	1	9
Projection	2.17	1.42	1	8
Passive aggression	2.50	1.52	1	9
Idealization	3.10	1.58	1	7.5
Somatization	3.35	1.84	1	9
Isolation	3.25	1.94	1	9
Displacement	3.48	1.84	1	9
Devaluation	3.28	1.54	1	8.5

For all scales, the mean values over all items are displayed. For psychological distress the rating scales ranged from 1 to 5; for grandiose and vulnerable narcissism the ratings scales ranged from 1 to 6; for the defense mechanisms the rating scales ranged from 1 to 9.

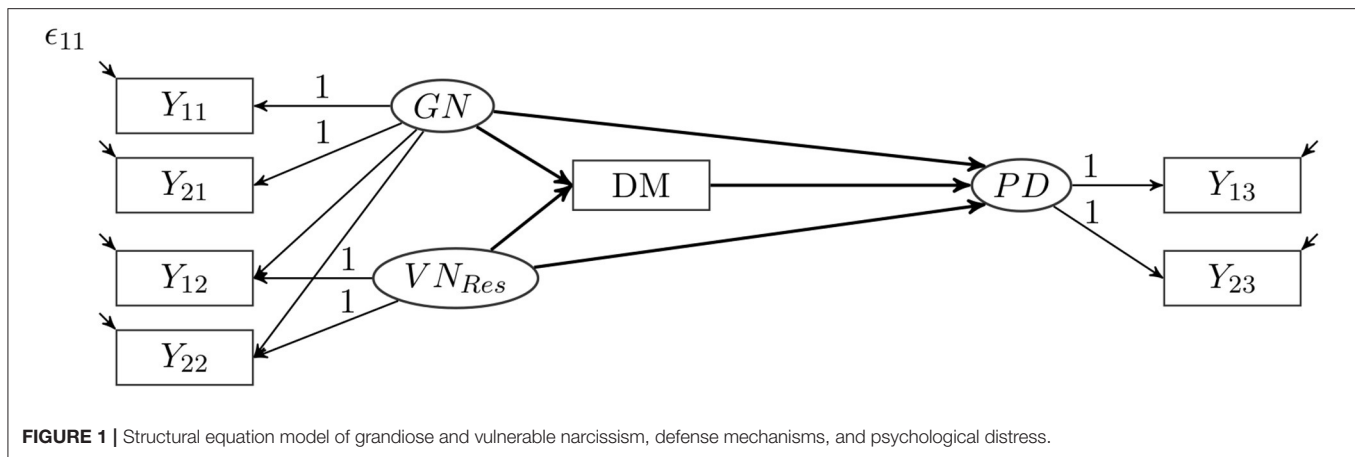
\*For this defense mechanism only one item was used.

ranging from 0 (*not at all like me*) to 5 (*very much like me*). The PNI shows overall good psychometric properties with alpha coefficients ranging between  $\alpha = 0.82$  and  $\alpha = 0.92$ . Re-test reliability for the total score was at  $\alpha = 0.86$  and CFA and ESEM confirmed the 7-factor lower order factor structure (65). Conclusions for higher order factor structures still remain open, however, empirical evidence suggests a two-factor solution for grandiose narcissism consisting of factors EXP, GF, and SSSE, and vulnerable narcissism consisting of factors ER, DEV, HS and CSE (44, 65–68). We based our analyses on this two-factor solution.

#### Defense Mechanisms

The Defense Style Questionnaire [DSQ 40, (69)] is the 40 item German version of the English DSQ 40 (70). In the DSQ, 20 defense mechanisms, represented by two items each, are assessed on a 9-point Likert scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). The items can be classified into three categories, each forming an individual scale: adaptive, intermediate (neurotic), and maladaptive defense mechanisms. The respective





items are marked as such in the results. Factor analysis of the German version confirmed the original factor structure but assigned individual defense mechanisms to the three factors in a different pattern: adaptive defenses (sublimation, humor, anticipation, suppression, rationalization, dissociation, and denial), intermediate/neurotic defenses (pseudo-altruism, undoing, reaction formation, and acting out), and maladaptive defenses (splitting, autistic fantasies, projection, passive aggression, idealization, somatization, isolation, displacement, and devaluation) (69). Other studies on the DSQ 40 vary in the assignment of the individual defense mechanisms to their levels of adaptiveness. For our study we based the assignment on the factor analysis of Schauenburg et al. (69), although some clinical doubts might remain. However, since we did not use the scale means for our analysis, the assignment is irrelevant for the interpretation of our results.

### Psychological Distress

For the assessment of psychological distress, we used the German version of the Brief Symptom Inventory [BSI-18; German version: Mini-SCL, (71)]. The BSI-18 is a reliable and short instrument for the assessment of clinical distress to assess subjective mental impairment on the scales depression ( $\alpha = 0.87$ ), anxiety ( $\alpha = 0.84$ ), and somatization ( $\alpha = 0.82$ ) (72). Items are rated on a 5-point Likert scales ranging from 0 (*not at all*) to 4 (*extremely*). For this study, we used the Global Severity Index (GSI,  $\alpha = 0.93$ ), an overall score for psychological distress that can be calculated from the three subscales. Both, first and second order factor structures were supported by CFA (72).

### Statistical Analysis

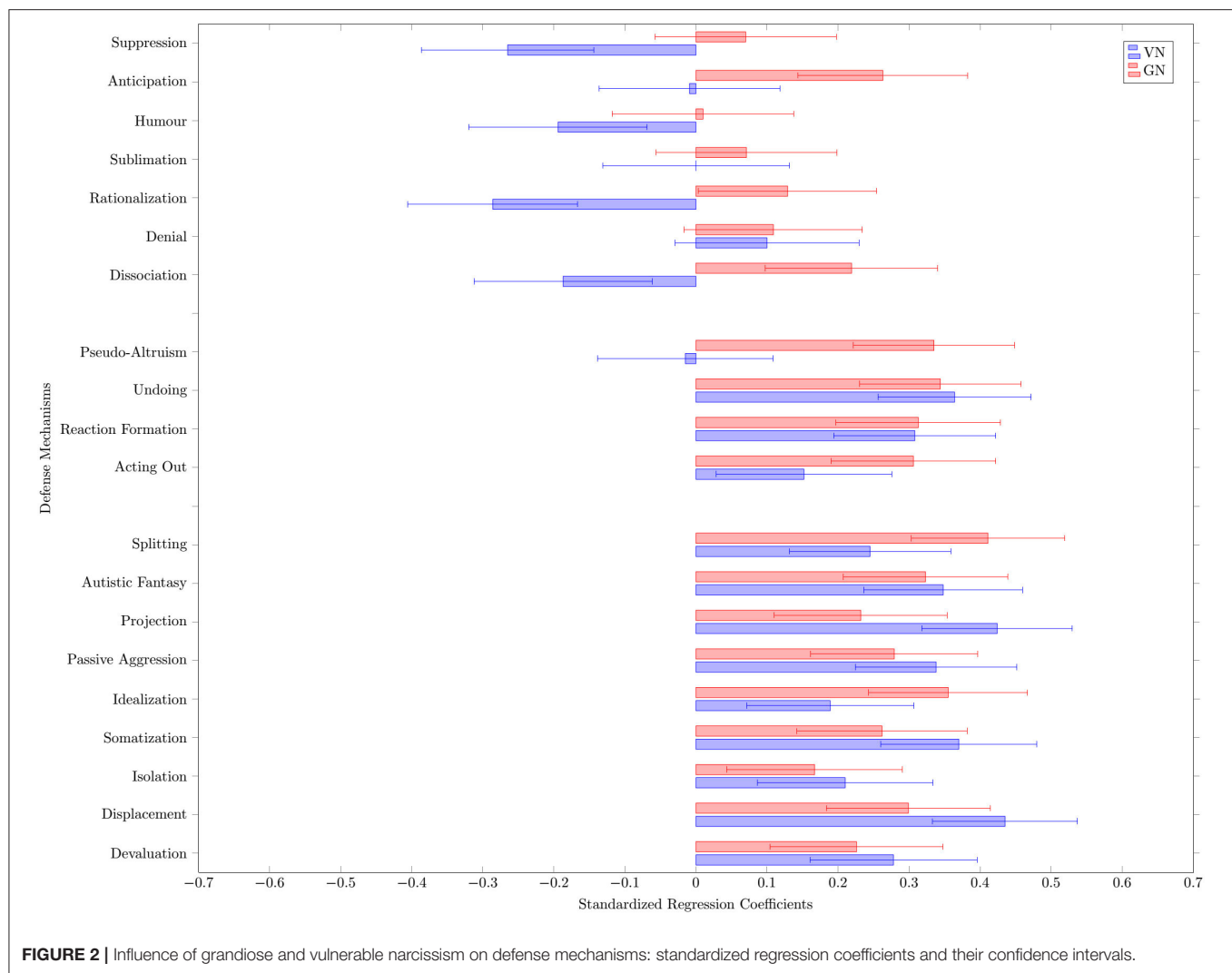
For an a priori calculation of the sample size, comparable studies served as orientation [e.g., (73, 74)] for the calculation of the correlations. These studies show an average effect sizes of  $r = 0.3$ . A power analysis for the calculation of the sample size was conducted with the program G\*Power 3.1 (75). With an alpha error probability of 0.05, an estimated power of 0.95 and the estimated effect size of  $r = 0.3$ , a sample size of 134 participants resulted from the analysis. As structural equation

models require a minimum of  $N = 200$  (76) we used this as the study's benchmark.

Structural equation modeling was used to address the questions in this study. These models combine the different facets of narcissism (assessed by PNI), defense mechanisms (assessed by DSQ 40), and psychological distress (assessed by BSI-18) into one model. The model is displayed in **Figure 1**.

To represent the different correlations of GN and VN with the other variables, we used a bifactor S-1 model (77, 78). This S-1 model allows a clear separation of grandiose and vulnerable aspects of narcissism. Since GN is the core of the current definition of pathological narcissism, it was chosen as the reference factor for the model. Based on prior research and modeling suggestions (44, 65, 68) two parcels ( $Y_{11}$  and  $Y_{21}$ ) were calculated from the items of the PNI scales for EXP, GF, and SSSE. These two parcels load on the GN factor, which represents the degree of grandiose narcissism. Two other parcels ( $Y_{12}$  and  $Y_{22}$ ) were calculated from the remaining items of the PNI, which form the CSE, DEV, ER, and HS scales. These two parcels also load on the GN factor. These two parcels additionally load on a second factor VN<sub>Res</sub> that is uncorrelated with the GN factor. This second factor is a residual factor, and it describes that portion in the variance of vulnerable narcissism that cannot be explained by GN. This residual factor has the mean value 0 and a person with a value of 0 in this factor would have exactly the value in the VN that would be expected on the basis of the GN. Thus, a person with a positive value on this residual factor would have a higher VN than one would have expected based on their GN. Through this approach, the GN factor represents the grandiose elements of narcissism, encompassing the elements contained in both GN and VN. The residual factor of VN contains only those elements that have nothing in common with GN. By separating the reference and the residual factor, we can better examine the influence on other variables the specific vulnerable facet of narcissism has independently of grandiose narcissism.

For each defense mechanism, an individual model was calculated, leading to a total of 20 models. Each defense mechanism also formed a mediator between the two narcissism factors and psychological distress. Two parcels ( $Y_{13}$  and  $Y_{23}$ ) were calculated from the items of the BSI-18 and loaded on the



psychological distress factor. We used this model to examine the strength of the relationship between the narcissism factors and the respective defense mechanism, the strength of the influence on psychological distress, and to what extent this influence is mediated by the defense mechanism.

The defense mechanisms were each comprised of two items and the mean of these two items was used as a manifest variable in the model. For the defense mechanisms of sublimation, rationalization, reaction formation, and denial, the correlations of the two items were not significant. In each of these models, only the item that represented the defense mechanism best in terms of content was used.

The model was evaluated with Mplus 8 using a maximum likelihood estimator. The goodness-of-fit of all models was examined with the  $\chi^2$ -Test, the CFI, and the RMSEA. A good model fit is indicated by a value of  $\chi^2 < 2 \cdot df$ , a CFI  $> 0.97$ , and a RMSEA  $< 0.05$ ; an acceptable model fit is indicated by a value if  $\chi^2 < 3 \cdot df$ , a CFI  $> 0.95$ , and a RMSEA  $< 0.08$  (79).

## RESULTS

The model fit of all models are displayed in the **Appendix**. In 14 models the model fit was good and in five models the model fit was acceptable (in these models, the RMSEA was above 0.05 but below 0.08; the other model fit indices indicated a good model fit). Only in the model with projection, the model fit was too low (RMSEA = 0.092 and  $\chi^2 = 34.48$  with  $df = 11$ ). The results of this model should be interpreted with caution. The results of this study use the standardized regression coefficients  $b$  of the structural equation model, the size of which can be interpreted as correlations.

Descriptive statistics are displayed in **Table 1**. As expected in a non-clinical sample, participants used more adaptive defense mechanisms such as rationalization, humor, and anticipation than other defense mechanisms. Suppression and intermediate/neurotic defense mechanisms were employed occasionally, and maladaptive defense mechanisms were

**TABLE 2 |** Direct and indirect effects of narcissism on psychological distress mediated by defense mechanisms.

Model	Effects on DM		Effects on psychological distress				
	GN	VN <sub>Res</sub>	DM	GN direct	GN indirect	VN <sub>Res</sub> direct	VN <sub>Res</sub> indirect
<b>Adaptive</b>							
Suppression	0.070	−0.265*	−0.028	0.110	−0.002	0.492*	0.007
Anticipation	0.263*	−0.009	−0.012	0.112	−0.003	0.499*	0.000
Humor	0.010	−0.194*	0.078	0.105	0.001	0.514*	−0.015
Sublimation	0.071	0.000	0.126*	0.101	0.009	0.501*	0.000
Rationalization	0.129*	−0.286*	−0.046	0.114	−0.006	0.486*	0.013
Denial	0.109	0.100	0.006	0.107	0.001	0.499*	0.001
Dissociation	0.219*	−0.187*	0.034	0.101	0.007	0.505*	−0.006
<b>Intermediate/neurotic</b>							
Pseudo-altruism	0.335*	−0.015	−0.018	0.113	−0.006	0.499*	0.000
Undoing	0.344*	0.364*	0.126	0.062	0.043	0.453*	0.046
Reaction formation	0.313*	0.308*	0.187*	0.047	0.058*	0.441*	0.058*
Acting out	0.306*	0.152*	0.236*	0.032	0.072*	0.464*	0.036*
<b>Maladaptive</b>							
Splitting	0.411*	0.245*	0.240*	0.011	0.099*	0.443*	0.059*
Autistic fantasy	0.323*	0.348*	0.259*	0.025	0.084*	0.410*	0.090*
Projection	0.232*	0.424*	0.235*	0.056	0.054*	0.400*	0.100*
Passive aggression	0.279*	0.338*	0.211*	0.051	0.059*	0.429*	0.071*
Idealization	0.355*	0.189*	0.157*	0.050	0.056*	0.471*	0.030*
Somatization	0.262*	0.370*	0.380*	0.009	0.100*	0.360*	0.141*
Isolation	0.167*	0.210*	0.247*	0.069	0.041*	0.450*	0.052*
Displacement	0.299*	0.435*	0.258*	0.030	0.077*	0.388*	0.112*
Devaluation	0.226*	0.278*	0.166*	0.071	0.037*	0.455*	0.046*

The 20 models differ in the defense mechanism.

DM = defense mechanism; GN = grandiose narcissism factor; VN<sub>Res</sub> = vulnerable narcissism residual factor.

\*Significant effect.

reported least frequently. In terms of psychological distress, we found rather low levels ( $M = 1.73$ ,  $SD = 0.63$ ) which is also expected in a non-clinical sample. Similar scores for GN ( $M = 3.19$ ,  $SD = 0.75$ ) and VN ( $M = 3.04$ ,  $SD = 0.79$ ) were found. The associations between the specific defense mechanisms and psychological distress are depicted in **Table 2**.

## Associations Between Grandiose and Vulnerable Narcissism and Specific Defense Mechanisms

The associations are displayed in **Figure 2** and can also be found in **Table 2**. GN showed significant positive associations with adaptive defense mechanisms anticipation ( $b = 0.26$ ), rationalization ( $b = 0.13$ ), and dissociation ( $b = 0.22$ ); intermediate/neurotic defense mechanisms pseudo altruism ( $b = 0.36$ ), undoing ( $b = 0.34$ ), reaction formation ( $b = 0.31$ ), and acting out ( $b = 0.31$ ); and maladaptive defenses splitting ( $b = 0.41$ ), idealization ( $b = 0.36$ ), autistic fantasies ( $b = 0.32$ ), displacement ( $b = 0.30$ ), passive aggression ( $b = 0.28$ ), somatization ( $b = 0.26$ ), devaluation ( $b = 0.23$ ), projection ( $b = 0.23$ ), and isolation ( $b = 0.17$ ).

VN showed significant negative associations with the adaptive defense mechanisms rationalization ( $b = -0.29$ ), suppression

( $b = -0.27$ ), humor ( $b = -0.19$ ) and dissociation ( $b = -0.19$ ). VN showed significant positive associations with the intermediate/neurotic defenses undoing ( $b = 0.36$ ), reaction formation ( $b = 0.31$ ), and acting out ( $b = 0.15$ ) and with the maladaptive defenses displacement ( $b = 0.44$ ), projection ( $b = 0.42$ ), somatization ( $b = 0.37$ ), autistic fantasies ( $b = 0.35$ ), passive aggression ( $b = 0.34$ ), devaluation ( $b = 0.28$ ), splitting ( $b = 0.25$ ), isolation ( $b = 0.21$ ), idealization ( $b = 0.19$ ).

Overall, in this non-clinical sample, GN seemed to be associated with most adaptive defense mechanisms and especially with all maladaptive and intermediate/neurotic defense mechanisms, while VN was negatively associated with adaptive mechanisms and strongly positively associated with maladaptive and neurotic defense mechanisms.

## Associations Between Grandiose and Vulnerable Narcissism and Psychological Distress

In order to estimate the association of narcissism and psychological distress regardless of a defense mechanism, a reduced model was estimated. This model is like the model in **Figure 1**, but without the defense mechanism. This reduced

model had a very good model fit ( $\chi^2 = 9.89$ ,  $df = 8$ ,  $p = 0.27$ , RMSEA = 0.031, CFI = 0.99). In the reduced model, GN had no significant association with psychological distress [ $b = 0.107$ ,  $p = 0.108$ , 95%-KI: (-0.024; 0.238)]. The residual factor of VN had a significant, positive association with psychological distress [ $b = 0.500$ ,  $p < 0.001$ , 95%-KI: (0.396; 0.603)]. This is a large association. Participants who reported higher vulnerable narcissism than expected based on their grandiose narcissism reported more psychological distress.

## Mediator Analysis of Defense Mechanisms Between Narcissism and Psychological Distress

The results for the mediation analysis can be found in the last four columns of **Table 2**. Both GN and VN had indirect effects on psychological distress. The indirect effects were mediated by the corresponding defense mechanism of the model. No significant direct effect of GN on psychological distress was found. In contrast, strong direct effects of VN on psychological distress were found. GN showed significant indirect effects on psychological distress when mediated by specific defense mechanisms. More specifically, this mediation was found in models with reaction formation and acting out (from the intermediate/neurotic defense category) and in all models with maladaptive defense mechanisms. For VN, significant indirect effects on psychological distress mediated by the defense mechanisms could be found for the same models. This means, that individuals with higher levels of vulnerable and grandiose narcissism reported more maladaptive defense mechanisms and therefore more psychological distress.

## DISCUSSION

The aim of the current study was to investigate the nature and role of defense mechanisms in grandiose and vulnerable facets of narcissism in a non-clinical sample. First, we aimed to explore defense mechanisms that are typical for GN and VN, respectively. Second, we aimed to replicate past findings showing that GN and VN are differentially related to psychological distress, assuming that GN would not be related to psychological distress and VN would be strongly related to psychological distress. Third, we assumed that specific defense mechanisms would shed light on the former differential narcissism-distress interplay and therefore explored whether and which defense mechanisms mediated the association between psychological distress and VN and GN, respectively.

To address our research questions we analyzed data of  $N = 254$  healthy subjects with structural equation modeling and employed a bifactor S-1 model (77, 78). The latter allowed us to separate statistically grandiose and vulnerable aspects of narcissism. Since GN is the core of the current definition of pathological narcissism, it was chosen as the reference factor for the model.

Overall, specific defense mechanisms for both types of narcissism could be found. First, we found differences between GN and VN and the adaptiveness of their defensive structure:

Both GN and VN were related to almost all intermediate/neurotic and maladaptive defense mechanisms. However, only GN was significantly positively related to the use of adaptive defense mechanisms. Since the use of adaptive defense mechanisms is related to mental health, this finding might be one of the explanations why GN is not associated with psychological distress while VN is. Second, we found that those defense mechanisms that were exclusively found in GN, were not only non-related, but significantly negatively related to VN. These mechanisms are pseudo-altruism, rationalization, anticipation, and dissociation. Only these mechanisms did not mediate the relationship between GN and psychological distress. This leads to the assumption that the use of these particular mechanisms in GN might be the strategic “advantage” of GN compared to VN when regulating psychological distress. Third, we found overall qualitative differences with regard to the defense mechanisms for GN and VN: The defense mechanisms showing the strongest association with grandiose narcissism are splitting-based (e.g., splitting, idealization, and devaluation) and socially desirable (e.g., pseudo altruism, anticipation, and rationalization). VN on the contrary was most strongly associated with defense mechanisms that can be summarized as related to dissociating the affect from the self (e.g., somatization, projection, autistic fantasies, and displacement) and self-directed defense mechanisms (e.g., reaction formation, undoing, and passive aggression). Overall, GN appeared to be related to the more effective and more socially desirable defensive styles than VN.

The current findings are in line with existing research on defense mechanisms in narcissism: Zeigler-Hill and Besser (80) found that GN was positively related with the use of adaptive humor (self-enhancing and affiliative), whereas VN was negatively associated with adaptive humor and positively with maladaptive humor (self-defeating and aggressive). Richardson and Boag (81) found defense mechanisms acting out, dissociation, and splitting for grandiose psychopathological narcissism and further showed that immature defensive strategies mediate the relationship between Machiavellianism and distress. Fernie et al. (62) found denial to be especially prominent in VN. Mielimaka et al. (61) reported a strong relationship between immature and neurotic defenses based on the DSQ and pathological narcissism, albeit not differentiating between GN and VN. To our best knowledge, the only existing study on defense mechanisms, differentiating between GN and VN, has recently been published by Khodabakhsh Pirkhany and Safaeian (82), finding high expressions of GN and VN related to intermediate/neurotic and maladaptive defenses, and this being significantly higher than for individuals with low expressions in pathological narcissism.

With regard to psychological distress, GN was not directly related to psychological distress, whereas VN was directly related to psychological distress. Since VN is a residual factor in our study, the result means that it is not the global measure of GN that is related to psychological distress, but only the VN that exceeds the measure of GN. Individuals who are less vulnerably narcissistic than would be expected based on their GN report lower psychological distress. These findings corroborate existing research on the role of coping flexibility and emotion regulation



in GN and VN. Ng et al. (83) identified more flexible coping with stress in GN as a crucial mediating factor that makes them appear psychologically healthier than VN. Di Pierro et al. (53) emphasized these differences in accessing adaptive emotion regulation strategies by demonstrating that VN was associated with emotion regulation difficulties, and in understanding, accepting, and being clear about emotional states, whereas GN was not. Also, Zhang et al. (84) showed that VN was positively correlated with emotion dysregulation. Fernie et al. (62) found that unlike GN, VN was significantly associated with the use of denial as coping with stress response when controlling for anxiety and social desirability and behavioral disengagement. Hansen-Brown and Freis (63) found that a hostile attribution bias is exclusively found in VN, not in GN.

Intriguingly, the mediator analysis of defense mechanisms on the relationship between GN and VN and psychological distress seems to turn the tables for GN: Even though not directly related to psychological distress, GN showed significant positive associations with psychological distress when mediated by maladaptive defense mechanisms. These findings strongly highlight the central role of defense mechanisms in understanding the concept and pathological core of grandiose narcissism. The underlying defensive structure of the grandiose facet seems to expose its vulnerability and furthermore explains the relationship between GN and VN. A study of Mielimaka et al. (61) found similar results for narcissism, which can be considered comparable since the used measures base their operationalization of narcissism on its grandiose facet: they found that pathological narcissism itself was not directly related with interpersonal problems but indirectly related when mediated by neurotic defense mechanisms. Following this thought, an interesting finding of Jauk and Kaufman (40) on the relationship between GN and VN revealed that solely the severity of grandiosity explains the difference between the two facets and that GN and VN may be dissociable at lower levels of grandiosity but merge into an antagonistic core with signs of psychological maladjustment at higher levels.

## The Role of Defense Mechanisms in Diagnosing Personality Impairment

Our findings entail numerous clinical implications which are of particular relevance in the light of the current revisions of the DSM-5 classification and diagnostic approach toward personality disorders [for a review: (85)]. With the inclusion of the Level of Personality Functioning Scale [LPFS; (86)] in the appendix of DSM-5 Alternative Model for Personality Disorders (AMPD), a dimensional approach for diagnosing personality disorders on the dimensions identity, self-direction, empathy, and intimacy is introduced. The model suggests to abandon the prevailing categories and focus on diagnosing underlying impairments in personality functioning. To date, numerous studies have supported this dimensional model to be more accurate and clinically more useful than the categorical approach (87, 88). Even though defense mechanisms are not part of the LPFS, preliminary studies indicate that defenses may add to the assessment of severity of personality impairment (89). In a subsequent clinical analysis of outliers, whose markers for clinical

severity were significantly underestimated by the rating of the LPFS, Kampe (90) found that these were mainly personalities with high expressions of GN. In a comparison with a measure that includes defense mechanisms (91) personality impairments were accurately detected with a measure assessing defense mechanisms. These preliminary findings in clinical case analyses support our findings on maladaptive defense mechanisms in GN as a core element of its potential psychopathology. It emphasizes that considering defense mechanisms into revisions of the model for diagnosing personality disorders would be helpful. Defense mechanisms had already been included in DSM-IV-TR but been waived again in further revisions (12).

## Theoretical Implications and Clinical Relevance

The phenomenon of narcissism is of particular interest to the clinical field. Due to numerous difficulties in diagnostic approaches of pathological narcissism, the improvement in psychotherapeutic treatment is frequently overestimated. Not rarely treatment courses of narcissistic patients end with unpleasant surprises and sudden dropouts, fights, or an inability to end the treatment and separate from the therapist (8). Overall, our findings extend recent studies showing the interpersonal burden pathological narcissism places on relationships, both in daily life (92) and in clinical settings (93). These challenging interpersonal patterns are visible in treatment complications like drop-outs (4), the need for tact and sensitivity and therapist's adaptiveness when dealing with problematic relationship patterns (94), underlying shame (95) and the need for the therapist to turn to both fragile vulnerable aspects and provocative grandiose aspects of pathological narcissism (96).

Often there is little change in the personality and a sense of guardedness in the patient. This struggle has led Kernberg to write an article on "the almost untreatable narcissistic patient" (7), explaining these difficulties and emphasizing the role of defense mechanisms: Due to the rigid defensive structure, these patients don't admit their mental difficulties and make a big effort to constantly impress the therapist with good behaviors, charming attitudes, and superficial improvement. These psychoanalytic conclusions have already been revealed in empirical studies: Dickinson and Pincus (97) found that GN and VN reported domineering and vindictive interpersonal problems but GN denied interpersonal distress whereas VN reported high distress. Kaufman et al. (42) demonstrated that GN was not correlated with psychopathology and positively associated with life satisfaction but was also associated with multiple indicators of inauthenticity. Arian (59) indicated that narcissistic defenses strongly relate to a tendency to devalue and stigmatize mental illness, whereas adaptive defenses do not. This might explain the guardedness in narcissism when it comes to admitting mental distress. Our conclusions on the central role of defense mechanisms in narcissism complement these findings and further contribute to possible explanations of clinical difficulties with important implications for therapeutic approaches. It strengthens the assumption of defense mechanisms being the heart of the narcissistic pathology, or as Kernberg termed it, narcissism itself

being a “character defense” (17). Our findings show the two-sidedness of the narcissistic defense structure: on the one hand, it prevents the experience of psychological distress, and on the other hand it depicts the core of the pathology. The inclusion of defensive operations in the understanding, diagnostic and treatment of (grandiose) narcissism is hence important for an accurate and successful treatment (7). One treatment for (narcissistic) personality disorders especially developed based on this assumption is Transference Focused Psychotherapy (TFP) by the group of Kernberg (6, 98–100). Based on working with countertransference, this treatment focuses on the extraction, clarification, and interpretation of projective defensive operations, aiming to help the patients understand their mental representations and personality difficulties. Studies have supported the idea that besides symptom reduction, TFP successfully facilitates change from disorganized attachment representations to organized ones and leads to a notable improvement in mentalization abilities (99–106).

## On the Relationship Between Grandiose and Vulnerable Narcissism

Eventually, this study adds to the discussion of the global operationalization of the concept of narcissism with GN and VN as potentially underlying factors. In our non-clinical sample, we did not find GN and VN as distinct factors with our initial modeling attempts. Instead, we built GN as a reference factor and VN as a residual factor. This raises the question of the relationship between GN and VN and whether they are two sides of a medal or fluctuating, if not overlapping constructs. Understanding the grandiose side as a defensive shield to protect the self from the conscious experience of the vulnerable side, our findings offer another perspective on the relationship between GN and VN. This leads to the assumption that individuals with narcissistic features might as well oscillate between grandiosity and vulnerability, which is compatible with the implications of Jauk and Kaufman (40), Jauk et al. (41), Gore and Widiger (46), and Oltmanns and Widiger (47). Even though this would support psychoanalytic theory on the concept of narcissism, further empirical studies to explore this relationship are still needed.

## Limitations

Even though our findings are in line with expectations derived from psychoanalytic theory and supported by prior research in related fields, a limitation to our study is that our findings only are based on a non-clinical sample that might not represent the pathological expressions of the constructs sufficiently. Particularly, the current sample demonstrated relatively low levels of psychological distress. This might be especially relevant for the associations between GN and psychological distress which could be expected to be more strongly and directly related in a clinical sample with higher levels at the pathological end of the spectrum than in this relatively healthy population. Future studies should replicate the results with clinical samples with expectedly higher distress and pathological narcissism levels. Furthermore, it is important to note that even though psychoanalytic theory draws causal conclusions, our study represents correlations, and no causal implications can be drawn due the cross-section design of the study.

## Perspectives

Our study highlights the importance of the concept of defense mechanisms for the conceptualization, diagnosis, and treatment of narcissism. For further research and for possible further changes in the diagnostic dimensions of personality pathology, we recommend considering defense mechanisms as a relevant domain in narcissism and personality in general. Studies that strengthen this matter are still needed. As our findings only refer to a non-clinical sample, we furthermore recommend including the pathological spectrum of narcissism into further conclusions on the central role of defense mechanism. We believe that a deeper understanding of defense mechanisms in narcissism, personality pathology, and mental disorders in general would be useful for both research and clinical practice. Even though deriving from psychoanalytic theory, we emphasize the relevance of the concept of defense mechanisms for all traditions and approaches.

Overall, future research should not only assess the phenomenological manifestations of disorders in terms of symptoms but to also take underlying, shared mechanisms into account. As most psychological disorders are related to dysfunctional emotion regulation (107), the inclusion of more hidden, that is implicit and unconscious, ways of dealing with affects and stressors, may be a fruitful endeavor (108). This is also in line with research showing that most processes operate implicitly rather than explicitly (109, 110).

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethikkommission der Psychologischen Hochschule Berlin Prof. Dr. T. Storck Am Köllnischen Park 2 10179 Berlin. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

LK conceptualized the study and drafted the manuscript. LK and CR coordinated the assessment. JB conducted the analysis. SH-S contributed to planning and implementation of the study and writing. All authors critically revised the manuscript, contributed equally, and approved the final version to be published.

## FUNDING

This research was facilitated by incentive funds of the Freie Universität Berlin.

## ACKNOWLEDGMENTS

We would like to thank the Department of Psychiatry, Psychotherapy and Psychosomatic Medicine, Psychosoziales

Zentrum Itzehoe, Itzehoe, Germany (Prof. Dr. A. Deister, head of department) for institutional support and the publication fee. We furthermore thank Helene

Harnisch, Ilva Heitmann, and Charlotte Weinmann for their help with data collection and conduction of the study.

## REFERENCES

- Loeffler LA, Huebner AK, Radke S, Habel U, Derntl B. The association between vulnerable/grandiose narcissism and emotion regulation. *Front Psychol.* (2020) 11:2732. doi: 10.3389/fpsyg.2020.19330
- Rohmann E, Hanke S, Bierhoff H-W. Grandiose and vulnerable narcissism in relation to life satisfaction, self-esteem, and self-construal. *J Individ Differ.* (2019). doi: 10.1027/1614-0001/a000292
- Campbell MA, Waller G, Pistrang N. The impact of narcissism on drop-out from cognitive-behavioral therapy for the eating disorders: a pilot study. *J Nervous Mental Dis.* (2009) 197:278–81. doi: 10.1097/NMD.0b013e31819dc150
- Ellison WD, Levy KN, Cain NM, Ansell EB, Pincus AL. The impact of pathological narcissism on psychotherapy utilization, initial symptom severity, and early-treatment symptom change: a naturalistic investigation. *J Personal Assess.* (2013) 95:291–300. doi: 10.1080/00223891.2012.742904
- Ogrodniczuk JS, Piper WE, Joyce AS, Steinberg PI, Duggal S. Interpersonal problems associated with narcissism among psychiatric outpatients. *J Psychiatric Res.* (2009) 43:837–42. doi: 10.1016/j.jpsychires.2008.12005
- Diamond D, Yeomans FE, Stern B, Levy KN, Hörz S, Doering S, et al. Transference focused psychotherapy for patients with comorbid narcissistic and borderline personality disorder. *Psychoanal Inquiry.* (2013) 33:527–51. doi: 10.1080/07351690.2013815087
- Kernberg OF. The almost untreatable narcissistic patient. *J Am Psychoanal Assoc.* (2007) 55:503–39. doi: 10.1177/00030651070550020701
- Little R. Treatment considerations when working with pathological narcissism. *Trans Anal J.* (2006) 36:303–17. doi: 10.1177/036215370603600405
- Cain NM, Pincus AL, Ansell EB. Narcissism at the crossroads: phenotypic description of pathological narcissism across clinical theory, social/personality psychology, and psychiatric diagnosis. *Clin Psychol Rev.* (2008) 28:638–56. doi: 10.1016/j.cpr.2007.09006
- Levy KN. Subtypes, dimensions, levels, and mental states in narcissism and narcissistic personality disorder. *J Clin Psychol.* (2012) 68:886–97. doi: 10.1002/jclp.21893
- Levy KN, Chauhan P, Clarkin JF, Wasserman RH, Reynoso JS. Narcissistic pathology: empirical approaches. *Psychiatric Ann.* (2009) 39:3. doi: 10.3928/00485713-20090401-03
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: APA (2013). doi: 10.1176/appi.books.9780890425596
- Pincus AL, Cain NM, Wright AG. Narcissistic grandiosity and narcissistic vulnerability in psychotherapy. *Personal Disord Theory Res Treat.* (2014) 5:439. doi: 10.1037/per0000031
- Roche MJ, Pincus AL, Lukowitsky MR, Ménard KS, Conroy DE. An integrative approach to the assessment of narcissism. *J Personal Assess.* (2013) 95:237–48. doi: 10.1080/00223891.2013770400
- Miller JD, Gentile B, Wilson L, Campbell WK. Grandiose and vulnerable narcissism and the DSM–5 pathological personality trait model. *J Personal Assess.* (2013) 95:284–90. doi: 10.1080/00223891.2012.685907
- Weiss B, Miller JD. Distinguishing between grandiose narcissism, vulnerable narcissism, narcissistic personality disorder. In: Hermann A, Brunell A, Foster J, editors. *Handbook of Trait Narcissism*. Cham: Springer (2018). doi: 10.1007/978-3-319-92171-6\_1
- Kernberg OF. *Borderline Conditions and Pathological Narcissism*. New York, NY: Aronson (1975).
- Kernberg OF. Factors in the psychoanalytic treatment of narcissistic personalities. *J Am Psychoanal Assoc.* (1970) 18:51–85. doi: 10.1177/000306517001800103
- Rice TR, Hoffman L. Defense mechanisms and implicit emotion regulation: a comparison of a psychodynamic construct with one from contemporary neuroscience. *J Am Psychoanal Assoc.* (2014) 62:693–708. doi: 10.1177/0003065114546746
- Kernberg OF. Narcissistic defenses in the distortion of free association and their underlying anxieties. *Psychoanal Quart.* (2015) 84:625–42. doi: 10.1002/psaq.12022
- Robins RW, Tracy JL, Shaver PR. Shamed into self-love: dynamics, roots, and functions of narcissism. *Psychol Inquiry.* (2001) 12:230–6. Available online at: <http://www.jstor.org/stable/1449481>
- Vaillant GE, Bond M, Vaillant CO. An empirically validated hierarchy of defense mechanisms. *Arch Gen Psychiatry.* (1986) 43:786–94. doi: 10.1001/archpsyc.198601800080072010
- Cramer P. Personality, personality disorders, and defense mechanisms. *J Personal.* (1999) 63:4. doi: 10.1111/1467-649400064
- Di Giuseppe M, Perry JC, Conversano C, Gelo OCG, Gennaro A. Defense mechanisms, gender, and adaptiveness in emerging personality disorders in adolescent outpatients. *J Nerv Mental Dis.* (2020) 208:933–41. doi: 10.1097/NMD.0000000000001230
- Lingiardi V, Lonati C, Delucchi F, Fossati A, Vanzulli L, Maffei C. Defense mechanisms and personality disorders. *J Nerv Mental Dis.* (1999) 187:224–8. doi: 10.1097/00005053-199904000-00005
- Perry JC, Presniak MD, Olson TR. Defense mechanisms in schizotypal, borderline, antisocial, and narcissistic personality disorders. *Psychiatry Interpersonal Biol Processes.* (2013) 76:32–52. doi: 10.1521/psyc.2013.76.132
- Presniak MD, Olson TR, MacGregor MW. The role of defense mechanisms in borderline and antisocial personality. *J Personal Assess.* (2010) 92:137–45. doi: 10.1080/00223890903510373
- Zanarini MC, Weingeroff JL, Frankenburg FR. Defense mechanisms associated with borderline personality disorder. *J Personal Disord.* (2009) 23:113–21. doi: 10.1521/pedi.2009.23.2113
- Bennett CS. Attachment theory and research applied to the conceptualization and treatment of pathological narcissism. *Clin Soc Work J.* (2006) 34:45–60. doi: 10.1007/s10615-005-0001-9
- Prunas A, Di Pierro R, Huemer J, Tagini A. Defense mechanisms, remembered parental caregiving and adult attachment style. *Psychoanal Psychol.* (2018) 36:64–72. doi: 10.1037/pap0000158
- Perry JD, Perry JC. Conflicts, defenses and the stability of narcissistic personality features. *Psychiatry Interpersonal Biol Processes.* (2004) 67:310–30. doi: 10.1521/psyc.67.4.31056570
- Hilsenroth MJ, Fowler JC, Padawer JR, Handler L. Narcissism in the Rorschach revisited: some reflections on empirical data. *Psychol Assess.* (1997) 9:113. doi: 10.1037/1040-3590.9.2.113
- Raskin R, Novacek J. Narcissism and the use of fantasy. *J Clin Psychol.* (1991) 47:490–9. doi: 10.1002/1097-4679(199107)47:4<490::AID-JCLP2270470404>3.0.CO;2-J
- Ronningstam E. Pathological narcissism and narcissistic personality disorder in Axis I disorders. *Harvard Rev Psychiatry.* (1996) 3:326–40. doi: 10.3109/10673229609017201
- Ronningstam E. Narcissistic personality disorder: facing DSM–V. *Psychiatric Ann.* (2009) 39:9. doi: 10.3928/00485713-20090301-09
- Pincus AL, Lukowitsky MR. Pathological narcissism and narcissistic personality disorder. *Ann Rev Clin Psychol.* (2010) 6:421–46. doi: 10.1146/annurev.clinpsy.12.1208131215
- Miller JD, Lynam DR, McCain JL, Few LR, Crego C, Widiger TA, et al. Thinking structurally about narcissism: an examination of the Five-Factor Narcissism Inventory and its components. *J Personal Disord.* (2016) 30:1–18. doi: 10.1521/pedi.2015.29\_177

38. Crowe ML, Lynam DR, Campbell WK, Miller JD. Exploring the structure of narcissism: toward an integrated solution. *J Personal.* (2019) 87:1151–69. doi: 10.1111/jopy.12464
39. Houlcroft L, Bore M, Munro D. Three faces of narcissism. *Personal Individ Differ.* (2012) 53:274–8. doi: 10.1016/j.paid.2012.03036
40. Jauk E, Kaufman SB. The higher the score, the darker the core: the non-linear association between grandiose and vulnerable narcissism. *Front Psychol.* (2018) 9:1305. doi: 10.3389/fpsyg.201801305
41. Jauk E, Weigle E, Lehmann K, Benedek M, Neubauer AC. The relationship between grandiose and vulnerable (hypersensitive) narcissism. *Front Psychol.* (2017) 8:1600. doi: 10.3389/fpsyg.201701600
42. Kaufman SB, Weiss B, Miller JD, Campbell WK. Clinical correlates of vulnerable and grandiose narcissism: a personality perspective. *J Personal Disord.* (2020) 34:107–30. doi: 10.1521/pedi.2018.32.384
43. Miller JD, Hoffman BJ, Gaughan ET, Gentile B, Maples J, Keith Campbell W. Grandiose and vulnerable narcissism: a nomological network analysis. *J Personal.* (2011) 79:1013–42. doi: 10.1111/j.1467-6494.2010.00711x
44. Pincus AL, Ansell EB, Pimentel CA, Cain NM, Wright AG, Levy KN. Initial construction and validation of the Pathological Narcissism Inventory. *J Personal Assess.* (2009) 21:365. doi: 10.1037/a0016530
45. Wink P. Two faces of narcissism. *J Personal Soc Psychol.* (1991) 61:590. doi: 10.1037/0022-3514.61.4590
46. Gore WL, Widiger TA. Fluctuation between grandiose and vulnerable narcissism. *Personal Disord Theory Res Treat.* (2016) 7:363. doi: 10.1037/per0000181
47. Oltmanns JR, Widiger TA. Assessment of fluctuation between grandiose and vulnerable narcissism: development and initial validation of the FLUX scales. *Psychol Assess.* (2018) 30:1612. doi: 10.1037/pas0000616
48. Zajenkowski M, Witowska J, Maciantowicz O, Malesza M. Vulnerable past, grandiose present: the relationship between vulnerable and grandiose narcissism, time perspective and personality. *Personal Individ Differ.* (2016) 98:102–6. doi: 10.1016/j.paid.2016.03092
49. Rohmann E, Neumann E, Herner MJ, Bierhoff H-W. Grandiose and vulnerable narcissism. *Eur Psychol.* (2012) 17:279–90. doi: 10.1027/1016-9040/a000100
50. Besser A, Priel B. Grandiose narcissism versus vulnerable narcissism in threatening situations: emotional reactions to achievement failure and interpersonal rejection. *J Soc Clin Psychol.* (2010) 29:874–902. doi: 10.1521/jscp.2010.29.874
51. Miller JD, Lynam DR, Vize C, Crowe M, Sleep C, Maples-Keller JL, et al. Vulnerable narcissism is (mostly) a disorder of neuroticism. *J Personal.* (2018) 86:186–99. doi: 10.1111/jopy.12303
52. Erkoreka L, Navarro B. Vulnerable narcissism is associated with severity of depressive symptoms in dysthymic patients. *Psychiatry Res.* (2017) 257:265–9. doi: 10.1016/j.psychres.2017.07061
53. Di Pierro R, Di Sarno M, Madeddu F. Investigating the relationship between narcissism and emotion regulation difficulties: the role of grandiose and vulnerable traits. *Clin Neuropsychiatry.* (2017) 14:209–15. Available online at: <https://www.semanticscholar.org/paper/Investigating-the-relationship-between-narcissism-Pierro-Sarno/4d58898d0e23df171381f008241a424d9afd1a0c>
54. Euler S, Stöbi D, Sowislo J, Ritzler F, Huber CG, Lang UE, et al. Grandiose and vulnerable narcissism in borderline personality disorder. *Psychopathology.* (2018) 51:110–21. doi: 10.1159/000486601
55. Dawood S, Pincus AL. Pathological narcissism and the severity, variability, and instability of depressive symptoms. *Personal Disord Theory Res Treat.* (2018) 9:144–54. doi: 10.1037/per0000239
56. Kealy D, Laverdière O, Pincus AL. Pathological narcissism and symptoms of major depressive disorder among psychiatric outpatients: the mediating role of impaired emotional processing. *J Nerv Mental Dis.* (2020) 208:161–4. doi: 10.1097/NMD0000000000000114
57. Marčinko D, Jakšić N, Ivezić E, Skočić M, Surányi Z, Lončar M, et al. Pathological narcissism and depressive symptoms in psychiatric outpatients: mediating role of dysfunctional attitudes. *J Clin Psychol.* (2014) 70:341–52. doi: 10.1002/jclp.22033
58. Almond R. I can do it (all) myself: clinical technique with defensive narcissistic self-sufficiency. *Psychoanal Psychol.* (2004) 21:371. doi: 10.1037/0736-9735.21.3371
59. Arian K. A stigmatizing attitude towards psychiatric illnesses is associated with narcissistic personality traits. *Israel J Psychiatry Relat Sci.* (2005) 42:248. Available online at: <https://www.semanticscholar.org/paper/AStigmatizingAttitudeTowards-Psychiatric-is-Ar?kan/aadd5cd265bcaeeaff77d9ce4fe16abf4ad39dc8?p2f>
60. Cheek J, Kealy D, Joyce AS, Ogrodniczuk JS. Interpersonal problems associated with narcissism among psychiatric outpatients: a replication study. *Archiv Psychiatry.* (2018) 20:26–33. doi: 10.12740/APP/90328
61. Mielimaka M, Ogrodniczuk JS, Kealy D, Cheek J, Joyce AS. Narcissism and interpersonal problems among psychiatric outpatients: what is the role of defensive style? *J Nerv Mental Dis.* (2018) 206:711–5. doi: 10.1097/NMD0000000000000871
62. Fernie BA, Fung A, Nikčević AV. Different coping strategies amongst individuals with grandiose and vulnerable narcissistic traits. *J Affect Disord.* (2016) 205:301–5. doi: 10.1016/j.jad.2016.08009
63. Hansen-Brown AA, Freis SD. Assuming the worst: hostile attribution bias in vulnerable narcissists. *Self Identity.* (2021) 20:152–64. doi: 10.1080/15298868.20191609574
64. Krizan Z, Johar O. Narcissistic rage revisited. *J Personal Soc Psychol.* (2015) 108:784–801. doi: 10.1037/pspp0000013
65. Morf CC, Schürch E, Küfner A, Siegrist P, Vater A, Back M, et al. Expanding the nomological net of the Pathological Narcissism Inventory: German validation and extension in a clinical inpatient sample. *Assessment.* (2017) 24:419–43. doi: 10.1177/1073191115627010
66. Jakšić N, Milas G, Ivezić E, Wertag A, Jokić-Begić N, Pincus AL. The Pathological Narcissism Inventory (PNI) in transitional post-war Croatia: psychometric and cultural considerations. *J Psychopathol Behav Assess.* (2014) 36:640–52. doi: 10.1007/s10862-014-9425-2
67. Karakoula P, Triliva S, Tsaousis I. Description of the basic psychometric characteristics and the factor structure of the Greek version of the Pathological Narcissism Inventory. *Psychology.* (2013) 20:160–75. doi: 10.12681/psy\_hps.23534
68. Wright AG, Lukowitsky MR, Pincus AL, Conroy DE. The higher order factor structure and gender invariance of the Pathological Narcissism Inventory. *Assessment.* (2010) 17:467–83. doi: 10.1177/1073191110373227
69. Schauenburg H, Willenborg V, Sammet I, Ehrenthal JC. Self-reported defence mechanisms as an outcome measure in psychotherapy: a study on the German version of the Defence Style Questionnaire DSQ 40. *Psychol Psychotherapy Theory Res Practice.* (2007) 80:355–66. doi: 10.1348/147608306X146068
70. Andrews G, Singh M, Bond M. The defense style questionnaire. *J Nerv Mental Dis.* (1993) 181:246–56. doi: 10.1097/00005053-199304000-00006
71. Franke GH. *Mini-SCL. German manual of the Mini Symptom Checklist [German].* Göttingen: Hogrefe. (2016).
72. Franke GH, Jaeger S, Glaesmer H, Barkmann C, Petrowski K, Braehler E. Psychometric analysis of the brief symptom inventory 18 (BSI-18) in a representative German sample. *BMC Med Res Methodol.* (2017) 17:14. doi: 10.1186/s12874-016-0283-3
73. Cramer P. Narcissism and attachment: the importance of early parenting. *J Nerv Mental Dis.* (2019) 207:69–75. doi: 10.1097/NMD0000000000000919
74. Mikulincer M, Dolev T, Shaver PR. Attachment-related strategies during thought suppression: ironic rebounds and vulnerable self-representations. *J Personal Soc Psychol.* (2004) 87:940. doi: 10.1037/0022-3514.87.6940
75. Faul F, Erdfelder E, Buchner A, Lang A-G. Statistical power analyses using G\* Power 3.1: tests for correlation and regression analyses. *Behav Res Methods.* (2009) 41:1149–60. doi: 10.3758/BRM.41.41149
76. Kline RB. *Principles and Practice of Structural Equation Modeling (3. Baski).* New York, NY: Guilford. (2011).
77. Eid M. Multi-faceted constructs in abnormal psychology: implications of the bifactor S-1 model for individual clinical assessment. *J Abnormal Child Psychol.* (2020) 48:895–900. doi: 10.1007/s10802-020-00624-9



78. Eid M, Geiser C, Koch T, Heene M. Anomalous results in G-factor models: explanations and alternatives. *Psychol Methods*. (2017) 22:541. doi: 10.1037/met0000083
79. Schermelleh-Engel K, Moosbrugger H, Müller H. Evaluating the fit of structural equation models: tests of significance and descriptive goodness-of-fit measures. *Methods Psychol Res*. (2003) 8:23–74. Available online at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.509.4258&rep=rep1&type=pdf>
80. Zeigler-Hill V, Besser A. Humor style mediates the association between pathological narcissism and self-esteem. *Personal Individ Differ*. (2011) 50:1196–201. doi: 10.1016/j.paid.2011.02006
81. Richardson EN, Boag S. Offensive defenses: the mind beneath the mask of the dark triad traits. *Personal Individ Differ*. (2016) 92:148–52. doi: 10.1016/j.paid.2015.12039
82. Khodabakhsh Pirkhany R, Safaeian E. Comparing the Defense styles and the Self-conscious affect of Shame and Guilt in subtypes of Narcissism and comparison with ordinary people. *J Psychol Stud*. (2020) 15:7–24. doi: 10.22051/PSY.2020.23089.1820
83. Ng HK, Cheung RY-H, Tam K-P. Unraveling the link between narcissism and psychological health: new evidence from coping flexibility. *Personal Individ Differ*. (2014) 70:7–10. doi: 10.1016/j.paid.2014.06006
84. Zhang H, Luo Y, Zhao Y, Zhang R, Wang Z. Differential relations of grandiose narcissism and vulnerable narcissism to emotion dysregulation: self-esteem matters. *Asian J Soc Psychol*. (2017) 20:232–7. doi: 10.1111/ajsp.12191
85. Zimmermann J, Kerber A, Rek K, Hopwood CJ, Krueger RF. A brief but comprehensive review of research on the Alternative DSM-5 model for personality disorders. *Curr Psychiatry Rep*. (2019) 21:1–19. doi: 10.1007/s11920-019-1079-z
86. Bender DS, Morey LC, Skodol AE. Toward a model for assessing level of personality functioning in DSM-5, Part I: a review of theory and methods. *J Personal Assess*. (2011) 93:332–46. doi: 10.1080/00223891.2011583808
87. Hopwood CJ, Kotov R, Krueger RF, Watson D, Widiger TA, Althoff RR, et al. The time has come for dimensional personality disorder diagnosis. *Personal Mental Health*. (2018) 12:82. doi: 10.1002/pmh1408
88. Widiger TA, Sellbom M, Chmielewski M, Clark LA, DeYoung CG, Kotov R, et al. Personality in a hierarchical model of psychopathology. *Clin Psychol Sci*. (2019) 7:77–92. doi: 10.1177/2167702618797105
89. Kampe L, Zimmermann J, Bender D, Caligor E, Borowski A-L, Ehrenthal JC, et al. Comparison of the structured DSM–5 clinical interview for the Level of Personality Functioning Scale with the Structured Interview of Personality Organization. *J Personal Assess*. (2018) 100:642–9. doi: 10.1080/00223891.20181489257
90. Kampe L. Zum Paradigmenwechsel der Diagnostik der Persönlichkeitsstörungen. Gegenüberstellung des STIPO-Interviews mit dem Interview der LPFS des DSM-5. Hamburg: Verlag Dr. Kovac. (2019).
91. Clarkin JF, Caligor E, Stern BL, Kernberg OF. *Structured Interview of Personality Organization*. New York, NY: STIPO. (2004).
92. Day N, Townsend ML, Grenyer B. Living with pathological narcissism: a qualitative study. *Borderline Personal Disord Emotion Dysregul*. (2020) 7:1–14. doi: 10.1186/s40479-020-00132-8
93. Barr KR, Jewell M, Townsend ML, Greyner BFS. Living with personality disorder and seeking mental health treatment: patients and family members reflect on their experiences. *Borderline Personal Disord Emotion Dysregul*. (2020) 7:4. doi: 10.1186/s40479-020-00136-4
94. Ellison WD, Acuff MC, Kealy D, Joyce AS, Ogronczuk JS. Narcissism and quality of life: the mediating role of relationship patterns. *J Nerv Mental Dis*. (2020) 208:613–8. doi: 10.1097/NMD0000000000001170
95. Kramer U, Pascual-Leone A, Rohde KB, Sachse R. The role of shame and self-compassion in psychotherapy for narcissistic personality disorder: an exploratory study. *Clin Psychol Psychotherapy*. (2018) 25:272–82. doi: 10.1002/cpp2160
96. Kealy D, Goodman G, Rasmussen B, Weideman R, Ogronczuk JS. Therapists' perspectives on optimal treatment for pathological narcissism. *Personal Disord*. (2017) 8:35–45. doi: 10.1037/per0000164
97. Dickinson KA, Pincus AL. Interpersonal analysis of grandiose and vulnerable narcissism. *J Personal Disord*. (2003) 17:188–207. doi: 10.1521/pedi.17.3.18822146
98. Clarkin J, Kernberg O, Yeomans F. *Transference-Focused Psychotherapy for Borderline Personality Disorder Patients*. New York, NY: Guilford. (1999)
99. Diamond D, Clarkin JF, Levy KN, Meehan KB, Cain NM, Yeomans FE, et al. Change in attachment and reflective function in borderline patients with and without comorbid narcissistic personality disorder in transference focused psychotherapy. *Contemp Psychoanal*. (2014) 50:175–210. doi: 10.1080/00107530.2014880316
100. Stern BL, Yeomans F, Diamond D, Kernberg OF. Transference-focused psychotherapy for narcissistic personality. *J Pers Disord*. (2013) 34(Suppl.):159–76. doi: 10.1037/14041-014
101. Buchheim A, Hörz-Sagstetter S, Doering S, Rentrop M, Schuster P, Buchheim P, et al. Change of unresolved attachment in borderline personality disorder: RCT study of transference-focused psychotherapy. *Psychotherapy Psychosomatics*. (2017) 86:314–6. doi: 10.1159/000460257
102. Clarkin JF, Cain NM, Lenzenweger MF. Advances in transference-focused psychotherapy derived from the study of borderline personality disorder: clinical insights with a focus on mechanism. *Curr Opin Psychol*. (2018) 21:80–5. doi: 10.1016/j.copsyc.2017.09008
103. Doering S, Hörz S, Rentrop M, Fischer-Kern M, Schuster P, Benecke C, et al. Transference-focused psychotherapy v. treatment by community psychotherapists for borderline personality disorder: randomised controlled trial. *Br J Psychiatry*. (2010) 196:389–95. doi: 10.1192/bjp.bp.109070177
104. Fischer-Kern M, Doering S, Taubner S, Hörz S, Zimmermann J, Rentrop M, et al. Transference-focused psychotherapy for borderline personality disorder: change in reflective function. *Br J Psychiatry*. (2015) 207:173–4. doi: 10.1192/bjp.bp.113143842
105. Perez DL, Vago DR, Pan H, Root J, Tiescher O, Fuchs BH, et al. Frontolimbic neural circuit changes in emotional processing and inhibitory control associated with clinical improvement following transference-focused psychotherapy in borderline personality disorder. *Psychiatry Clin Neurosci*. (2016) 70:51–61. doi: 10.1111/pcn12357
106. Tmej A, Fischer-Kern M, Doering S, Hörz-Sagstetter S, Rentrop M, Buchheim A. Borderline patients before and after 1 year of transference-focused psychotherapy (TFP): a detailed analysis of change of attachment representations. *Psychoanal Psychol*. (2020) 38:12–21. doi: 10.1037/pap0000302
107. Sheppes G, Suri G, Gross JJ. Emotion regulation and psychopathology. *Ann Rev Clin Psychol*. (2015) 11:379–405. doi: 10.1146/annurev-clinpsy-032814-112739
108. Koole SL, Rothermund K. “I feel better but I don’t know why”: the psychology of implicit emotion regulation. *Cogn Emotion*. (2011) 25:389–99. doi: 10.1080/02699931.2010550505
109. Cone J, Mann T, Ferguson M. Can we change our implicit minds? New evidence for how, when, and why implicit impressions can be rapidly revised. *Adv Soc Psychol*. (2017) 56:131–99. doi: 10.1016/bs.aesp.2017.03001
110. Greenwald AG, Lai CK. Implicit social cognition. *Ann Rev Psychol*. (2020) 71:50837. doi: 10.1146/annurev-psych-010419-050837
111. Cramer P. Defense mechanisms: 40 years of empirical research. *J Pers Assess*. (2015) 97:114–22. doi: 10.1080/00223891.2014.947997
112. Hansen-Brown AA, Freis SD. Assuming the worst: Hostile attribution bias in vulnerable narcissists. *Self Identity*. (2019) 20:152–64. doi: 10.1080/15298868.2019.1609574

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Copyright © 2021 Kampe, Bohn, Remmers and Hörz-Sagstetter. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

## APPENDIX

**Table A1** | Model Fit Indices of all 20 structural equation models.

Defense mechanism	$\chi^2$	df	p	RMSEA	CFI
<b>Adaptive</b>					
Suppression	11.334	11	0.4157	0.011	1.00
Anticipation	15.509	11	0.1604	0.040	0.997
Humor	14.216	11	0.2213	0.034	0.998
Sublimation	20.094	11	0.0441	0.057	0.994
Rationalization	12.398	11	0.3345	0.022	0.999
Denial	16.110	11	0.1371	0.043	0.996
Dissociation	14.606	11	0.2013	0.036	0.997
<b>Intermediate/neurotic</b>					
Pseudo-altruism	10.771	11	0.4627	0.000	1.00
Undoing	16.622	11	0.1196	0.045	0.996
Reaction formation	13.113	11	0.2860	0.028	0.999
Acting out	22.354	11	0.0218	0.064	0.992
<b>Maladaptive</b>					
Splitting	15.660	11	0.1542	0.041	0.997
Autistic fantasy	18.743	11	0.0659	0.053	0.995
Projection	34.480	11	0.0003	0.092	0.984
Passive aggression	22.378	11	0.0216	0.064	0.992
Idealization	15.998	11	0.1412	0.042	0.997
Somatization	13.209	11	0.2799	0.028	0.999
Isolation	14.979	11	0.1835	0.038	0.997
Displacement	11.996	11	0.3639	0.019	0.999
Devaluation	19.049	11	0.0602	0.054	0.994

The 20 models differ in the defense mechanism.

RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index.



# What Do Therapist Defense Mechanisms Have to Do With Their Experience of Professional Self-Doubt and Vicarious Trauma During the COVID-19 Pandemic?

Katie Aafjes-Van Doorn<sup>1††</sup>, Vera Békés<sup>1†</sup>, Xiaochen Luo<sup>2</sup>, Tracy A. Prout<sup>1</sup> and Leon Hoffman<sup>3</sup>

<sup>1</sup> Ferkauf Graduate School of Psychology, Yeshiva University, New York, NY, United States, <sup>2</sup> Department of Counseling Psychology, Santa Clara University, Santa Clara, CA, United States, <sup>3</sup> New York Psychoanalytic Society and Institute, New York, NY, United States

## OPEN ACCESS

### Edited by:

Danny Horesh,  
Bar-Ilan University, Israel

### Reviewed by:

Laura Muzi,  
Sapienza University of Rome, Italy  
Maria Nicoleta Turliuc,  
Alexandru Ioan Cuza  
University, Romania

### \*Correspondence:

Katie Aafjes-Van Doorn  
katie.aafjes@yu.edu

<sup>††</sup> These authors have contributed  
equally to this work and share first  
authorship

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

Received: 30 December 2020

Accepted: 02 July 2021

Published: 30 July 2021

### Citation:

Aafjes-Van Doorn K, Békés V, Luo X,  
Prout TA and Hoffman L (2021) What  
Do Therapist Defense Mechanisms  
Have to Do With Their Experience of  
Professional Self-Doubt and Vicarious  
Trauma During the COVID-19  
Pandemic?  
Front. Psychol. 12:647503.  
doi: 10.3389/fpsyg.2021.647503

This is the first study to examine psychotherapists' levels of defense mechanisms, their concurrent relationship with professional work-related stress (professional self-doubt and vicarious trauma), and how their levels of defense mechanisms predict the changes in these professional stresses over the course of 3 months since the start of the COVID-19 pandemic. Data from two online studies (Study 1;  $N = 105$  and Study 2;  $N = 336$ ), using two self-report measures of therapists' defense mechanisms (Defense Style Questionnaire-40 in Study 1 and Defense Mechanism Rating Scales Self-Report-30 in Study 2), are presented. Therapists reported higher levels of mature defense mechanisms, and lower levels of immature defense mechanisms, compared to published community and clinical populations assessed before and during the pandemic. Therapists' lower level of mature defense mechanisms and higher levels of neurotic and immature defense mechanisms were related to higher concurrent levels of vicarious trauma and professional doubt. Therapists who reported higher levels of mature defense mechanisms at 3-month follow-up showed less vicarious trauma and professional self-doubt at follow-up, after controlling for these professional stressors at baseline. Implications for clinical supervision and training are discussed. The context and professional challenges during the pandemic are unique and future replications of the results outside the pandemic context are warranted.

**Keywords:** defense mechanisms, therapist, COVID-19, vicarious trauma, professional self-doubt

## INTRODUCTION

The concept of defense mechanisms has a long history in the field of psychology (Freud, 1894, 1936), in particular in the area of developmental psychology (e.g., Boldrini et al., 2020), psychopathology (Bond, 2004), and psychotherapy process and outcome research (e.g., Roy et al., 2009; Perry and Bond, 2012). Defense mechanisms, defined as automatic reactions to internal and external stressors or conflict, underlie a wide range of healthy and psychopathological phenomena (Perry, 2014). Individuals' choice of defense mechanisms is mostly involuntary, but the types of defense mechanisms used can lead to enormous differences in mental health and interpersonal effectiveness (Vaillant, 2020).

Defense mechanisms are categorized hierarchically based on their general level of adaptiveness (Perry, 1993; Perry and Bond, 2017). This hierarchy incorporates three overarching defense categories: (1) *Mature* defense mechanisms that include, for example, sublimation, altruism, anticipation, and humor; (2) *Neurotic* defense mechanisms that include intellectualization, undoing, isolation of affect, reaction formation, displacement, and repression; and (3) *Immature* defense mechanisms that include, for example, acting-out, splitting, projection, projective identification, idealization, devaluation, denial, passive-aggression, and help-rejecting complaining (Perry and Bond, 2017). In addition to these defense categories, many studies also report on overall defensive functioning (ODF); a summary variable consisting of the mean of each defense used, each weighted by its level. Lower ODF is generally associated with a greater number of symptoms, symptomatic behaviors and a wide variety of disorders (e.g., Drapeau et al., 2003; Kramer et al., 2013). Though all defense mechanisms are thought to protect the individual from anxiety, mature defense mechanisms do not threaten interpersonal relationships or distort reality as neurotic or immature defense mechanisms do.

Following the development of systematic assessment methods during the 1990s, recent studies have demonstrated a number of robust findings. There is ample research on therapists' judgments of patient defense mechanisms (e.g., Hendriksen et al., 2011), therapists' technique in response to patients' defense mechanisms (e.g., Winston et al., 1994; Siefert et al., 2006; Bhatia et al., 2016; Petraglia et al., 2017), accuracy of defense interpretation (Perry et al., 2012), and the role of patient's defense mechanisms and therapists' interventions in treatment alliance and treatment outcome (Despland et al., 2001). Improvement in the adaptiveness of defense mechanisms during psychotherapy is associated with greater adjustment and positive treatment outcome (e.g., Perry and Bond, 2012). Defense mechanisms are also a useful predictor of change in psychotherapy and have been shown to be malleable, with patients experiencing meaningful improvement in the type of defense mechanisms used after completion of psychotherapy (Babl et al., 2019). Recent findings demonstrated that defense mechanisms had a relevant impact on resilience to stressful life events, such as quarantining in response to the COVID-19 pandemic among community samples (DiGiuseppe et al., 2020a; Marazziti et al., 2020; Prout et al., 2020). However, with the exception of one study which showed that therapist trainees most frequently reported adaptive defense mechanisms (Adams and Riggs, 2008), little is known about therapists' own defensive functioning in normal professional circumstances or during the uniquely stressful time of the COVID-19 pandemic.

Although defense mechanisms generally become more salient when they are maladaptive, all human individuals use defense mechanisms in their daily lives (Cramer, 2008). Individuals tend to have certain default defense patterns that they use to manage distressing emotions and thoughts, but the use of specific defense mechanisms also depends on the circumstances, especially on the nature and level of distress (e.g., Perry et al., 2015; Békés et al., 2017). Stress has consistently been shown to be associated with the use of lower level defense mechanisms (e.g., Cramer, 2006;

Perry et al., 2015), and those experiencing high levels of stress are likely to use more immature defense mechanisms than those experiencing less severe or no stress (Zimmerman et al., 2019).

Therapist factors play an important role in psychotherapy treatment outcomes. The fact that therapists differ significantly in their effectiveness, has mainly been examined by way of therapist effects, such as the interventions used, professional experience or training, and capacity for empathy (Constantino et al., 2017). It might also be important to consider other therapist factors on the personal qualities that are cross-situational and relatively constant across patients (i.e., inferred traits; see Beutler et al., 2004), such as the therapist's coping patterns, personality, attachment, and emotional wellbeing (Heinonen and Nissen-Lie, 2020). Indeed, interpersonal patterns that are characteristic to therapists showed the strongest evidence of a direct effect on the psychotherapy outcome (for a systematic review within the context of psychodynamic treatment outcomes, see Lingiardi et al., 2018). Similarly, Heinonen and Nissen-Lie, (2020), who systematically reviewed this literature across modalities, concluded that the most effective therapists are characterized by professionally cultivated, interpersonal capacities, which are likely rooted in their personal lives and attachment history.

The work of psychotherapy is known to be stressful for therapists, even in the best of times (Briggs and Munley, 2008) and working with patients triggers a range of emotional responses (Hayes et al., 2011). Many therapists also experience patient-contingent compassion fatigue and might subsequently experience burnout (Steel et al., 2015; O'Connor et al., 2018). It is thought that therapists' internal experiences and coping mechanisms may increase vulnerability to burnout (Simionato and Simpson, 2018). Therapists, for example, have a propensity to minimize their own vulnerability while continuing to expose themselves to excessive work pressures, to deny personal needs and emotions, and many are reluctant to set boundaries and ask for support. These factors appear to perpetuate the cycle of emotional exhaustion (Ledingham, 2015). Moreover, therapists themselves also experience their own emotional problems, such as anxiety and depression (Guy and Liaboe, 1986), and often pursue therapy for themselves (Orlinsky et al., 2011; Moe and Thimm, 2020).

The COVID-19 pandemic has posed a uniquely challenging situation for therapists (Aafjes-van Doorn et al., 2020a,b). This ongoing global crisis has had a significant negative impact on psychological distress and post-traumatic symptoms observed in both general and clinical populations (e.g., Prout et al., 2020; Tsamakidis et al., 2020). When therapists empathically engage with these traumatized patients, they may experience a cumulative and deleterious effect through vicarious traumatization (McCann and Pearlman, 1990; Békés et al., 2020). From research on previous disasters, such as in Hurricane Katrina (Culver et al., 2011) or 9/11 (Boscarino et al., 2004), we know that the experience of vicarious trauma is especially impactful when therapists and patients are simultaneously experiencing a disaster. Moreover, in addition to managing widespread societal and health concerns, and often treating traumatized patients, therapists also suddenly had to adapt to providing online therapy during the current crisis (Békés et al., 2020). Transitioning from in-person to online



therapy, without much time to access training or support, might make therapists less certain about their professional (clinical and technical) capacities and competencies (Aafjes-van Doorn et al., 2020a). Thus, given the generally increased stress during the time of COVID-19, when therapists are exposed to higher levels of patient distress and the sudden professional transition to an online format, they might revert to using lower level, less mature defense mechanisms.

Thus, therapists' experiences of professional self-doubt and vicarious trauma during the pandemic are likely to be affected by not only the external circumstances of the pandemic and by working online during this stressful time, but also their way of coping with these stresses. Examining therapists' use of defense mechanisms is especially important given that it might not only impact their experience of professional self-doubt and vicarious trauma and mental health in general, but also the quality of care they are able to provide to their patients.

Defense mechanisms serve a protective function in helping to maintain psychological integrity in the face of threat and are instrumental in determining ongoing adjustment to trauma (Punamaki et al., 2002). Although research examining specific defense mechanisms in relation to professional experiences, such as vicarious traumatization among therapists is lacking, vicarious traumatization has shown to be related to the level of defensive functioning among a sample of therapist trainees (Adams and Riggs, 2008). Also, recent studies have reported that therapists with healthy coping styles characterized by active, problem-focused strategies reported fewer PTSD symptoms, less vicarious traumatization, less negative affect, fewer disruptions in self-trust schemas, and less burnout than those with avoidant or emotion-focused coping styles (e.g., Schauben and Frazier, 1995).

This paper describes two studies—one cross sectional and one longitudinal. The aims of these studies were to address the following research questions: (1) What type of defense mechanisms did therapists use during the early days of the COVID-19 pandemic, as measured by two different defense mechanism assessment measures?; (2) How did therapists' defense mechanisms relate to their experiences of professional self-doubt and vicarious trauma when providing online therapy during the COVID-19 pandemic?; and (3) Were therapists' defense mechanisms related to their professional adaptation over the course of the first 3 months of the pandemic, as measured in Study 2?

We expected that therapists on average would report the use of relatively adaptive, mature defense mechanisms, and that higher levels of mature defense mechanisms would be related to less professional self-doubt and less vicarious traumatization experiences. We also hypothesized that therapists who used less adaptive defense mechanisms (i.e., relied more on defense mechanisms within the neurotic or immature defense categories) would show greater vulnerability to work-related stresses. We predicted that the type of defense mechanisms used would predict professional adaptation over time, in that therapists who use defense mechanisms in the mature defense category would experience more positive changes (reduction of professional-doubt and vicarious trauma experiences) over time

compared to therapists who relied on neurotic or immature defense mechanisms.

## METHODS

### Procedures

The two studies reported here represent two separate recruitment efforts of very similar online surveys. Both studies collected data during the COVID-19 pandemic. For Study 1, therapists were recruited between March 25 and May 17, 2020 (soon after the pandemic was declared by the World Health Organization and therapists had to suddenly transition to online therapy), via national and international professional listservs and individual contacts. For Study 2, therapists were recruited between April 11th and June 16th 2020 (in the early months of the pandemic outbreak in the United States) via additional professional email listservs for psychoanalysts and psychodynamically oriented clinicians, and social media outlets including LinkedIn and Facebook.

In both these studies, interested therapists were directed to an online survey platform with additional information about the study. Therapists providing online therapy were eligible to participate. After providing consent, participants were directed to an online survey that included standardized scales in a fixed order, which took approximately 15 min to complete. The eligibility criteria, online consent procedures, and survey length were the same in both studies. Both studies were approved by [the local—omitted for peer review] Institutional Review Board. Other previous publications on this dataset have reported on the change in professional experiences over time (Aafjes-van Doorn et al., 2021).

### Measures

The online surveys in the two studies presented in this paper included the same individual items and standardized measures of professional self-doubt and vicarious trauma as well as additional scales unique to each study. Defense mechanisms were measured by different self-report measures in each study. For Study 1, therapists' defense mechanisms were assessed using the Defense Style Questionnaire-40 (DSQ-40; Andrews et al., 1993), because it was the most widely used defense measure in the literature. In Study 2, therapists' defense mechanisms were assessed using the newly developed Defense Mechanisms Rating Scale-Self Report-30 (DMRS-SR-30; DiGiuseppe et al., 2020a), because this promising newer measure, in contrast with the DSQ, provides an ODF metric. The DMRS-SR-30 has also been used in several large-scale COVID community studies and thus allows us to report on direct comparisons within the pandemic context. In both studies, the defense measure was administered once. In Study 1, a cross-sectional study, the defense measure (DSQ-40) was included. In Study 2, a longitudinal design, the defense measure (DMRS-SR-30) was part of the follow-up survey (to reduce the burden on participants who completed the lengthy baseline survey, the defense measure was only included in the shorter follow-up survey). Given the overlap in measures and similarity in study design, it was deemed most informative to report on these therapist-defense findings in conjunction in this

manuscript, rather than in two separate manuscripts. We thus avoided piece-meal publications of these two studies.

### Professional Self-Doubt

The Professional Self-Doubt scale (PSD; Nissen-Lie et al., 2017) is a nine-item scale derived from the larger Development of Psychotherapists Common Core Questionnaire (DPCCQ; Orlinsky et al., 1999). The PSD assesses therapists' level of uncertainty in their ability to be helpful for a patient by items such as feeling "*Afraid that you are doing more harm than good in treating a client,*" or "*Distressed by powerlessness to affect a patient's tragic life situation.*" Items are rated on a six-point Likert scale from 0 (never) to 5 (very often), with higher scores indicating more professional self-doubt. The PSD was assessed in Study 1 and at both timepoints in Study 2, Cronbach's  $\alpha$  were 0.91 in Study 1 and 0.90 and 0.85 in Study 2.

### Vicarious Trauma

The Vicarious Trauma Survey (VTS; Vrkleviski and Franklin, 2008) is a self-report measure of subjective distress related to working with traumatized clients. The VTS includes eight items, from which the first two are screening questions about vicarious trauma exposure (e.g., "*My job involves exposure to distressing material and experiences*"), whereas the other six items ask about distress due to the exposure (e.g., "*It is hard to stay positive and optimistic given some of the things I encounter in my work.*"). In the present study only the six distress items were calculated without the two screening items (see Aparicio et al., 2013). Items are rated on a 7-point Likert scale from Strongly Disagree (1) to Strongly Agree (7), higher scores indicating more distress. The VTS has strong psychometric properties (Michalopoulos and Aparicio, 2012; Aparicio et al., 2013; Benuto et al., 2018). The PSD was assessed in Study 1 and at both timepoints in Study 2, Cronbach's  $\alpha$  were 0.72 in Study 1 and 0.76 and 0.73 in Study 2.

### Defense Mechanisms

#### Defense Style Questionnaire-40

In Study 1, defense mechanisms were assessed using the Defense Style Questionnaire-40 (DSQ-40; Andrews et al., 1993). The DSQ is the most widely used self-report measure of defense mechanisms (DiGiuseppe et al., 2020a). The DSQ is a 40-item self-report inventory that assesses individual defense mechanisms, structured into three defense categories: mature (8 items), neurotic (8 items), and immature (24 items). The DSQ uses a 9-point Likert scale from Strongly disagree (1) to Strongly agree (9). The DSQ-40 has strong psychometric properties, albeit the factor structure has been critiqued (e.g., Prout et al., 2018). Several researchers have reported difficulty in replicating the three-factor structure of the DSQ-40 (Trijsburg et al., 2000; Ruutu et al., 2006; Prout et al., 2018; Tapp et al., 2018), to the extent that it is recommended not to use the DSQ subscales, without additional factor-analytic procedures on data obtained from the DSQ-40 (Wilkinson and Ritchie, 2015). The DSQ-40 was administered as part of the baseline survey. Cronbach's  $\alpha$  for the DSQ total score was 0.91 in our study.

#### Defense Mechanisms Rating Scale-Self Report

In Study 2, defense mechanisms were assessed with the newly developed Defense Mechanisms Rating Scale-Self Report-30 (DMRS-SR-30; DiGiuseppe et al., 2020a). The DMRS-SR-30 is a self-report version of the observer-rated Defense Mechanisms Rating Scales (DMRS; Perry, 1990; Perry and Henry, 2004), both assess defense mechanisms across the hierarchy described in the DSM-IV (American Psychiatric Association, 1994). The DMRS-SR-30 uses a 5-point Likert scale ranging from Not at all (0) to Very often or Very much (4). The measure provides scores for three defense categories (Mature, Neurotic, Immature) based on 28 individual defense mechanisms, and a score for ODF. The psychometric properties of the DMRS-SR-30 show strong criteria and concurrent validity as well as convergent and divergent validity (DiGiuseppe et al., 2020a,b). The DMRS-SR-30 was administered as part of the follow-up survey. Cronbach's  $\alpha$  in the present study was 0.85.

### Demographics

Individual demographic items that were assessed in both studies included age, gender, race/ethnicity, highest degree, treatment orientation and setting, patient population, licensure, years of experience, number of patients, previous online therapy experience (yes/no), and previous training in online therapy (yes/no).

### Data Analysis

Standardized measures did not contain missing data because of the forced-choice logic of the online survey in Study 1 and Study 2. A small sample of participants ( $N = 26$ ) completed both surveys for both Study 1 and Study 2; to maximize statistical power, these participants were included in the data analyses on aggregated means for both studies. We used the full sample of 105 psychotherapists in the analyses for Study 1 because all participants completed all standardized measures reported here. For Study 2, there was no missing data for the DMRS-SR-30 variables, but there was missing data for vicarious trauma and professional self-doubt. Therefore, we reported on the DMRS-SR-30 scores for all participants ( $N = 366$ ), whereas the sample sizes of the correlations and regressions that included other variables were smaller ( $N = 178$  for VTS,  $N = 169$  for PSD). The completion rates of the VTS and PSD were lower because these measures were added midway through the data collection. The therapists who completed all measures did not differ significantly on therapist characteristics from those who did not complete the VTS and PSD in Study 2.

To answer the first research question, descriptive statistics of the three defense levels for both studies were reported. For the second research question, concurrent associations between defense categories and professional experiences for Study 1 and Study 2 were assessed using Pearson correlations. Because defense mechanisms were assessed only once in each study (at baseline in Study 1 and at follow-up in Study 2), the concurrent correlations were reported for the VTS and PSD data at the start of the pandemic (Study 1) and the VTS and PSD data at 3-month follow-up (Study 2).

**TABLE 1** | Therapist characteristics in studies 1 and 2.

Demographics	Study 1 (N = 105)		Study 2 (N = 336)	
	N	%	N	%
<b>GENDER</b>				
Female	92	87.6	260	77.8
Male	13	12.4	76	22.2
<b>LOCATION CONTINENT</b>				
North America	94	89.5	294	87.5
Europe	9	8.6	34	10.1
South America	1	1.0	0	0
Australia and Oceania	1	1.0	2	0.6
Asia	0	0	3	0.9
Africa	0	0	1	0.3
<b>ETHNICITY*</b>				
White	90	85.7	281	83.6
Hispanic or Latino	6	5.7	10	3.0
Asian or Asian Indian	4	3.9	19	5.7
American Indian or Alaska Native	1	1.0	2	0.6
African American	0	0	0	0
Middle Eastern	0	0	5	1.5
Other/mixed	2	2.0	11	3.3
<b>PROFESSION</b>				
Psychologist	75	71.4	185	55.1
Social worker	14	13.3	42	12.5
Counsellor	8	7.6	19	5.7
Medical doctor	2	1.9	29	8.6
Other	9	8.6	69	20.5
<b>WORK SETTING BEFORE THE PANDEMIC*</b>				
Private Practice	75	71.4	263	78.3
Outpatient	28	26.7	58	17.3
Hospital	13	12.4	27	8.0
Other	7	7	8	2.4
<b>THEORETICAL ORIENTATION*</b>				
Psychodynamic	69	65.7	205	61.0
Integrative	51	48.6	124	36.9
CBT	44	41.9	87	25.9
Humanistic	28	26.7	56	16.7
Psychoanalytic	25	23.8	132	39.3
Systemic	17	16.2	41	12.2
Other	19	18.1	56	16.7
<b>Previous experience of providing online therapy</b>				
Yes	56	53.8	173	52.0
No	48	46.2	160	48.0
<b>Previous training in providing online therapy**</b>				
No	81	77.1	192	88.1
Yes	24	22.9	26	11.9

Response categories are reported in order of prevalence in the samples.

\*Multiple answers were possible per respondent.

\*\*Due to a technical error, some responses on this item were missing.

For the third research question, the data from Study 2 was used to examine whether the use of defense mechanisms reported at the 3-month time point could predict reported professional experiences (VTS and PSD) at this same time point while controlling for experiences of professional self-doubt and vicarious trauma during the initial weeks of the pandemic, by using stepwise linear regression models. For completeness, paired

sample *t*-tests to establish changes in vicarious trauma and professional self-doubt over time in Study 2 were reported. All the data were analyzed using IBM SPSS Statistics 25. Results for Study 1 and Study 2 will be reported sequentially.

## RESULTS

### Study 1: Therapists' Defense Mechanisms During the Initial Weeks of the COVID-19 Pandemic

#### Therapist Characteristics (N = 105)

Therapists' mean age was 48.27 years old ( $SD = 15.78$ , range = 25–79). Most of the therapists were White ( $N = 90$ , 85.7%) and female ( $N = 92$ , 87.6%) and lived in the United States at the time of the survey ( $N = 93$ , 88.6%). Most therapists had received training as professional psychologists ( $N = 75$ , 71.4%). Most of them were licensed ( $N = 89$ , 84.8%) and relatively experienced ( $N = 69$ , 65.7% with more than 9 years of experience). Almost half of the participating therapists had no experience with online therapy prior to the pandemic ( $N = 47$ , 44.8%). See Table 1 for a more detailed description of the therapists' characteristics.

#### Therapists' Defense Mechanisms

Therapists reported a relatively high level of use of mature defense mechanisms ( $M = 6.18$ ,  $SD = 0.87$ ) as well as a relatively lower level of neurotic defense mechanisms ( $M = 4.20$ ,  $SD = 0.88$ ) and immature defense mechanisms ( $M = 2.69$ ,  $SD = 0.81$ ). Compared to the populations studied in the literature, therapists reported a significant lower level of immature defense use than community adults and neurotic patients in outpatient services (Sammallahti et al., 1996; Granieri et al., 2017). Therapists in Study 1 also reported higher use of mature defense mechanisms than the community sample reported by Granieri et al. (2017), but this difference was not significant when compared to another community sample or a neurotic patient sample. Therapists' reported neurotic defense use did not consistently differ from other samples (see Table 2).

#### Concurrent Associations With Experience of Professional Self-Doubt and Vicarious Trauma

The descriptive statistics of experience of professional self-doubt and vicarious trauma and their Pearson correlations with the three defense categories are presented in Table 3. Immature defense mechanisms and neurotic defense mechanisms were positively related with professional self-doubt ( $r = 0.30$ ,  $p = 0.002$ ;  $r = 0.22$ ,  $p = 0.03$ , respectively). Neurotic defense mechanisms were also positively associated with the level of experienced vicarious trauma ( $r = 0.23$ ,  $p = 0.02$ ).

### Study 2: Therapists' Defense Mechanisms Three Months Into the COVID-19 Pandemic

#### Therapist Characteristics (N = 336)

Therapists' mean age in this sample was 50.05 years old ( $SD = 16.31$ , range = 22–84). Most of the participants were White ( $n = 291$ , 83.6%) and female ( $n = 260$ , 77.8%). Most of them lived in the United States ( $N = 278$ , 82.7%). The therapists were mostly trained as psychologists ( $N = 185$ , 55%), licensed ( $N = 283$ ,

**TABLE 2 |** Independent samples *t*-tests comparing therapists' defense mechanisms (DSQ-40) in study 1 to other samples.

Study	Sample	<i>N</i>	Mature defenses <i>M</i> ( <i>SD</i> )	<i>t</i>	Neurotic defenses <i>M</i> ( <i>SD</i> )	<i>t</i>	Immature defenses <i>M</i> ( <i>SD</i> )	<i>t</i>
Study 1	Therapists during pandemic	105	6.18 (0.87)		4.20 (0.88)		2.69 (0.81)	N/A
Granieri et al. (2017)	Community adults	328	4.82 (1.21)	<b>12.59</b> <i>p</i> < 0.00001	4.36 (1.20)	−1.47 <i>p</i> = 0.14	3.72 (1.06)	<b>−10.47</b> <i>p</i> < 0.00001
Sammallahti et al. (1996)	Community adults	334	6.2 (1.4)	0.17 <i>p</i> = 0.86	3.9 (1.3)	2.69 <i>p</i> = 0.007	3.5 (1.0)	<b>8.43</b> <i>p</i> < 0.00001
Sammallahti et al. (1996)	Neurotic patients	53	5.7 (1.5)	2.15 <i>p</i> = 0.03	4.2 (1.4)	0.0 <i>p</i> > 0.99	4.8 (1.1)	<b>12.38</b> <i>p</i> < 0.00001

Independent sample *t*-tests were conducted between Study 1 and previous studies using DSQ in community or outpatient samples. Bonferroni correction was used to correct issues for multiple testing, with a significance level of  $p < 0.05/9$  (0.006) for bolded items. All the comparisons were conducted with an assumption of unequal variance, given the differences in sample sizes.

**TABLE 3 |** Pearson correlations between therapists' defense mechanisms (DSQ-40), professional self-doubt, and vicarious trauma in study 1 (*N* = 105).

Variables	<i>M</i> ( <i>SD</i> )	1	2	3	4	5
<b>DEFENSE MECHANISMS</b>						
1. Mature	6.18 (0.87)	–				
2. Neurotic	4.20 (0.88)	0.11	–			
3. Immature	2.69 (0.81)	0.02	0.51**	–		
<b>PROFESSIONAL EXPERIENCES</b>						
4. Professional self-doubt	2.48 (0.86)	−0.11	0.22*	0.30**	–	
5. Vicarious trauma	3.81 (1.16)	0.16	0.24*	0.17	0.47**	–

\* $p < 0.05$ ; \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

84.2%), and relatively experienced ( $N = 241$ , 71.5% with more than 9 years of experience). Most of them saw patients in private practice before the pandemic ( $N = 263$ , 78.3%) and worked with populations of adults ( $N = 320$ , 95.2%) and adolescents ( $N = 145$ , 43.2%). Approximately half of the participants had experiences providing online therapy prior to the pandemic ( $N = 156$ , 46.5%). See **Table 1** for a more detailed description of therapist characteristics.

### Therapists' Defense Mechanisms

Similar to findings in Study 1, therapists reported high levels of mature defense mechanisms ( $M = 56.49$ ,  $SD = 13.25$ ) and relatively low levels of neurotic defense mechanisms ( $M = 21.04$ ,  $SD = 6.92$ ) and immature defense mechanisms ( $M = 10.12$ ,  $SD = 5.35$ ). The therapists' ODF ( $M = 5.71$ ,  $SD = 0.50$ ) indicated an average healthy ("healthy-neurotic," Perry and Henry, 2004) functioning (**Table 4**). The ODF in our therapist sample was comparable to a community sample in Italy during the first week of lockdown (DiGiuseppe et al., 2020a,c), and significantly higher than an Italian sample of mostly students during the second month of the pandemic (DiGiuseppe et al., 2020c). Additionally, consistent with results in Study 1, therapists reported a significantly lower level of immature defense mechanisms than both community samples

during pandemic (DiGiuseppe et al., 2020a,c), see also **Table 4**. Therapists reported a higher use of mature defense mechanisms than the community student sample and a higher use of neurotic defense mechanisms than the community adult sample (see **Table 4**).

While the majority of therapists ( $N = 218$ , 64.9%) reported healthy or superior functioning ( $ODF \leq 5.5$ ), a relatively large proportion ( $N = 93$ , 27.7 %) of therapists' defensive functioning fell into the range associated with neurotic character and symptoms disorders ( $5 \leq ODF < 5.5$ ). Finally, we identified a small percentage of therapists ( $N = 25$ , 7.4%) whose ODF fell into the lowest range, associated with personality disorders or acute depression ( $ODF < 5.0$ ).

### Concurrent Associations Between Defense Mechanisms and Experience of Professional Self-Doubt and Vicarious Trauma

The reported mean scores of the variables in Study 2, as well as the associations between experience of professional self-doubt and vicarious trauma and the three categories defense mechanisms, and ODF are presented in **Table 5**. Three months after the beginning of the pandemic, professional self-doubt and vicarious trauma experiences were negatively related with mature defense mechanisms ( $r = -0.40$ ,  $p < 0.001$ , and  $r = -0.44$ ,  $p < 0.001$ , respectively) and ODF ( $r = -0.37$ ,  $p < 0.001$ , and  $r = -0.30$ ,  $p < 0.001$ , respectively) while being positively related with neurotic defense mechanisms ( $r = 0.24$ ,  $p = 0.003$ , and  $r = 0.25$ ,  $p = 0.001$ , respectively).

### Longitudinal Associations Between Defense Mechanisms and Experience of Professional Self-Doubt and Vicarious Trauma

Professional doubt significantly decreased over 3 months [ $t_{(168)} = 23.53$ ,  $p < 0.001$ ], whereas reported levels of vicarious trauma did not change significantly [ $t_{(175)} = 1.54$ ,  $p = 0.127$ ]. Given the significant correlations between defense mechanisms, professional self-doubt, and vicarious trauma, we conducted linear regression models to see if defense mechanisms (the total ODF score or the three defense categories) predicted these experiences of professional self-doubt and vicarious trauma at



**TABLE 4 |** Independent samples *t*-tests comparing therapists' defense mechanisms (DMRS-SR-30) in study 2 to other samples.

Study	Sample	N	Mature Defenses M (SD)	t	Neurotic Defenses M (SD)	t	Immature Defenses M (SD)	t	ODF	t
Study 2	Therapists during pandemic	336	56.49 (13.25)		21.04 (6.92)		10.12 (5.35)		5.71 (0.50)	
DiGiuseppe et al. (2020a)	Young adults in Italy during pandemic	94	39.42 (10.08)	13.48	20.22 (5.73)	1.17	38.69 (9.18)	−28.84	4.91 (0.44)	<b>14.06</b>
DiGiuseppe et al. (2020c) (unpublished data)	Adults in Italy during pandemic	5,683	55.54 (19.99)	1.23	18.64 (10.65)	5.95	25.31 (14.94)	−43.06	5.58 (0.83)	2.84
				$p < 0.00001$			$p = 0.24$	$p < 0.00001$	$p < 0.00001^*$	
				$p = 0.22$			$p < 0.00001$	$p < 0.00001$	$p > 0.999$	

Independent sample *t*-tests were conducted between Study 2 and previous studies using DMRS in community samples. Bonferroni correction was used to correct issues for multiple testing, with a significance level of  $p < 0.05/8$  (0.0063) for bolded items.

\*Other than this comparison, all the other comparisons were conducted with an assumption of unequal variance that is more conservative, given the differences in sample sizes. ODF = overall defensive functioning.

**TABLE 5 |** Pearson correlations between therapists' defense mechanisms (DMRS-SR-30), professional self-doubt, and vicarious trauma in study 2 ( $N = 336$ ).

Variables	M (SD)	1	2	3	4	5	6
<b>DEFENSE MECHANISMS</b>							
1. Mature	56.49 (13.25)	–					
2. Neurotic	21.04 (6.92)	−0.64**	–				
3. Immature	10.12 (5.35)	−0.62**	0.16**	–			
4. ODF	5.71 (0.50)	0.93**	−0.34**	−0.60**	–		
<b>PROFESSIONAL EXPERIENCES</b>							
5. Professional Self-Doubt	1.11 (0.68)	−0.40**	0.24**	0.31**	−0.37**	–	
6. Vicarious Trauma	3.97 (1.04)	−0.33**	0.25**	0.10	−0.30**	0.45**	–

\* $p < 0.05$ ; \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

the 3-month time point, after controlling for professional self-doubt and vicarious trauma at the initial timepoint (i.e., early weeks of the pandemic). The results from the regression models, controlling for scores of professional self-doubt and vicarious trauma at the initial weeks of the pandemic, are presented in **Table 6**. After controlling the contribution of vicarious trauma at the early weeks of the pandemic, the ODF at the 3-month time point negatively predicted vicarious trauma ( $B = -0.36$ ,  $SE = 0.13$ ,  $t = -2.71$ ,  $p = 0.01$ ,  $\Delta R^2 = 0.03$ ), with higher levels of defense functioning predicting lower levels of vicarious trauma. Similarly, the ODF at the 3-month time point also negatively predicted professional self-doubt ( $B = -0.35$ ,  $SE = 0.09$ ,  $t = -3.72$ ,  $p < 0.001$ ,  $\Delta R^2 = 0.05$ ), after controlling for the significant contribution of professional self-doubt at the early weeks of the pandemic. Regarding the three categories of defense mechanisms (i.e., mature, neurotic, and immature), mature defense mechanisms at the 3-month measurement point negatively predicted vicarious trauma ( $B = -2.17$ ,  $SE = 0.85$ ,  $t = -2.56$ ,  $p = 0.01$ ,  $\Delta R^2 = 0.03$ ) after controlling for the contribution of vicarious trauma, earlier in the pandemic, with higher use of mature defense mechanisms predicting lower levels of vicarious trauma. Similarly, after controlling for the significant

contribution of professional self-doubt in the initial weeks of the pandemic, mature defense mechanisms after 3 months negatively predicted the experienced professional self-doubt at that same time ( $B = -1.16$ ,  $SE = 0.58$ ,  $t = -2.01$ ,  $p = 0.046$ ,  $\Delta R^2 = 0.06$ ). In contrast, neither neurotic defense use, or immature defense use were associated with experiences of professional self-doubt and vicarious trauma in the regression model.

## DISCUSSION

To our knowledge, this is the first study to focus on defensive functioning among psychotherapists. Our aim was to assess defense mechanisms used by therapists during the early days and months of the pandemic, and to establish the concurrent relationship between use of defense mechanisms and experiences of professional self-doubt and vicarious trauma, as well as the relationship between defense mechanisms and change in these professional stressors over time. We reported on two recruitment efforts of two similar online surveys completed by therapists in the early days of the pandemic (Study 1) and 3 months into the pandemic (Study 2), using two different self-report measures of

**TABLE 6 |** Regression analyses of therapists' overall defensive functioning and defense mechanisms predicting change in therapists' experiences of professional self-doubt and vicarious trauma.

Predictor variables	Coeff.	SE	95% CI
<b>Vicarious Trauma Predicted by ODF</b>			
<i>Vicarious Trauma at the initial timepoint</i>	0.48***	0.06	0.37, 0.59
<i>ODF</i>	−0.36**	0.13	−0.61, −0.10
$R^2 = 0.35; F_{(2, 173)} = 46.67^{***}$			
<b>Professional Self-Doubt predicted by ODF</b>			
<i>Professional Self-Doubt at the initial timepoint</i>	0.38***	0.06	0.26, 0.50
<i>ODF</i>	−0.35***	0.09	−0.53, −0.16
$R^2 = 0.30; F_{(2, 166)} = 35.35^{***}$			
<b>Vicarious Trauma Predicted by Defense Levels</b>			
<i>Vicarious Trauma at the initial timepoint</i>	0.46***	0.06	0.35, 0.58
<i>Defense Level</i>			
Mature	−2.17*	0.85	−3.85, −0.50
Neurotic	−0.94	1.30	−3.51, 1.63
Immature	−1.77	1.59	−4.90, 1.37
$R^2 = 0.36; F_{(4, 171)} = 23.95^{***}$			
<b>Professional Self-Doubt Predicted by Defense Levels</b>			
<i>Professional Self-Doubt at the initial timepoint</i>	0.36***	0.06	0.24, 0.49
<i>Defense Level</i>			
Mature	−1.18*	0.58	−2.33, −0.02
Neurotic	−0.35	0.91	−2.14, 1.44
Immature	1.13	1.09	−1.03, 3.28
$R^2 = 0.31; F_{(4, 164)} = 18.17^{***}$			

Coeff., Unstandardized coefficient; ODF, overall defense functioning. All variables in the regression were measured at follow-up (after controlling for Professional Self-Doubt and Vicarious Trauma at baseline).

\* $p < 0.05$ ; \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

defense mechanisms, the DSQ-40 (Andrews et al., 1993) and the DMRS-SR-30 (DiGiuseppe et al., 2020b) respectively.

In response to the first research question, the results of both studies indicated that therapists reported relatively healthy levels of defense mechanisms during the pandemic. Therapists reported higher levels of mature defense mechanisms, and lower levels of immature defense mechanisms, compared to published community and clinical populations assessed before and during the pandemic. In Study 1, therapists on average reported higher levels of relatively adaptive, mature defense mechanisms and lower levels of neurotic and immature defense mechanisms, compared to published DSQ data on neurotic patient samples and community samples outside the pandemic (Sammallahti et al., 1996; Granieri et al., 2017). Similarly, in Study 2, therapists reported relatively healthy use of defense mechanisms, compared to other DMRS-SR-30 studies conducted during the pandemic. More specifically, therapists in Study 2 reported higher levels of ODF and higher levels of mature defense mechanisms than a small, Italian, young adult sample (DiGiuseppe et al., 2020a), but no significant difference with an Italian adult community sample (DiGiuseppe et al., 2020c). The therapists in Study 2 also reported lower levels of immature defense mechanisms than these young adult and adult community samples, and higher levels of neurotic defense mechanisms than the Italian community adults during the pandemic. Notably, defense levels among the therapists in both studies also varied greatly, ranging from low levels, usually associated with personality disorders and acute depression, through levels associated with neurotic

character and symptom disorders, to healthy and superior level functioning (Perry and Henry, 2004).

In answer to our second research question, we found that therapists' lower level of mature defense mechanisms and higher levels of neurotic and immature defense mechanisms were related to higher concurrent levels of vicarious trauma and professional doubt. In other words, therapists who used less adaptive defense mechanisms showed greater vulnerability to professional self-doubt and vicarious trauma, whereas more adaptive defense mechanisms appeared to protect from these experiences. This relationship between defense mechanisms and professional stress was found in both studies, using two different defense mechanism rating scales. These results are in line with previous research showing that therapist trainees who used relatively mature defense mechanisms (as measured by the DSQ) reported fewer vicarious trauma symptoms (Adams and Riggs, 2008). This implies that by the use of mature, adaptive defense mechanisms, therapists may be able to manage the stress induced by the traumatic material they are exposed to in sessions, and thus decrease the likelihood of experiencing vicarious trauma. In contrast, the use of lower level, less adaptive defense mechanisms (neurotic, immature) increases the likelihood of more intense vicarious traumatization. More generally, this found association between neurotic and immature defense mechanisms and professional stress in therapists, fits with the literature on neurotic and immature defense mechanisms and psychological distress in the general population (related to anxiety in the general population; Mohamadpour, 2009; related

to psychiatry residents' level of burnout; Hurşitoglu et al., 2019).

With regards to the third research question, therapists who reported higher levels of mature defense mechanisms at the 3-month follow-up in Study 2 showed less vicarious trauma and professional self-doubt at follow-up, after controlling for the level of these professional stresses at baseline. More specifically, higher ODF, as well as more mature defense mechanisms were associated with less professional self-doubt and vicarious trauma 3 months later, even when controlling for levels of these professional challenges during the initial weeks of the pandemic.

Previous studies have already shown that in patient and community populations, more adaptive defense mechanisms are related to better psychological functioning and less symptomatology (e.g., Perry and Bond, 2012), and studies during the pandemic supported these findings (e.g., DiGiuseppe et al., 2020a; Prout et al., 2020). Our results are in line with these results in that they indicate a positive relationship between the adaptiveness of therapists' defense mechanism and their experience of professional challenges like professional self-doubt and vicarious trauma. Our findings suggest that therapists' reported defense mechanisms may reflect their varying ability to cope with various professional stresses at the time of uncertainty and transition at the beginning of a global pandemic, as well as to adapt to the stresses over time.

When interpreting our results regarding therapists' defense mechanisms, and especially of those whose defense mechanisms fell into a lower range, it is important to keep in mind that data collection occurred during a global pandemic and in the midst of transitioning to provide online therapy. These particular circumstances inevitably color the picture. Our results may only reflect therapists' defensive functioning in the context of various personal and professional challenges. Given that stress is associated with the use of less mature defense mechanisms (Cramer, 2006; Perry et al., 2015), it is possible that therapists would have reported the use of more mature and less immature defense mechanisms outside the pandemic.

Keeping this in mind, there was a relatively high proportion of therapists in this sample whose ODF fell into a range often associated with neurotic and symptom disorders, and a small subsample of therapists whose ODF was at a low level, usually associated with personality disorders or acute depression. The prevalent use of maladaptive defense mechanisms is linked not only to symptomatology but, as our study has demonstrated, to experiences of professional self-doubt and vicarious trauma as well. The importance of therapists' defense mechanisms extends to the professional lives of therapists and the use of defense mechanisms likely has an impact on how they experience the practice of psychotherapy, and possibly the quality of support they provide to their patients.

Understanding characteristics of therapists that might explain their differences in outcome is a pressing task. Besides helping to better understand how psychotherapy works, knowledge on the characteristics of effective therapists could have other practical value. Insofar as adaptive defenses are trainable and defense-use is modifiable, training programs and supervision could be geared toward nurturing the use of more adaptive defenses.

Also, merely being aware of these beneficial characteristics might help therapists monitor themselves in developing the qualities shown to improve outcomes via reflective and deliberate practice (Goldberg et al., 2016).

Similar to the advice given to patients, it might be important to provide professional and personal support to help therapists manage pandemic-related stress. Training on how to transition effectively to an online therapy format might be helpful in decreasing the overall stress of online work and may help increase therapists' professional confidence. Practicing self-care strategies and seeking out personal therapy, could improve therapists' ability to cope with the stress and trauma they experience during their online sessions during the pandemic and beyond.

Furthermore, therapists might benefit from identifying their own individual tendencies to use certain defense mechanisms when they experience stress, in and outside the professional context. Using an increased range of mature defense mechanisms might help build resilience and flexibility for adapting to future professional and societal challenges. These types of psychoeducation and personal-professional reflections could be integrated into graduate training curriculum and become part of supervision sessions, thereby helping to avoid high levels of professional self-doubt and vicarious traumatization during trainees' clinical practice and burnout later in their careers. Addressing therapists' use of defense mechanisms is especially important, given that therapists' professional stresses can also have a negative impact on the therapy process and ultimately treatment effectiveness (Sexton, 1999; Nissen-Lie et al., 2017).

## LIMITATIONS

Despite this unique contribution, several methodological limitations apply to our study. First, given that this study did not include a control group of online therapists assessed before the COVID-19 context, it is not clear if the therapist defense mechanisms and professional stresses reflect the intensity of the pandemic context, or if these associations would also emerge under normal professional and personal circumstances. It is therefore important to replicate this study outside of pandemic-times. Second, therapists' defense mechanisms were measured at one time point only (not repeated across measurement points), therefore it remains unclear if therapists revert to different more or less adaptive defense mechanisms over time. It is possible that many therapists become resilient and are able to tap into their pre-pandemic resources, whereas other therapists might experience accumulating stress over time (Aafjes-van Doorn et al., 2021), and revert to more maladaptive defense mechanisms as the pandemic continues. Third, a well-known limitation, common to all survey research, is that all variables were self-reported responses, which means that the relationship between these variables might have been spuriously inflated. Moreover, there is an inherent difficulty of assessing defense mechanisms through self-report measures (DiGiuseppe et al., 2020b) as the use of many defense mechanisms is relatively automatic and outside of awareness (Perry and Henry, 2004). However, both the DSQ-40 and the DMRS-SR-30 have been shown to have strong

reliability and validity, and there is evidence that their results are comparable to observer-rated methods (DiGiuseppe et al., 2020b).

It also would have been helpful to have used the same defense measure for both samples of therapists, so that the samples could have combined into one large sample. Arguably, using two different defense measures has been valuable in itself, especially given that each measure has its own limitations. The DSQ, used in Study 1, has been widely used among patients and community samples, however, its face validity (e.g., Chabrol et al., 2005) and the factor structure has been criticized in the literature (e.g., Prout et al., 2018). The DMRS-SR-30 is newer and less widely used, but appears to be psychometrically stronger (e.g., DiGiuseppe et al., 2020a). Another limitation of the reported data is that in Study 2 only a subsample of DMRS-SR-30 completers were asked to complete the VTS and PSD. This was caused by the researcher's belated decision to add these measures to the survey, and does not represent missing data *per se*; nevertheless, it does limit the sample size of these correlations.

Regardless of the measure itself, statistically assessing defense mechanisms is intrinsically difficult. Studying defense mechanisms as they are manifested in internal experiences and behavior clouds the distinction between constructs (explanatory terms) and phenomena (empirical referents) (Mihalits and Codenotti, 2020).

Furthermore, although reflecting an international sample of therapists, the samples in the two studies are less diverse in other dimensions, such as race, educational level, and access to technology. Our recruitment efforts reflect convenience sampling, without equal subsamples of trainees, licensed clinicians, and those with or without training in online therapy. Further studies on larger and multicultural therapist samples are underway and might help to test if the prevalence of defense mechanisms, and their associations with therapists' experiences of professional self-doubt and vicarious trauma are generalizable to the therapist profession more widely.

## CONCLUSION

This study provides unique information about the therapists' use of defense mechanisms and experiences of professional self-doubt and vicarious trauma amidst a global pandemic. Therapists

reported relatively adaptive levels of defense mechanisms, compared to published community and clinical populations assessed before and during the pandemic. During the initial weeks of the pandemic, as well as 3 months into the pandemic, adaptive defenses appeared as protective factors against experiencing vicarious trauma and professional doubt, whereas less adaptive (neurotic and immature) defenses appeared as risk factors of these professional stresses. Therapists who reported higher levels of adaptive defense mechanisms 3 months into the pandemic, showed reduced levels of vicarious trauma and professional self-doubt in these 3 months. Providing professional and personal support to therapists might help improve their psychological functioning and help manage their experiences of professional self-doubt and vicarious trauma, and ultimately help therapists to provide optimal care for their patients. Future replications of studies assessing therapists' defense mechanisms, as well as their relationship with professional stresses outside the pandemic context are warranted.

## DATA AVAILABILITY STATEMENT

The data may be available by request. Requests to access these datasets should be directed to katie.aafjes@yu.edu.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Western IRB, Yeshiva University. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

KAVD and VB developed the survey study, conducted the study itself, as well as the data cleaning, data preparation, developed research questions, were responsible for the majority of the literature research, and write-up of the manuscript. XL contributed to the data preparation, data-analyses, and write up of the results. TP and LH contributed to the initial data collection, recruitment and survey design as well as several rounds of edits of the manuscripts. All authors contributed to the article and approved the submitted version.

## REFERENCES

- Aafjes-van Doorn, K., Békés, V., Luo, X., Prout, T. A., and Hoffman, L. (2021). Therapists' resilience during COVID-19. *Psychol. Trauma*.
- Aafjes-van Doorn, K., Békés, V., and Prout, T. A. (2020a). Grappling with our therapeutic relationship and professional self-doubt during COVID-19: will we use video therapy again? *Counsell. Psychol. Q.* 1–12. doi: 10.1080/09515070.2020.1773404
- Aafjes-van Doorn, K., Békés, V., Prout, T. A., and Hoffman, L. (2020b). Psychotherapists' vicarious traumatization during the COVID-19 pandemic. *Psychol. Trauma* 12, S148–S150. doi: 10.1037/tra0000868
- Adams, S. A., and Riggs, S. A. (2008). An exploratory study of vicarious trauma among therapist trainees. *Train. Educ. Prof. Psychol.* 2, 26–34. doi: 10.1037/1931-3918.2.1.26
- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Psychiatric Disorders*. Washington, DC: American Psychiatric Association.
- Andrews, G., Singh, M., and Bond, M. (1993). The defense style questionnaire. *J. Nerv. Ment. Dis.* 181, 246–256.
- Aparicio, E., Michalopoulos, L. M., and Unick, G. J. (2013). An examination of the psychometric properties of the Vicarious Trauma Scale in a sample of licensed social workers. *Health Soc. Work* 38, 199–206. doi: 10.1093/hsw/hlt017
- Babl, A., Grosse Holtforth, M., Perry, J. C., Schneider, N., Dommann, E., Heer, S., et al. (2019). Comparison and change of defense mechanisms over the course of psychotherapy in patients with depression or anxiety disorder: evidence from a randomized controlled trial. *J. Affect. Disord.* 252, 212–220. doi: 10.1016/j.jad.2019.04.021
- Békés, V., Aafjes-van Doorn, V., McCollum, J., Prout, T. R., and Hoffman, L. (2020). The development of a self-report scale to assess therapists' acceptance



- of online psychotherapy via video conferencing (Manuscript submitted for publication).
- Békés, V., Perry, J. C., and Starrs, C. J. (2017). Resilience in holocaust survivors: a study of defense mechanisms in holocaust narratives. *J. Aggress. Maltreat. Trauma* 26, 1072–1089. doi: 10.1080/10926771.2017.1320344
- Benuto, L., Singer, J., Cummings, C., and Ahrendt, A. (2018). The Vicarious Trauma Scale: confirmatory factor analysis and psychometric properties with a sample of victim advocates. *Health Soc. Care Commun.* 26, 564–571. doi: 10.1111/hsc.12554
- Beutler, L. E., Malik, M., Alimohamed, S., Harwood, T. M., Talebi, H., Noble, S., et al. (2004). "Therapist variables," in *Bergin and Garfield's Handbook of Psychotherapy and Behavior Change, 5th Edn.*, ed M. J. Lambert (New York, NY: John Wiley and Sons), 227–306.
- Bhatia, M., Petraglia, J., de Roten, Y., Banon, E., Despland, J.-N., and Drapeau, M. (2016). What defense mechanisms do therapists interpret in-session? *Psychodyn. Psychiatry* 44, 567–585. doi: 10.1521/pdps.2016.44.4.567
- Boldrini, T., Buglio, G. L., Giovanardi, G., Lingiardi, V., and Salcuni, S. (2020). Defense mechanisms in adolescents at high risk of developing psychosis: an empirical investigation. *Res. Psychother. Psychopathol. Process Outcome* 23:1. doi: 10.4081/ripppo.2020.456
- Bond, M. (2004). Empirical studies of defense style: relationships with psychopathology and change. *Harv. Rev. Psychiatry* 12, 263–278. doi: 10.1080/10673220490886167
- Boscarino, J. A., Figley, C. R., and Adams, R. E. (2004). Compassion fatigue following the September 11 terrorist attacks: a study of secondary trauma among New York City social workers. *Int. J. Emerg. Ment. Health* 6, 57–66.
- Briggs, D. B., and Munley, P. H. (2008). Therapist stress, coping, career sustaining behavior and the working alliance. *Psychol. Rep.* 103, 443–454. doi: 10.2466/pr0.103.2.443-454
- Chabrol, H., Rousseau, A., Rodgers, R., Callahan, S., Pirlot, G., and Sztulman, H. (2005). A study of the face validity of the 40 Item version of the Defense Style Questionnaire (DSQ-40). *J. Nerv. Ment. Dis.* 193, 756–758. doi: 10.1097/01.nmd.0000185869.07322.ed
- Constantino, M. J., Boswell, J. F., Coyne, A. E., Kraus, D. R., and Castonguay, L. G. (2017). "Who works for whom and why? Integrating therapist effects analysis into psychotherapy outcome and process research," in *Why are Some Therapists are Better Than Others? Understanding Therapist Effects*, eds L. G. Castonguay and C. E. Hill (Washington DC: American Psychological Association), 55–68. doi: 10.1037/0000034-004
- Cramer, P. (2006). *Protecting the Self: Defense Mechanisms in Action*. New York, NY: Guilford Press.
- Cramer, P. (2008). Seven pillars of defense mechanism theory. *Soc. Pers. Psychol. Compass* 2, 1963–1981. doi: 10.1111/j.1751-9004.2008.00135.x
- Culver, L. M., McKinney, B. L., and Paradise, L. V. (2011). Mental health professionals' experiences of vicarious traumatization in post-Hurricane Katrina New Orleans. *J. Loss Trauma* 16, 33–42. doi: 10.1080/15325024.2010.519279
- Despland, J.-N., de Roten, Y., Despars, J., Stigler, M., and Perry, J. C. (2001). Contribution of patient defense mechanisms and therapist interventions to the development of early therapeutic alliance in a brief psychodynamic investigation. *J. Psychother. Pract. Res.* 10, 155–164.
- DiGiuseppe, M., Perry, J. C., Lucchesi, M., Michelini, M., Vitiello, S., Piantanida, A., et al. (2020b). Preliminary reliability and validity of the DMRS-SR-30, a novel self-report measure based on the Defense Mechanisms Rating Scales. *Front. Psychiatry* 11:870. doi: 10.3389/fpsy.2020.00870
- DiGiuseppe, M., Zilcha-Mano, S., Prout, T. A., Perry, J. C., Orrù, G., and Conversano, C. (2020c). Psychological impact of coronavirus disease 2019 among Italians during the first week of lockdown. *Front. Psychiatry* 11:576597. doi: 10.3389/fpsy.2020.576597
- DiGiuseppe, M. D., Gemignani, A., and Conversano, C. (2020a). Psychological resources against the traumatic experience of COVID-19. *Clin. Neuropsychiatry* 17, 85–87. doi: 10.36131/CN20200210
- Drapeau, M., De Roten, Y., Perry, J. C., and Despland, J.-N. (2003). A study of stability and change in defense mechanisms during a brief psychodynamic investigation. *J. Nerv. Ment. Dis.* 191, 496–502. doi: 10.1097/01.nmd.0000082210.76762.ec
- Freud, A. (1936). *The Ego and the Mechanisms of Defense*. New York: International University Press.
- Freud, S. (1894). *The Neuro-psychoses of Defence. The Standard Edition of the Complete Psychological Works of Sigmund Freud, Volume III*. London: Hogarth Press.
- Goldberg, S. B., Babins-Wagner, R., Rousmaniere, T., Berzins, S., Hoyt, W. T., Whipple, J. L., et al. (2016). Creating a climate for therapist improvement: a case study of an agency focused on outcomes and deliberate practice. *Psychotherapy* 53, 367–375. doi: 10.1037/pst0000060
- Granieri, A., La Marca, L., Mannino, G., Giunta, S., Guglielmucci, F., and Schimmenti, A. (2017). The relationship between defense patterns and DSM-5 maladaptive personality domains. *Front. Psychol.* 8:1926. doi: 10.3389/fpsyg.2017.01926
- Guy, J. D., and Liaboe, G. P. (1986). The impact of conducting psychotherapy on psychotherapists' interpersonal functioning. *Profess. Psychol. Res. Pract.* 17, 111–114. doi: 10.1037/0735-7028.17.2.111
- Hayes, J. A., Gelso, C. J., and Hummel, A. M. (2011). Managing countertransference. *Psychotherapy* 48, 88–97. doi: 10.1037/a0022182
- Heinonen, E., and Nissen-Lie, H. A. (2020). The professional and personal characteristics of effective psychotherapists: a systematic review. *Psychother. Res.* 30, 417–432. doi: 10.1080/10503307.2019.1620366
- Hendriksen, M., Van, H. L., Schoevers, R. A., de Jonghe, F. E. R. E., Gijsbers van Wijk, C. M. T., Peen, J., et al. (2011). Therapist judgment of defense styles and therapeutic technique related to outcome in psychodynamic psychotherapy for depression. *Psychother. Psychosom.* 80, 377–379. doi: 10.1159/000324365
- Hurşitoglu, O., Findikli, E., Saglam, F., and Doganer, A. (2019). Resident Burnout may be correlated with immature and neurotic ego defenses in a sample from Turkey. *Psychiatry Behav. Sci.* 9, 69–77. doi: 10.5455/PBS.20181015100722
- Kramer, U., de Roten, Y., Perry, J. C., and Despland, J.-N. (2013). Beyond splitting: observer-rated defense mechanisms in borderline personality disorder. *Psychoanal. Psychol.* 30, 3–15. doi: 10.1037/a0029463
- Ledingham, M. (2015). *Beliefs and Perceptions About Burnout Amongst Mental Health Professionals*. Edith Cowan University. Available online at: <https://ro.ecu.edu.au/theses/1614> (accessed November 15, 2020).
- Lingiardi, V., Muzi, L., Tanzilli, A., and Carone, N. (2018). Do therapists' subjective variables impact on psychodynamic psychotherapy outcomes? A systematic literature review. *Clin. Psychol. Psychother.* 25, 85–101. doi: 10.1002/cpp.2131
- Marazziti, D., Pozza, A., Di Giuseppe, M., and Conversano, C. (2020). The psychosocial impact of COVID-19 pandemic in Italy: a lesson for mental health prevention in the first severely hit European country. *Psychol. Trauma* 12, 531–533. doi: 10.1037/tra0000687
- McCann, I. L., and Pearlman, L. A. (1990). Vicarious traumatization: a framework for understanding the psychological effects of working with victims. *J. Trauma. Stress* 3, 131–149. doi: 10.1007/BF00975140
- Michalopoulos, L. M., and Aparicio, E. (2012). Vicarious trauma in social workers: the role of trauma history, social support, and years of experience. *J. Aggress. Maltreat. Trauma* 21, 646–664. doi: 10.1080/10926771.2012.689422
- Mihalits, D. S., and Codenotti, M. (2020). The conceptual tragedy in studying defense mechanisms. *Integr. Psychol. Behav. Sci.* 54, 354–369. doi: 10.1007/s12124-020-09515-6
- Moe, F. D., and Thimm, J. (2020). Personal therapy and the personal therapist. *Nord. Psychol.* 73, 3–28. doi: 10.1080/19012276.2020.1762713
- Mohamadpour, A. (2009). Case-control study of defense styles and state-trait anxiety among college students with general anxiety disorder. *J. Fundament. Ment. Health* 41, 7–14. doi: 10.22038/FMH.2009.1639
- Nissen-Lie, H. A., Rønnestad, M. H., Høglend, P. A., Havik, O. E., Solbakken, O. A., Stiles, T. C., et al. (2017). Love yourself as a person, doubt yourself as a therapist?: relationship of therapist professional and personal functioning to therapeutic outcome. *Clin. Psychol. Psychother.* 24, 48–60. doi: 10.1002/cpp.1977
- O'Connor, K., Neff, D. M., and Pitman, S. (2018). Burnout in mental health professionals: a systematic review and meta-analysis of prevalence and determinants. *Eur. Psychiatry* 53, 74–99. doi: 10.1016/j.eurpsy.2018.06.003
- Orlinsky, D., Ambühl, H., Rønnestad, M., Davis, J., Gerin, P., Davis, M., et al. (1999). Development of psychotherapists: concepts, questions, and methods of a collaborative international study. *Psychother. Res.* 9, 127–153. doi: 10.1093/ptr/9.2.127
- Orlinsky, D. E., Schofield, M. J., Schroder, T., and Kazantzis, N. (2011). Utilization of personal therapy by psychotherapists: a practice-friendly review and a new study. *J. Clin. Psychol.* 67, 828–842. doi: 10.1002/jclp.20821

- Perry, J., Petraglia, J., Olson, T., Presniak, M., and Metzger, J. (2012). "Accuracy of defense interpretation in three character types," in *Psychodynamic Psychotherapy Research: Evidence-Based Practice and Practice-Based Evidence* (New York: Humana Press), 417–447. doi: 10.1007/978-1-60761-792-1\_25
- Perry, J. C. (1990). *Defense Mechanism Rating Scales (DMRS)*. Unpublished Manuscript. Cambridge Hospital and Harvard Medical School, Cambridge, MA.
- Perry, J. C. (1993). "The study of defense mechanisms and their effects," in *Psychodynamic Treatment Research: A Handbook for Clinical Practice*, eds N. Miller, L. Luborsky, J. Barber, and J. Docherty (New York: Basic Books), 276–308.
- Perry, J. C. (2014). Anomalies and specific functions in the clinical identification of defense mechanisms. *J. Clin. Psychol.* 70, 406–418. doi: 10.1002/jclp.22085
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-year outcome. *Am. J. Psychiatry* 169, 916–925. doi: 10.1176/appi.ajp.2012.11091403
- Perry, J. C., and Bond, M. (2017). Addressing defenses in psychotherapy to improve adaptation. *Psychoanal. Inq.* 37, 153–166. doi: 10.1080/07351690.2017.1285185
- Perry, J. C., and Henry, M. (2004). "Studying defense mechanisms in psychotherapy using the defense mechanism rating scales," in *Defense Mechanisms: Theoretical, Research and Clinical Perspectives*, (Oxford: Elsevier Science Ltd.), 165–192. doi: 10.1016/S0166-4115(04)80034-7
- Perry, J. C., Metzger, J., and Sigal, J. J. (2015). Defensive functioning among women with breast cancer and matched community controls. *Psychiatry* 78, 156–169.
- Petraglia, J., Bhatia, M., and Drapeau, M. (2017). Ten principles to guide psychodynamic technique with defense mechanisms: an examination of theory, research, and clinical implications. *J. Psychol. Psychother.* 7, 2161–0487. doi: 10.4172/2161-0487.1000288
- Prout, T. A., Gottdiener, W. H., Camargo, A., and Murphy, S. (2018). The relationship between defense mechanisms and religious coping using a new two-factor solution for the Defense Style Questionnaire-40. *Bull. Menninger Clin.* 82, 224–252. doi: 10.1521/bumc.2018.82.3.224
- Prout, T. A., Zilcha-Mano, S., Aafjes-van Doorn, K., Békés, V., Christman-Cohen, I., Whistler, K., et al. (2020). Identifying predictors of psychological distress during COVID-19: a machine learning approach. *Front. Psychol.* 11:586202. doi: 10.3389/fpsyg.2020.586202
- Punamaki, R. L., Kanninen, K., Qouta, S., and El-Sarraj, E. (2002). The role of psychological defences in moderating between trauma and posttraumatic symptoms among Palestinian men. *Int. J. Psychol.* 27, 286–296. doi: 10.1080/00207590244000133
- Roy, C. A., Perry, C. J., Luborsky, L., and Banon, E. (2009). Changes in defensive functioning in completed psychoanalyses: the Penn psychoanalytic treatment collection. *J. Am. Psychoanal. Assoc.* 57, 399–415. doi: 10.1177/0003065109333357
- Ruutu, T., Pelkonen, M., Holi, M., Karlsson, L., Kiviruusu, O., Heilä, H., et al. (2006). Psychometric properties of the Defense Style Questionnaire (DSQ-40) in adolescents. *J. Nerv. Ment. Dis.* 194, 98–105. doi: 10.1097/01.nmd.0000198141.88926.2e
- Sammallahti, P. R., Holi, M. J., Komulainen, E. J., and Aalberg, V. A. (1996). Comparing two self-report measures of coping—The Sense of Coherence Scale and the Defense Style Questionnaire. *J. Clin. Psychol.* 52, 517–524. doi: 10.1002/(SICI)1097-4679(199609)52:5<517::AID-JCLP4>3.0.CO;2-K
- Schauben, L. J., and Frazier, P. A. (1995). Vicarious trauma: The effects on female counselors of working with sexual violence survivors. *Psychol. Women Q.* 19, 49–54. doi: 10.1111/j.1471-6402.1995.tb00278.x
- Sexton, L. (1999). Vicarious traumatization of counsellors and effects on their workplaces. *Br. J. Guid. Counsell.* 27, 393–403. doi: 10.1080/03069889908256279
- Siefert, C. J., Hilsenroth, M. J., Weinberger, J., Blagys, M. D., and Ackerman, S. J. (2006). The relationship of patient defensive functioning and alliance with therapist technique during short-term psychodynamic psychotherapy. *Clin. Psychol. Psychother.* 13, 20–33. doi: 10.1002/cpp.469
- Simionato, G. K., and Simpson, S. (2018). Personal risk factors associated with burnout among psychotherapists: a systematic review of the literature. *J. Clin. Psychol.* 74, 1431–1456. doi: 10.1002/jclp.22615
- Steel, C., Macdonald, J., Schröder, T., and Mellor-Clark, J. (2015). Exhausted but not cynical: burnout in therapists working within improving access to psychological therapy services. *J. Ment. Health* 24, 33–37. doi: 10.3109/09638237.2014.971145
- Tapp, J., Cottle, L., Christmas, M., Stratton, R., Gannon, T. A., and Moore, E. (2018). A psychometric evaluation of the Defence Style Questionnaire-40 in a UK forensic patient population. *J. For. Psychiatry Psychol.* 29, 288–307. doi: 10.1080/14789949.2017.1375542
- Trijsburg, R. W., Van T'Spijker, A., Van, H. L., Hesselink, A. J., and Duivenvoorden, H. J. (2000). Measuring overall defensive functioning with the Defense Style Questionnaire: a comparison of different scoring methods. *J. Nerv. Ment. Dis.* 188, 432–439. doi: 10.1097/00005053-200007000-00007
- Tsamakis, K., Triantafyllis, A. S., Tsiptsios, D., Spartalis, E., Mueller, C., Tsamakis, C., et al. (2020). COVID-19 related stress exacerbates common physical and mental pathologies and affects treatment (Review). *Exp. Ther. Med.* 20, 159–162. doi: 10.3892/etm.2020.8671
- Vaillant, G. E. (2020). "Defense mechanisms," in *Encyclopedia of Personality and Individual Differences*, eds V. Zeigler-Hill and T. K. Shackelford (Cham: Springer International Publishing), 1024–1033. doi: 10.1007/978-3-319-24612-3\_1372
- Vrklevski, L. P., and Franklin, J. (2008). Vicarious trauma: the impact on solicitors of exposure to traumatic material. *Traumatology* 14, 106–118. doi: 10.1177/1534765607309961
- Wilkinson, W. W., and Ritchie, T. D. (2015). The dimensionality of defense-mechanism parcels in the Defense Style Questionnaire-40. *Psychol. Assess.* 27, 326–331. doi: 10.1037/pas0000051
- Winston, B., Samstag, L. W., Winston, A., and Muran, J. C. (1994). Patient defense/therapist interventions. *Psychotherapy* 31, 478–491.
- Zimmerman, T. N., Porcerelli, J. H., and Arterbery, V. E. (2019). Defensive functioning in cancer patients, cancer survivors, and controls. *Psychoanal. Psychol.* 36, 259–262. doi: 10.1037/pap0000225

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Aafjes-Van Doorn, Békés, Luo, Prout and Hoffman. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Defensive Functioning of Individuals Diagnosed With Gender Dysphoria at the Beginning of Their Hormonal Treatment

Guido Giovanardi<sup>1\*</sup>, Marta Mirabella<sup>1</sup>, Mariagrazia Di Giuseppe<sup>2</sup>, Francesco Lombardo<sup>3</sup>, Anna Maria Speranza<sup>1</sup> and Vittorio Lingiardi<sup>1</sup>

<sup>1</sup> Department of Dynamic and Clinical Psychology, and Health Studies, "Sapienza" University of Rome, Rome, Italy,

<sup>2</sup> Department of Surgical, Medical and Molecular Pathology, Critical and Care Medicine, University of Pisa, Pisa, Italy,

<sup>3</sup> Laboratory of Seminology - Sperm Bank "Loredana Gandini", Department of Experimental Medicine, "Sapienza" University of Rome, Rome, Italy

## OPEN ACCESS

### Edited by:

Carmita Helena Najjar Abdo,  
University of São Paulo, Brazil

### Reviewed by:

Stéphane Raffard,  
Université Paul Valéry, Montpellier  
III, France

André Marquez Cunha,  
Universidade Federal de Goiás, Brazil

### \*Correspondence:

Guido Giovanardi  
guido.giovanardi@uniroma1.it

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 08 February 2021

**Accepted:** 06 July 2021

**Published:** 10 August 2021

### Citation:

Giovanardi G, Mirabella M, Di  
Giuseppe M, Lombardo F,  
Speranza AM and Lingiardi V (2021)  
Defensive Functioning of Individuals  
Diagnosed With Gender Dysphoria at  
the Beginning of Their Hormonal  
Treatment.  
Front. Psychol. 12:665547.  
doi: 10.3389/fpsyg.2021.665547

Defense mechanisms are relevant indicators of psychological functioning and vulnerability to psychopathology. Their evaluation can unveil individuals' unconscious strategies for mediating reactions to emotional conflict and external stressors. At the beginning of their journey toward gender reassignment, individuals diagnosed with gender dysphoria (GD) may experience conflict and stressful experiences that trigger a wide range of defense mechanisms. Mature defenses may strengthen these individuals as they travel along this important path, while neurotic and immature defenses may exacerbate their body dissatisfaction (BD) and hinder their processing of change. Only a few studies have investigated self-reported defensive functioning in transgender people, finding a higher frequency of maladaptive defense mechanisms relative to controls. The present study was the first to apply an in-depth clinician-rated tool to assess the entire hierarchy of defense mechanisms within a sample of transgender people. Defensive functioning and personality organization were assessed in 36 individuals diagnosed with GD (14 trans women, 22 trans men, mean age 23.47 years), using the Defense Mechanisms Rating Scales (Perry, 1990) and the Shedler-Westen Assessment Procedure-200 (Shedler et al., 2014). Body uneasiness was assessed using the Body Uneasiness Test (BUT; Cuzzolaro et al., 2006). The findings showed that defensive functioning correlated positively with healthy personality functioning and negatively with BD. Compared to cisgender controls, participants with GD who presented greater defensive functioning were found to be more immature and to demonstrate significant differences in many levels of functioning. The clinical implications of the results suggest that psychological interventions aimed at improving defensive functioning in individuals with GD will be important in helping them manage the challenges posed by their gender transition.

**Keywords:** defense mechanisms, gender dysphoria, transgender, personality, body satisfaction

## INTRODUCTION

Gender dysphoria (GD; American Psychiatric Association, 2013) is a condition in which individuals experience distress due to an incongruence between their gender identity (or experienced/expressed gender) and the gender that was assigned to them at birth<sup>1</sup>. Over the past decade, GD has received increased research attention, and it is now considered a multifactorial construct integrating biological, psychological, and social factors (De Vries and Cohen-Kettenis, 2012). Research has shown (for a review, see Dhejne et al., 2016) that the population of individuals with GD is heterogeneous and vulnerable to several psychological challenges. In particular, recent studies have highlighted the risk for individuals with GD to suffer from several Axis I psychiatric disorders, such as depression, anxiety, and substance disorders (de Freitas et al., 2020). Mixed findings have been reported for Axis II personality disorders (PDs), with prevalence rates for this population ranging from 4.3% (Fisher et al., 2013) to 81.4% (Mazaheri Meybodi et al., 2014). Several studies involving transgender youth have highlighted the risk for this population of developing eating disorders or eating disorder symptoms (e.g., Feder et al., 2017), and for engaging in self-harming behavior and suicidal ideation and attempts (e.g., Aitken et al., 2016). Furthermore, recent studies have identified a potential link between GD and autism spectrum disorders (Hisle-Gorman et al., 2019; Warrier et al., 2020); however, this association is highly debated by experts in the field (e.g., Turban and van Schalkwyk, 2018).

As several studies have shown, body dissatisfaction (BD), which consists of negative feelings toward one's body and a negative evaluation of one's appearance, may be a key factor in the development of psychopathology (Bandini et al., 2013). Indeed, research (Vocks et al., 2009; Couturier et al., 2015; Witcomb et al., 2015; Becker et al., 2016; Jones et al., 2016; Mirabella et al., 2020) has reported that BD in individuals with GD extends beyond non-sexual body parts and, therefore, represents a significant source of suffering. Moreover, many studies have noted that the distress associated with BD may be increased in transgender people, due to discrimination and stigma in their life contexts (e.g., Clements-Nolle et al., 2006; Ristori and Steensma, 2016; Giovanardi et al., 2018, 2020a; Fortunato et al., 2020).

Gender-affirming treatments (e.g., social transition, whereby an individual adopts a name, pronoun, clothing, and hairstyle associated with their affirmed gender; Olson-Kennedy, 2016; Olson-Kennedy et al., 2016; Sherer, 2016) and hormonal and surgical interventions to modify the body according to one's affirmed gender have been found to significantly improve transgender people's mental health and well-being (Coleman et al., 2012). Recent reviews (Costa and Colizzi, 2016; Nguyen et al., 2018) have demonstrated that individuals with GD who have access to gender-affirming treatments present improvements in mental health outcomes and

psychological well-being, including lower levels of anxiety and depression, perceived and social distress, personality-related psychopathology, suicidality, and higher quality of life, self-esteem, and body satisfaction. However, as several psychological guidelines and research studies underline (Bockting et al., 2006; Coleman et al., 2012; Giovanardi et al., 2019), gender transition and hormonal therapy can affect mood and PDs both positively and negatively (Matthys et al., 2021).

In this regard, the latest version of the Standards of Care for the Health of Transsexual, Transgender, and Gender Non-conforming People (SOC-7; Coleman et al., 2012), by the World Professional Association for Transgender Health (WPATH), and the Guidelines for Psychological Practice with Transgender and Gender Non-conforming People (American Psychiatric Association, 2015), published by the American Psychological Association (APA), underline the importance of adopting a multidisciplinary approach for the care of transsexual, transgender, and gender non-conforming people. The guidelines encourage the use of both physical (e.g., primary care, gynecologic and urologic care, reproductive options) and mental health support (e.g., assessment, counseling, psychotherapy) to maximize transgender people's overall health, psychological well-being, and self-fulfillment. Nonetheless, research on the protective and predictive factors of psychologically positive outcomes within gender transitions is scarce (Dhejne et al., 2016). In particular, the role of defense mechanisms, which are important mediators of psychological adjustment (Perry et al., 2019), is understudied in this population.

The DSM-5 conceptualizes defense mechanisms as "mechanisms that mediate the individual's reaction to internal or external stressors" (American Psychiatric Association, 2013). Such mechanisms are automatic processes that operate partially or wholly outside of an individual's awareness (Cramer, 1998). However, they may be identified in conversation by presenting an apparent incongruity with the outward meaning of the communication (Perry, 2014). Defense mechanisms can be both healthy and psychopathological, and they have been organized into a hierarchy based on their defensive function and level of adaptation (American Psychiatric Association, 1994; Vaillant, 1995). According to the gold-standard theoretical approach to the study of defense mechanisms (Vaillant, 1992, 2020; Perry, 2014), the Defense Mechanisms Rating Scales (DMRS; Perry, 1990) were developed to provide a valid and reliable observer-rated qualitative and quantitative assessment of 30 defense mechanisms, organized into 7 defense levels, 3 defensive categories, and an index of Overall Defensive Functioning (ODF). The ODF represents an overall summary measure, indicating the subject's level of defensive maturity (Perry and Bond, 2012).

Research has demonstrated the importance of the systematic assessment of defense mechanisms (Vaillant, 2020; Tanzilli et al., 2021). For instance, mature defenses (e.g., anticipation, humor, self-assertion) mitigate negative emotions and representations associated with conflict and distress (MacGregor and Olson, 2005; Martino et al., 2020), whereas immature defenses (e.g., splitting, denial, passive aggression) are linked to maladaptive personality traits at the base of several forms of psychopathology (Zimmerman et al., 2019; Boldrini et al., 2020; Perry et al.,

<sup>1</sup>In the present research, the sample was comprised of individuals who had received a diagnosis of GD; thus, the terminology used to describe our sample will be "individuals with GD" or, more generally, "transgender people." The sample subgroups will be identified as "trans women" (assigned male at birth) and "trans men" (assigned female at birth).



2020). Several studies have shown that defense styles contribute significantly to individual differences in responses to stressful environments (Vaillant, 1992; Schulz et al., 2005; Cramer, 2006; Prout et al., 2020; Conversano, 2021; Di Giuseppe et al., 2021). Individuals with GD may be subject to numerous stressful events, due to social discrimination and stigma. The gender transition, itself, entailing massive changes to the body and many aspects of psychological functioning (e.g., emotion regulation), may produce a further risk factor for psychological adaptation.

As recommended by the international guidelines (Coleman et al., 2012), transgender people should have access to psychological resources both during and after their gender transition, to help them cope with any side effects of their treatment and to support them in adapting to their new reality. In this regard, we believe that defense mechanisms may be useful indexes of flexibility in individuals who are facing this journey, as well as useful prognostic variables to assess and promote in psychological counseling. Use of immature defenses (e.g., splitting, acting out) may hinder an individual's capacity to process changes, at both a physical and a psychological level. Moreover, use of particular defenses (e.g., projection, dissociation) might be associated with a significant level of BD. Lemma (2012, 2013) focused on the "embodied self" of transgender people and their "need to be seen" by caregivers and others not as "perverse," but as "incongruent"—mirroring their felt "incongruence at the level of the body" (Lemma, 2013, p. 94). Moreover, as the psychoanalyst Saketopoulou (2014) noted, for transgender people, the ability to reflect, understand, and mentalize their body reality—in other words, the use of mature defenses (e.g., self-observation)—is key to achieving satisfying outcomes from a gender transition.

Despite research advances, literature on the defensive functioning of transgender people remains scarce. Lobato et al. (2009), using the self-report Defense Style Questionnaire (DSQ, Bond et al., 1983), investigated defenses in a sample of 32 trans women before and after gender reassignment, finding no significant differences 1 year post-surgery. However, the study lacked a control group, and thus the maturity of the defensive array could not be measured. Two studies (Sundbom et al., 1995; Sundbom and Bodlund, 1999) used a projective test, the Defense Mechanism Test, comparing patients with gender identity disorder (GID; American Psychiatric Association, 2000) to borderline patients and controls, finding higher frequencies of projection and introjection defenses in the GID sample. Finally, Prunas et al. (2014) used the self-report Response Evaluation Measure-71 (REM-71; Steiner et al., 2001) with a sample of 104 trans women and 36 trans men, compared to cisgender male and female controls, finding more maladaptive defensive functioning in trans women (but not trans men) compared to both control groups, including a higher use of immature defenses, such as projection, splitting, omnipotence, and fantasy.

Since defense mechanisms operate partially or wholly outside of awareness, self-report measures are limited to rating only their conscious correlates (Bond, 2004). Projective methods, on their part, have shown a lack of measurement validity on the entire hierarchy of defenses (Cramer, 1991). In light of

the unconscious, dynamic, and functional nature of defense mechanisms, observer-rated instruments, applied in a clinical situation, are optimal for identifying when a defense is being used, and for what function (Perry and Ianni, 1998).

The present study aimed at analyzing the defensive functioning of individuals with GD and its association with personality adjustment and body satisfaction, in comparison to that of cisgender controls. Our first hypothesis was that higher ODF and greater use of mature defenses would be associated with higher personality functioning and lower body satisfaction. Conversely, lower ODF and greater use of immature defenses would be associated with lower personality functioning and BD. Our second hypothesis was that individuals with GD would show lower defensive functioning compared to cisgender controls. Finally, our third hypothesis was that certain defense mechanisms would differentiate individuals with GD from cisgender controls, with trans women presenting lower defensive adjustment.

## METHODS

### Participants

The sample consisted of 36 adult participants, composed of 14 trans women and 22 trans men; mean age was 23.47 years ( $SD = 8.11$ ). All participants had been diagnosed with GD in a specialized center in Rome, Italy, and were at stage T0 of hormonal therapy (waiting to start). They were recruited from the endocrinology unit of the Policlinico Umberto I Hospital of Rome. All participants declared an early onset of GD (during first or middle childhood, all before puberty). Two age-matched control groups (with the same mean age and standard deviation to the trans women and trans men, respectively), composed of 14 cisgender females and 22 cisgender males, were also extracted from a community sample analyzed in a previously published research project (Di Giuseppe et al., 2020). The experimental and control samples shared similar demographic characteristics, including a medium/high level of education, no marriage, and no children (Table 1). The study was approved by the Ethical Committee of the Department of Dynamic and Clinical Psychology, Sapienza University of Rome, Italy. All subjects provided written informed consent to participate.

### Measures

#### Defense Mechanisms Rating Scale

The Defense Mechanisms Rating Scale (DMRS) (Perry, 1990) is an observer-based measure that assesses defense mechanisms from verbatim transcripts of clinical interviews or therapy sessions. The measure provides definitions, functions, and assessment procedures for 30 defense mechanisms, which are hierarchically organized into 7 defense levels and 3 defensive categories (see Table 2). The description for each defense includes examples of possible and certain uses, as well as a list of neighboring defenses to support differential analyses with respect to other defensive phenomena. The DMRS offers quantitative scores for: (1) Overall Defensive Functioning (ODF), representing a summary index of overall

**TABLE 1 |** Sociodemographic characteristics of the samples ( $N = 72$ ).

	Transgender sample ( $N = 36$ )			Cisgender controls ( $N = 36$ )		
	Trans men ( $N = 22$ ) (%)	Trans women ( $N = 14$ ) (%)	Total (%)	Cis females ( $N = 22$ ) (%)	Cis males ( $N = 14$ ) (%)	Total (%)
Age group						
<20	45	43	44	45	43	44
20–30	45	43	44	45	43	44
>30	9	14	11	9	14	11
Marital status						
Single	68	64	67	14	36	22
In a relationship	32	36	33	86	64	78
Level of education						
High School	15	29	31	9	–	5
College	64	57	61	64	71	67
Academic degree	5	14	8	27	29	28
Professional status						
Students	64	43	56	59	57	58
Employed	27	36	30	18	29	22
Unemployed	9	21	14	23	14	20

defensive adaptiveness, calculated by taking the average level of each defense score, weighted by its place in the hierarchy, yielding a score ranging from 1 (lowest) to 7 (highest); (2) 7 defense level scores, representing the proportional scores of each defense level, respectively; and (3) 30 individual defense scores, representing the proportional scores of each defense mechanism, respectively, calculated by dividing the occurrence of each defense in the transcript by the total instances of all defense mechanisms (Di Giuseppe et al., 2019). The convergent and discriminant validity of the DMRS is good for the overall hierarchy of defense mechanisms (Perry and Høglend, 1998), and inter-rater reliability between trained raters is high for the ODF and defense levels (intraclass  $R > 0.80$ ) (Perry and Henry, 2004). In the present study, the interclass correlation (ICC) between two trained raters was calculated on six cases, resulting in a mean value of 0.76.

### Shedler Westen Assessment Procedure-200

The Shedler-Westen Assessment Procedure-200 (SWAP-200; Westen and Shedler, 1999a,b; Shedler et al., 2014) is a well-established and widely used psychometric procedure that was designed to provide a comprehensive assessment of personality and personality pathology. It consists of 200 personality-descriptive statements written in straightforward, experience-near language, to allow it to be used by clinicians with various theoretical orientations and levels of experience. The instrument utilizes a Q-sort method, which requires raters to sort items into eight categories, ranging from not descriptive to most descriptive of the individual, in order to comply with the fixed distribution. SWAP-200 PD scores, corresponding to 10 PD scales that are clinical prototypes of the DSM-IV-TR (American Psychiatric Association., 2000) and DSM-5 (American Psychiatric Association., 2013) PDs, produce a

nomothetic diagnosis. Furthermore, the measure generates a healthy functioning score, reflecting clinicians' consensual understanding of the subject's adaptive personality functioning (Westen and Shedler, 1999a). The SWAP-200 has been shown to have very good validity and reliability, both with clinicians who have not been trained in using the instrument (Westen and Shedler, 1999a,b; Cogan and Porcerelli, 2004; Shedler and Westen, 2004; Blagov et al., 2012) and with clinicians who have received instrumental training (Bradley et al., 2007). The SWAP-200 has been used in previous studies involving transgender people (Lingiardi and Giovanardi, 2017; Lingiardi et al., 2017; Giovanardi et al., 2020b), and it has been shown to be clinically helpful in identifying personality subtypes within this population (Lingiardi et al., 2017) and in other clinical populations (e.g., Powers and Westen, 2009; Huprich et al., 2013; Muzi et al., 2020, 2021). In the present study, we used only the High-Functioning subscale, to correlate with the ODF score from the DMRS.

### Body Uneasiness Test

The Body Uneasiness Test (BUT) (Cuzzolaro et al., 2000) is a self-report questionnaire that examines body shape and/or weight dissatisfaction, specific worries regarding particular body parts, avoidant and compulsive self-monitoring behaviors, feelings of detachment and estrangement toward one's own body, and body experiences and body image concerns. The measure comprises two parts. First, BUT-A consists of 34 items exploring body image concerns. Item scores are combined into a Global Severity Index (GSI), which is designed to assess a general level of body uneasiness, and five subscales, resulting from a factorial analysis (Cuzzolaro et al., 2000, 2006): Weight Phobia (fear of being or becoming fat), Body Image Concerns (worries related to physical appearance), Avoidance

**TABLE 2 |** Hierarchical organization of defense mechanisms in DMRS-based measures.

	Defensive category	Defense level	Defense mechanism
Overall Defensive Functioning (ODF)	Mature	High adaptive	Affiliation
			Altruism
			Anticipation
			Humor
			Self-assertion
			Self-observation
			Sublimation
	Neurotic	Obsessional	Suppression
			Intellectualization
			Isolation of affect
		Neurotic <sup>b</sup>	Undoing
			Displacement
			Dissociation
			Reaction formation
	Immature <sup>a</sup>	Minor image-distorting	Repression
			Devaluation
			Idealization
		Disavowal	Omnipotence
			Denial
			Projection
		Major image-distorting	Rationalization
			Autistic fantasy
			Projective identification
			Splitting of self-image
			Splitting of other's image
			Action
		Action	Acting out
			Help-rejecting complaining
			Passive aggression

This table reports on previously published data (Di Giuseppe et al., 2020).

<sup>a</sup>The immature category includes the categories of depressive and other immature (or non-depressive) defenses. The depressive category includes all action and major image-distorting defenses, plus projection, and devaluation. The other immature category includes autistic fantasy, rationalization, denial, omnipotence, and idealization.

<sup>b</sup>The neurotic defense level includes two sublevels of hysterical and other neurotic defenses. Hysterical defenses include repression and dissociation, while other neurotic defenses include displacement and reaction formation.

(avoidance behaviors related to body image), Compulsive Self-Monitoring (CSM; compulsive checking of physical appearance), and Depersonalization (feelings of detachment and estrangement toward the body). The second part of the measure, BUT-B, consists of 37 items exploring dissatisfaction with specific body parts (e.g., mouth, mustache, skin). The BUT-B produces two separate scores: a Positive Symptom Total (PST), which consists of the number of symptoms rated higher than 0, and a Positive Symptom Distress Index (PSDI), representing the average rating of those items constituting the PST. The present study utilized only the GSI. A GSI  $\geq 1.2$  is widely used as an index of clinically relevant discomfort with one's own body (Capoccia et al., 2015).

## Procedure

Participants were first asked to complete the BUT, then they were interviewed using the Clinical and Diagnostic Interview (CDI; Westen and Muderrisoglu, 2003)—a clinical interview that takes 2–3 h to administer, investigating personal history, affects, relationships, behaviors, affective states, emotion regulation processes, cognitive patterns, and history of symptoms and concerns, including severity, frequency, and duration. Each interview was recorded and transcribed. Clinical and Diagnostic Interview transcripts were rated by trained and reliable raters using the DMRS (Perry, 1990) and SWAP-200 (Shedler et al., 2014). Each evaluation was conducted blind and independent from the others, so no rater coded more than one measure for any single participant.

## DATA ANALYSIS

SPSS version 25 (IBM, Armonk, NY, United States) was used for the analyses. Bivariate correlations (Pearson's  $r$ , two-tailed) were calculated to study the relationship between defensive functioning (as assessed by the DMRS), personality functioning (as assessed by the SWAP-200), and body uneasiness in the experimental sample ( $N = 36$ ). One-way analyses of variance (ANOVAs) were run to compare DMRS scores between the experimental and control groups ( $N = 72$ ). A *post-hoc* Bonferroni test was applied to the ANOVAs to allow for multiple comparisons between groups.

## RESULTS

### Relationship Between Defensive Functioning, Personality Functioning, and Body Uneasiness in Individuals With GD

The positive association between defensive functioning, personality functioning, and body satisfaction was tested using Pearson's correlations. The results showed that higher ODF scores and greater use of mature defenses correlated with higher personality functioning and greater body satisfaction. Conversely, lower ODF scores and greater use of immature defenses correlated with lower personality functioning and greater BD.

As Table 3 shows, overall defensive maturity (as indicated by the ODF score) and mature defenses were positively associated with a healthy personality (as indicated by the High Functioning Scale score) and negatively associated with BD (as indicated by the GSI). Moreover, use of immature defenses—particularly those in the depressive defensive category—was negatively correlated with a healthy personality, but unrelated to BD.

### Comparisons of Defensive Functioning Between Transgender and Cisgender Groups

Differences in defensive functioning between the transgender and cisgender groups were tested using *T*-test analyses of the ODF, defensive categories, and defense levels. As presented in Table 4, individuals with GD obtained lower ODF scores ( $\Delta =$

**TABLE 3 |** Bivariate correlations between DMRS ODF, SWAP-200 high functioning scale, and BUT GSI scale ( $N = 36$ ).

DMRS scales and categories	SWAP-200	BUT
	High functioning scale	General index of severity
ODF	0.681**	−0.357*
Mature defenses	0.624**	−0.414*
Neurotic defenses	n.s.	n.s.
Immature defenses	−0.583**	n.s.
Depressive defenses	−0.504**	n.s.
Non-depressive defenses	n.s.	n.s.

DMRS, defense mechanisms rating scale; ODF, overall defensive functioning; SWAP-200, Shedler-Westen assessment procedure; BUT, body uneasiness test.

\* $p < 0.05$ .

\*\* $p < 0.01$ .

−0.49;  $p < 0.001$ ) than cisgender controls. Both neurotic and immature defenses were used significantly more by transgender participants compared to controls, whereas mature defenses were used significantly less.

Deeper analyses of the differences between groups were conducted with respect to the seven defense levels, finding that transgender participants strongly differed from cisgender controls in their higher use of obsessional ( $\Delta = 9.11$ ;  $p < 0.001$ ) and action ( $\Delta = 5.93$ ;  $p < 0.001$ ) defenses and their lower use of high-adaptive ( $\Delta = -19.42$ ;  $p < 0.001$ ) and major image-distorting ( $\Delta = -2.63$ ;  $p < 0.001$ ) defenses. Transgender participants also demonstrated marginally higher use ( $p < 0.05$ ) of neurotic and minor image-distorting defenses.

### Comparisons of Individual Defenses Between Subgroups (Trans Women vs. Trans Men vs. Cisgender Females vs. Cisgender Males)

Deeper analyses of the differences between transgender (trans women and trans men) and control (cisgender females and cisgender males) subgroups were achieved by investigating each subgroup's characteristic use of individual defense mechanisms.

#### Trans Women vs. Controls

**Table 5** displays the results of the ANOVA and *post-hoc* Bonferroni tests comparing trans women with both control subgroups. Trans women showed strongly significantly lower scores on the ODF and several high-adaptive defenses, such as sublimation, humor, and anticipation, compared to both female and male cisgender participants. With respect to the mature defense of altruism, trans women produced a strongly significantly lower score ( $p < 0.001$ ) than cisgender males, but not cisgender females. With regard to suppression and self-observation, trans women generated significantly lower scores than cisgender females ( $p < 0.01$ ), but only marginally significantly lower scores than cisgender males ( $p < 0.05$ ).

Moreover, they scored significantly higher than both control subgroups on undoing and passive aggression, and significantly higher than only cisgender males on rationalization. Finally, trans women produced higher scores on projection than both control subgroups, and higher scores on repression than cisgender males.

#### Trans Men vs. Controls

**Table 6** presents the results of the ANOVA and *post-hoc* Bonferroni tests comparing trans men and both control subgroups. Trans men generated only marginally lower ODF scores than cisgender males, whereas their scores were not significantly different from those of cisgender females. With respect to high-adaptive defenses, trans men produced significantly lower scores on suppression, sublimation, humor, and anticipation than both control subgroups ( $p < 0.001$ ), and significantly lower scores on *altruism* ( $p < 0.001$ ) and self-observation ( $p < 0.05$ ) than cisgender males and females, respectively. Conversely, trans men scored significantly higher than both control subgroups on several defense mechanisms, including undoing, repression, and passive aggression. Moreover, *post-hoc* tests showed that trans men showed higher use of idealization of others-image ( $p < 0.05$ ) and lower use of projective identification ( $p < 0.01$ ) than cisgender females. Finally, they reported strongly significantly lower scores on autistic fantasy compared to cisgender males ( $p < 0.001$ ), while only marginally significantly lower scores on this defense mechanism relative to cisgender females ( $p < 0.05$ ).

#### Trans Women vs. Trans Men

**Table 7** presents the results of the comparisons between trans women and trans men. *T*-test analyses showed a certain degree of homogeneity in defensive functioning across these subgroups. The only differences detected were as follows: trans women produced significantly higher scores on projection ( $p < 0.01$ ) and projective identification ( $p < 0.05$ ), while trans men generated marginally significantly higher scores on affiliation and devaluation of self-image (both  $p < 0.05$ ).

## DISCUSSION

The present study demonstrated the relationship between defensive functioning, personality adjustment, and body satisfaction in a sample of individuals with GD at the beginning of their hormonal therapy. Applying the gold-standard tool for assessing the entire hierarchy of defense mechanisms, the study described the characteristic defensive profiles of trans women and trans men, compared to their cisgender counterparts.

Our first hypothesis was fully confirmed, given that an association was found between defensive maturity, personality adjustment, and body satisfaction. According to the literature (Blagov and Westen, 2007; Russ et al., 2008; Di Lallo et al., 2009; Powers and Westen, 2009; Colli et al., 2014), use of mature defenses is associated with healthy personality functioning, which is a protective factor against the development of psychopathology (Bond and Perry, 2004). This finding might suggest that the use of mature defenses may be a protective factor against BD, which is a key factor in the distress suffered by transgender people



**TABLE 4 |** *T*-tests comparing transgender sample and cisgender controls (*N* = 72).

	Transgender sample ( <i>N</i> = 36)		Cisgender controls ( <i>N</i> = 36)		$\Delta$ Mean	<i>t</i>	<i>p</i> -Value
	Mean	<i>SD</i>	Mean	<i>SD</i>			
ODF	4.46	0.60	4.95	0.35	−0.49	−4.270	<b>&lt;0.001</b>
Mature defenses	15.61	10.86	35.03	9.89	−19.42	−7.931	<b>&lt;0.001</b>
Neurotic defenses	37.23	8.15	25.70	7.57	11.53	6.219	<b>&lt;0.001</b>
Immature defenses	47.15	12.48	39.17	7.56	7.98	3.280	<b>&lt;0.01</b>
Depressive defenses	24.00	11.12	19.16	6.49	4.84	2.257	<b>&lt;0.05</b>
Non-depressive defenses	23.15	6.52	20.11	6.14	3.04	2.040	<b>&lt;0.05</b>
High adaptive	15.61	10.86	35.03	9.89	−19.42	−7.931	<b>&lt;0.001</b>
Obsessional	20.86	8.05	11.75	4.63	9.11	5.885	<b>&lt;0.001</b>
Neurotic	16.37	5.59	13.95	4.75	2.42	1.978	0.052
Minor image-distorting	15.18	5.82	12.01	5.52	3.16	2.366	<b>&lt;0.05</b>
Disavowal	16.72	6.63	15.21	4.53	1.51	1.132	0.261
Major image-distorting	3.11	2.63	5.74	3.53	−2.63	−3.583	<b>&lt;0.001</b>
Action	12.15	7.43	6.22	3.21	5.93	4.398	<b>&lt;0.001</b>

*Bold values indicate statistically significant.*

and at the core of some associated conditions, including anxiety, depression, and eating disorders (e.g., Bandini et al., 2013). These findings suggest that defensive maturity should be considered as a particularly informative index for the psychological functioning of individuals with GD.

With regard to our second hypothesis, that individuals with GD would present lower defensive functioning relative to cisgender controls, the findings confirmed that transgender people were likely to use more neurotic and immature defenses as compared to their cisgender counterparts. Consistent with previous studies (Sundbom et al., 1995, Sundbom and Bodlund, 1999; Prunas et al., 2014), transgender participants presented lower ODF scores and less use of mature defenses than controls, suggesting that individuals with GD who have not yet begin gender-affirming hormonal treatment may be especially vulnerable to developing various forms of psychopathology (Dhejne et al., 2016). In particular, significant differences were found in trans men compared to cisgender females, with the former demonstrating greater use of obsessional and action defenses and less use of major image-distorting defenses. In terms of defensive functioning, these findings reflect transgender people's need to maintain distance from conflictual charged feelings (i.e., obsessional defenses) that they cannot fully elaborate, which may result in an aggressive attitude toward the self or other in an attempt to mitigate internal tension (i.e., action defenses). Despite transgender people's evident difficulty with body image, our participants seemed aware of their need to integrate their perceived gender with their assigned gender, leading to a reduction in their use of major image-distorting defenses.

The present findings appear somewhat controversial in light of previous studies (e.g., Prunas et al., 2014), which found several borderline or major image-distorting defenses in transgender samples. This difference might reflect methodological differences. The measure used in this study to assess defense

mechanisms, the DMRS, is the most comprehensive available instrument (gold-standard), supporting the deep investigation of defense mechanisms and the interpretation of defensive functions related to the use of detected defenses. Different from other commonly used measures, the DMRS and related measures (Di Giuseppe et al., 2014, 2020) have the unique strength of mapping definitions and functions to the entire hierarchy of defense mechanisms (Vaillant, 1992; American Psychiatric Association., 1994), revealing the unconscious function behind certain defensive profiles.

Our third hypothesis, which anticipated a characteristic use of defense mechanisms in transgender people and greater use of immature defenses by trans women, was also confirmed. Several defense mechanisms contributed to a unique defensive profile in individuals with GD, including undoing and passive aggression. Moreover, trans women showed greater use of rationalization compared to cisgender males, whereas trans men showed less use of repression and projective identification compared to cisgender females and less use of autistic fantasy compared to cisgender males.

Passive aggression, which is an immature defense used to cover up feelings of resentment and hostility toward others with apparent over-compliance, appeared most when participants described a lack of perceived support from family, friends, and school and medical staff. This defense mechanism is typically used by individuals who have learned to expect punishment or dismissal from caregivers in response to their expressed needs. In the present study, passive aggressive narratives often entailed descriptions of the self as a martyr or someone who was not entitled to receive support and acceptance, leading to expressions of “turning against the self” (i.e., self-punishing or self-harming behavior).

Similarly, trans women's high use of rationalization—a disavowal defense activated to avoid feelings of guilt or shame by justifying actions or claiming that external factors

**TABLE 5 |** Analyses of variance (ANOVAs with Bonferroni *post-hoc* tests) between trans women and controls ( $N = 50$ ).

	Trans women ( $N = 14$ )	Cisgender male controls ( $N = 22$ )	Cisgender female controls ( $N = 14$ )	<i>F</i>	<i>p</i> -Value
ODF	4.27 (0.51)	5.04 (0.38) <sup>†††</sup>	4.89 (0.32) <sup>†††</sup>	15.358	<b>&lt;0.001</b>
Suppression	0.77 (1.00)	3.36 (2.43) <sup>†</sup>	3.30 (2.58) <sup>††</sup>	6.694	<b>&lt;0.001</b>
Sublimation	0.70 (1.05)	4.36 (2.91) <sup>†††</sup>	3.03 (2.18) <sup>††</sup>	10.050	<b>&lt;0.001</b>
Self-observation	3.86 (3.26)	6.87 (2.93) <sup>†</sup>	7.76 (3.04) <sup>††</sup>	7.079	<b>&lt;0.01</b>
Self-assertion	3.33 (2.99)	4.48 (2.19)	4.36 (2.76)	0.828	0.443
Humor	1.19 (1.76)	6.28 (3.92) <sup>††</sup>	5.89 (4.91) <sup>††</sup>	7.509	<b>&lt;0.001</b>
Anticipation	0.20 (0.52)	2.77 (2.43) <sup>††</sup>	2.44 (2.03) <sup>††</sup>	8.067	<b>&lt;0.001</b>
Altruism	0.38 (0.63)	5.03 (3.50) <sup>†††</sup>	2.64 (2.94)	10.284	<b>&lt;0.001</b>
Affiliation	2.04 (2.03)	3.89 (3.64)	4.18 (3.08)	2.322	0.109
Isolation	2.27 (2.73)	2.92 (2.78)	2.38 (2.48)	0.250	0.780
Intellectualization	6.74 (3.97)	4.67 (3.76)	4.17 (2.49)	2.655	0.081
Undoing	11.05 (3.55)	4.60 (3.56) <sup>***</sup>	4.79 (3.42) <sup>***</sup>	16.560	<b>&lt;0.001</b>
Repression	7.97 (3.54)	4.33 (3.17) <sup>*</sup>	5.91 (3.02)	4.514	<b>&lt;0.05</b>
Dissociation	1.99 (2.63)	2.42 (3.51)	1.55 (1.50)	0.523	0.596
Reaction formation	1.49 (1.42)	3.09 (1.61)	2.88 (2.65)	2.523	0.091
Displacement	4.13 (2.47)	3.24 (2.14)	4.22 (2.82)	0.695	0.504
Deval. self	0.89 (1.29)	2.01 (2.04)	2.48 (2.34)	2.697	0.078
Deval. others	5.03 (2.90)	2.71 (2.88)	3.21 (2.87)	2.605	0.085
Ideal self	3.34 (2.52)	1.98 (2.00)	2.59 (3.11)	0.915	0.407
Ideal others	3.88 (2.73)	3.58 (1.82)	2.46 (2.34)	1.887	0.163
Omnipotence	2.09 (2.29)	1.99 (1.69)	1.18 (1.69)	1.285	0.308
Denial	2.65 (1.93)	2.83 (2.36)	2.78 (1.88)	0.032	0.969
Rationalization	11.31 (4.27)	6.25 (4.21) <sup>**</sup>	8.81 (4.09)	5.136	<b>&lt;0.01</b>
Projection	3.87 (2.85)	1.75 (2.43) <sup>*</sup>	1.87 (1.67) <sup>*</sup>	4.121	<b>&lt;0.05</b>
Autistic fantasy	1.86 (1.83)	3.49 (1.88)	2.27 (1.98)	2.827	0.069
Splitting self	0.91 (1.31)	1.72 (2.08)	1.73 (1.62)	1.178	0.317
Splitting others	1.63 (1.37)	2.00 (2.50)	2.42 (2.24)	0.606	0.550
Projective ident.	1.56 (1.22)	1.43 (1.44)	2.09 (2.16)	0.721	0.492
Passive aggression	8.12 (4.43)	1.74 (2.17) <sup>***</sup>	2.77 (2.37) <sup>***</sup>	18.580	<b>&lt;0.001</b>
HRC	3.10 (3.63)	2.01 (2.15)	1.59 (1.55)	1.645	0.204
Acting out	1.65 (1.89)	2.30 (2.22)	1.94 (1.77)	0.394	0.676

\*\*\*Indicates a strongly significantly higher score for trans women relative to male and female controls ( $p < 0.001$ ). \*\*Indicates a significantly higher score for trans women relative to male and female controls ( $p < 0.01$ ). \*Indicates a marginally significantly higher score for trans women relative to male and female controls ( $p < 0.05$ ). <sup>†††</sup>Indicates a strongly significantly lower score for trans women relative to male and female controls ( $p < 0.001$ ). <sup>††</sup>Indicates a significantly lower score for trans women relative to male and female controls ( $p < 0.01$ ). <sup>†</sup>Indicates a marginally significantly lower score for trans women relative to male and female controls ( $p < 0.05$ ). Bold values indicate statistically significant.

impelled the subject's behavior—seemed to reflect the same underlying dynamics. Trans women usually demonstrated this defense mechanism when describing stressful experiences with their caregivers, which often contained naïve or bizarre explanations of their caregivers' behaviors. With respect to transgender participants' mature defenses, their relatively high use of undoing—an obsessional defense—suggests that they managed aggression toward others through the use of contradictory statements, in order to mitigate any expression of emotional needs.

Of note, this type of defensive functioning does not typically relate to identity problems, in the way that major and minor image distortion defenses do (Rosa et al., 2019). With respect to these latter defenses, our sample scored similar to controls—or even lower, as in the case of trans men's projective identification and autistic fantasy. It is possible to hypothesize that obsessive

defenses may serve to isolate emotional contents and restrain cognitions to specific aspects of reality, such as dissatisfaction with one's body or the desire to undergo a gender transition. This profound uneasiness might be the bedrock for the use of action-type defenses, including passive aggression, which are typically practiced by individuals who were raised in a rejecting environment and never had the opportunity to express and regulate their anger and develop trust in significant others (Kramer et al., 2013; Perry et al., 2013).

Overall, our findings highlight that interpretations of GD as a severe "identity" disorder, as proposed by many psychoanalytic authors—often associating it with severe narcissistic disorders (Oppenheimer, 1991) or psychotic symptomatology (Chiland, 2000)—are shortsighted. Indeed, the defenses associated with these disorders do not seem to align with the general defensive functioning of our sample. Conversely, our findings support

**TABLE 6 |** Analyses of variance (ANOVAs with Bonferroni *post-hoc* tests) between trans men and controls ( $N = 58$ ).

	Trans men ( $N = 22$ )	Cisgender male controls ( $N = 22$ )	Cisgender female controls ( $N = 14$ )	<i>F</i>	<i>p</i> -Value
ODF	4.58 (0.63)	5.04 (0.38) <sup>†</sup>	4.89 (0.32)	4.606	<b>&lt;0.05</b>
Suppression	0.98 (1.52)	3.36 (2.43) <sup>††</sup>	3.30 (2.58) <sup>††</sup>	7.754	<b>&lt;0.001</b>
Sublimation	0.76 (1.29)	4.35 (2.91) <sup>†††</sup>	3.03 (2.18) <sup>††</sup>	13.527	<b>&lt;0.001</b>
Self-observation	4.87 (4.30)	6.87 (2.93)	7.76 (3.04) <sup>†</sup>	3.770	<b>&lt;0.05</b>
Self-assertion	3.99 (4.31)	4.48 (2.19)	4.36 (2.76)	0.111	0.895
Humor	1.49 (2.36)	6.28 (3.92) <sup>†††</sup>	5.89 (4.91) <sup>†††</sup>	9.515	<b>&lt;0.001</b>
Anticipation	0.37 (0.90)	2.77 (2.43) <sup>†††</sup>	2.44 (2.03) <sup>†††</sup>	10.164	<b>&lt;0.001</b>
Altruism	0.88 (1.48)	5.02 (3.50) <sup>†††</sup>	2.64 (2.94)	10.447	<b>&lt;0.001</b>
Affiliation	4.26 (2.82)	3.89 (3.64)	4.18 (3.08)	0.064	0.938
Isolation	4.51 (5.66)	2.92 (2.78)	2.38 (2.48)	1.609	0.209
Intellectualization	6.16 (5.15)	4.67 (3.76)	4.17 (2.49)	1.449	0.244
Undoing	10.70 (4.02)	4.60 (3.56) <sup>***</sup>	4.79 (3.42) <sup>***</sup>	17.959	<b>&lt;0.001</b>
Repression	10.23 (4.76)	4.33 (3.17) <sup>***</sup>	5.91 (3.02) <sup>***</sup>	12.177	<b>&lt;0.001</b>
Dissociation	2.26 (2.44)	2.42 (3.51)	1.55 (1.50)	0.696	0.503
Reaction formation	1.64 (2.16)	3.09 (1.61)	2.88 (2.65)	2.400	0.100
Displacement	2.75 (2.38)	3.24 (2.14)	4.22 (2.82)	1.935	0.154
Deval. self	2.23 (2.17)	2.01 (2.04)	2.48 (2.34)	0.202	0.818
Deval. others	4.31 (2.61)	2.71 (2.88)	3.21 (2.87)	1.617	0.208
Ideal self	2.73 (2.51)	1.98 (2.00)	2.59 (3.11)	0.365	0.696
Ideal others	4.75 (4.03)	3.58 (1.82)	2.46 (2.34) <sup>*</sup>	3.170	<b>&lt;0.05</b>
Omnipotence	1.13 (1.96)	1.99 (1.69)	1.18 (1.69)	1.129	0.331
Denial	3.18 (3.46)	2.83 (2.36)	2.78 (1.88)	0.136	0.873
Rationalization	9.18 (3.59)	6.25 (4.21)	8.81 (4.09)	2.628	0.081
Projection	1.55 (2.0)	1.75 (2.43)	1.87 (1.67)	0.149	0.862
Autistic fantasy	0.93 (1.52)	3.49 (1.88) <sup>†††</sup>	2.27 (1.98) <sup>†</sup>	9.022	<b>&lt;0.001</b>
Splitting self	0.88 (1.83)	1.72 (2.08)	1.73 (1.62)	1.463	0.240
Splitting others	1.07 (1.10)	2.00 (2.50)	2.42 (2.24)	2.696	0.076
Projective ident.	0.53 (1.07)	1.43 (1.44)	2.09 (2.16) <sup>††</sup>	4.974	<b>&lt;0.01</b>
Passive aggression	7.86 (6.66)	1.74 (2.17) <sup>***</sup>	2.77 (2.37) <sup>***</sup>	10.430	<b>&lt;0.001</b>
HRC	1.54 (1.96)	2.01 (2.15)	1.59 (1.55)	0.304	0.739
Acting out	2.27 (2.81)	2.30 (2.22)	1.94 (1.77)	0.150	0.861

\*\*\*Indicates a strongly significantly higher score for trans men relative to male and female controls ( $p < 0.001$ ).

\*Indicates a marginally significantly higher score for trans men relative to male and female controls ( $p < 0.05$ ).

†††Indicates a strongly significantly lower score for trans men relative to male and female controls ( $p < 0.001$ ).

††Indicates a significantly lower score for trans men relative to male and female controls ( $p < 0.01$ ).

†Indicates a marginally significantly lower score for trans men relative to male and female controls ( $p < 0.05$ ). Bold values indicate statistically significant.

the idea of greater external sources of suffering linked to GD, connected to a lack of recognition and mirroring from one's environment, rather than self-image distortion. Transgender people's stressful lived experiences may polarize their defensive functioning toward a self-sacrificing dysregulation between their thoughts, feelings, and actions. In line with previous research on defense mechanisms in transgender people (Prunas et al., 2014), the present study found higher defensive functioning in trans men compared to trans women. In particular, trans men were more likely to devalue their qualities and turn to others for help or support, whereas trans women were more likely to project conflictual feelings, impulses, and thoughts and blame others for their emotional distress.

The present findings have several clinical implications. First, our results demonstrate that the assessment of defenses

using the DMRS and related instruments may be helpful in predicting the maturity and flexibility of psychological organization in individuals at the beginning of their gender transition journey. Second, the findings highlight the need to support individuals with GD, who are more psychologically vulnerable than their cisgender counterparts, before, during, and after their gender transition. Several studies (Hoglund and Perry, 1998; Perry et al., 1998; Hersoug et al., 2002; Drapeau et al., 2003) have shown that effective psychological support may improve defensive functioning and thereby equip subjects with more protective factors to help them manage stressful conditions. In this regard, it is important to consider the role of psychological support for transgender people not as a mechanism for counteracting splitting or distorting self-image—as previously intended by many authors (e.g., Chiland,

**TABLE 7 |** *T*-tests comparing trans women and trans men (*N* = 36).

	Transgender women ( <i>N</i> = 14)		Transgender men ( <i>N</i> = 22)		$\Delta$ Mean	<i>F</i>	<i>p</i> -Value
	Mean	<i>SD</i>	Mean	<i>SD</i>			
ODF	4.27	0.51	4.58	0.63	−0.31	−1.539	0.133
Suppression	0.77	1.00	0.98	1.52	−0.21	−0.448	0.657
Sublimation	0.70	1.05	0.76	1.29	−0.05	−0.129	0.898
Self-observation	3.86	3.26	4.87	4.30	−1.00	−0.745	0.461
Self-assertion	3.33	2.99	3.99	4.31	−0.67	−0.506	0.616
Humor	1.19	1.76	1.49	2.36	−0.29	−0.399	0.692
Anticipation	0.20	0.52	0.37	0.90	−0.17	−0.646	0.522
Altruism	0.38	0.63	0.88	1.48	−0.51	−1.415	0.167
Affiliation	2.04	2.03	4.26	2.82	−2.22	−2.552	<b>&lt;0.05</b>
Isolation of affects	2.27	2.73	4.51	5.66	−2.24	−1.378	0.177
Intellectualization	6.74	3.97	6.16	5.15	0.58	0.357	0.723
Undoing	11.05	3.55	10.70	4.02	0.35	0.265	0.793
Repression	7.97	3.54	10.23	4.76	−2.26	−1.528	0.136
Dissociation	1.99	2.63	2.26	2.44	−0.27	−0.316	0.754
Reaction formation	1.49	1.42	1.64	2.16	−0.15	−0.228	0.821
Displacement	4.13	2.47	2.75	2.38	1.37	1.663	0.105
Devaluation of self-image	0.89	1.29	2.23	2.17	−1.34	−2.107	<b>&lt;0.05</b>
Devaluation of others-image	5.03	2.90	4.31	2.61	0.73	0.780	0.441
Idealization of self-image	3.34	2.52	2.73	2.51	0.62	0.717	0.479
Idealization of others-image	3.88	2.73	4.75	4.03	−0.87	−0.709	0.483
Omnipotence	2.09	2.29	1.13	1.96	0.95	1.332	0.192
Denial	2.65	1.93	3.18	3.46	−0.53	−0.525	0.603
Rationalization	11.31	4.27	9.18	3.59	2.13	1.613	0.116
Projection	3.87	2.85	1.55	2.0	2.32	2.882	<b>&lt;0.01</b>
Autistic fantasy	1.86	1.83	0.93	1.52	0.94	1.665	0.105
Splitting of self-image	0.91	1.31	0.88	1.83	0.03	0.045	0.965
Splitting of others-image	1.63	1.37	1.07	1.10	0.56	1.359	0.183
Projective identification	1.56	1.22	0.53	1.07	1.03	2.662	<b>&lt;0.05</b>
Passive aggression	8.12	4.43	7.86	6.66	0.26	0.128	0.899
HRC	3.09	3.63	1.55	1.96	1.55	1.668	0.104
Acting out	1.66	1.89	2.27	2.81	−0.62	−0.722	0.475

*Bold values indicate statistically significant.*

2000)—but as one aimed at improving subjects' capacity to elaborate stressful life experiences and to mentalize the changes they experience in their body and mind during their gender transition (Saketopoulou, 2014). Finally, consistent with the recommendations of several international guidelines (e.g., Coleman et al., 2012), psychological support must be provided in the context of a multidisciplinary gender-affirming approach to care, whereby subjects are accompanied by a team of medical and psychological experts.

## LIMITATIONS AND FUTURE DIRECTIONS

Despite its strengths, the present study also presented some limitations. First, the sample size was relatively small, and therefore generalization to the entire population of individuals with GD must be drawn with caution. Moreover, in our sample we found a medium-to-high level of education, and thus this study may have overlooked important aspects of transgender

populations with lower level of education. Further research involving larger stratified samples should be pursued to confirm these findings. Second, due to the cross-sectional nature of the research, only exploratory analyses of associations between the studied variables were possible. Our transgender participants were all at the beginning of a process that would have had a deep impact on their life and were thus highly exposed to stress, which could have developed defense mechanisms. Longitudinal studies should be designed to gain insight on how defense mechanisms might impact the adjustment of transgender people to the entire gender transition process. Finally, the lack of information on psychiatric symptoms at the time of interview might have led us to overlook potentially significant factors in individual defensive functioning. Considering the predictive value of defensive functioning on mental health (Conversano and Di Giuseppe, 2021; Hersoug et al., 2021), future research should seek to produce a comprehensive assessment of psychological changes during gender transitions, both before



and after hormone therapy and gender reassignment surgery, in order to better understand the impact of psychological and psychosocial factors on defensive functioning.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Department of Dynamic and Clinical Psychology,

and Health Studies, Sapienza University of Rome, Italy. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

GG and VL conceived the research study. MM and FL contributed to data collection. MD performed DMRS ratings. GG performed data analyses and wrote the first draft of the manuscript. AS and VL contributed to the interpretation of the results. All authors critically reviewed the final draft of the manuscript.

## REFERENCES

- Aitken, M., VanderLaan, D. P., Wasserman, L., Stojanovski, S., and Zucker, K. J. (2016). Self-harm and suicidality in children referred for gender dysphoria. *J. Am. Acad. Child Adolesc. Psychiatry* 55, 513–520. doi: 10.1016/j.jaac.2016.04.001
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders, 4th Edn.* Arlington, VA: American Psychiatric Association.
- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders, 4th Edn. Text Rev.* Arlington, VA: American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, 5th Edn.* Arlington, VA: American Psychiatric Association.
- American Psychiatric Association. (2015). Guidelines for psychological practice with transgender and gender nonconforming people. *Am. Psychol.* 70, 832–864. doi: 10.1037/a0039906
- Bandini, E., Fisher, A. D., Castellini, G., Sauro, C. L., Lelli, L., Meriggiola, M. C., et al. (2013). Gender identity disorder and eating disorders: similarities and differences in terms of body uneasiness. *J. Sex. Med.* 10, 1012–1023. doi: 10.1111/jsm.12062
- Becker, I., Nieder, T. O., Cerwenka, S., Briken, P., Kreukels, B. P., Cohen-Kettenis, P. T., et al. (2016). Body image in young gender dysphoric adults: a European multi-center study. *Arch. Sex. Behav.* 45, 559–574. doi: 10.1007/s10508-015-0527-z
- Blagov, P., and Westen, D. (2007). Under the Axis II radar: clinically relevant personality constellations that escape DSM-IV diagnosis. *J. Nerv. Ment. Dis.* 195, 477–483. doi: 10.1097/NMD.0b013e318064e824
- Blagov, P. S., Bi, W., Shedler, J., and Westen, D. (2012). The Shedler-Western Assessment Procedure (SWAP): evaluating psychometric questions about its reliability, validity, and impact of its fixed score distribution. *Assessment* 19, 370–382. doi: 10.1177/1073191112436667
- Bockting, W. O., Knudson, G., and Goldberg, J. M. (2006). Counseling and mental health care for transgender adults and loved ones. *Int. J. Transgend.* 9, 35–82. doi: 10.1300/J485v09n03\_03
- Boldrini, T., Lo Buglio, G., Giovanardi, G., Lingardi, V., and Salcuni, S. (2020). Defense mechanisms in adolescents at high risk of developing psychosis: an empirical investigation. *Res. Psychother.* 23:456. doi: 10.4081/ripppo.2020.456
- Bond, M. (2004). Empirical studies of defense style: relationships with psychopathology and change. *Harv. Rev. Psychiatry* 12, 263–278. doi: 10.1080/10673220490886167
- Bond, M., Gardner, S. T., Christian, J., and Sigal, J. J. (1983). Empirical study of self-rated defense styles. *Arch. Gen. Psychiatry* 40, 333–338. doi: 10.1001/archpsyc.1983.01790030103013
- Bond, M., and Perry, J.-C. (2004). Long-term changes in defense styles with psychodynamic psychotherapy for depressive, anxiety and personality disorders. *Am. J. Psychiatry* 161, 1665–1671. doi: 10.1176/appi.ajp.161.9.1665
- Bradley, R., Hilsenroth, M., Guarnaccia, C., and Westen, D. (2007). Relationship between clinician assessment and self-assessment of personality disorders using the SWAP-200 and PAI. *Psychol. Assess.* 19, 225–229. doi: 10.1037/1040-3590.19.2.225
- Capoccia, D., Monaco, V., Coccia, F., and Cavaggioni, G. (2015). Axis II disorders, body image and childhood abuse in bariatric surgery candidates. *Clin. Ter.* 166, e248–e253. doi: 10.7417/T.2015.1868
- Chiland, C. (2000). The psychoanalyst and the transsexual patient. *Int. J. Psychoanal.* 81, 21–35. doi: 10.1516/0020757001599483
- Clements-Nolle, K., Marx, R., and Katz, M. (2006). Attempted suicide among transgender persons: the influence of gender-based discrimination and victimization. *J. Homosex.* 51, 53–69. doi: 10.1300/J082v51n03\_04
- Cogan, R., and Porcerelli, J. H. (2004). Personality pathology, adaptive functioning, and strengths at the beginning and end of psychoanalysis. *J. Am. Psychoanal. Assoc.* 52, 1230–1231.
- Coleman, E., Bockting, W., Botzer, M., Cohen-Kettenis, P., DeCuypere, G., Feldman, J., et al. (2012). Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *Int. J. Transgend.* 13, 165–232. doi: 10.1080/15532739.2011.700873
- Colli, A., Tanzilli, A., Dimaggio, G., and Lingardi, V. (2014). Patient personality and therapist response: an empirical investigation. *Am. J. Psychiatry* 171, 102–108. doi: 10.1176/appi.ajp.2013.13020224
- Conversano, C. (2021). The psychodynamic approach during COVID-19 emotional crisis. *Front. Psychol.* 12:670196. doi: 10.3389/fpsyg.2021.670196
- Conversano, C., and Di Giuseppe, M. (2021). Psychological factors as determinants of chronic conditions: clinical and psychodynamic advances. *Front. Psychol.* 12:635708. doi: 10.3389/fpsyg.2021.635708
- Costa, R., and Colizzi, M. (2016). The effect of cross-sex hormonal treatment on gender dysphoria individuals' mental health: a systematic review. *Neuropsychiatr. Dis. Treat.* 12, 1953–1966. doi: 10.2147/NDT.S95310
- Couturier, J., Pindiprolu, B., Findlay, S., and Johnson, N. (2015). Anorexia nervosa and gender dysphoria in two adolescents. *Int. J. Eat. Disord.* 48, 151–155. doi: 10.1002/eat.22368
- Cramer, P. (1991). "The defense mechanism manual," in *The Development of Defense Mechanisms*, ed P. Cramer (New York, NY: Springer), 215–234. doi: 10.1007/978-1-4613-9025-1
- Cramer, P. (1998). Coping and defense mechanisms: what's the difference? *J. Pers.* 66, 919–946. doi: 10.1111/1467-6494.00037
- Cramer, P. (2006). *Protecting the Self: Defense Mechanisms in Action*. New York, NY: Guilford Press.
- Cuzzolaro, M., Vetrone, G., Marano, G., and Battacchi, M. (2000). "Body uneasiness test," in *Repertorio delle Scale di Valutazione in Psichiatria*, Vol. 3, ed L. Conti (Firenze: Società Editrice Universo), 1759–1761.
- Cuzzolaro, M., Vetrone, G., Marano, G., and Garfinkel, P. E. (2006). The Body Uneasiness Test (BUT): development and validation of a new body image assessment scale. *Eat. Weight Disord.* 11, 1–13. doi: 10.1007/BF03327738
- de Freitas, L. D., Léda-Rêgo, G., Bezerra-Filho, S., and Miranda-Scippa, Â. (2020). Psychiatric disorders in individuals diagnosed with gender

- dysphoria: a systematic review. *Psychiatry Clin. Neurosci.* 74, 99–104. doi: 10.1111/pcn.12947
- De Vries, A. L., and Cohen-Kettenis, P. T. (2012). Clinical management of gender dysphoria in children and adolescents: the Dutch approach. *J. Homosex.* 59, 301–320. doi: 10.1080/00918369.2012.653300
- Dhejne, C., van Vlerken, R., Heylens, G., and Arcelus, J. (2016). Mental health and gender dysphoria: a review of the literature. *Int. Rev. Psychiatry* 28, 44–57. doi: 10.3109/09540261.2015.1115753
- Di Giuseppe, M., Gennaro, A., Lingardi, V., and Perry, J. C. (2019). The role of defense mechanisms in emerging personality disorders in clinical adolescents. *Psychiatry* 82, 128–142. doi: 10.1080/00332747.2019.1579595
- Di Giuseppe, M., Nepa, G., Prout, T. A., Albertini, F., Marcelli, S., Orrù, G., et al. (2021). Stress, burnout, and resilience among healthcare workers during the COVID-19 emergency: the role of defense mechanisms. *Int. J. Environ. Res. Public Health* 18:5258. doi: 10.3390/ijerph18105258
- Di Giuseppe, M., Perry, J. C., Lucchesi, M., Michelini, M., Vitiello, S., Piantanida, A., et al. (2020). Preliminary reliability and validity of the DMRS-SR-30, a novel self-report based on the Defense Mechanisms Rating Scales. *Front. Psychiatry* 11:870. doi: 10.3389/fpsy.2020.00870
- Di Giuseppe, M., Perry, J. C., Petraglia, J., Janzen, J., and Lingardi, V. (2014). Development of a Q-sort version of the Defense Mechanism Rating Scales (DMRS-Q) for clinical use. *J. Clin. Psychol.* 70, 452–465. doi: 10.1002/jclp.22089
- Di Lallo, J. J., Jones, M., and Westen, D. (2009). Personality subtypes in disruptive adolescent males. *J. Nerv. Ment. Dis.* 197, 15–23. doi: 10.1097/NMD.0b013e318192770c
- Drapeau, M., de Roten, Y., Perry, J. C., and Despland, J. N. (2003). A study of stability and change in defense mechanisms during a brief psychodynamic investigation. *J. Nerv. Ment. Dis.* 191, 496–502. doi: 10.1097/01.nmd.0000082210.76762.ec
- Feder, S., Isserlin, L., Seale, E., Hammond, N., and Norris, M. L. (2017). Exploring the association between eating disorders and gender dysphoria in youth. *Eat. Disord.* 25, 310–317. doi: 10.1080/10640266.2017.1297112
- Fisher, A. D., Bandini, E., Casale, H., Ferruccio, N., Meriggiola, M. C., Gualerzi, A., et al. (2013). Sociodemographic and clinical features of gender identity disorder: an Italian multicentric evaluation. *J. Sex. Med.* 10, 408–419. doi: 10.1111/j.1743-6109.2012.03006.x
- Fortunato, A., Giovanardi, G., Mirabella, M., Di Ceglie, D., Speranza, A. M., Caviglia, G., et al. (2020). Caring for gender diverse children and adolescents in Italy: a mixed-method investigation of clinicians' knowledge and approach to clinical practice. *Clin. Child Psychol. Psychiatry* 25, 1049–1067. doi: 10.1177/1359104520925526
- Giovanardi, G., Fortunato, A., Mirabella, M., Speranza, A. M., and Lingardi, V. (2020a). Gender diverse children and adolescents in Italy: a qualitative study on specialized centers' model of care and network. *Int. J. Environ. Res. Public Health* 17:9536. doi: 10.3390/ijerph17249536
- Giovanardi, G., Morales, P., Mirabella, M., Fortunato, A., Chianura, L., Speranza, A. M., et al. (2019). Transition memories: experiences of trans adult women with hormone therapy and their beliefs on the usage of hormone blockers to suppress puberty. *J. Endocrinol. Invest.* 42, 1231–1240. doi: 10.1007/s40618-019-01045-2
- Giovanardi, G., Mundo, E., and Lingardi, V. (2020b). Paola on the couch: the quest for feminine identity in an empirically supported psychoanalytic psychotherapy of a trans woman. *Psychoanal. Psychol.* doi: 10.1037/pap0000330. [Epub ahead of print].
- Giovanardi, G., Vitelli, R., Maggiora Vergano, C., Fortunato, A., Chianura, L., and Lingardi, V. (2018). Attachment patterns and complex trauma in a sample of adults diagnosed with gender dysphoria. *Front. Psychol.* 9:60. doi: 10.3389/fpsyg.2018.00060
- Hersoug, A. G., Wærsted, M., and Lau, B. (2021). Defensive functioning moderates the effects of nondirective meditation. *Front. Psychol.* 12:629784. doi: 10.3389/fpsyg.2021.629784
- Hersoug, A. G., Monsen, J., Havik, O. D., and Hoglend, P. (2002). Quality of early working alliance in psychotherapy: diagnoses, relationship and intrapsychic variables as predictors. *Psychother. Psychosom.* 71, 18–27. doi: 10.1159/000049340
- Hisle-Gorman, E., Landis, C. A., Susi, A., Schvey, N. A., Gorman, G. H., Nylund, C. M., et al. (2019). Gender dysphoria in children with autism spectrum disorder. *LGBT Health* 6, 95–100. doi: 10.1089/lgbt.2018.0252
- Hoglend, P., and Perry, J. C. (1998). Defensive functioning predicts improvement in treated major depressive episodes. *J. Nerv. Ment. Dis.* 186, 238–243. doi: 10.1097/00005053-199804000-00006
- Huprich, S. K., DeFife, J., and Westen, D. (2013). Refining a complex diagnostic construct: subtyping dysthymia with the Shedler-Westen Assessment Procedure-II. *J. Affect. Disord.* 186–192. doi: 10.1016/j.jad.2013.09.008
- Jones, B. A., Haycraft, E., Murjan, S., and Arcelus, J. (2016). Body dissatisfaction, and disordered eating in trans people: a systematic review of the literature. *Int. Rev. Psychiatry* 28, 81–94. doi: 10.3109/09540261.2015.1089217
- Kramer, U., de Roten, Y., Perry, J. C., and Despland, J.-N. (2013). Beyond splitting: observer-rated defense mechanisms in borderline personality disorder. *Psychoanal. Psychol.* 30, 3–15. doi: 10.1037/a0029463
- Lemma, A. (2012). Research off the couch: re-visiting the transsexual conundrum. *Psychoanal. Psychother.* 26, 263–281. doi: 10.1080/02668734.2012.732104
- Lemma, A. (2013). The body one has and the body one is: understanding the transsexual's need to be seen. *Int. J. Psychoanal.* 94, 277–292. doi: 10.1111/j.1745-8315.2012.00663.x
- Lingardi, V., and Giovanardi, G. (2017). Challenges in assessing personality of individuals with gender dysphoria with the SWAP-200. *J. Endocrinol. Invest.* 40, 693–703. doi: 10.1007/s40618-017-0629-7
- Lingardi, V., Giovanardi, G., Fortunato, A., Nassisi, V., and Speranza, A. M. (2017). Personality and attachment in transsexual adults. *Arch. Sex. Behav.* 46, 1313–1323. doi: 10.1007/s10508-017-0946-0
- Lobato, M. I., Koff, W. J., Crestana, T., Chaves, C., Salvador, J., Rodolpho Petry, A., et al. (2009). Using the Defensive Style Questionnaire to evaluate the impact of sex reassignment surgery on defensive mechanisms in transsexual patients. *Braz. J. Psychiatry* 31, 303–306. doi: 10.1590/S1516-44462009005000007
- MacGregor, M. W., and Olson, T. R. (2005). "Defense mechanisms: their relation to personality and health. an exploration of defense mechanisms assessed by the defense-Q," in *Advances in Psychology Research*, Vol. 36, ed A. Columbus (Hauppauge, NY: Nova Science Publishers), 95–141.
- Martino, G., Caputo, A., Bellone, F., Quattropiani, M. C., and Vicario, C. M. (2020). Going beyond the visible in type 2 diabetes mellitus: defense mechanisms and their associations with depression and health-related quality of life. *Front. Psychol.* 11:267. doi: 10.3389/fpsyg.2020.00267
- Matthys, I., Defreyne, J., Elaut, E., Fisher, A. D., Kreukels, B., Staphorsius, A., et al. (2021). Positive and negative affect changes during gender-affirming hormonal treatment: results from the European Network for the Investigation of Gender Incongruence (ENIGI). *J. Clin. Med.* 10:296. doi: 10.3390/jcm10020296
- Mazaheri Meybodi, A., Hajebi, A., and Ghanbari Jolfaie, A. (2014). Psychiatric axis I comorbidities among patients with gender dysphoria. *Psychiatry J.* 2014:971814. doi: 10.1155/2014/971814
- Mirabella, M., Giovanardi, G., Fortunato, A., Senofonte, G., Lombardo, F., Lingardi, V., et al. (2020). The body I live in. Perceptions and meanings of body dissatisfaction in young transgender adults: a qualitative study. *J. Clin. Med.* 9:3733. doi: 10.3390/jcm9113733
- Muzi, L., Tieghi, L., Franco, A., Rugo, M., and Lingardi, V. (2021). The mediator effect of personality on the relationship between symptomatic impairment and treatment outcome in eating disorders. *Front. Psychol.* 12:688924. doi: 10.3389/fpsyg.2021.688924
- Muzi, L., Tieghi, L., Rugo, M. A., and Lingardi, V. (2020). Personality as a predictor of symptomatic change in a residential treatment setting for anorexia nervosa and bulimia nervosa. *Eat. Weight Disord.* 26, 1195–1209. doi: 10.1007/s40519-020-01023-1
- Nguyen, H. B., Chavez, A. M., Lipner, E., Hantsoo, L., Kornfield, S. L., Davies, R. D., et al. (2018). Gender-affirming hormone use in transgender individuals: impact on behavioral health and cognition. *Curr. Psychiatry Rep.* 20:110. doi: 10.1007/s11920-018-0973-0
- Olson-Kennedy, J. (2016). Mental health disparities among transgender youth: rethinking the role of professionals. *JAMA Pediatr.* 170, 423–424. doi: 10.1001/jamapediatrics.2016.0155
- Olson-Kennedy, J., Cohen-Kettenis, P. T., Kreukels, B. P., Meyer-Bahlburg, H. F., Garofalo, R., Meyer, W., et al. (2016). Research priorities for gender nonconforming/transgender youth: gender identity development and biopsychosocial outcomes. *Curr. Opin. Endocrinol. Diabetes Obes.* 23, 172–179. doi: 10.1097/MED.0000000000000236
- Oppenheimer, A. (1991). The wish for a sex change: a challenge to psychoanalysis? *Int. J. Psychoanal.* 72, 221–231.
- Perry, J. C. (1990). *Defense Mechanism Rating Scales (DMRS), 5th Edn.* Cambridge: Harvard School of Medicine.

- Perry, J. C. (2014). Anomalies and specific functions in the clinical identification of defense mechanisms. *J. Clin. Psychol.* 70, 406–418. doi: 10.1002/jclp.22085
- Perry, J. C., Banon, E., and Bond, M. (2020). Change in defense mechanisms and depression in a pilot study of antidepressive medications plus 20 sessions of psychotherapy for recurrent major depression. *J. Nerv. Mental Dis.* 208, 261–268. doi: 10.1097/NMD.0000000000001112
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-years outcome. *Am. J. Psychiatry* 69, 916–925. doi: 10.1176/appi.ajp.2012.11091403
- Perry, J. C., and Henry, M. (2004). “Studying defense mechanisms in psychotherapy using the Defense Mechanism Rating Scales,” in *Defense Mechanisms: Theoretical, Research and Clinical Perspectives*, eds U. Hentschel, G. Smith, J. G. Draguns, and W. Ehlers (Oxford: Elsevier Science Ltd), 165–192.
- Perry, J. C., and Høglend, P. (1998). Convergent and discriminant validity of overall defensive functioning. *J. Nerv. Ment. Dis.* 186, 529–535. doi: 10.1097/00005053-199809000-00003
- Perry, J. C., Høglend, P., Shear, K., Vaillant, G. E., Horowitz, M. J., Kardos, M. E., et al. (1998). Field trial of a diagnostic axis for defense mechanisms for DSM-IV. *J. Pers. Disord.* 12, 56–68. doi: 10.1521/pedi.1998.12.1.56
- Perry, J. C., and Ianni, F. (1998). Observer-rated measures of defense mechanisms. *J. Pers.* 66, 993–1024. doi: 10.1111/1467-6494.00040
- Perry, J. C., Knoll, M., and Tran, V. (2019). “Motives, defenses, and conflicts in the dynamic formulation for psychodynamic psychotherapy using the idiographic conflict formulation method,” in *Case Formulation for Personality Disorders*, ed U. Kramer (New York, NY: Elsevier), 203–224. doi: 10.1016/B978-0-12-813521-1.00011-4
- Perry, J. C., Presniak, M. D., and Olson, T. R. (2013). Defense mechanisms in schizotypal, borderline, antisocial, and narcissistic personality disorders. *Psychiatry* 76, 32–52. doi: 10.1521/psyc.2013.76.1.32
- Powers, A., and Westen, D. (2009). Personality subtypes in patients with panic disorder. *Compr. Psychiatry* 50, 164–172. doi: 10.1016/j.comppsy.2008.07.006
- Prout, T. A., Zilcha-Mano, S., Aafjes-van Doorn, K., Békés, V., Christman-Cohen, I., Whistler, K., et al. (2020). Identifying predictors of psychological distress during COVID-19: a machine learning approach. *Front. Psychol.* 11:586202. doi: 10.3389/fpsyg.2020.586202
- Prunas, A., Vitelli, R., Agnello, F., Curti, E., Fazzari, P., Giannini, F., et al. (2014). Defensive functioning in MtF and FtM transsexuals. *Compr. Psychiatry* 55, 966–971. doi: 10.1016/j.comppsy.2013.12.009
- Ristori, J., and Steensma, T. D. (2016). Gender dysphoria in childhood. *Int. Rev. Psychiatry* 28, 13–20. doi: 10.3109/09540261.2015.1115754
- Rosa, V., Tomai, M., Lauriola, M., Martino, G., and Di Trani, M. (2019). Body mass index, personality traits, and body image in Italian pre-adolescents: an opportunity for overweight prevention. *Psihologija* 52–9–9. doi: 10.2298/PSI181121009R
- Russ, E., Shedler, J., Bradley, R., Westen, D. (2008). Refining the construct of narcissistic personality disorder: diagnostic criteria and subtypes. *Am. J. Psychiatry* 165, 1473–1481. doi: 10.1176/appi.ajp.2008.07030376
- Saketopoulou, A. (2014). Mourning the body as bedrock. *J. Am. Psychoanal. Assoc.* 62, 773–806. doi: 10.1177/0003065114553102
- Schulz, M. S., Waldinger, R. J., Hauser, S. T., and Allen, J. P. (2005). Adolescents’ behavior in the presence of interparental hostility. *Dev. Psychopathol.* 17, 489–507. doi: 10.1017/S0954579405050236
- Shedler, J., and Westen, D. (2004). Refining personality disorder diagnosis: integrating science and practice. *Am. J. Psychiatry* 161, 1350–1365. doi: 10.1176/appi.ajp.161.8.1350
- Shedler, J., Westen, D., and Lingardi, V. (2014). *La Valutazione della Personalità con la SWAP-200 [Personality Assessment with the SWAP-200]*. Milano: Raffaello Cortina.
- Sherer, I. (2016). Social transition: supporting our youngest transgender children. *Pediatrics* 137:e20154358. doi: 10.1542/peds.2015-4358
- Steiner, H., Araujo, K. B., and Koopman, C. (2001). The Response Evaluation Measure (REM-71): a new instrument for the measurement of defenses in adults and adolescents. *Am. J. Psychiatry* 158, 467–473. doi: 10.1176/appi.ajp.158.3.467
- Sundbom, E., and Bodlund, O. (1999). Prediction of outcome in transsexualism by means of the defense mechanism test and multivariate modelling: a pilot study. *Percept. Mot. Skills* 88, 3–20. doi: 10.2466/pms.1999.88.1.3
- Sundbom, E., Bodlund, O., Hojerback, K. (1995). Object relations and defensive operations in transsexuals and borderline patients as measured by the Defense Mechanism Test. *Nord. J. Psychiatry* 49, 379–388. doi: 10.3109/08039489509011931
- Tanzilli, A., Di Giuseppe, M., Giovanardi, G., Boldrini, T., Caviglia, G., Conversano, C., et al. (2021). Mentalization, attachment, and defense mechanisms: a Psychodynamic Diagnostic Manual-2-oriented empirical investigation. *Res. Psychother.* 31–41. doi: 10.4081/ripppo.2021.531
- Turban, J. L., and van Schalkwyk, G. I. (2018). “Gender dysphoria” and autism spectrum disorder: is the link real? *J. Am. Acad. Child Adolesc. Psychiatry* 57, 8–9. doi: 10.1016/j.jaac.2017.08.017
- Vaillant, G. E. (2020). “Defense mechanisms,” in *Encyclopedia of Personality and Individual Differences*, eds V. Zeigler-Hill and T. K. Shackelford (Springer, Cham). doi: 10.1007/978-3-319-24612-3\_1372
- Vaillant, G. E. (1992). *Ego Mechanisms of Defense: A Guide for Clinicians and Researchers*. Washington, DC: American Psychiatric Press.
- Vaillant, G. E. (1995). *Adaptation to Life*. Cambridge, MA: Harvard University Press.
- Vocks, S., Stahn, C., Loenser, K., and Legenbauer, T. (2009). Eating and body image disturbances in male-to-female and female-to-male transsexuals. *Arch. Sex. Behav.* 38, 364–377. doi: 10.1007/s10508-008-9424-z
- Warrier, V., Greenberg, D. M., Weir, E., Buckingham, C., Smith, P., Lai, M. C., et al. (2020). Elevated rates of autism, other neurodevelopmental and psychiatric diagnoses, and autistic traits in transgender and gender-diverse individuals. *Nat. Commun.* 11, 1–12. doi: 10.1038/s41467-020-17794-1
- Westen, D., and Muderrisoglu, S. (2003). Reliability and validity of personality disorder assessment using a systematic clinical interview: evaluating an alternative to structured interviews. *J. Personal. Disord.* 17, 350–368. doi: 10.1521/pedi.17.4.351.23967
- Westen, D., and Shedler, J. (1999a). Revising and assessing Axis II, Part I: developing a clinically and empirically valid assessment method. *Am. J. Psychiatry* 156, 258–272.
- Westen, D., and Shedler, J. (1999b). Revising and assessing Axis II, Part II: toward an empirically based and clinically useful classification of personality disorders. *Am. J. Psychiatry* 156, 273–285.
- Witcomb, G. L., Bouman, W. P., Brewin, N., Richards, C., Fernandez-Aranda, F., and Arcelus, J. (2015). Body image dissatisfaction and eating-related psychopathology in trans individuals: a matched control study. *Eur. Eat. Disord. Rev.* 23, 287–293. doi: 10.1002/erv.2362
- Zimmerman, T. N., Porcerelli, J. H., and Arterbery, V. E. (2019). Defensive functioning in cancer patients, cancer survivors, and controls. *Psychoanal. Psychol.* 36:259. doi: 10.1037/pap0000225

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher’s Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Giovanardi, Mirabella, Di Giuseppe, Lombardo, Speranza and Lingardi. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Inter-rater Reliability and Construct Validity of the Lerner Defense Scale in Clinical and Non-clinical Groups

Anna Maria Rosso <sup>1,2\*</sup>, Cinzia Airaldi <sup>1</sup> and Andrea Camoirano <sup>2</sup>

<sup>1</sup> Department of Educational Sciences, University of Genoa, Genoa, Italy, <sup>2</sup> Associazione Psicologia Clinica, Genova, Italy

## OPEN ACCESS

### Edited by:

Tracy A. Prout,  
Yeshiva University, United States

### Reviewed by:

Gregory Meyer,  
University of Toledo, United States  
Gregory Zecca,  
Independent Researcher,  
Geneva, Switzerland

### \*Correspondence:

Anna Maria Rosso  
rosso@unige.it

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 12 May 2021

**Accepted:** 26 August 2021

**Published:** 24 September 2021

### Citation:

Rosso AM, Airaldi C and Camoirano A  
(2021) Inter-rater Reliability and  
Construct Validity of the Lerner  
Defense Scale in Clinical and  
Non-clinical Groups.  
Front. Psychol. 12:708886.  
doi: 10.3389/fpsyg.2021.708886

The current study investigated the inter-rater reliability and the construct validity of the Rorschach Lerner Defense Scale (LDS). In particular, it aimed to explore the inter-rater reliability, analyzing the most frequent coding mistakes in an attempt to improve the coding guidelines, and to investigate the ability of the scale to distinguish between individuals with neurotic-level and borderline-level personality organization, according to the Psychodynamic Diagnostic Manual-2 (PDM-2), and non-clinical subjects. Eighty clinical subjects and 80 non-clinical ones participated in the study. Among the clinical subjects, 40 have borderline-level personality organization and 40 have neurotic-level personality organization. Non-clinical subjects were drawn from an archival dataset of non-clinical individuals who previously participated in a Rorschach normative study. The LDS showed substantial inter-rater reliability; however, guidelines could be improved, specifically with regard to the threshold for coding Devaluation and Idealization at level 1. Furthermore, more examples should be included in the manual about the coding of Projective Identification and Denial. The LDS distinguished borderline-level subjects from both the non-clinical and neurotic groups with regard to Devaluation and Projective Identification, with borderline-level personality organization subjects reporting higher scores than either of the two other groups. Only the Denial scale discriminated between the non-clinical and neurotic group, with the latter reporting higher scores of high-level Denial.

**Keywords:** defense mechanisms, Lerner Defense Scale, Rorschach test, Psychodynamic Diagnostic Manual-second edition, level of personality organization

## INTRODUCTION

In psychoanalysis, the conceptualization of the defenses followed a long path which can be described, briefly and in a reductive way, as the transition from being considered pathogenic elements to becoming protective factors against negative affects (Freud, 1926, 1938). Klein (1946) added that defenses not only protect individuals from painful feelings but also significantly contribute to organizing psychic development.

More recently, Kernberg (1975) identified the quality of the defense mechanisms as a crucial diagnostic criterion for differentiating among neurotic, borderline, and psychotic levels of personality organization. The massive use of primitive splitting and denial was peculiar to the psychotic level, especially if associated with impaired reality testing, while projective identification, primitive idealization, and devaluation were distinctive defense mechanisms used by individuals with a borderline level of personality organization.



Currently, according to the Psychodynamic Diagnostic Manual-2 (PDM-2; Lingardi and McWilliams, 2017), developed on the basis of Kernberg's theory, defensive functioning is one of the 12 psychological capacities included in the Mental Functioning Axis (M Axis), and its assessment is essential to identify the level of personality organization (P Axis).

Since defenses are unconscious psychic processes, measuring them may be challenging and performance-based tests may be more appropriate for identifying them. As Lerner (2005) stated, the Rorschach can provide psychoanalysts and researchers a way to operationalize psychic processes that are not directly observable. In 1980, Lerner and Lerner developed the Lerner Defense Scale (LDS) based on Kernberg's theoretical framework in order to evaluate the emergence of the primitive defenses of Splitting, Devaluation, Idealization, Projective Identification, and Denial in the Rorschach test.

The theoretical orientation of Lerner and Lerner is at the basis of the choice to consider only Rorschach responses with human content as the unit of analysis. According to Kernberg's theoretical formulation, in fact, there is a close link between defenses and object relations, and in the Rorschach test, the latter is represented in a peculiar way by responses with human content.

The LDS, which is described in detail in the Materials and methods section, showed good levels of reliability between coders, exhibiting agreement rates between 83 and 100% in one study (Lerner and Lerner, 1980) and correlation coefficients between 0.94 and 0.96 in a second study (Lerner et al., 1981). Perry and Ianni (1998) in a more recent review reported high inter-rater reliability with  $r$  ranging from 0.94 to 0.99.

Studies related to the validity of the scale were conducted comparing individuals with borderline and neurotic disorders (Lerner and Lerner, 1980), patients with borderline personality disorder and schizophrenia (Lerner et al., 1981), people with borderline and narcissistic personality disorders (Farris, 1988), and patients with restrictive anorexia and bulimia (Brouillette, 1987; Piran and Lerner, 1987; Van-Der Keshet, 1988, all quoted by Lerner, 2005).

On the whole, findings confirmed that individuals with borderline disorders have specific primitive defensive levels both with respect to patients with neurotic disorders and patients with schizophrenia.

High scores on the LDS were also found in nailbiters in an Indian study (Arora et al., 2010) and in the parents of individuals with cocaine dependence in a Brazilian study (Pinheiro et al., 2001). To our knowledge, to date, no validation study has been carried out in European countries, and cross-cultural studies are not available.

Despite the promising findings, acknowledged also by Meyer et al. (2011) who indicated the LDS as a mature area for research, and the results from a recent clinical survey (Meyer et al., 2013) that rated all the LDS subscales accurate but Projective Identification, LDS is rarely used in clinical practice (Meyer et al., 2013). In addition, to date, no reference norms for non-clinical populations are available for all the defenses because only one published study (Baity et al., 2009) provided reference norms limited to Splitting, Devaluation, and Idealization subscales.

The current study aims to offer a contribution to this field by providing reference norms for all the LDS subscales and by investigating (a) the inter-rater reliability; (b) the most frequent coding mistakes in order to possibly improve the LDS coding guidelines; (c) the ability of the LDS to distinguish between individuals with neurotic and borderline levels of personality organization evaluated according to PDM-2 criteria, and a non-clinical group in an Italian sample; and (d) the association between Idealization and Devaluation with Reflection (Exner, 2003) and Space-fusion Rorschach responses (Rosso et al., 2015b, 2019; Rosso and Camoirano, 2019), which are the Rorschach structural variables assumed to be related to narcissistic personality traits. The main novelty of the present study consists in the fact that participants were evaluated by clinicians trained in psychoanalytic psychotherapy on the basis of PDM-2 dimensional diagnostic criteria, and not based on DSM categorical diagnostic criteria as in previous studies. In addition, to our knowledge, this is the first study exploring the association of the LDS with Reflection and Space-fusion responses.

It was expected that findings from this study would replicate substantial inter-rater reliability, while this study was exploratory regarding the analysis of the more frequent coding mistakes in an effort to possibly improve coding guidelines.

It was hypothesized that the LDS is able to discriminate borderline from a neurotic level of personality organization. Significant positive associations between Idealization and Reflection responses and between Devaluation and Space-fusion responses are hypothesized because Reflection responses are assumed to be markers of narcissistic traits also in healthy subjects (Exner, 2003), whereas Space-fusion responses were observed in more disordered narcissistically vulnerable individuals (Rosso et al., 2019).

## MATERIALS AND METHODS

### Participants

Eighty clinical subjects and 80 non-clinical subjects participated in the study. Clinical subjects were self-referred outpatients who had undergone psychological assessment at a private clinical psychology service in northern Italy between 2017 and 2019. There were 37 females and 43 males ranging in age from 18 to 65 years ( $M$  age = 39.43 years  $\pm$  9.06) and in education from 8 to 23 years ( $M$  education = 13.90 years  $\pm$  4.05). Each of them had received a diagnosis according to the PDM-2: 40 subjects were outpatients with personality organized at a neurotic level, and 40 were outpatients with borderline personality organization. Each clinical subject, following intake interviews and psychological assessment, had been rated based on the Psychodiagnostic Chart-2 (PDC-2; Gordon and Bornstein, 2015, 2018) on P Axis and M Axis. Subjects in the Neurotic Level of Personality Organization group received scores ranging from 6 to 8 in the P Axis ( $M$  = 6.48  $\pm$  0.64) and scores ranging from 46 to 54 in the M Axis ( $M$  = 49.05  $\pm$  2.56). Subjects in the Borderline Level of Personality Organization group received scores ranging from 3 to 5 in the P Axis ( $M$  = 4.23  $\pm$  0.66) and scores ranging from 31 to 46 in the M Axis ( $M$  = 38.25  $\pm$  4.59).

Among the non-clinical subjects, 45 were women and 35 were men aged from 20 to 70 years ( $M$  age = 36.19 years  $\pm$  12.72) with a level of education ranging from 5 to 23 years ( $M$  education = 14.56 years  $\pm$  3.22).

They were drawn from an archival dataset of non-clinical individuals who had previously participated on a voluntary basis in a Rorschach normative study (Rosso et al., 2015a), reporting not having had any psychological, psychiatric, or neurological treatment, and not having used psychotropic medication or abused alcohol or illegal drugs. None of them obtained scores in the clinical range either on Beck Depression Inventory II ( $M$  = 3.69  $\pm$  2.41) or on Symptom Checklist-90-Revised ( $M$  = 43.74  $\pm$  3.63).

No significant differences were found between clinical and non-clinical groups regarding sex ( $\chi^2$  = 1.60;  $p$  = 0.45), age ( $t$  = -1.854;  $p$  = 0.66), and education ( $t$  = 1.145;  $p$  = 0.254).

## Measures

The LDS (Lerner and Lerner, 1980) was applied to the Rorschach protocols, which were administered according to the Comprehensive System (CS, Exner, 2003).

For the purpose of this study, Reflection and human content responses were coded according to the CS, Space-fusion responses were coded according to Rosso and colleagues' criteria (Rosso et al., 2015b, 2019; Rosso and Camoirano, 2019), *Dr* (a Rorschach location score used when the area interpreted is small, seldom used and arbitrarily delimited) and *F(c)* (a Rorschach determinant used when the subject distinguishes forms within a shading area without using shading or uses the tones of shading within a colored area) were coded according to Rapaport, 1946.

When applying the LDS, all the responses containing a human figure must be evaluated. The human figure can be real or imaginary, whole, or with missing parts. Human detail contents must also be taken into account to rate the defense of Projective Identification (Lerner and Lerner, 1980, p. 259). Each human response can receive more than one LDS score.

Splitting involves the tendency to polarize descriptions of human content as indicated by the following markers: (1) two human content responses given in sequence are described with opposite affective tonalities; (2) a single human figure is described as divided into parts and reported as each part being the opposite of the other; (3) two human figures described in opposite ways are reported in the same response; (4) an implicitly idealized figure is diminished by negative features, or an implicitly devalued figure is embellished by other qualities.

Devaluation is ranked on a 5-point scale according to three dimensions: the degree to which the reality of the human figure is maintained, the space-time distancing, and the severity of the disparaging attribution. At level 1, the human figure is described in negative but socially acceptable terms, it is real, and it is not distant in space or time; at level 2, the figure is described in socially unacceptable negative terms, it is real even if it may be devoid of some of its parts, and it can be distant in time and space; at level 3, the figure is real but the response contains a distortion of the human form, it can be spaced out in time or space, and if it is negatively described, it is in socially acceptable terms; at level 4, the human dimension is still maintained but the human form is

distorted, can be pushed away in time and space, and is described in negative and socially unacceptable terms; the difference with level 3 is the greater negativity of the description. At level 5, the human dimension is lost, the distorted form can be pushed away in time or space, and the figure can be described in neutral or negative terms.

Idealization is also rated on a 5-point scale along the same three dimensions. At level 1, the human dimension is maintained, the figure is not spaced out in time and space and is described in positive but not overly flattering terms; at level 2, there may be a time lag, and the figure is described with excessively positive tones; at level 3, the human figure can be described positively although not excessively and can be removed in space and/or time. Level 4 differs from level 3 because of the description in excessively positive terms, while at level 5 the human dimension is not maintained and the figure can be described in either neutral or positive terms and distanced in time and space.

Projective Identification is rated in confabulatory responses of inadequate formal level characterized by descriptions that neglect the real features of the stimuli and replace them with arbitrary fantasies and affects with an aggressive or sexual quality, or in human content responses (including *Hd*) with *Dr* localization, *F(c)* determinant, and aggressive connotation (acted or suffered).

Depending on the degree of distortion of reality, Denial is ranked along with three levels: high, medium, and low. High-level denial is shown in responses of adequate form quality through the disavowal of the impulse, or the intellectualization, or the minimization, or refutation of one's own response.

Medium-level denial is evident in responses of an adequate form quality that, however, present a logical, emotional contradiction, or an incongruous association that violates the reality principle. Low-level denial shows impairment in reality testing in two possible peculiar ways: an acceptable response is made inadequate because of the addition of an inappropriate percept or when the respondent fails to contemplate a facet of the blot that is obvious. Responses that include a bizarre incongruous combination also fall into this category.

**Table 1** provides some examples for each defense and each level. Since idealization, devaluation, and denial are ranked on a continuum, in the present study these three variables were weighted according to rank, then collapsed into an overall derived weighted score for that category, as suggested by Hilsenroth et al. (1993, 1997).

## Procedure

The first author selected Rorschach protocols from non-clinical and clinical archival datasets. Non-clinical protocols had been previously collected by graduate students after attending two academic courses on Rorschach testing (see Rosso et al., 2015a), while clinical protocols were administered by licensed clinical psychologists trained in Rorschach testing. Each subject gave written informed consent prior to administration, accepting that the Rorschach protocols would be used for research purposes, after being anonymized. The first author checked all the protocols to verify that they had been properly administered and coded, then, she anonymized and assigned them to the second and the third author, blinded to the protocol group the individual

**TABLE 1** | Examples of Rorschach responses coded according to Lerner Defense Scale (LDS) guidelines.

Defense	Examples
<b>Splitting</b>	<p>"Two happy dancers rehearsing their favorite dance step" [W] followed by "Two angry men glaring at each other" [W] on Card II</p> <p>"A strange character, at the top he looks like an ugly monster with strange limbs ready to skewer, in the lower part he looks like a fluffy little chubby guy" [D3] on Card IX</p> <p>"Two women who look at each other, the one on the right has a sweet look and would like to shake hands with the one on the left who instead looks at her with hatred and would like to hurt her" [D9] on Card III</p> <p>"A nice dwarf" [D3] on Card IX</p>
<b>Devaluation</b>	
Level 1	"A woman in an ugly dress" [D4] on Card I
Level 2	"A dirty woman who has rolled in the mud" [D4] on Card I
Level 3	"An ugly witch" [D4] on Card I
Level 4	"A scorched witch" [D4] on Card I
Level 5	"A mannequin without a head" [D4] on Card I
<b>Idealization</b>	
Level 1	"An elegant woman" [D4] on Card I
Level 2	"A very elegant woman with a beautiful evening dress" [D4] on Card I
Level 3	"An angel" [W] on Card I
Level 4	"A beautiful angel" [W] on Card I
Level 5	"An ancient statue of Venus"
<b>Projective Identification</b>	"The angry and hungry snowman who is about to come on me" [W] on Card IV "A man's profile who is going to hit someone" [Dd99: internal Dr in a small shading area] on Card IV
<b>Denial</b>	
High-level	"Two pacifists" [W] on Card II "Two Homo sapiens" [W] on Card II "Two angry Donald Ducks" [D9] on Card III "No, I do not remember I said that"
Medium-level	"A walking sleeping woman" [D9] on Card III
Low-level	"Two men raising a heart" [D1] on Card III

belonged to, so that the LDS could be applied. Altogether, 597 Rorschach responses were coded according to the LDS. In case of disagreement between the second and the third author, the coding decision was made by the first author.

## RESULTS

Inter-rater reliability was calculated on all 160 Rorschach protocols. Altogether, 597 Rorschach responses were taken into account for coding, and 444 defenses were coded. On the whole, LDS percentage of agreement was 84%; it was, respectively, 100, 85, 81, 55, and 81% regarding Splitting, Devaluation, Idealization, Projective Identification, and Denial. Inter-rater reliability was substantial (Cohen's  $k = 0.79$ ) for the five main defenses. Analysis of disagreement showed that 76% were due to errors of omission or commission, and in the remaining 24%, the errors were due to confusion between two different defenses. The former errors were mostly related to Devaluation at level 1 and high-level Denial, whereas all the errors of confusion concerned Projective Identification.

Preliminary analyses of the data indicated that the study variables were not normally distributed with skewness and kurtosis values falling outside the accepted range of  $\pm 2$  (George and Mallery, 2010), thus appropriate for non-parametric statistical tests. A Mann-Whitney  $U$ -test, performed to analyze

the effect of sex on the LDS, did not find any significant effect ( $ps$  ranging from 0.109 to 0.957). Spearman's correlation analysis did not find any significant association between age and LDS scores ( $ps$  ranging from 0.272 to 0.946).

Comparisons between non-clinical and clinical groups, performed using the Kruskal-Wallis test, yielded significant differences regarding the total number of primitive defenses identified by the LDS ( $\chi^2 = 9.927$ ;  $p = 0.007$ ), Devaluation ( $\chi^2 = 8.067$ ;  $p = 0.018$ ), Projective Identification ( $\chi^2 = 10.543$ ;  $p = 0.005$ ), and Denial ( $\chi^2 = 11.982$ ;  $p = 0.003$ ). Then, pairwise group comparisons, using the Mann-Whitney  $U$ -test, were performed. The borderline group reported significantly higher scores than the non-clinical and neurotic groups on all four variables with effect sizes ranging from Cohen's  $d = 0.46$  to Cohen's  $d = 0.73$ . Only the Denial scale discriminated between the non-clinical and neurotic group, with the latter reporting higher scores ( $z = -2.223$ ;  $p = 0.026$ ;  $d = 0.27$ ). Regarding the other two Rorschach variables (Reflection and Space-fusion responses), subjects in the borderline group gave significantly more Space-fusion responses than the other two groups. Descriptive statistics, comparisons, and effect sizes are reported in **Table 2**.

A further comparison on the Denial subscales between groups showed that the neurotic group gave a higher number of high-level responses than subjects in the non-clinical group ( $z = -3.051$ ;  $p = 0.002$ ), while the borderline group gave a higher

**TABLE 2 |** Descriptive statistics and comparisons between non-clinical and clinical groups.

	NC N = 80		NL N = 40		BL N = 40		Comparisons			
Variable	M	SD	M	SD	M	SD		Z	p	d
P Axis			6.48	0.64	4.23	0.66	NL>BL	−7.918	<0.0001	3.46
M Axis			49.05	2.56	38.25	4.59	NL>BL	−7.714	<0.0001	3.02
R-LDS	3.45	2.37	4.18	3.19	3.85	2.79			n.s.	
Defenses	2.23	2.24	2.63	2.39	4.03	3.17	BL>NC	−3.122	0.002	0.67
							BL>NL	−1.990	0.047	0.50
S	0.03	0.16	0.08	0.27	0.10	0.38			n.s.	
WDV	4.03	4.34	4.68	4.96	7.23	6.04	BL>NC	−2.766	0.006	0.62
							BL>NL	−2.018	0.044	0.46
WI	1.86	3.01	1.78	3.41	1.93	3.92			n.s.	
PI	0.11	0.32	0.10	0.38	0.50	0.91	BL>NC	−2.719	0.007	0.63
							BL>NL	−2.590	0.010	0.62
WDN	0.46	1.12	0.85	1.76	1.85	2.69	NL>NC	−2.279	0.023	0.27
							BL>NC	−3.333	0.001	0.73
Reflection	0.34	0.76	0.50	0.82	0.28	0.60			n.s.	
S-fus	0.66	1.09	0.70	0.91	1.23	1.23	BL>NC	−2.991	0.003	0.49
							BL>NL	−2.038	0.042	0.50

NC, non-clinical group; NL, Neurotic Level Personality Organization group; BL, Borderline Level Personality Organization group; M, mean; SD, standard deviation; Z, z statistic; p, p-value; d, Cohen's measure of effect size ( $|d| < 0.20$ : negligible;  $0.20 < d < 0.50$ : small;  $0.50 < d < 0.80$ : moderate;  $d > 0.80$ : large); P Axis, Level of Personality Organization score on Psychodiagnostic Chart-2; M Axis, Mental Functioning score on Psychodiagnostic Chart-2; R-LDS = total responses coded according to the Lerner Defense Scale; Defenses: total defenses coded on the Lerner Defense Scale; WDV, Weighted Devaluation; WI, Weighted Idealization; PI = Projective Identification; WDN, Weighted denial; S-Fus, Space Fusion responses.

**TABLE 3 |** Comparisons between non-clinical and clinical groups on LDS variables (after converting the score for each defense to a percentage using the total number of responses eligible for coding on LDS as the denominator).

	NC N = 77		NL N = 38		BL N = 36		Comparisons			
Variable	M	SD	M	SD	M	SD		z	p	d
Defenses%	0.61	0.43	0.63	0.38	1.04	0.41	BL>NC	−4.620	<0.0001	1.02
							BL>NL	−4.103	<0.0001	1.04
WDV%	1.14	1.19	1.31	1.35	2.09	1.58	BL>NC	−3.030	0.002	0.69
							BL>NL	−2.185	0.029	0.54
WI%	0.50	0.79	0.35	0.60	0.56	1.01			n.s.	
PI%	0.024	0.072	0.017	0.063	0.11	0.22	BL>NC	−2.825	0.005	0.59
							BL>NL	−2.757	0.006	0.66
WDN%	0.14	0.43	0.17	0.28	0.46	0.68	NL>NC	−2.223	0.026	0.58
							BL>NC	−3.395	0.001	0.60

NC, non-clinical group; NL, Neurotic-Level Personality Organization group; BL, Borderline-Level Personality Organization group; M, mean; SD, standard deviation; Z, z statistic; p, p-value; d, Cohen's measure of effect size ( $|d| < 0.20$ : negligible;  $0.20 < d < 0.50$ : small;  $0.50 < d < 0.80$ : moderate;  $d > 0.80$ : large); Defenses%, percentage of defenses coded on the total responses eligible for coding on the LDS; WDV%, percentage of Weighted Devaluation on the total responses eligible for coding on the LDS; WI%, percentage of Weighted Idealization on the total responses eligible for coding on the LDS; PI%, percentage of Projective Identification on the total responses eligible for coding on the LDS; WDN%, percentage of Weighted denial on the total responses eligible for coding on the LDS.

number of low-level responses compared with the neurotic group ( $z = -2.756$ ;  $p = 0.006$ ).

Since a significant correlation was found between the responses eligible for coding on the LDS and Weighted Devaluation ( $\rho = 0.571$ ;  $p < 0.0001$ ), Weighted Idealization ( $\rho = 0.453$ ;  $p < 0.0001$ ), Projective Identification ( $\rho = 0.394$ ;  $p < 0.0001$ ), and Weighted Denial ( $\rho = 0.394$ ;  $p < 0.0001$ ), comparisons were performed again after converting the score for each defense to a percentage score using the total number of responses eligible for coding on LDS as the denominator. Nine

subjects (three in the non-clinical group, two in the Neurotic, and four in the Borderline-Level Personality Organization groups) were removed because they did not give any human response, so in these cases, the percentage could not be calculated. Results showed that subjects in the borderline-level group had a higher percentage of defenses coded on the LDS compared both with non-clinical subjects ( $z = -4.620$ ;  $p < 0.0001$ ) and with subjects in the neurotic level group ( $z = -4.103$ ;  $p < 0.0001$ ) with large effect sizes (Cohen's  $d$ , respectively, 1.02 and 1.04). Effect sizes were in the moderate range (Cohen's  $d$  ranging from 0.54 to 0.69).



**TABLE 4 |** Partial correlations (controlling for coded responses on the Lerner Defense Scale) among Psychodiagnostic Chart-2 (PDC-2), LDS, and Rorschach variables.

	P Axis	M Axis	S	WDV	WI	PI	WDN	Reflection
P Axis	–							
M Axis	0.928***	–						
S	–0.077	–0.098	–					
WDV	–0.336**	–0.376**	–0.003	–				
WI	–0.059	–0.013	0.131	0.092	–			
PI	–0.290**	–0.282*	–0.027	–0.068	–0.143	–		
WDN	–0.193	–0.186	0.122	0.064	–0.087	0.292**	–	
Reflection	0.172	0.181	0.121	0.025	0.232*	–0.077	–0.140	–
S-fus	–0.327**	–0.255*	–0.068	0.132	–0.073	0.184	–0.029	0.055

P Axis, Level of Personality Organization score on Psychodiagnostic Chart-2; M Axis, Mental Functioning score on Psychodiagnostic Chart-2; S, Splitting; WDV, Weighted Devaluation; WI, Weighted Idealization; PI, Projective Identification; WDN, Weighted denial; S-Fus, Space Fusion responses.

regarding the defenses of Devaluation, Projective Identification, and Denial, with subjects in the borderline-level group reporting higher scores than the other two groups. Results are reported in **Table 3**.

Partial correlation analysis, controlling for the number of responses coded on the LDS, was performed to investigate the association between LDS scores, PDC-2 scores on P Axis and M Axis, and Reflection and Space-Fusion Rorschach responses. Devaluation and Projective Identification were correlated with P Axis (respectively,  $\rho = -0.336$  and  $\rho = -0.290$ ), and with M Axis (respectively,  $\rho = -0.376$  and  $\rho = -0.282$ ). Defenses did not correlate with each other, but Denial correlated with Projective Identification ( $\rho = -0.292$ ). Idealization correlated with Reflection responses ( $\rho = 0.232$ ), whereas no defense correlated with Space-fusion responses, although the latter correlated negatively both with P Axis ( $\rho = -0.327$ ) and with M Axis ( $\rho = -0.255$ ). Results are shown in **Table 4**.

A further partial correlation between S-fusion responses and Devaluation subscales showed that S-fusion responses correlated significantly with Devaluation at level 1 ( $\rho = 0.462$ ;  $p < 0.0001$ ), level 2 ( $\rho = 0.379$ ;  $p = 0.001$ ), and level 4 ( $\rho = 0.280$ ;  $p = 0.017$ ).

## DISCUSSION

Findings confirmed a more than satisfactory level of inter-rater agreement although some issues emerged with regard to the scoring of Projective Identification. An analysis of the coding errors revealed that the most crucial issue was confusion between Devaluation and Projective Identification when the associative elaboration involved material with aggressive meaning. Errors were mostly due to the fact that the rater had not correctly understood the particular confabulatory quality of the Projective Identification response. Another critical dilemma was whether or not to code Projective Identification when a human detail without aggressive content, such as “eyes,” is interpreted in a Dr location with an F(c) determinant. In the current study, according to LDS scoring guidelines, we did not score this kind of response; however, it might be interesting for further studies to investigate whether or not validity improves when coding

the “eyes responses.” Concerning Idealization and Devaluation, omission and commission errors were due to the fact that responses such as “astronaut” or “two women dancing together” or “waiters” are indicated in some studies (e.g., Lerner and Van-Der Keshet, 1995; Lerner, 2005) as signs of Idealization or Devaluation without a very clear rationale, so that sometimes rating the highest levels of Idealization and Devaluation is challenging. To overcome these doubts, a scoring system providing more examples could be useful.

It was hypothesized that the LDS is able to discriminate individuals in the neurotic personality organization group from persons in the borderline level of personality organization group. Results showed that some subscales, namely, Devaluation, Projective Identification, and Denial, were able to discriminate between the two groups, while Idealization and Splitting were not. In particular, Devaluation and Projective Identification correlated significantly and negatively both with P Axis and M Axis, supporting the validity of the LDS in distinguishing between developmental levels of personality organization.

Devaluation is a frequently used defense mechanism by individuals with a borderline level of personality organization and a fragile sense of self. It protects them against having to recognize the need for the Other, thus defending themselves against feelings of envy and fear of abandonment. The positive correlation found between Devaluation and Space-fusion Rorschach responses assumed to be a sign of marked narcissistic vulnerability in personality disordered individuals (Rosso and Camoirano, 2019), offers further support to the hypothesis that Devaluation is a marker of malignant narcissism (Kernberg, 2004).

Projective identification is a primitive defense mechanism typically used by individuals with a borderline level of personality organization: they project intolerable intrapsychic experiences onto another person, often a close individual, feeling empathy with what they project, trying to control the other in a continuing effort to defend themselves against the intolerable experience, and, unconsciously, in actual interaction with the other, leading the individual to experience what has been projected onto him/her (Kernberg, 1987). Not surprisingly, in the current study, Projective Identification correlated with the most primitive levels of Denial.

With regard to the Denial subscale, results showed that subjects with neurotic-level personality organization used high-level Denial more frequently compared to the non-clinical group, while individuals with borderline-level personality organization more frequently made use of low-level Denial than neurotic and non-clinical subjects did. This finding, which is in line with previous studies (see Lerner, 2005 for a review), raises some doubts about whether it is appropriate to include neurotic forms of negation, intellectualization, or minimization in a scale designed to rate primitive defenses, especially if a weighted score is used because it could be misleading, above all, in the protocols that have a high number of responses rated as a high-level denial. For example, in our analyses, when the weighted score was used, Denial did not correlate with either P Axis or M Axis, while the low-level Denial subscale correlated significantly and negatively with P Axis ( $\rho = -0.236$ ;  $p = 0.036$ ). In the current study, LDS subscales did not correlate with each other, except for a significant correlation found between Projective Identification and Denial. A further correlation analysis showed that particularly medium-level and low-level Denial correlated with PI ( $\rho = 0.285$ ;  $p = 0.011$  and  $\rho = 0.257$ ;  $p = 0.022$  respectively), while no correlation emerged between high-level Denial and Projective Identification ( $\rho = 0.099$ ;  $p = 0.385$ ). This finding, which needs replication studies, seems to suggest that low-level Denial and Projective Identification correlated with each other in that they imply a more impaired mental functioning associated with a more severe reality distortion due to the eruption from the primary process that disrupts the ego functions of secondary process thinking.

Our findings regarding Idealization support the hypotheses put forth in a previous study (Lerner and Van-Der Keshet, 1995). According to Kernberg's (1980) assumption, idealization falls on a continuum from pathological to normal, and it implies also non-defensive aspects, including a precondition for feelings of mature love. Results from the current study further support the hypothesis according to which the Idealization subscale is more sensitive to the adaptive aspects of an idealization than to the defensive ones. The positive correlation between Reflection responses and Idealization offers further support to this hypothesis, being Reflection responses are also an indicator of adaptive narcissism (Exner, 2003).

Contrary to some previous findings (Lerner and Lerner, 1980; Lerner et al., 1981; Farris, 1988), in the current study Splitting did not distinguish between non-clinical and clinical groups. Only 2.5% of the non-clinical subjects and 7.5% of both the neurotic

and the borderline groups gave a splitting response. It might be assumed that this result depends on the fact that in the borderline group, only five out of 40 subjects (12.5%) were rated at the lowest borderline level on the P Axis. Based on this supposition, results might confirm that splitting is a defense mostly used by more severely disturbed individuals with personality organized at the lowest borderline personality level.

Finally, this study offers the first reference norms for a non-clinical population for all five main defenses (see Table 2). A previous study (Baity et al., 2009) offered norms for three out of the five defenses, namely, Splitting, Devaluation, and Idealization. A comparison between our results and Baity et al.'s findings did not show significant differences (Cohen's  $d$  respectively  $-0.38$  for Splitting,  $-0.25$  for Devaluation, and  $-0.01$  for Idealization).

In conclusion, the current study provides suggestions for improving the scoring system and offers further support to the validity of the LDS. Specifically, Devaluation, Projective Identification, and low-level Denial subscales were able to discriminate between neurotic and borderline levels of personality organization. In addition, the current study provides reference norms available for non-clinical populations, which could encourage broader use of the LDS in clinical practice as well as in research, including psychotherapy outcome studies.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

AR designed the study, coordinated data collection, performed the statistical analyses, and prepared the first draft of the article. CA and AC contributed to the search for references, coded the Rorschach protocols, cooperated in performing the statistical analyses, and contributed to the final version. All authors contributed to the article and approved the submitted version.

## REFERENCES

- Arora, P. N., Saneja, S., and Pathak, S. (2010). Study of defense mechanism in nailbiter and normal individuals. *Indian J. Commun. Psychol.* 6, 195–201.
- Baity, M. R., Blais, M. A., Hilsenroth, M. J., Fowler, J. C., and Padawer, J. R. (2009). Self-mutilation, severity of borderline psychopathology, and the Rorschach. *Bull. Menninger Clin.* 73, 203–225. doi: 10.1521/bumc.2009.73.3.203
- Brouillette, C. (1987). *A Rorschach assessment of the character structure of anorexia nervosa and bulimia patients and of their mothers*. Unpublished doctoral dissertation, University of Toronto, Canada.
- Exner, J. E. (2003). *The Rorschach: A Comprehensive System* (4th ed.). Hoboken, NJ: Wiley.
- Farris, M. (1988). "Differential diagnosis of borderline and narcissistic personality disorders," in *Primitive Mental States and the Rorschach*, eds H. Lerner and P. Lerner (Madison, CT: International Universities Press), 299–338.
- Freud, S. (1926). "Inhibitions, symptoms and anxiety," in *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, ed J. Strachey (London: The Hogarth Press), 77–175.
- Freud, S. (1938). "An outline of psychoanalysis," in *Standard Edition of the Complete Psychological Works of Sigmund Freud*, ed J. Strachey (London: The Hogarth Press), 139–207.

- George, D., and Mallery, M. (2010). *SPSS for Windows Step by Step: A Simple Guide and Reference, 17.0 update (10a ed.)*. Boston: Pearson.
- Gordon, R. M., and Bornstein, R. F. (2015). *The Psychodiagnostic Chart-2 v.8.1 (PDC-2)*. Available online at: [https://www.researchgate.net/publication/2925928-61\\_Digital\\_Psychodiagnostic\\_Chart-2\\_PDC-2\\_v81](https://www.researchgate.net/publication/2925928-61_Digital_Psychodiagnostic_Chart-2_PDC-2_v81)
- Gordon, R. M., and Bornstein, R. F. (2018). Construct validity of the Psychodiagnostic Chart: a transdiagnostic measure of personality organization, personality syndromes, mental functioning, and symptomatology. *Psychoanal. Psychol.* 35, 280–288. doi: 10.1037/pap0000142
- Hilsenroth, M. J., Fowler, J. C., Padawer, J. R., and Handler, L. (1997). Narcissism in the Rorschach revisited: some reflections on empirical data. *Pers. Assess.* 9, 113–121. doi: 10.1037/1040-3590.9.2.113
- Hilsenroth, M. J., Hibbard, S. R., Nash, M. R., and Handler, L. (1993). A Rorschach study of narcissism, defense, and aggression in borderline, narcissistic, and Cluster C personality disorders. *J. Pers. Assess.* 60, 346–361. doi: 10.1207/s15327752jpa6002\_11
- Kernberg, O. (1975). *Borderline Conditions and Pathological Narcissism*. New York, NY: Aronson.
- Kernberg, O. (1980). *Internal World External Reality*. New York, NY: Aronson.
- Kernberg, O. F. (1987). Projection and projective identification: developmental and clinical aspects. *J. Am. Psychoanal. Assoc.* 35, 795–819. doi: 10.1177/000306518703500401
- Kernberg, O. (2004). *Aggressivity, Narcissism, and Self-destructiveness in the Psychotherapeutic Relationship*. New Haven and London: Yale Universities Press.
- Klein, M. (1946). Notes on some schizoid mechanisms. *Int. J. Psychoanal.* 27, 99–110.
- Lerner, H. D., Sugarman, A., and Gaughran, J. (1981). Borderline and schizophrenic patients. *J. Nerv. Ment. Dis.* 169, 705–711. doi: 10.1097/00005053-198111000-00004
- Lerner, P. M. (2005). “Defense and its assessment: the lerner defense scale,” in *Scoring the Rorschach: Seven Validated Systems*, eds R. F. Bornstein and J. M. Masling (New York, NY: “Lawrence Erlbaum Associates Publishers”), 237–269.
- Lerner, P. M., and Lerner, H. (1980). “Rorschach assessment of primitive defense in borderline personality structure,” in *Borderline Phenomena and the Rorschach Test*, eds J. Kwawer, H. Lerner, P.M. Lerner, and A. Sugarman (New York, NY: International Universities Press), 257–274.
- Lerner, P. M., and Van-Der Keshet, Y. (1995). A note on the assessment of idealization. *J. Pers. Assess.* 65, 77–90. doi: 10.1207/s15327752jpa6501\_6
- Lingiardi, V., and McWilliams, N. (2017). *Psychodynamic diagnostic manual: PDM-2, 2nd ed*, eds V. Lingiardi and N. McWilliams. New York, NY: The Guilford Press.
- Meyer, G. J., Hsiao, W.-C., Viglione, D. J., Mihura, J. L., and Abraham, L. M. (2013). Rorschach scores in applied clinical practice: a survey of perceived validity by experienced clinicians. *J. Pers. Assess.* 95, 351–365. doi: 10.1080/00223891.2013.770399
- Meyer, G. J., Viglione, D. J., Mihura, J. L., Erard, R. E., and Erdberg, P. (2011). *Rorschach Performance Assessment System*. Toledo, OH: Rorschach Performance Assessment System.
- Perry, J. C., and Ianni, F. F. (1998). Observer-rated measures of defense mechanisms. *J. Pers.* 66, 993–1024. doi: 10.1111/1467-6494.00040
- Pinheiro, R. T., Sousa, P. L. R., Da Silva, R. A., Horta, B. L., De Souza, R. M., and Fleming, M. (2001). Cocaine addicts and their families: an empirical study of the processes of identification. *Int. J. Psychoanal.* 82, 347–360. doi: 10.1516/V04M-D744-GKLT-J7G7
- Piran, N., and Lerner, P. (1987). *Piagetian cognitive development and ego development: a study of anorexic patients*. Unpublished manuscript, Toronto General Hospital, Canada.
- Rapaport, D. (1946). “The Rorschach Test,” in *Diagnostic Psychological Testing: The Theory, Statistical Evaluation, and Diagnostic Application of a Battery of Tests*, Volume II. (New York, NY: The Year Book Publishers), 85–394.
- Rosso, A. M., and Camoirano, A. (2019). Construct validity of Rorschach space responses. *Open Psychol. J.* 12:116. doi: 10.2174/1874350101912010116
- Rosso, A. M., Camoirano, A., and Chiorri, C. (2019). Validity of space responses: what can we learn from rorschach protocols of divorcing couples fighting for child custody? *Rorschachiana* 40, 3–21. doi: 10.1027/1192-5604/a000106
- Rosso, A. M., Camoirano, A., and Schiaffino, G. (2015a). Are individuals in Rorschach nonpatient samples truly psychologically healthy? Data of a sample of 212 adult nonpatients from Italy. *Rorschachiana* 36, 112–155. doi: 10.1027/1192-5604/a000052
- Rosso, A. M., Chiorri, C., and Denevi, S. (2015b). Rorschach space responses and anger. *Psychol. Rep.* 117, 117–132. doi: 10.2466/03.02.PR0.117c10z4
- Van-Der Keshet, J. (1988). *Anorexic patients and ballet students: a Rorschach analysis*. Unpublished doctoral dissertation, University of Toronto, Canada.

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Rosso, Airaldi and Camoirano. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# The Relationship Between Defense Mechanisms and Attachment as Measured by Observer-Rated Methods in a Sample of Depressed Patients: A Pilot Study

Vera Békés<sup>1\*</sup>, Katie Aafjes-van Doorn<sup>1</sup>, Daniel Spina<sup>2</sup>, Alessandro Talia<sup>3</sup>, Claire J. Starrs<sup>4</sup> and J. Christopher Perry<sup>5</sup>

<sup>1</sup>Ferkauf Graduate School of Psychology, Yeshiva University, New York, NY, United States, <sup>2</sup>Department of Clinical Psychology, Pennsylvania State University, University Park, PA, United States, <sup>3</sup>Institute for Psychosocial Prevention, University Hospital Heidelberg, University of Heidelberg, Heidelberg, Germany, <sup>4</sup>Department of Psychology, SUNY Potsdam, Potsdam, NY, United States, <sup>5</sup>Department of Psychiatry, Canada Institute of Community and Family Psychiatry, Jewish General Hospital, McGill University, Montreal, QC, Canada

## OPEN ACCESS

### Edited by:

Roumen Kirov,  
Bulgarian Academy of Sciences (BAS),  
Bulgaria

### Reviewed by:

E. Samuel Winer,  
Mississippi State University,  
United States  
Alberto Sardella,  
University of Messina, Italy

### \*Correspondence:

Vera Békés  
vera.bekes@yu.edu

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 31 December 2020

**Accepted:** 26 August 2021

**Published:** 27 September 2021

### Citation:

Békés V, Aafjes-van Doorn K,  
Spina D, Talia A, Starrs CJ and  
Perry JC (2021) The Relationship  
Between Defense Mechanisms and  
Attachment as Measured by  
Observer-Rated Methods in a  
Sample of Depressed Patients: A  
Pilot Study.  
Front. Psychol. 12:648503.  
doi: 10.3389/fpsyg.2021.648503

Despite many theoretical and clinical writings, the theorized connection between defense mechanisms and adult attachment in depressed patients has received little empirical attention. This is the first study to examine patients' defense mechanisms in relation to their attachment in a clinical sample of depressed patients and also the first to use observer-rated measures for assessing both defense mechanisms and attachment. In this pilot study, we aimed to investigate the relationship between patients' attachment and their use of defense mechanisms in psychotherapy sessions, as well as patterns of change over treatment. We conducted a secondary analysis of data from a randomized controlled trial of 30 patients receiving psychotherapy for major depression. Session transcripts were previously coded for defense mechanisms using the Defense Mechanisms Rating Scales, and depression severity data were collected by the clinician-rated HRSD-17 and the self-report BDI-II. Patients' attachment was assessed in two transcripts, one in an early session and a second in a late session, using the novel observer-rated Patient Attachment Coding System. In contrast with expectations, in the early phase of therapy, preoccupied attachment-related characteristics were significantly positively related to overall defensive functioning and negatively related to Depressive immature defenses. In the late phase of treatment, preoccupied attachment-related characteristics were negatively correlated with Non-depressive immature defenses. Moreover, as expected, early-phase defense use was related to late phase attachment; specifically, early neurotic and immature Depressive and Non-depressive defenses predicted an increase in avoidant, whereas immature Non-depressive defenses predicted a decrease in preoccupied attachment-related characteristics over the course of treatment, after controlling for early attachment effects. The results imply a longitudinal relationship between defenses and change in attachment-related characteristics over the course of treatment in a depressed



sample and warrant further research about the relationship between defenses and attachment during psychotherapy.

**Keywords:** defense mechanisms, attachment, depression, observer-rated, patient attachment coding system

## INTRODUCTION

Patients' attachment-related differences and defense mechanisms are the two main aspects of personality functioning and are thought to be important predictors of symptom severity and psychotherapy outcome (Blatt and Levy, 2003; Perry, 2014; Dagan et al., 2018; Perry et al., 2020). Despite increasing interest in the topic over the past few years, there is still little empirical research conducted on the associations between defense mechanisms and patient's attachment, especially in depressed patients. In this study, we sought to address this important gap in the literature by empirically examining the relationship between patients' attachment-related characteristics and their use of defense mechanisms in treatment sessions conducted as part of a previous RCT for depression.

Defense mechanisms can be defined as automatic reactions to internal and external stressors or conflicts aimed at warding off negative emotional experiences. They are thought to underlie a wide range of healthy and psychopathological phenomena, including depression (Perry, 2014). The use of defense mechanisms in any given situation is mostly out of the individual's awareness; however, the type of defense mechanism used can lead to considerable differences in mental health and interpersonal functioning (Vaillant, 2020).

Defense mechanisms can be categorized hierarchically, based on their general level of adaptiveness (Perry, 1990; Perry and Bond, 2017). Of the tripartite defense categories, *mature* defense mechanisms are deemed the most adaptive strategies to maximize gratification and allow relatively good conscious awareness of feelings, ideas, and their behavior-related consequences. Though all defense mechanisms are thought to protect the individual from anxiety, mature defenses do not threaten interpersonal relationships or distort reality in order to do so. The intermediate level of *neurotic* defense mechanisms functions to keep distressing thought content out of awareness, also with minimal reality distortion. In contrast, the low level, mostly maladaptive *immature* defenses act through strong reality distortion or detachment from reality (Perry and Bond, 2017) and are associated with mental health problems and lower interpersonal functioning, characteristic of severe mood and anxiety disorders (Trower and Chadwick, 1995; Calati et al., 2010; Perry and Bond, 2012; Berney et al., 2014; Ciocca et al., 2017).

Relevant to patients who suffer from depression, the immature defense category can be further subdivided into Depressive and Non-depressive Defenses. Depressive defenses have been empirically associated with depression, whereas Non-depressive defenses were negatively associated with depression (Høglend and Perry, 1998). In depressed patients, the use of immature defenses has been found to decrease by the end of treatment, whereas neurotic and mature defenses remain unchanged (e.g., Mullen et al., 1999). Moreover, within immature defenses, the

subgroup of Depressive defense mechanisms is linked to decreases in depression symptomatology specifically (Perry et al., 2020).

Attachment theory (Bowlby, 1969) offers a cogent framework for understanding the development and treatment of psychopathologies such as depression (Cummings and Cicchetti, 1990; Williams and Riskind, 2004; Dykas and Cassidy, 2011; Lakey and Orehek, 2011; Hames et al., 2013). There appears to be an overrepresentation of patients with insecure attachment in clinical populations in general and in clinically depressed samples in particular, compared with non-clinical samples (Bakermans-Kranenburg and van IJzendoorn, 2009; for a recent meta-analysis see Dagan et al., 2018). Similarly, individuals with insecure attachments have been shown to experience higher levels of depression than securely attached individuals (Fonagy et al., 1996; Borelli et al., 2010; Ivarsson et al., 2010).

John Bowlby developed his theory of attachment partly to explain why some of his patients appeared to eschew intimacy and defend against experiencing emotions, with calamitous consequences for their social adaptation (Duschinsky, 2020). Bowlby posited that individual differences in early relationships with one's primary caregivers are carried forward and shape relationships with others (e.g., peers and romantic partners; Bowlby, 1988; Roisman, 2006; Feeney, 2008; Holland and Roisman, 2010; Groh et al., 2014).

Following Bowlby's innovative theorizing, a host of studies have confirmed that early differences in attachment relationships later impact cognitive and affective processing of expectations about closeness and support from others. Beginning in the sixties, attachment researchers established that differences in parental sensitivity and responsiveness give rise to distinct infant tendencies to establish proximity with the caregiver, which in turn seem to be underpinned by differing expectations concerning caregiver availability (Ainsworth et al., 1978). In particular, Ainsworth and colleagues proposed that infants seek proximity with their caregiver in one of three ways: *secure*, involving actively seeking proximity if they generally expect the caregiver to be available when they are distressed; *avoidant*, if they do not hold such an expectation, they seem to defensively inhibit their search for physical proximity; and *resistant* (or ambivalent), if they expect the caregiver to be unpredictable or inconsistent leading to constantly monitoring their proximity to the caregiver even when he or she is within reach.

Later work showed that these infant differences are robustly predicted by parent's attachment representations, as assessed in a semi-structured interview, the Adult Attachment Interview (AAI; Main et al., 1985). Namely, parents of secure infants in the AAI appear to openly access their own representations and memories of their relationships with their parents and are termed "secure-autonomous." Parents of avoidant infants seem to shift their attention away from discussing attachment relationships and stressful episodes and are termed "dismissing,"

while parents of resistant infants appear to focus excessively on such topics and are termed “preoccupied.”

According to one popular view, whereas secure attachment is related to an unbiased way of processing affectively laden information, with little need to use reality-distorting defense mechanisms (Cramer and Kelly, 2010; Dykas and Cassidy, 2011), insecure attachment reflects defensive responses to negative emotions, threats to separation, or distress more generally (Ein-Dor et al., 2016). In this view, attachment is seen as an adaptation strategy to a given environment (Luyten et al., 2021).

Certain defense mechanisms are prominent in the interpersonal patterns that convey the effect of attachment insecurity on psychological distress, such as depression. For example, dismissing attachment classifications seem to be associated with denying one's own weaknesses and those of one's attachment figures (Main et al., 2002). Conversely, preoccupied attachment may be associated with hyperactivating the expression of distress and maintaining a consistent focus on negative emotions, which may work to gain and maintain others' proximity – at least in the short term.

Indeed, attachment theory can be understood as a two-person theory of conflict and defense. It emphasizes the coping or defensive processes required to deal with fearful arousal within the context of attachment relationships. In Bowlby's view, defensive exclusion occurs when attachment-related information is kept out of awareness to prevent the painful effect associated with attachment system activation when no perceived comfort from attachment figures (real or representational) is available (Bowlby, 1980). In contrast to an intrapsychic theory of defense, attachment theory locates the ontogeny of defenses in an intersubjective field. The development of defensive styles is theorized to occur at the interface between a child's fearful arousal and the subsequent responses of important attachment figures. More specifically, the infant-caregiver interactions that occur around distress and comfort result in defensive adaptations, in the form of defense mechanisms (Lyons-Ruth, 2003). In other words, in relation to adult attachment patterns, defenses are conceptualized as the mechanism that modulates the attachment system in order to reduce distressing feelings associated with negative expectancies, both at the intrapersonal and interpersonal levels (Kobak and Bosmans, 2019), and as such are directly related to emotion dysregulation (Malik et al., 2015).

Despite many theoretical and clinical writings, this hypothesized connection between attachment and defense mechanisms has received little empirical attention. The few existing empirical studies generally suggest that insecure attachment is typically associated with an increased use of immature defense mechanisms (e.g., Prunas et al., 2019) and that this overreliance on immature defenses leaves insecurely attached individuals particularly vulnerable to psychopathology, such as depression (e.g., Laczkovics et al., 2018; Ciocca et al., 2020). Up until now, however, empirical studies investigating the association between attachment and defenses have been conducted in non-clinical samples (Ciocca et al., 2020) rather than clinical or treatment samples.

Previous studies on the relationship between attachment and defense mechanisms have been further limited by their reliance on self-report questionnaires. Self-report measures may be more biased (when compared to observer-based measures) when aiming to identify processes that are predominantly unconscious, such as attachment and defenses. Whereas preliminary evidence shows that self-report and observer-rated defense ratings may align (Di Giuseppe et al., 2020), it is increasingly well-agreed that self-report measures of attachment (for example, the Experience of Close Relationships Scale; Brennan et al., 1998) and observer-rated measures of attachment (such as the AAI) do not cohere empirically and may in fact capture different constructs (Roisman, 2006; Strauss et al., 2015).

In the current study, we sought to address this gap in the literature by examining the association between attachment and defense mechanisms in patients undergoing psychotherapy for depression, using a novel observer-rated method for assessing attachment, the Patient Attachment Coding System (PACS; Talia et al., 2017), in addition to the well-established observer-rated DMRS for defenses. The PACS was initially developed in an effort to find verbal markers that would distinguish the discourse of patients who had been independently classified as secure, dismissing, or preoccupied on the AAI (Talia et al., 2014, 2017, 2019b). This work led to distinct identifying markers that can be reliably scored in any session of psychotherapy transcribed verbatim, regardless of the therapeutic orientation (Talia et al., 2014). Because the PACS markers occur regardless of whether patients speak about attachments or other topics that they find distressful, Talia and his colleagues have described them first and foremost as capturing differing ways in which patients collaborate with the therapist, rather than defenses (Talia et al., 2019a).

## Aims

Given the importance of attachment security and defense mechanisms in the development of psychopathology, such as depression (Høglend and Perry, 1998; Martin-Joy et al., 2017) and their general importance in treatment formulations (e.g., Fonagy, 2001; Eagle, 2013), it is important to better understand the relationship between these two processes. Thus, the overall aim of our study was to investigate the relationship between patients' attachment and their use of defense mechanisms in psychotherapy for depression, as well as any patterns of change over time. Of note, in contrast with previous studies, where attachment style was assessed as a predictor of defense use, in this present pilot study, we aimed to explore the role of defense mechanism in predicting changes in in-session attachment-related characteristics over treatment. Specifically, we explored the following two research questions:

1. What is the relationship between depressed patients' in-session attachment-related characteristics and their defense mechanisms? We hypothesized that patients with secure attachment would exhibit higher overall defensive functioning, would use more mature defenses, and less immature defenses, in both the early and late sessions. Conversely, we also expected that patients with insecure attachment, specifically

avoidant and preoccupied patterns, would use more immature defenses, in particular more Depressive defenses.

2. Does patients' defensive functioning in the early session predict their attachment security in the late phase of treatment? We expected that patients' overall defensive functioning, and amount of mature or immature defense use, early in treatment would predict attachment-related characteristics in the late phase of treatment. More specifically, within this clinically depressed sample, we expected that lower-level defenses, such as Immature, and especially, early Depressive Immature defense use would predict insecure (avoidant and preoccupied) attachment-related characteristics in the late phase of treatment.

## MATERIALS AND METHODS

### Treatment Trial

This study reports on secondary analyses of existing treatment data collected as part of a previously conducted randomized controlled treatment trial (RCT) of 30 patients undergoing treatment for major depression (see Perry et al., 2021 for a detailed description of the RCT). Inclusion criteria in the study were having acute recurrent major depression and a 17 or higher score on the Hamilton Depression Rating Scale; exclusion criteria included psychotic or bipolar type I disorders, substance use or dependence serious enough to interfere with therapy, and an effective response to antidepressant medications, if tried, in the past 4 weeks.

Nineteen patients (63%) were female, and mean age was 41 years ( $SD=12.43$ ). As part of the RCT, patients were randomly assigned to either cognitive behavior psychotherapy (CBT;  $n=13$ ), supportive psychotherapy (ST;  $n=7$ ), or psychodynamic psychotherapy (PDT;  $n=10$ ). On average, the CBT treatments consisted of 21.00 ( $SD=10.44$ ) sessions over 14 months (range=2.75–21.75) and the ST consisted of 17.00 ( $SD=9.04$ ) sessions over 14 months (6.5–27.5), whereas the PDT treatments were longer and consisted of an average of 62.7 ( $SD=23.43$ ) sessions over 21 months (range=7.5–24.5). Depressive symptoms were assessed at baseline and at the end of treatment. Baseline depression scores on the BDI-II ( $M=23.34$ ,  $SD=6.97$ ) and HRSD-17 ( $M=17.48$ ,  $SD=6.10$ ) significantly correlated ( $r=0.48$ ,  $p<0.01$ ), and both significantly decreased by termination [ $t(27)=5.63$ ,  $p<0.001$  and  $t(27)=4.22$ ,  $p<0.001$ , respectively]. As a part of the original RCT, the treatment sessions were audio-recorded and transcribed and coded for individual defense mechanisms, hierarchically organized into subsequent defense categories. For further details on the trial and the participants, please see Perry et al. (2021).

### Measures

#### Existing Measurements

##### Depression

The clinician-rated Hamilton Depression Rating Scale (HRSD-17; Hamilton, 1960) was used to assess depression levels pre-and post-treatment. The HRSD-17 is a 17-item semi-structured

interview, which assesses depression on a 5-point Likert scale, ranging from 0 to 4. The HRSD-17 has demonstrated good internal consistency in previous studies with a mean alpha of 0.79 across studies, in our report Cronbach's  $\alpha=0.83$ .

The self-report Beck Depression Inventory II (BDI-II; Beck, et al., 1996) was also administered pre-and post-treatment. The BDI-II is a widely used 21-item measure of Depressive symptoms experienced during the previous week, using a four-point Likert scale. Internal consistency of the BDI-II has been reported to be good in several studies, for example, a Cronbach alpha of 0.90 has been reported (Storch et al., 2004). Cronbach's alpha for BDI-II was 0.96 in the present report.

#### Defense Mechanisms

The observer-rated Defense Mechanism Rating Scales (DMRS; Perry, 1990) was used to assess defense mechanisms in session transcripts in the early and late treatment phases. The DMRS identifies 30 individual defenses (Perry, 1990) as they occur in the text. The individual defense mechanisms are hierarchically arranged into three categories: Mature, Neurotic, and Immature defenses, and the Immature category can be further subdivided into Depressive and Non-depressive immature defenses. In addition to the tripartite categories, a score for overall defensive functioning (ODF) is calculated by summing the weighted average of each defense based on its defense level. The ODF can range between 1 and 7, with higher scores indicating more adaptive defensive functioning. Inter-rater reliability of the three defense categories, the Depressive and Non-depressive defenses, and the ODF have been shown to be satisfactory (Perry, 2014).

#### Novel Observer-Rated Method

##### Attachment

For this secondary analysis, the Patient Attachment Coding System (PACS; Talia et al., 2014) was used to assess patients' attachment. The PACS is a transcript-based measure that yields classifications of patients' attachment based on a single therapy session transcribed verbatim in any treatment modality, regardless of the stage of treatment and of therapist's activity. Recent work in attachment-informed psychotherapy research (Talia et al., 2017) has shown that patients' discourse style during psychotherapy reliably predicts their independently obtained attachment classification on the AAI. PACS attachment security has been found to predict greater in-session mentalizing (Talia et al., 2017), greater resolution of relational ruptures in psychotherapy (Miller-Bottomo et al., 2018), and patient-therapist physiological synchrony (Kleinbub et al., 2020). The PACS has also been shown to predict patients' AAI classification even when applied to post-treatment interviews rather than therapy sessions (Talia et al., 2019b).

When coding with the PACS, the coder assesses the frequency and intensity of 40 different discourse markers as they occur in a transcript, which are grouped into five main scales used to assign a final main attachment classification to the patient: Proximity seeking, Exploring, and Contact maintaining which

are associated with Secure attachment; Avoidance which is associated with Avoidant attachment; and Resistance which is associated with Preoccupied attachment. A sixth scale, Balance, is used as a global score of security which encompasses the five main PACS scales. As such, although a person may exhibit predominantly secure attachment characteristics, they may also exhibit some avoidant and resistant markers.

In this study, we report on the scores on the three PACS scales reflecting attachment-related characteristics, including secure attachment (Balance scale), avoidant attachment (Avoidance scale), and preoccupied attachment (Resistance scale). In order to avoid multiple testing of related variables, we used Balance as a proxy for attachment security (and did not include the three secure scales). The rater assigns a rating from 1 to 7 in 0.5 increments based on both the frequency and intensity of the markers of each subscale identified in the transcript. More specifically, the Balance score reflects the degree of attachment security exhibited by the patient including the open expression of emotions in the present, communication of feeling and needs in the therapeutic relationship, autonomous reflections, and positive emotions. The Avoidance scale assesses the level of evasion of inquiries into the patient's positive and negative experience and the level of minimization or deferment of any mental state previously conveyed (e.g., the patient affirms that he or she has no right to complain; chuckles about his or her own distress). The Resistance scale captures discourse markers that enlist the therapist's agreement with the patient's views or otherwise restrict the therapist's capacity to disagree, for example, by being vague or excessively detailed. In order to assign an overall attachment classification (Secure, Avoidant, or Preoccupied) for the patient, a proportional index of balance, avoidant, and resistant characteristics is calculated (for a more detailed description of the PACS, see Talia et al., 2017).

## Procedures

In order to become reliable PACS coders, four clinical psychology doctoral students completed a one-week comprehensive training workshop in the use of the PACS taught by the developer (A.T.) and attended weekly reliability consensus meetings on practice transcripts for 3 months following the training workshop. When their ICC with the developer of the PACS reached 0.80 or above, the students started coding the session transcripts for the study. Session transcripts were randomly assigned across the four raters. Throughout the coding, the raters received ongoing intensive supervision from the developer of the PACS. Inter-rater reliability was calculated on 29 (50%) out of 58 coded sessions, and the ICC between the developer and the coders was 0.85. From the available session transcripts already coded on the DMRS, two sessions per treatment were coded with the PACS, one session from the early phase of treatment (the second session) and a session at the late phase of treatment (the penultimate session), altogether resulting in a sample of 60 PACS coded sessions, reflecting 30 treatments.

## Data Analysis

In the reported analyses, the total sample of 30 treatments was used. Two patients were dropped out during treatment; therefore, the cross-sectional analysis at the early phase was based on  $n=30$ , whereas the analyses at the late phase of treatment and the change across treatment included  $n=28$ . The use of an existing data set and observer ratings meant that there were no missing attachment or defense scores. To compare initial attachment and defense scores across the three treatment arms, we conducted one-way ANOVA. The small number of patients in each treatment modality only allowed us to conduct pilot comparisons and to report effect sizes and not values of  $p$ .

The attachment and defense variables were not normally distributed (skewness and kurtosis more than twice the standard error). Both at the early and late phases, attachment scores on the Balance scale were significantly positively skewed, due to the high prevalence of insecure patients in the sample ( $n=21$ ). Therefore, non-parametric tests of defenses and attachment were used in subsequent analyses. Wilcoxon signed-rank test was used to compare attachment and defenses in the early and late phases of the treatments. A paired samples  $t$  test was used to compare self-rated and observer-rated depression scores at pre-and post-treatment. Spearman's rho correlations were used to analyze the relationship between variables on the DMRS and the PACS. Linear regression analysis was used to examine whether early-phase defensive functioning predicted late-phase attachment. For checking the assumptions for the regression models, we confirmed that the data contained approximately normally distributed errors with equal variance and met the assumptions of homogeneity of variance and linearity. Two-tailed tests of significance were applied throughout. Given the exploratory nature of the examinations and the relatively low power, we did not apply a correction for multiple correlations. All statistical analyses were conducted using SPSS 24.0.

## RESULTS

### Patient Attachment and Defenses Early in Treatment

In the early sessions, the majority of the 30 patients were classified on the PACS as Preoccupied ( $n=15$ ). Nine patients were classified as Secure and six as Avoidant. Regarding the scales, the average rating on the PACS Balance scale suggested that overall the patients in this sample were relatively insecurely attached ( $M=2.93$ ;  $SD=1.4$ ) at baseline, a score which is significantly lower than in other mixed outpatients' samples [ $M=3.7$ ,  $SD=1.3$ ,  $t(188)=2.79$ ,  $p<0.01$ ; Talia et al., 2017]. Moreover, these depressed patients also scored higher on the PACS Resistance scale ( $M=4.20$ ;  $SD=2.47$ ), indicating that their attachment was significantly more preoccupied than is generally seen in outpatient samples [ $M=3.3$ ,  $SD=2.00$ ,  $t(188)=2.18$ ,  $p<0.05$ ], whereas the PACS Avoidance scale



( $M=2.79$ ;  $SD=1.77$ ) was in line with previous findings [ $M=2.8$ ,  $SD=1.60$ ,  $t(188)=0.00$ ,  $p=ns$ ; Talia et al., 2017].

Average overall defensive functioning ( $M=4.88$ ;  $SD=0.57$ ) early in treatment fell into the level usually associated with acute depression or personality disorders and was comparable to other mixed outpatient groups reported in the literature [ $M=4.62$ ,  $SD=0.27$ ,  $t(49)=1.93$ ,  $p=ns$ ; Perry and Henry, 2004]. **Table 1** shows the means, standard deviations, and significant changes in the relevant variables.

Early-phase PACS and defense variables differed in the three treatment arms. Pilot comparison using Eta-squared showed that variance in early treatment PACS variables across the three treatment arms was Balance  $\eta^2=0.010$ , Avoidance  $\eta^2=0.158$ , and Resistance  $\eta^2=0.154$ ; and variance based on the treatment arms in early-phase defense variables ranged between Neurotic defenses  $\eta^2=0.035$  and ODF  $\eta^2=0.108$ .

### Research Question 1: Relationship Between the Patients' Attachment-Related Characteristics and Their Use of Defense Mechanisms

Spearman's rho correlations were used to test the relationship between in-session attachment-related characteristics (PACS Balance, PACS Avoidance, and PACS Resistance) at both early and late phases of treatment and patients' use of defense mechanisms (DMRS variables: ODF, Mature, Neurotic, Immature including Depressive and Non-depressive Immature defenses). No significant correlations between attachment security (PACS Balance scale) or avoidance (PACS Avoidance scale) and the DMRS variables were found in the early or late sessions. In the early sessions, the PACS Resistance scale was significantly related to ODF ( $r_s=0.37$ ,  $p=0.043$ ) and negatively associated with the DMRS Depressive Immature defenses ( $r_s=-0.45$ ,  $p=0.012$ ; see **Table 2**). At the late phase of treatment, the PACS Resistance scale negatively correlated with the DMRS Non-depressive immature defenses ( $r_s=-0.42$ ,  $p=0.027$ ; see **Supplementary Material**).

### Research Question 2: Patients' Use of Defense Mechanisms Early in Treatment and Attachment-Related Characteristics Late in Treatment

In order to establish whether there was any relationship between patients' use of defense mechanisms early in treatment and improvement in their attachment-related characteristics during treatment, we used Spearman's rho correlations between the defense variables (DMRS scales: ODF, Mature, Neurotic, Immature) at the early phase of the treatment and attachment variables (PACS scales: Balance, Avoidance, Resistance) at the late phase of the treatment. Results showed a significant negative correlation between early DMRS Neurotic defenses and late-phase PACS Avoidance scale ( $r_s=-0.44$ ,  $p=0.020$ ) and a significant negative correlation with the PACS Resistance scale at the end phase of treatment ( $r_s=-0.42$ ,  $p=0.030$ ). Early DMRS Immature defenses were significantly and positively correlated with late-phase PACS Avoidance scale ( $r_s=0.51$ ,  $p=0.005$ ) and negatively with late-phase PACS Resistance scale ( $r_s=-0.48$ ,  $p=0.009$ ; see **Supplementary Material**).

Based on these significant relationships between DMRS defenses early in treatment and PACS scales in the late phase of treatment, we conducted linear regressions to establish whether defense use (DMRS Immature, Neurotic defenses) in the early phase predicts attachment-related characteristics (PACS Avoidance, Resistance scales) in the late phase of treatment, after controlling for early levels of attachment-related characteristics. Since the DMRS Immature defenses category can be divided into the two mutually exclusive subcategories of Depressive immature defenses and Non-depressive immature defenses, we substituted these subcategories in the regression model, rather than the less specific DMRS Immature defense category. We used stepwise regression to assess the unique contribution of Depressive and Non-depressive defenses in predicting the change in attachment-related characteristics.

As **Table 3** shows, both early Depressive and Non-depressive immature defenses significantly predicted late-phase PACS

**TABLE 1 |** Wilcoxon signed-rank tests comparing Beginning and Late-Phase Defense and Attachment Variables ( $N=28$ ).

	Early Phase		Late Phase		z	p
	Mean (SD)	Range	Mean (SD)	Range		
Attachment-related characteristics						
PACS Balance	2.93 (1.40)	1.5–6.0	2.36 (0.98)	1.0–4.5	−1.50	0.134
PACS Avoidance	2.79 (1.77)	1.0–7.0	2.82 (1.77)	1.0–6.5	−0.16	0.871
PACS Resistance	4.20 (2.47)	1.0–7.0	4.68 (2.56)	1.0–7.0	−0.57	0.573
Defense Mechanisms <sup>a</sup>						
DMRS ODF	4.88 (0.57)	3.1–5.8	5.08 (0.49)	4.1–6.0	−1.34	0.179
DMRS Mature	0.17 (0.11)	0.0–0.4	0.17 (0.11)	0.0–0.4	−0.42	0.674
DMRS Neurotic	0.54 (0.16)	0.3–0.8	0.59 (0.17)	0.2–0.9	−1.35	0.178
DMRS Immature	0.28 (0.13)	0.1–0.6	0.23 (0.13)	0.0–0.5	−1.91	0.056
Immature: Depressive	0.18 (0.11)	0.0–0.6	0.15 (0.11)	0.0–0.5	−1.42	0.156
Immature: Non-depressive	0.10 (0.07)	0.0–0.2	0.08 (0.04)	0.0–0.3	−1.23	0.219

<sup>a</sup>Defense scores were obtained from the original RCT, see Perry et al. (2020), in this same journal issue.

**TABLE 2 |** Spearman correlations between early PACS attachment-related characteristics and early DMRS defense mechanisms.

	1	2	3	4	5	6	7	8	9
1. PACS Balance	–								
2. PACS Avoidance	–0.03	–							
3. PACS Resistance	–0.20	–0.58**	–						
4. DMRS ODF	–0.14	–0.11	–0.37*	–					
5. DMRS Mature	–0.21	0.16	0.16	0.55**	–				
6. DMRS Neurotic	–0.07	–0.28	0.13	0.21	–0.60**	–			
7. DMRS Immature	0.17	0.29	–0.36	–0.75**	–0.12	–0.68**	–		
8. Immature: Depressive	0.28	0.21	–0.45*	–0.86**	–0.38*	–0.38*	0.79**	–	
9. Immature: Non-depressive	–0.21	0.15	0.08	–0.12	0.26	–0.55**	0.55**	0.06	–

PACS, Patient Attachment Coding System; DMRS, Defense Mechanism Rating Scale; ODF, Overall Defensive Functioning; Immature Defenses were subdivided into Depressive immature and Non-Depressive immature. \* $p < 0.05$ ; \*\* $p < 0.01$ .

**TABLE 3 |** Regression models for early DMRS defense mechanisms predicting late PACS attachment-related characteristics.

Predictor variables	Coeff	SE	95% CI	F	df	p	adjR <sup>2</sup>
<b>Immature defenses predicting Avoidance</b>							
Early Avoidance	0.52**	0.17	(0.18, 0.87)				
Depressive defenses	5.76*	2.37	(0.88, 10.64)				
Non-Depressive defenses	8.78*	3.69	(1.16, 16.41)	8.83	(3, 27)	0.000	0.47
<b>Immature defenses predicting Resistance</b>							
Early Resistance	0.48*	0.17	(0.11, 0.85)				
Non-Depressive defenses	–16.69*	5.85	(–28.74, –4.64)	8.55	(2, 27)	0.001	0.36
<b>Neurotic defenses predicting Avoidance</b>							
Early Avoidance	0.52**	0.17	(0.11, 0.85)				
Neurotic defenses	–3.84*	1.81	(–0.39, 10.71)	7.83	(2, 27)	0.002	0.34
<b>Neurotic defenses predicting Resistance</b>							
Early Resistance	0.48**	0.18	(0.18, 0.87)				
Neurotic defenses	5.16	2.69	(–7.56, –0.12)	5.71	(2, 27)	0.009	0.26

\* $p < 0.05$ ; \*\* $p < 0.01$ .

Avoidance after controlling for baseline PACS Avoidance ( $B = 6.47$ ,  $SE = 2.20$ ,  $t = 2.95$ ,  $p < 0.05$ ,  $\Delta R^2 = 0.14$ ;  $B = 8.43$ ,  $SE = 3.70$ ,  $t = 2.38$ ,  $p < 0.05$ ,  $\Delta R^2 = 0.11$ ; respectively). Moreover, early Non-depressive immature defenses (but not Depressive immature defenses) negatively predicted PACS Resistance at the late phase of treatment, after controlling for early PACS Resistance ( $B = -18.56$ ,  $SE = 5.48$ ,  $t = -3.38$ ,  $p < 0.01$ ,  $\Delta R^2 = 0.23$ ). Finally, early DMRS Neurotic defenses significantly predicted late-phase PACS Avoidance after controlling for early PACS Avoidance ( $B = -0.384$ ,  $SE = 1.81$ ,  $t = -2.13$ ,  $p < 0.05$ ,  $\Delta R^2 = 0.06$ ). Early-phase DMRS Neurotic defenses did not predict late-phase PACS Resistance significantly after controlling for early Resistance ( $B = 5.16$ ,  $SE = 2.69$ ,  $t = 1.92$ ,  $p = ns$ ,  $\Delta R^2 = 0.10$ ).

## DISCUSSION

This pilot study is the first to examine patients' defense mechanisms in relation to their attachment in a clinical sample of depressed patients and also the first to use observer-rated

measures for assessing both defense mechanisms and attachment. Specifically, the present study explored the role of early-phase defense mechanisms in predicting changes in attachment-related characteristics over the course of psychotherapy.

We first hypothesized that patients with higher overall defensive functioning, more Mature defenses, and less Immature defenses would be associated with more attachment security across all sessions. This first hypothesis was not supported. We found that attachment security (PACS Balance) and PACS Avoidance were not related to defenses, but PACS Resistance was positively associated with overall defensive functioning at the early phase of treatment and negatively associated with Depressive Immature defenses in the early phase. PACS Resistance was also negatively associated with Non-depressive immature defenses at the late phase of treatment.

Our second hypothesis was partly supported, in that early-phase Immature and Neurotic defense use was related to late-phase attachment-related characteristics. We found that Immature defenses, and specifically, both Depressive and Non-depressive immature defense use and Neurotic defense use, were associated

with more late-phase PACS Avoidance, even after controlling for early-phase PACS Avoidance levels. Moreover, more Non-depressive defense use during the early phase of therapy predicted less PACS Resistance at the late phase, after controlling for the effect of early PACS Resistance levels.

The positive relationship between overall defensive functioning and preoccupied attachment-related characteristics at the early phase of treatment may be explained by the fact that defensive functioning is usually at its lowest, not at the beginning of psychotherapy but somewhat later in treatment, when the patient is more deeply engaged in working on difficult topics in therapy. Thus, even though attachment-related characteristics may be detected already in early sessions, defense style of the patient when dealing with stressful conditions (or topics) may only be displayed later in therapy or across several sessions. Moreover, we assessed defenses and attachment in only one session transcript from each time point. The last sessions before termination often trigger attachment-related issues and may bring up relational insecurities, which might result in bias toward lower defensive functioning and more insecure attachment characteristics than what the patient would typically display. Although this treatment trial allowed for a pilot comparison between three different psychological treatments, the variability in the number of sessions and length of therapy across the three treatment arms (an average of 21 sessions in CBT, 17 in ST, and 62 in PDT) limited the ability to interpret the temporal relationship between defenses and attachment in our study. Future studies using more sessions per treatment may more reliably assess change processes during the course of treatment.

Another explanation for the relative lack of a cross-sectional relationship between defenses and attachment-related characteristics might also be methodological. Both defense mechanisms and attachment were coded across whole therapy sessions, as they occurred, and summary scores for both constructs were used in the subsequent analyses. It is thus possible that unrelated segments were coded as defense and as attachment episodes, with relatively little overlap, manifesting in divergent results. As such, future studies implementing a more fine-grained approach focusing on identifying episodes when defense and attachment events overlap in the transcripts may more accurately reflect the association between specific defense mechanisms and attachment-related characteristics.

When interpreting the cross-sectional associations between defense use and patient attachment, it is important to also consider that our depressed sample included patients with relatively low defensive functioning and mostly insecure attachment classification ( $n=21$ , 70%), with half of the patients ( $n=15$ , 50%) classified as preoccupied. A predominance of insecure and especially preoccupied attachment in a depressed sample is to be expected, as these have been proposed to relate to psychopathology, and specifically, depression (e.g., Laczkovics et al., 2018; Ciocca et al., 2020); however, the widely varying prevalence of the three attachment styles in our sample limited a fair comparison of patients with different attachment classifications.

It is important to also note that the comparison of the results based on self-report and observer-rated methods is

limited, due to the inherent differences occurring when studying phenomena at least partly outside of awareness, such as defense mechanisms and attachment. Findings obtained by self-report measures may not be directly translatable to results with observer-rated methods, such as the AAI interview and the PACS, and vice versa.

Our results imply a longitudinal relationship between immature and neurotic defense use and attachment security, in which patients who used more immature (both Depressive and Non-depressive) or neurotic defenses early in treatment displayed an increase in PACS Avoidance late in treatment, whereas patients who used more Non-depressive immature defenses early in treatment displayed a decrease in PACS Resistance by the late phase of treatment, independently of their early attachment-related characteristics. That is, in this depressed sample, which had a high prevalence of neurotic and immature defenses at the beginning of treatment, the use of these defenses was related to a reduction in characteristics related to preoccupied attachment and an increase in avoidant attachment-related characteristics over the course of treatment. Previous studies showed that insecure attachment, and especially preoccupied attachment, is associated with more vulnerability to psychopathology and especially depressive symptoms, compared to not only secure but also avoidant attachment (Cole-Detke and Kobak, 1996; Fonagy et al., 1996; Rosenstein and Horowitz, 1996; Borelli et al., 2010; Laczkovics et al., 2018). In our study, increase in avoidance and decrease in preoccupied characteristics thus might be considered as a possible proxy for improvement in attachment-related problems within insecure attachment.

The longitudinal (but not cross-sectional) findings of our pilot study support the theorized connection between defense mechanisms and adult attachment in depressed patients, as well as the few empirical findings that examined this association in non-clinical samples. These studies found that insecure attachment is typically associated with the less adaptive defense mechanisms (e.g., Prunas et al., 2019). Whereas our study did not find the expected relationship between attachment and defense variables in the same session, our findings showed that neurotic and immature defenses are related to *change* and possibly, improvement in insecure attachment over the course of treatment.

## Limitations

Observer-rated codings are a strength but may also limit generalizability outside the session. As mentioned earlier, even though observer ratings may be less biased and better able to assess processes outside of the patient's awareness, observer ratings are limited in that they assess patient functioning in a specific context, that is, a session, which might be affected by various circumstances, including the topic of the session or the level of alliance with the therapist. In a recent meta-analysis by Spruit et al. (2020), the type of instrument used to assess attachment uniquely contributed to the explanation of variance in depression symptoms among adolescents, and studies including self-report tools reported bigger effect sizes compared to those based on interviews and observations.

Although beyond the scope of the current investigation, it would be interesting to examine whether similar patterns between attachment and defenses would emerge if self-report assessments of attachment were used.

Furthermore, the PACS observer-rated coding system at the moment does not include the fourth attachment category Unresolved/disorganized (insecure) attachment. The inclusion of an additional attachment category may differentiate within the large proportion of patients currently classified as Preoccupied in our study.

Another limitation of this study is the relatively small sample size, which allowed for running correlations on the higher order defense and attachment categories, but did not allow for testing regression or mediation models on defense levels or individual defenses. The considerable differences in treatment length, especially the significantly longer psychodynamic therapies, also limit the generalizability of our results regarding temporal changes. Furthermore, we could only report initial comparisons across treatment arms. Given that some of the effect sizes across treatment modalities were large (Avoidance  $\eta^2 = 0.158$ , and Resistance  $\eta^2 = 0.154$ ), further studies with larger sample sizes (powered to assess between-treatment effects) are warranted. Thus, this study can be seen as an exploratory pilot study, and larger-scale studies should examine the exact nature of the relationship between defense mechanisms and attachment security, testing mediation models of attachment, defenses, and psychopathology. A better understanding of the connections between insecure attachment and immature defenses with specific symptom clusters might induce clinicians to assess and intervene both on manifest symptoms and on defensive and relational styles, to help improve severe symptoms in depressed patients during the course of treatment.

Future research examining the association between adult attachment patterns and depressive symptoms should also examine further mediators and moderators. Attachment is likely best conceptualized as one etiological factor that interacts with many contextual and individual factors influencing risk for depression later in life (Cummings and Cicchetti, 1990; Rosen and Rothbaum, 1993; Belsky, 1997; De Wolff and Van Ijzendoorn, 1997; Sroufe, 2005;). As such, the association between adult attachment and depressive symptoms may be mediated by cognitive, behavioral, relational, physiological, and affective processes (e.g., emotion regulation; Malik et al., 2015). Identifying these mechanisms may offer novel targets for the treatment of depression.

Using the PACS system to study patients' attachment in session transcripts illustrates the potential clinical relevance of applying *post hoc* observer-rated measurements within the context of a highly controlled research design, such as an

RCT. These observer codings are not only relevant with regard to the research insights they provide, but also might provide a useful clinical training tool to graduate students, who are interested in learning more about the psychotherapy process and how to attune their interventions to different types of patients. Furthermore, developing simple observer-rated methods that require minimal or no training to use are warranted. These methods could provide tools for clinicians to assess their patients' defensive and attachment-related patterns *in situ*, at any time point during treatment, which has the potential to significantly enhance case formulation and tracking treatment-related changes over time.

## DATA AVAILABILITY STATEMENT

The data analyzed in this study is subject to the following licenses/restrictions: The IRB decision did not allow publishing the dataset. Requests to access these datasets should be directed to vera.bekes@yu.edu.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Research Ethics Committee of the Jewish General Hospital in Montreal, Quebec, Canada (original RCT) and Yeshiva University's IRB (WIRB), New York, NY (secondary data analysis). The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

VB: original idea, study coordination, data analysis, and manuscript write-up. KD: conceptual contribution, study coordination, and manuscript write-up. DS: conceptual contribution, data analysis, and manuscript write-up. AT: conceptual contribution, coding supervision, and manuscript write-up. CS: manuscript write-up. JP: providing data from the original RCT and conceptual contribution. All authors contributed to the article and approved the submitted version.

## SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsyg.2021.648503/full#supplementary-material>

## REFERENCES

- Ainsworth, M. D. S. (1978). The bowlby-ainsworth attachment theory. *Behav. Brain Sci.* 1, 436–438.
- Bakermans-Kranenburg, M. J., and van Ijzendoorn, M. H. (2009). The first 10,000 adult attachment interviews: distributions of adult attachment representations in clinical and non-clinical groups. *Attachment Human Develop.* 11, 223–263. doi: 10.1080/14616730902814762
- Beck, A. T., Steer, R. A., and Brown, G. K. (1996). *Beck depression inventory (BDI-II)* (Vol. 10. p. s15327752jpa6703\_13). Pearson.
- Belsky, J. (1997). Variation in susceptibility to environmental influence: An evolutionary argument. *Psychol. Inq.* 8, 182–186. doi: 10.1207/s15327965pli0803\_3



- Berney, S., de Roten, Y., Beretta, V., and Kramer, U. (2014). Identifying psychotic defenses in a clinical interview. *J. Clin. Psychol.* 70, 428–439. doi: 10.1002/jclp.22087
- Blatt, S. J., and Levy, K. N. (2003). Attachment theory, psychoanalysis, personality development, and psychopathology. *Psychoanal. Inq.* 23, 102–150. doi: 10.1080/07351692309349028
- Borelli, J. L., Crowley, M. J., David, D. H., Sbarra, D. A., Anderson, G. M., and Mayes, L. C. (2010). Attachment and emotion in school-aged children. *Emotion* 10, 475–485. doi: 10.1037/a0018490
- Bowlby, J. (1969). *Attachment and Loss: Vol 1. Attachment*. New York: Basic Books.
- Bowlby, J. (1980). "Attachment and loss: Loss, sadness and depression," in *Attachment and Loss: Vol. 3: Loss, Sadness and Depression*. London: The Hogarth press and the institute of psycho-analysis), 1–462.
- Bowlby, J. (1988). *A Secure Base: Parent-Child Attachment and Healthy Human Development*. New York: Basic Books.
- Brennan, K., Clark, C., and Shaver, P. (1998). "Self-report measures of adult romantic attachment" in *Attachment Theory and Close Relationships*. eds. J. Simpson and W. Rholes (New York: Guilford Press), 46–76.
- Calati, R., Osmano, O., De Ronchi, D., and Serretti, A. (2010). The use of the defence style questionnaire in major depressive and panic disorders: A comprehensive meta-analysis. *Psychol. Psychother. Theory Res. Pract.* 83, 1–3. doi: 10.1348/147608309X464206
- Ciocca, G., Rossi, R., Collazzoni, A., Gorea, F., Vallaj, B., Stratta, P., et al. (2020). The impact of attachment styles and defense mechanisms on psychological distress in a non-clinical young adult sample: A path analysis. *J. Affect. Disord.* 273, 384–390. doi: 10.1016/j.jad.2020.05.014
- Ciocca, G., Collazzoni, A., Limoncin, E., Franchi, C., Mollaioli, D., Di Lorenzo, G., et al. (2017). Defence mechanisms and attachment styles in paranoid ideation evaluated in a sample of non-clinical young adults. *Riv. Psichiatr.* 52, 162–167. doi: 10.1708/2737.27909
- Cole-Detke, H., and Kobak, R. (1996). Attachment processes in eating disorders and depression. *J. Consult. Clin. Psychol.* 64, 282–290. doi: 10.1037/0022-006X.64.2.282
- Cramer, P., and Kelly, F. D. (2010). Attachment style and Defense mechanisms in parents who abuse their children. *J. Nerv. Ment. Dis.* 198, 619–627. doi: 10.1097/NMD.0b013e3181ef3ee1
- Cummings, E. M., and Cicchetti, D. (1990). "Toward a transactional model of relations between attachment and depression," in *Attachment in the Preschool Years: Theory, Research, and Intervention*. eds. M. T. Greenberg, D. Cicchetti and E. M. Cummings (United States: University of Chicago Press), 339–372.
- Dagan, O., Facompré, C., and Bernard, K. (2018). Adult attachment representations and depressive symptoms: A meta-analysis. *J. Affect. Disord.* 236, 274–290. doi: 10.1016/j.jad.2018.04.091
- De Wolff, M. S., and Van Ijzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Dev.* 68, 571–591.
- Di Giuseppe, M., Perry, J. C., Lucchesi, M., Michelini, M., Vitiello, S., Piantanida, A., et al. (2020). Preliminary reliability and validity of the DMRS-SR-30, a novel self-report measure based on the Defense mechanisms rating scales. *Front. Psych.* 11:870. doi: 10.3389/fpsy.2020.00870
- Duschinsky, R. (2020). *Cornerstones of Attachment Research*. United Kingdom: Oxford University Press.
- Dykas, M. J., and Cassidy, J. (2011). Attachment and the processing of social information across the life span: theory and evidence. *Psychol. Bull.* 137, 19–46. doi: 10.1037/a0021367
- Eagle, M. (2013). *Attachment and Psychoanalysis*. New York: Guilford Press.
- Ein-Dor, T., Viglin, D., and Doron, G. (2016). Extending the Transdiagnostic model of attachment and psychopathology. *Front. Psychol.* 7:484. doi: 10.3389/fpsyg.2016.00484
- Feeney, J. A. (2008). "Adult romantic attachment: developments in the study of couple relationships," in *Handbook of Attachment: Theory, Research, and Clinical Applications*. eds. J. Cassidy and P. R. Shaver (New York: Guilford Press), 456–481.
- Fonagy, P., Leigh, T., Steele, M., Steele, H., Kennedy, R., Mattoon, G., et al. (1996). The relation of attachment status, psychiatric classification, and response to psychotherapy. *J. Consult. Clin. Psychol.* 64, 22–31. doi: 10.1037/0022-006X.64.1.22
- Fonagy, P. (2001). *Attachment Theory and Psychoanalysis*. New York: Other Press.
- Groh, A. M., Fearon, R. P., Bakermans-Kranenburg, M. J., van Ijzendoorn, M. H., Steele, R. D., and Roisman, G. I. (2014). The significance of attachment security for children's social competence with peers: A meta-analytic study. *Attachment Human Develop.* 16, 103–136. doi: 10.1080/14616734.2014.883636
- Hames, J. L., Hagan, C. R., and Joiner, T. E. (2013). Interpersonal processes in depression. *Annu. Rev. Clin. Psychol.* 9, 355–377. doi: 10.1146/annurev-clinpsy-050212-185553
- Hamilton, M. (1960). A rating scale for depression. *J. Neurol. Neurosurg. Psychiatry* 23, 56–62. doi: 10.1136/jnnp.23.1.56
- Høglend, P., and Perry, J. C. (1998). Defensive functioning predicts improvement in major depressive episodes. *J. Nerv. Ment. Dis.* 186, 238–243. doi: 10.1097/00005053-199804000-00006
- Holland, A. S., and Roisman, G. I. (2010). Adult attachment security and young adults' dating relationships over time: self-reported, observational, and physiological evidence. *Dev. Psychol.* 46, 552–557. doi: 10.1037/a0018542
- Ivarsson, T., Granqvist, P., Gillberg, C., and Broberg, A. G. (2010). Attachment states of mind in adolescents with obsessive-compulsive disorder and/or depressive disorders: A controlled study. *Eur. Child Adolesc. Psychiatry* 19, 845–853. doi: 10.1007/s00787-010-0120-x
- Kleinbub, J. R., Talia, A., and Palmieri, A. (2020). Physiological synchronization in the clinical process: A research primer. *J. Couns. Psychol.* 67, 420–437. doi: 10.1037/cou0000383
- Kobak, R., and Bosmans, G. (2019). Attachment and psychopathology: A dynamic model of the insecure cycle. *Curr. Opin. Psychol.* 25, 76–80. doi: 10.1016/j.copsyc.2018.02.018
- Lackovics, C., Fonzo, G., Bendixsen, B., Shpigel, E., Lee, I., Skala, K., et al. (2018). Defense mechanism is predicted by attachment and mediates the maladaptive influence of insecure attachment on adolescent mental health. *Curr. Psychol.* 39, 1388–1396. doi: 10.1007/s12144-018-9839-1
- Lakey, B., and Orehek, E. (2011). Relational regulation theory: A new approach to explain the link between perceived social support and mental health. *Psychol. Rev.* 118, 482–495. doi: 10.1037/a0023477
- Luyten, P., Campbell, C., and Fonagy, P. (2021). Rethinking the relationship between attachment and personality disorder. *Curr. Opin. Psychol.* 37, 109–113. doi: 10.1016/j.copsyc.2020.11.003
- Lyons-Ruth, K. (2003). Dissociation and the parent-infant dialogue: A longitudinal perspective From attachment research. *J. Am. Psychoanal. Assoc.* 51, 883–911. doi: 10.1177/00030651030510031501
- Main, M., Goldwyn, R., and Hesse, E. (2002). *Classification and Scoring Systems for the Adult Attachment Interview*. Berkeley, CA: University of California.
- Main, M., Kaplan, N., and Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. *Monogr. Soc. Res. Child Dev.* 50:66. doi: 10.2307/3333827
- Malik, S., Wells, A., and Wittkowski, A. (2015). Emotion regulation as a mediator in the relationship between attachment and depressive symptomatology: A systematic review. *J. Affect. Disord.* 172, 428–444. doi: 10.1016/j.jad.2014.10.007
- Martin-Joy, J. S., Malone, J. C., Cui, X.-J., Johansen, P.-Ø., Hill, K. P., Rahman, M. O., et al. (2017). Development of adaptive coping From mid to late life: A 70-year longitudinal study of Defense maturity and its psychosocial correlates. *J. Nerv. Ment. Dis.* 205, 685–691. doi: 10.1097/NMD.0000000000000711
- Miller-Bottomo, M., Talia, A., Safran, J. D., and Muran, J. C. (2018). Resolving alliance ruptures from an attachment-informed perspective. *Psychoanal. Psychol.* 35, 175–183. doi: 10.1037/pap0000152
- Mullen, L. S., Blanco, C., Vaughan, S. C., Vaughan, R., and Roose, S. P. (1999). Defense mechanisms and personality in depression. *Depress. Anxiety* 10, 168–174. doi: 10.1002/(SICI)1520-6394(1999)10:4<168::AID-DA5>3.0.CO;2-5
- Perry, J. C. (1990). *Defense Mechanism Rating Scales (DMRS). 5th Edn.* Cambridge, MA: Author.
- Perry, J. C., Banon, E., and Bond, M. (2020). Change in defense mechanisms and depression in a pilot study of antidepressive medications plus 20 sessions of psychotherapy for recurrent major depression. *J. Nerv. Ment. Dis.* 208, 261–268. doi: 10.1097/NMD.0000000000001112
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-year outcome. *Am. J. Psychiatry* 169, 916–925. doi: 10.1176/appi.ajp.2012.11091403
- Perry, J. C. (2014). Anomalies and specific functions in the clinical identification of defense mechanisms. *J. Clin. Psychol.* 70, 406–418.
- Perry, J. C., and Bond, M. (2017). Addressing defenses in psychotherapy to improve adaptation. *Psychoanal. Inq.* 37, 153–166. doi: 10.1080/07351690.2017.1285185

- Perry, J. C., Bond, M., and Diep, D. (2021). Change in defense mechanisms and depression in a pilot study of antidepressive medications plus up to 18 months of psychotherapy for recurrent major depression. *J. Nerv. Ment. Dis.* 208, 261–268. doi: 10.1097/nmd.0000000000001112
- Perry, J. C., and Henry, M. (2004). Studying defense mechanisms in psychotherapy using the Defense mechanism rating scales. *Defense Mech. Theor. Res. Clin. Perspec.* 136, 165–186. doi: 10.1016/S0166-4115(04)80034-7
- Prunas, A., Di Pierro, R., Huemer, J., and Tagini, A. (2019). Defense mechanisms, remembered parental caregiving, and adult attachment style. *Psychoanal. Psychol.* 36, 64–72. doi: 10.1037/pap0000158
- Roisman, G. I. (2006). The role of adult attachment security in non-romantic, non-attachment-related first interactions between same-sex strangers. *Attachment Human Develop.* 8, 341–352. doi: 10.1080/14616730601048217
- Rosen, K. S., and Rothbaum, F. (1993). Quality of parental caregiving and security of attachment. *Dev. Psychol.* 29, 358–367. doi: 10.1037/0012-1649.29.2.358
- Rosenstein, D. S., and Horowitz, H. A. (1996). Adolescent attachment and psychopathology. *J. Consult. Clin. Psychol.* 64, 244–253. doi: 10.1037/0022-006X.64.2.244
- Spruit, A., Goos, L., Weenink, N., Rodenburg, R., Niemeyer, H., Stams, G. J., et al. (2020). The relation between attachment and depression in children and adolescents: A multilevel meta-analysis. *Clin. Child. Fam. Psychol. Rev.* 23, 54–69. doi: 10.1007/s10567-019-00299-9
- Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment Human Develop.* 7, 349–367. doi: 10.1080/14616730500365928
- Storch, E. A., Roberti, J. W., and Roth, D. A. (2004). Factor structure, concurrent validity, and internal consistency of the beck depression inventory? Second edition in a sample of college students. *Depress. Anxiety* 19, 187–189. doi: 10.1002/da.20002
- Strauss, B., Altmann, U., Singh, S., Schurig, S., and Kirchmann, H. (2015). The "attachment elephant"- Are different measures of adult attachment related to the same construct? First results of a collaborative study, in *Vortrag, 46th Annual Meeting of the Society for Psychotherapy Research*: June 26, 2015.
- Talia, A., Daniel, S. I., Miller-Bottomo, M., Brambilla, D., Miccoli, D., Safran, J. D., et al. (2014). AAI predicts patients' in-session interpersonal behavior and discourse: A "move to the level of the relation" for attachment-informed psychotherapy research. *Attachment Human Develop.* 16, 192–209. doi: 10.1080/14616734.2013.859161
- Talia, A., Miller-Bottomo, M., and Daniel, S. I. F. (2017). Assessing attachment in psychotherapy: validation of the patient attachment coding system (PACS). *1205 Clin. Psychol. Psychother.* 24, 149–161. doi: 10.1002/cpp.1990
- Talia, A., Miller-Bottomo, M., Katznelson, H., Pedersen, S. H., Steele, H., Schröder, P., et al. (2019a). Mentalizing in the presence of another: measuring reflective functioning and attachment in the therapy process. *Psychother. Res.* 29, 652–665. doi: 10.1080/10503307.2017.1417651
- Talia, A., Miller-Bottomo, M., Wyner, R., Lillengren, P., and Bate, J. (2019b). Patients' adult attachment interview classification and their experience of the therapeutic relationship: are they associated? Research in psychotherapy: psychopathology. *Process and Outcome* 22:361. doi: 10.4081/ripppo.2019.361
- Trower, P., and Chadwick, P. (1995). Pathways to defense of the self: A theory of two types of paranoia. *Clin. Psychol. Sci. Pract.* 2, 263–278.
- Vaillant, G. E. (2020). "Defense Mechanisms" in *Encyclopedia of Personality and Individual Differences*. eds. V. Zeigler-Hill and T. K. Shackelford (New York: Springer International Publishing), 1024–1033.
- Williams, N. L., and Riskind, J. H. (2004). Cognitive vulnerability and attachment. *J. Cogn. Psychother.* 18, 3–6. doi: 10.1891/jcop.18.1.3.28052

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Békés, Aafes-van Doorn, Spina, Talia, Starrs and Perry. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Psychological Adaptive Mechanism Maturity Predicts Good Outcomes in Treatment for Refractory PTSD

Thomas Beresford<sup>1,2\*</sup>, Lawrence Wahlberg<sup>1,2</sup>, Daniel Hipp<sup>1,2</sup> and Patrick J. Ronan<sup>3,4</sup>

<sup>1</sup> Rocky Mountain Regional Veteran Affairs Medical Center, VA Eastern Colorado Health Care System, Aurora, CO, United States, <sup>2</sup> Department of Psychiatry, School of Medicine, University of Colorado, Aurora, CO, United States, <sup>3</sup> Sioux Falls VA Health Care System, Sioux Falls, SD, United States, <sup>4</sup> Sanford School of Medicine, University of South Dakota, Vermillion, SD, United States

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

John H. Porcerelli,  
University of Detroit Mercy,  
United States

Rebecca Ciacchini,  
University of Pisa, Italy

### \*Correspondence:

Thomas Beresford  
thomas.beresford@cuanschutz.edu

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 31 May 2021

**Accepted:** 04 August 2021

**Published:** 30 September 2021

### Citation:

Beresford T, Wahlberg L, Hipp D and  
Ronan PJ (2021) Psychological  
Adaptive Mechanism Maturity  
Predicts Good Outcomes in Treatment  
for Refractory PTSD.  
Front. Psychol. 12:718451.  
doi: 10.3389/fpsyg.2021.718451

**Background:** Post-traumatic Stress Disorder (PTSD) severity follows a bell-shaped curve ranging from mild to severe. Those in the severe range often receive the most intensive treatments, including targeted residential rehabilitation stays. These are expensive and welcome ways to improve their effectiveness. We hypothesized that positive change among subjects treated in a 45-day residential rehabilitation format would be associated with the maturity levels of measurable Psychological Adaptive Mechanisms (PAMs), alternately ego defense mechanisms.

**Methods:** In this association study, adult male patients ( $N = 115$ ) with a history of combat related PTSD treated in a residential rehabilitation setting completed the Defense Style Questionnaire (DSQ) on admission, as well as the Post-Traumatic Stress Disorder Checklist-Military Version (PCL-M) and the Mississippi Scale for Combat-Related Post-traumatic Stress Disorder (M-PTSD) on admission and again at discharge. This allowed prospectively calculated change scores on each of the PTSD measures for each patient. The change scores allowed association testing with averaged admission DSQ scores using Pearson's correlation probability with significance held at  $p < 0.05$ .

**Results:** As hypothesized, averaged individual Mature scores on the DSQ were associated with improved change scores on both the PCL-M ( $p = 0.03$ ) and the M-PTSD ( $p = 0.04$ ). By contrast neither averaged DSQ Neurotic or Immature scores associated significantly with either PTSD scale change scores.

**Conclusion:** These results, the first of their kind to our knowledge, suggest that patients presenting with predominantly Mature level PAMs are likely to benefit from residential rehabilitation treatment of PTSD. By contrast, those presenting with Neurotic or Immature PAMs predominantly are less likely to encounter positive change in this type of treatment. Although residential treatment is often reserved for the most refractory PTSD cases, it appears that those endorsing Mature level PAMs will make use of residential treatment whereas other forms of treatment may be better suited to those with Neurotic and Immature adjustment mechanisms.

**Keywords:** adaptive mechanisms, ego defense, PTSD, refractory, residential treatment

## INTRODUCTION

Post-traumatic stress disorder (PTSD) occurs in response to sustained overwhelming stress. Viewed another way, it may present when stressful experiences occur in such strength and duration as to overwhelm the human Psychological Adaptive Mechanisms (PAMs) deployed to manage the high stress level. An immediate reaction to stress is the perception of a threat to one's conscious equilibrium. This in turn leads to a physiological increase in anxiety. Anxiety may be appreciated either in the form of impending disaster or unrelenting doom. Physiological anxiety may be considered as a signal that the human organism is under stress, although the signal may be an unpleasant one. Severe or repeated stresses, or both, may result in chronic anxiety related to the PTSD symptoms including hypervigilance and quick reactivity to incoming threats, real or perceived.

The study of PAMs (Vaillant, 1993; Beresford, 2012) has established that adaptive behaviors occur on a continuum ranging from Primitive, inflexible responses through a hierarchy culminating in Mature, flexible behaviors. **Figure 1** presents a clinical algorithm that depicts the differences among Vaillant's four domains, moving from Primitive through Mature. Seen in this manner, a PAM model provides considerable individual variation in observed behaviors occurring in response to stressful situations. The severity of PTSD itself can theoretically be moderated by the relative maturity of adaptive behaviors in response to same or similar stresses. Recent studies have advanced the notion that PTSD exists on a continuum, therefore (Shalev et al., 2017).

With this in mind, we asked whether persons in a residential treatment program for PTSD might have different outcomes based on the relative maturity of their PAMs? We hypothesized that residential treatment improvement would be empirically linked to PAM maturity in a positive manner—the more Mature the subject's adaptive mechanisms, the better residential treatment outcome.

## METHODS

### Participants and Procedures

Participants included 115 adult (>18 years) male veterans who completed treatment in the RMRVAMC's Residential PTSD program in 2008. Ongoing PTSD symptoms refractory to standard outpatient treatment and noted to require intensive treatment indicated admission to the residential unit. In all cases, patients admitted for treatment were required to be alcohol and substance free for 30 days prior to admission. This was verified by alcohol and drug screening prior to admission. Data on clinical variables, including PTSD symptom severity, depression, and anxiety were gathered on admission and discharge as part of the program's standard 45-day treatment regimen. Veterans were informed that the data collected would be analyzed to facilitate a quality assurance effort pertaining to the program's treatment effectiveness. The data from clinical intake and discharge testing were entered into a secure electronic database by quality assurance staff. All of the cases were given numerical codes prior to data analysis in order to ensure participants' anonymity and

confidentiality. Last, electronic record reviews were conducted to determine veterans' demographic information.

## Study Measures

### Post-traumatic Stress Disorder

#### *The Mississippi Scale for Combat-Related Post-traumatic Stress Disorder*

The Mississippi Scale for Combat-Related Post-traumatic Stress Disorder (M-PTSD, Keane et al., 1988) is a 35-item self-report measure of combat-related PTSD symptoms in veterans. Responses are given on a five-point Likert-type scale; low scores indicate little or no evidence of PTSD symptoms and higher scores indicate more severe PTSD symptomatology. Change scores indicate movement in symptom endorsement with movement toward lower scores indicating improvement. Item scores are summed and range from 35 to 175, with scores above 107 suggesting that the respondent is experiencing clinically significant symptoms of combat-related PTSD. The M-PTSD is widely used and has been shown to have excellent internal validity and reliability (Keane et al., 1987).

#### *The Post-traumatic Stress Disorder (PTSD) Checklist-Military Version*

The Post-Traumatic Stress Disorder Checklist-Military Version (PCL-M, Hoge et al., 2014) is a 17-item self-administered survey designed to give a preliminary assessment of the presence and severity of PTSD symptoms, as defined by the *Diagnostic and Statistical Manual of Mental Disorders* (APA, 2000, 2013). Respondents are asked to rate the extent to which they experienced PTSD-related symptoms over the past month, using a five-point Likert-type scale, ranging from 1 (not at all) to 5 (extremely). Item scores are summed to provide a total PTSD symptom severity score, with higher scores indicating more severe PTSD. The PCL-M is a widely used measure of combat-related PTSD symptoms and has been shown to have very good internal consistency (Ruggiero et al., 2006) and strong convergent validity, as demonstrated by its positive correlation with other measures of PTSD, such as the M-PTSD ( $r = 0.85-0.93$ ), Impact of Event Scale ( $r = 0.90$ ), and Clinician-Administered PTSD Scale ( $r = 0.79$ ) (Yeager et al., 2007; Keen et al., 2008).

### Psychological Adaptive Mechanisms

#### *Defense Style Questionnaire*

Each subject filled out printed versions of the 40-item Defense Style Questionnaire (DSQ) (Andrews et al., 1993) on admission. The DSQ was designed for recognition and quantitative measurement of ego-defense mechanisms, alternatively known as Psychological Adaptive Mechanisms or PAMs (Beresford, 2012). These refer to observable behavioral strategies by which individuals adapt to the stresses they encounter in their lives (Vaillant et al., 1986). The DSQ contains 40 itemized statements about what a person does in a difficult situation. The subject is asked to endorse each specific statement on a nine-point Likert-type scale. The 40 items reflect 20 adaptive styles, with two items for each on the scale. Each two respective item scores are averaged, resulting in a mean score for each PAM. Based on Vaillant's empirical work (Vaillant, 1985), the DSQ



scores for specific mechanisms are then grouped in an *a priori* fashion into three, rather than Vaillant's four, Domains of psychological adaptive styles: Immature (including Primitive), Neurotic, and Mature. Combined in this way, investigators may then compute category means for each of the three Domains for each study subject.

## Statistical Approach

Tests of association provided the method of assessing the relationship between PAM maturity on admission and improvement each of the two PTSD scales given first at admission and repeated at the end of the 45-day rehabilitation unit stay. For the PTSD scales, computed change scores—admission score minus discharge score—provided a measure of change for each individual. Pearson's *r* coefficient tested the statistical associations between the individual mean admission DSQ scores for each of the three Domains with the change scores recorded for each of the PTSD scale scores, independently. Probability reached significance at the  $p < 0.05$  level.

Calculations of mean scores for both PTSD measures and for each of the three PAM Domains allowed group comparisons among each of these measures for purposes of assessing overall PTSD symptom and DSQ Domain frequencies. Student's *t*-test allowed statistical calculation of mean differences with probability judged significant at  $p < 0.05$ .

## RESULTS

### Demographic Characteristics

Of the 115 veterans for whom data were collected, all were adult ( $>18$  years) male veterans, ranging in age from 27 to 75 ( $M = 54.84$ ,  $SD = 13.12$ ) (Table 1). Ethnic data were available from review of the participants' electronic medical records in 109 of the cases. Ethnic breakdown yielded 58.7% ( $N = 67$ ) of veterans identified as White, 28.4% ( $N = 33$ ) as Hispanic, 9.2% ( $N = 10$ ) as African American, and 2.8% ( $N = 3$ ) as Native American. One veteran identified as multiracial (0.9%) and data were missing for the remaining six participants. Participants' level of education ranged from 9.0 to 20.0 years ( $M = 13.34$ ,  $SD = 1.96$ ).

### PTSD Change Scores by Adaptive Mechanism Domain

For the whole sample, mean calculation yielded a PCLM average score of  $64.9 \pm 19.3$  and  $133.6 \pm 21.0$  average Mississippi score, both signifying PTSD (Table 2). On average, PTSD change scores showed mild improvement—a score decrease of about six points on each scale—between admission and discharge: PCLM at  $-6.1 \pm 13.6$ , and Mississippi at  $-6.4 \pm 21.3$ . The standard deviations suggest wide variations of outcome over the course of the treatment program. A *t*-test of the mean differences between the two measures was non-significant. For clinical perspective, US Department of Veterans Affairs' National Center for PTSD recommends “using 5 points as a minimum threshold for determining whether an individual has responded to treatment and 10 points as a minimum threshold for determining whether the improvement is clinically meaningful.” See [https://ipgap.indiana.edu/documents/ptsd\\_instruments/pcl-manual.pdf](https://ipgap.indiana.edu/documents/ptsd_instruments/pcl-manual.pdf).

**TABLE 1 |** Demographic characteristics.

	<i>N</i>	Mean or %
Gender		
Male	115	100%
Age	111	$54.85 \pm 13.11$
Education	109	$13.34 \pm 1.96$
Race/Ethnicity	109	
Caucasian	64	58.70%
Hispanic	31	28.40%
African American	10	9.20%
Native American	3	2.90%
Biracial/Multiracial	1	0.90%

**TABLE 2 |** Mean difference and association probabilities ( $n = 115$ ).

PAM domains	Mature	Neurotic	Immature
mean frequency vs. mature domain ( <i>t</i> -test)		$p < 0.03$	$p < 0.0001$
Mississippi	$p < 0.03$	ns	ns
PCL-M	$p < 0.04$	ns	ns

Within DSQ domains, and vs. Mississippi and PCL-M.

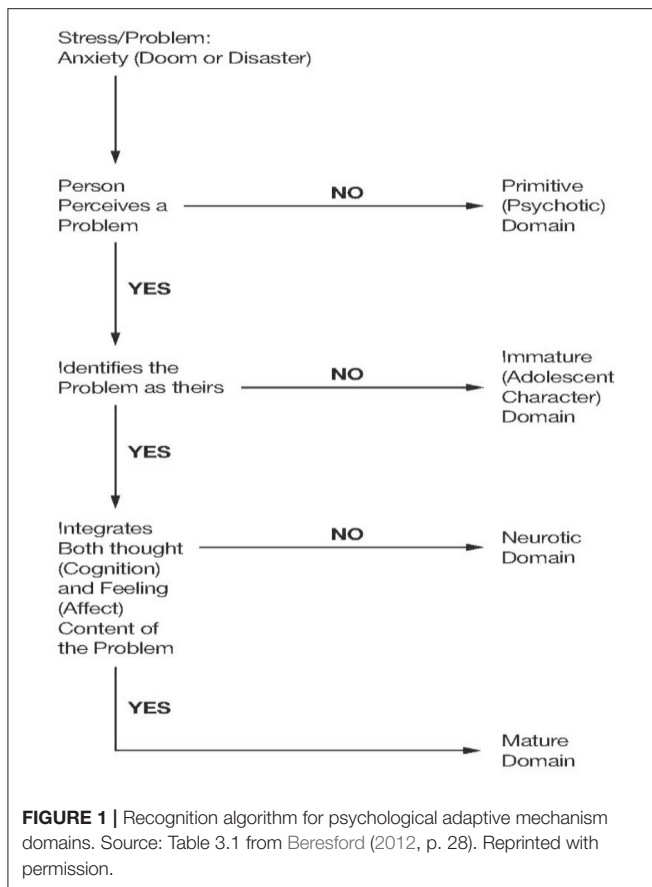
At the time of admission, the average DSQ endorsements on the nine-point scale over the three adaptive Domains, respectively, exhibited much smaller standard deviations: Immature  $5.2 \pm 1.1$ , Neurotic  $5.5 \pm 5.2$ , and Mature  $4.4 \pm 1.3$ . Student's *t*-test of the means revealed differences in endorsement patterns across the Domains. The subjects endorsed Mature adaptive mechanisms significantly less often than they did the Immature ( $p < 0.001$ ) or the Neurotic ( $p < 0.03$ ) PAMs.

To define the relationship, if any, between change scores on the PTSD measures and PAM Domain endorsement we used Pearson's correlation coefficient. Change scores on both the PCLM and the Mississippi scales were positively and significantly associated with Mature Domain endorsement,  $r = 0.20$ ,  $p < 0.03$  and  $r = 0.19$ ,  $p < 0.04$ , respectively. By contrast, there was no statistical correlation between the change scores and either Neurotic or Immature Domain endorsement.

## DISCUSSION

### Conclusion

Psychological Adaptive Mechanism assessment appeared to sort those with improved PTSD vs. those with no improvement, on average, in this association study, validating our hypothesis. This finding raises the possibility that systematic PAM assessment may be useful in directing residential treatment resources to those refractory cases who can benefit most from them. Testing this new hypothesis appears best done in a more complex, prospective design of PTSD treatment outcome, expanding on that used in this instance. To do so, however will likely require further inquiry as described below.



## Limitations

This study assessed a relatively small, exploratory sample of cases admitted after failing outpatient treatment for PTSD. No prior treatment descriptors were available from which to analyze other potential factors contributing to outcome or prognosis. Further study of the question of PAM maturity and PTSD outcome will require larger patient samples and more in-depth collection of pertinent variables than can be offered in the scope of the present study.

The present report describes a consecutive sample of the severe PTSD cases in whom outpatient treatment did not offer sufficient symptom resolution. This was done for quality assurance purposes rather than for broader scientific inquiry. Future studies may include a wider selection of post-combat persons with PTSD, for example, whose treatment spans outpatient as well as residential modalities. Assessment on such instruments as the DSQ can allow a basis for random assignment of outpatient vs. residential treatment.

## Uses

While useful statistically in a sample of this nature, the DSQ in its present form does not offer the clinician a way of characterizing individual persons with greater or lesser endorsement of the three domains mentioned. That is, at present there is no “cut point” measure that can offer the clinician a way of sorting the three

DSQ Domains in real time such that, with confidence, they could be assigned to one or another treatment group.

Others point out that assessing PAMs, mechanisms that reside in the unconscious until needed, cannot be accomplished directly using self-reports. Vaillant's original investigations addressed this by reporting empirical analyses of action vignettes describing observable behaviors in the face of challenging circumstances. Independent raters then classified each vignette as best exemplifying one of the adaptive mechanisms from Vaillant's original glossary (Vaillant, 1971) of 18 separate defense/adaptive mechanisms. The independent ratings allowed assessments of reliability. Perry and colleagues later used the same method, substituting recorded video interviews for the vignettes (Perry and Cooper, 1989).

About the same time, Andrews and colleagues developed the DSQ as a brief, self-report survey that took less time to administer (Andrews et al., 1993). As in the present report, this approach sacrificed individual case characterization for greater ease of data collection in the aggregate. It is important to note that the DSQ, contrasted to our PAM algorithm used for clinical purposes, construes Vaillant's defenses differently: three Domains, with Primitive and Immature combined in the DSQ as compared to the original four Domains in the algorithm.

Perry and colleagues developed the Defense Mechanism Rating Scale (DMRS) as another approach to reliable assessment (Perry, 1990; Di Giuseppe et al., 2020). Di Giuseppe and associates took this further using a Q-sort procedure, the DMRS-Q (Di Giuseppe et al., 2014). The same item endorsement approach characterizes these assessments and results in a complex reading of a panoply of defenses in individual cases.

Two concerns persist, however. First, these approaches still rely on a series of items that may be time-consuming to collect and require available, specialized software for analysis. The results offer spectra of defensive tendencies rather than definitive statements of specific adaptive strategies. Second, the items themselves depend on statements of what a person would or might do in a particular situation; corroboration must come from external sources such as reports from significant others or from a treatment team's serial, multiple observations. As Vaillant has pointed out, what people do generally offers a far more reliable indicator of adaptation than what they say (Vaillant, 1977).

The principal investigator of the present report adopts another approach for clinical use based on the application of traditional medical assessment and diagnosis (Beresford, 2012, 2014). In this method, a clinician trained in PAM recognition takes a clinical history of behavioral adaptations to current stresses in their lives, focusing on actions that can be observed. From these histories, the clinician uses the brief algorithm in **Figure 1** (Beresford, 2014) that sorts PAMs by Domain using Vaillant's original glossary, the simplest available (Vaillant, 1993). From this the knowledgeable clinician can arrive at an accurate formulation of operant PAMs in an individual case. One limitation occurs in the need to train clinicians in this method. Both the method and the algorithm can be taught, however, and potentially offer more efficiently gathered, useful evidence for clinical decision-making.

This study offers the hope for more directed, effective treatment for patients suffering from the more refractory forms

of PTSD. We have shown that those who endorse Mature PAMs more frequently responded to the residential treatment whereas those endorsing Immature, or Neurotic PAMs received little benefit from such treatment. Explanations of the positive effects of the Mature PAMs in this setting, vs. the null effect of the other two Domains, deserve further investigation. For now, in reference to the distinctions presented in **Figure 1**, when faced with a stress, humans are at their most adaptable when they can (1) recognize a problem, (2) note it as one over which they have control, (3) identify the painful thoughts and the painful feelings it brings, and (4) integrate both feelings and thoughts in the interest of a flexible solution. By contrast, ignoring a problem, ascribing it to others, and finding an inability to reconcile the associated painful thoughts and feelings, all limit the options available for its resolution.

In the context of PTSD treatment assignments, further study may also determine whether this correlation between PAM maturity and PTSD improvement can be used as an *a priori* screen to help determine a treatment plan. It may be, for example, that growth toward, or reconstitution of, Mature adaptive mechanisms is facilitated by PTSD treatment, even in refractory cases. These, or other possible approaches, for example an artificial intelligence (AI) application of the Q-sort/DMRS process, will require further development and testing in order to arrive at a workable mechanism for assignment

of appropriate patients to the more resource intensive PTSD treatment modalities.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

## FUNDING

All the authors receive support for their work from the Department of Veterans Affairs; TB and PR receive partial support from Department of Veterans Affairs Merit Review Award, I01BX004712.

## ACKNOWLEDGMENTS

We thank our Quality Assurance staff who assisted in data collection.

## REFERENCES

- Andrews, G., Singh, M., and Bond, M. (1993). The defense style questionnaire. *J. Nerv. Ment. Dis.* 181, 246–256. doi: 10.1097/00005053-199304000-00006
- APA (2000). *Diagnostic and Statistical Manual of Mental Disorders, 4th Edn.* Text Revision. Washington, DC: American Psychiatric Association.
- APA (2013). *Diagnostic and Statistical Manual of Mental Disorders, 5th Edn.* Washington, DC: American Psychiatric Association.
- Beresford, M. D. (2012). *Psychological Adaptive Mechanisms: Ego Defense Recognition in Practice and Research*. New York, NY: Oxford University Press.
- Beresford, T. P. (2014). Clinical assessment of psychological adaptive mechanisms in medical settings. *J. Clin. Psychol.* 70, 466–477. doi: 10.1002/jclp.22090
- Di Giuseppe, M., Perry, J. C., Lucchesi, M., Michelini, M., Vitiello, S., Piantanida, A., et al. (2020). Preliminary reliability and validity of the DMRS-SR-30, a novel self-report measure based on the defense mechanisms rating scales. *Front. Psychiatry* 11:870. doi: 10.3389/fpsy.2020.00870
- Di Giuseppe, M., Perry, J. C., Petraglia, J., Janzen, J., and Lingardi, V. (2014). Development of a Q-sort version of the Defense Mechanism Rating Scales (DMRS-Q) for clinical use. *J. Clin. Psychol.* 70, 452–465. doi: 10.1002/jclp.22089
- Hoge, C. W., Riviere, L. A., Wilk, J. E., Herrell, R. K., and Weathers, F. W. (2014). The prevalence of post-traumatic stress disorder (PTSD) in US combat soldiers: a head-to-head comparison of DSM-5 versus DSM-IV-TR symptom criteria with the PTSD checklist. *Lancet Psychiatry* 1, 269–277. doi: 10.1016/S2215-0366(14)70235-4
- Keane, T. M., Caddell, J. M., and Taylor, K. L. (1988). Mississippi scale for combat-related posttraumatic stress disorder: three studies in reliability and validity. *J. Consult. Clin. Psychol.* 56, 85–90. doi: 10.1037/0022-006X.56.1.85
- Keane, T. M., Wolfe, J., and Taylor, K. L. (1987). Post-traumatic stress disorder: evidence for diagnostic validity and methods of psychological assessment. *J. Clin. Psychol.* 43, 32–43. doi: 10.1002/1097-4679(198701)43:1<32::AIDJCLP2270430106>3.0.CO;2-X
- Keen, S. M., Kutter, C. J., Niles, B. L., and Krinsley, K. E. (2008). Psychometric properties of PTSD Checklist in sample of male veterans. *J. Rehabil. Res. Dev.* 45, 465–474. doi: 10.1682/JRRD.2007.09.0138
- Perry, J. C. (1990). *The Defense Mechanism Rating Scales Manual, 5th Edn.* Cambridge, MA: Copyright by Perry, J.C. MD.
- Perry, J. C., and Cooper, S. H. (1989). An empirical study of defense mechanisms. I. Clinical interview and life vignette ratings. *Arch. Gen. Psychiatry* 46, 444–452. doi: 10.1001/archpsyc.1989.01810050058010
- Ruggiero, K. J., Rheingold, A. A., Resnick, H. S., Kilpatrick, D. G., and Galea, S. (2006). Comparison of two widely used PTSD-screening instruments: implications for public mental health planning. *J. Trauma. Stress* 19, 699–707. doi: 10.1002/jts.20141
- Shalev, A., Liberzon, I., and Marmar, C. (2017). Post-traumatic stress disorder. *N. Engl. J. Med.* 376, 2459–2469. doi: 10.1056/NEJMr1612499
- Vaillant, G. E. (1971). Theoretical hierarchy of adaptive ego mechanisms: a 30-year follow-up of 30 men selected for psychological health. *Arch. Gen. Psychiatry* 24, 107–118. doi: 10.1001/archpsyc.1971.01750080011003
- Vaillant, G. E. (1977). *Adaptation To Life*. Cambridge, MA: Harvard University Press.
- Vaillant, G. E. (1985). An empirically derived hierarchy of adaptive mechanisms and its usefulness as a potential diagnostic axis. *Acta Psychiatr. Scand. Suppl.* 319, 171–180. doi: 10.1111/j.1600-0447.1985.tb08533.x
- Vaillant, G. E. (1993). *This Wisdom of the Ego*. Cambridge, MA: Harvard University Press.
- Vaillant, G. E., Bond, M., and Vaillant, C. O. (1986). An empirically validated hierarchy of defense mechanisms. *Arch. Gen. Psychiatry* 43, 786–794. doi: 10.1001/archpsyc.1986.01800080072010
- Yeager, D. E., Magruder, K. M., Knapp, R. G., Nicholas, J. S., and Frueh, B. C. (2007). Performance characteristics of the posttraumatic stress disorder checklist and SPAN in Veterans Affairs primary care settings. *Gen. Hosp. Psychiatry* 29, 294–301. doi: 10.1016/j.genhosppsych.2007.03.004

**Author Disclaimer:** The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of

the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

*Copyright © 2021 Beresford, Wahlberg, Hipp and Ronan. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.*





# The Hierarchy of Defense Mechanisms: Assessing Defensive Functioning With the Defense Mechanisms Rating Scales Q-Sort

Mariagrazia Di Giuseppe<sup>1\*</sup> and J. Christopher Perry<sup>2</sup>

<sup>1</sup> Department of Surgical, Medical and Molecular Pathology, Critical and Care Medicine, University of Pisa, Pisa, Italy, <sup>2</sup> McGill University Department of Psychiatry at the Institute of Community and Family Psychiatry, Jewish General Hospital, Montreal, QC, Canada

## OPEN ACCESS

### Edited by:

Annalisa Tanzilli,  
Sapienza University of Rome, Italy

### Reviewed by:

Attà Negri,  
University of Bergamo, Italy  
Laura Muzi,  
University of Perugia, Italy  
Emanuela Brusadelli,  
University of Wollongong, Australia

### \*Correspondence:

Mariagrazia Di Giuseppe  
mariagrazia.digiuseppe@gmail.com

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 31 May 2021

**Accepted:** 24 September 2021

**Published:** 15 October 2021

### Citation:

Di Giuseppe M and Perry JC  
(2021) The Hierarchy of Defense  
Mechanisms: Assessing Defensive  
Functioning With the Defense  
Mechanisms Rating Scales Q-Sort.  
Front. Psychol. 12:718440.  
doi: 10.3389/fpsyg.2021.718440

The psychodynamic concept of defense mechanisms is nowadays considered by professionals with various theoretical orientations of great importance in the understanding of human development and psychological functioning. More than half century of empirical research has demonstrated the impact of defensive functioning in psychological well-being, personality organization and treatment process-outcome. Despite the availability of a large number of measures for their evaluation, only a few instruments assess the whole hierarchy of defenses, based on the Defense Mechanisms Rating Scales (DMRS), which arguably offers an observer-rated gold standard of assessment. The present article illustrates the theoretical and methodological background of the DMRS-Q, the Q-sort version of the DMRS for clinical use. Starting from the definition and function of the 30 defense mechanisms included in the hierarchy, we extracted 150 items that captured a full range of defensive manifestations according to the DMRS theory. The DMRS-Q set is described in this paper with reference to the DMRS manual. Directions are also provided for using the DMRS-Q online software for the free and unlimited coding of defense mechanisms. After each coding, the DMRS-Q software provides a report including qualitative and quantitative scores reflecting the individual's defensive functioning. Qualitative scores are displayed as the *Defensive Profile Narratives* (DPN), while quantitative scores are reported as Overall Defensive Functioning (ODF), defensive categories, defense levels, and individual defense mechanisms. Syntax for the scoring is displayed in the results and a clinical vignette of a psychotherapy session coded with the DMRS-Q is provided. The DMRS-Q is an easy-to-use, free, computerized measure that can help clinicians in monitoring changes in defense mechanisms, addressing therapeutic intervention, fostering symptoms decreasing and therapeutic alliance. Moreover, the DMRS-Q might be a valid tool for teaching the hierarchy of defense mechanisms and increase the observer-rated assessment of this construct in several research fields.

**Keywords:** defense mechanism, DMRS, Q-sort, assessment, personality, emotion regulation, psychotherapy, process-outcome

## INTRODUCTION

The psychodynamic concept of defense mechanisms, defined as automatic psychological mechanisms that mediate the individual's reaction to emotional conflicts and to internal or external stressors (American Psychiatric Association, 2013; Perry, 2014), has been extensively studied since its first appearance in Freud's psychoanalytic theory (Freud, 1894). After a century of clinical and theoretical work, and a quarter century of empirical research, an assessment of defense mechanisms was included in an Axis for the assessment of defense mechanisms in the DSM-IV (Cramer, 1987, 2015; Kernberg, 1988; American Psychiatric Association, 1994; Hoffman et al., 2016). The main contribution to the gold-standard approach to the study of defense mechanisms has been provided by the theory of defensive adaptiveness and the hierarchical organization of defense mechanisms proposed by Vaillant (1971, 1992) and operationalized by Perry (1990). In his extensive and valuable work, Vaillant described excellent clinical vignettes of defenses as they operate in real life – both in momentary examples, and those that recur over time – and integrated findings from several longitudinal studies demonstrating the evolution of defense mechanisms over the life cycle. With the development of the *Defense Mechanisms Rating Scales* (DMRS), Perry has provided a comprehensive, accurate and valid observer-rated methodology for assessing individual's defensive functioning based on the whole hierarchy of defense mechanisms (Perry and Henry, 2004). In recent years, the authors of this paper have adapted the DMRS theory to additional assessment methods, by developing both the Q-sort version (DMRS-Q; Di Giuseppe et al., 2014) and the self-report version (DMRS-SR-30; Di Giuseppe et al., 2020a) of the DMRS. Our main aim was to provide new measures based on the DMRS theory of defense mechanisms applicable in different clinical or research contexts, without the requirement of training for their valid and reliable use (Békés et al., 2021; Conversano and Di Giuseppe, 2021). In this article, we describe theoretical background, coding procedure, scoring system and results interpretation of the DMRS-Q, a computerized observer-rated Q-sort for the assessment of defense mechanisms in clinical setting.

## The Hierarchy of Defense Mechanisms

All DMRS-based measures refer to the generally accepted hierarchy of defense mechanisms (American Psychiatric Association, 1994, 2013; Hoglend and Perry, 1998; Lingiardi et al., 1999; Drapeau et al., 2003; Hilsenroth et al., 2003; Perry, 2014; Di Giuseppe et al., 2019, 2021; Tanzilli et al., 2021). A graphical summary of the hierarchy of defense mechanisms is shown in **Figure 1**.

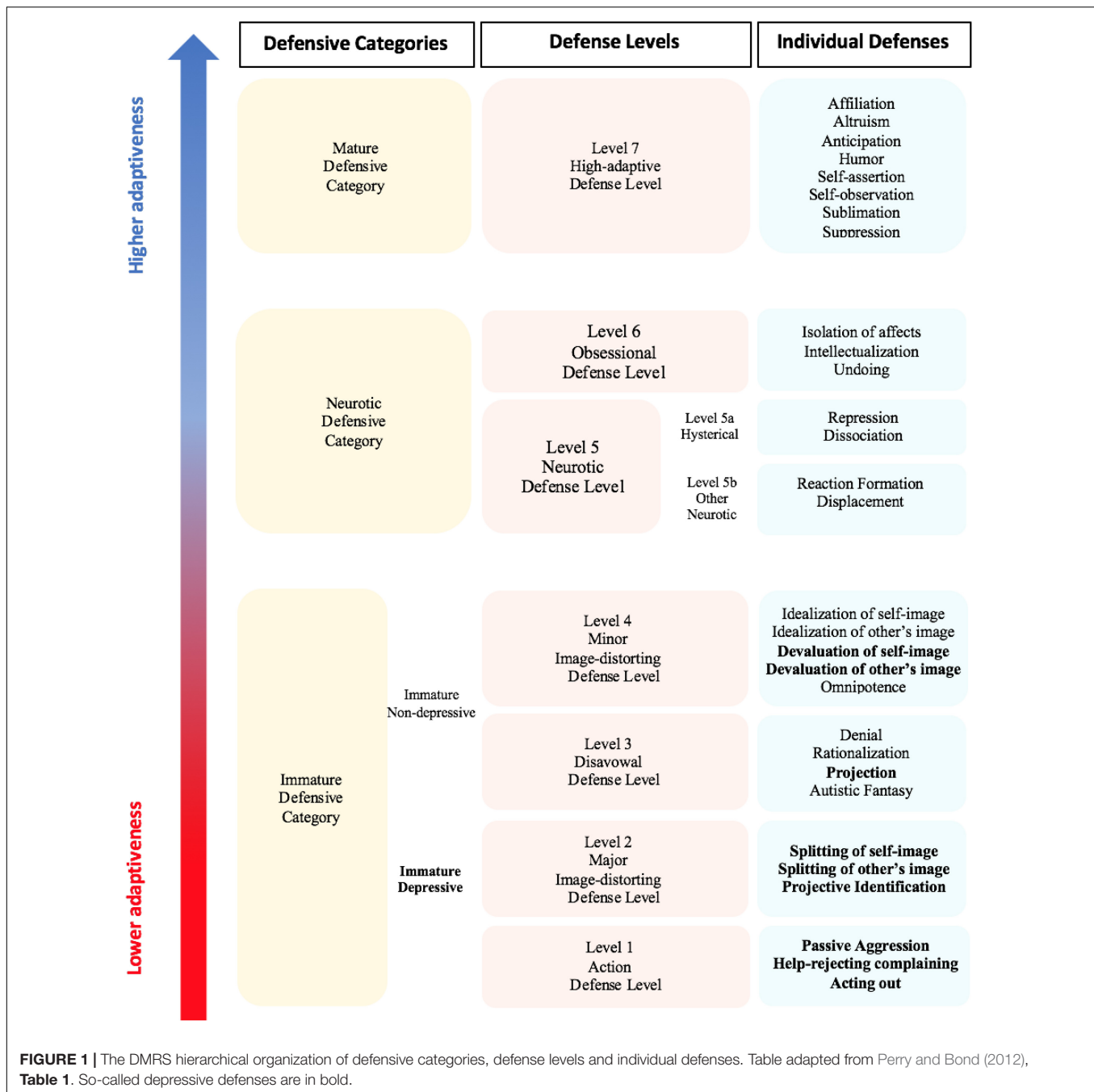
This hierarchy describes 30 defense mechanisms organized into seven defense levels, each of which has some general functions that the constituent defenses share in how they protect the individual from anxiety, or a sense of threat from internal or external sources, or conflicts.

In addition to the seven defense levels, there is level 0, describing defensive dysregulation, the so-called Psychotic Defenses Level. Defenses belonging to this defense level are

not included in the DMRS manual although they can be assessed using another DMRS-derived measure, the Psychotic-DMRS (P-DMRS; Berney et al., 2014; Boldrini et al., 2020). Defense levels can be further organized into three defensive categories of relatively similar degree of maturity, often used for describing in summary the individual defensive functioning. The three defensive categories, from the least to the most adaptive, respectively, include immature, neurotic and mature defenses. The immature defensive category is the most populated and includes all defenses belonging to action, disavowal and both image distortion defense levels. This defensive category can be further divided into two subcategories. The first is named depressive defenses, including acting out, help-rejecting complaining, passive aggression, splitting of self-image, splitting of other's image, projective identification, projection, devaluation of self-image, and devaluation of other's image. The second subcategory is the non-depressive defenses, including denial, rationalization, autistic fantasy, omnipotence, idealization of self-image, and idealization of other's image. Greater reliance on immature defenses informs on the subject's defensive vulnerability and his or her scarce awareness of both emotional and cognitive sides of internal conflicts or external stressful situations. These defenses inhibit awareness of unacceptable ideas, feelings, and actions, bypassing them to protect oneself from feeling threatened.

The neurotic defensive category represents the middle-range of adaptiveness and includes all defenses belonging to neurotic and obsessional defense levels. High use of these middle-range defenses describes the individual's ability to deal with either the emotional or the cognitive side of internal or external stressors, which can be handled one at a time. These defenses help the individual in keeping out of awareness parts of the conflict (e.g., associated feelings, desires and thoughts), which would generate intolerable anxiety if perceived as an integrated psychological experience. Finally, the mature defensive category corresponds to the high-adaptive defense level and includes the most adaptive defense mechanisms, which overlap with what are called positive coping strategies in other theoretical frameworks. High use of mature defenses fosters the integrated and partially aware experience of feelings, ideas, desires and thoughts associated to an internal conflict or external stressful situation. These defenses help the individual in dealing with his or her psychologically stressful experiences by integrating affects with ideas, therefore optimizing and possibly resolving the internal or external cause of distress (Vaillant, 1977, 1992). This tripartite model of DMRS hierarchical organization of defenses is often used for summarizing the defensive maturity of an individual by looking at the proportional scores obtained in each of the three defensive categories.

For a deeper understanding of individual's defensive functioning, the seven defense levels can be used as the generally accepted hierarchical organization of defense mechanisms (American Psychiatric Association, 1994). Defense levels differentiate one from another for their defensive function and level of adaptiveness, which are described in **Table 1**. Their assessment may inform about the most used defensive patterns, which reveal what defensive function is more frequently



activated in response to internal conflicts or external stressors. For example, two individuals who use 40% of defenses belonging to the neurotic defensive category can have a very different defensive profile depending on whether they use a more obsessional or neurotic defense level. Similarly, high use of action and major image-distorting defense levels is very different from high use of disavowal and minor image-distorting defense levels, although they are all included in the immature defensive category. Furthermore, these differentiations among individuals' defensive functioning are extremely evident when we look at the deepest level of investigation, the individual's use of 30 individual defense mechanisms.

Training individuals to rate defenses reliably is time consuming, as are making the ratings themselves, both of which limit the use of such ratings in clinical setting. While the DMRS is necessary for some types of research, we developed the DMRS-Q to meet the needs of a quicker, more user-friendly computerized tool for the assessment of defense mechanisms in clinical setting (Di Giuseppe et al., 2020b,c).

The present article aims to illustrate the DMRS-Q and its assessment and scoring methodology. We will provide the definition and function of 30 defense mechanisms as reported in the DMRS manual (Perry, 1990) and present the five DMRS-Q items corresponding to each defense mechanisms. Moreover, we

**TABLE 1 |** The defensive function of the seven hierarchically ordered defense levels.

Level 7: High adaptive defenses	High adaptive defenses are the individual's most adaptive ways of handling stressors and are often considered synonymous of positive coping. Internal or external stressors are fully perceived without distortion and the need to adapt to them is fully appropriated to oneself. The individual attempts to maximize the positive expression and gratification of his or her own motives, acknowledging limitations of the self and recurring to external sources of help when available.
Level 6: Obsessional defenses	Obsessional defenses protect the individual from the awareness of unacceptable or threatening feelings associated with an idea (e.g., wish, fear, experience, memory, or thought) by keeping distance from emotions, while remaining aware of the idea itself. As a result, feelings (emotional component) are largely kept out of awareness and indirectly expressed throughout minimization, generalization, or a series of contradictory statements.
Level 5: Neurotic defenses	Neurotic defenses reflect the experience that awareness of a wish, thought, or motive is unacceptable or threatening and must be kept out of awareness. The individual can experience feelings associated to an internal conflict or external stressor as long as full awareness of the idea (cognitive component) is blocked and expressed indirectly by way of a series of anomalous clues. Neurotic defenses are the most protean of all defense mechanisms, in that there are a seemingly infinite variety of ways to give partial expression of repressed ideas.
Level 4: Minor image-distorting defenses	Minor image-distorting defenses protect the individual from experiences that affect one's self esteem, such as failure, criticism, or disappointment that cause feelings of weakness, powerlessness, or shame. These defenses temporarily prop up self-esteem and strengthen self-image by using image-distortion to dismiss any threatening aspect of the stressor. These distortions are not all encompassing like those of the major image-distorting defenses. Nonetheless, they don't actually improve adaptation to the stressors.
Level 3: Disavowal defenses and autistic fantasy	Disavowal defenses reflect the perception of the individual that some aspects of internal experience external reality are unacceptable. By refusing to acknowledge these aspects of experience, the individual justifies not appropriating a problem as his or her own. The individual can further misattribute the problem to another source or reason, further covering up internal reality. This results in a failure both to acknowledge one's own role in the origins of a problem and to consider potential ways of handling the immediate problem, given the assertion that one has no such role.
Level 2: Major image-distorting defenses	Major image-distorting defenses protect the individual from intolerable anxiety when self or object representations of conflicting meaning are triggered. The individual keeps positive and negative representations separated and simplify the perception of self and others as either all good, powerful, and invulnerable or all bad, unworthy, powerless, and vulnerable. The individual then treats these distorted images in ways consistent with this perception. These defenses protect the self from the anxiety attending a sense of imminent threat of being punished, physically or psychologically abused, abandoned, or even killed. However, oversimplifying self or others and reacting accordingly produces the negative consequent that others withdraw or react negatively.
Level 1: Action defenses	Action defenses reflect the perception of the individual that the immediate source of stress or conflict is external and that the experience is intolerable. The individual's perception overlooks the internal sources of the distress, such as personal unacceptability of or limitations in awareness of one's own wishes, fears, and inhibitions. Unable to contain attendant distress, these defenses operate to engage, manipulate, or counterattack the apparent external source. These defenses lead the individual to impulsive action on the environment or oneself, thereby releasing tension, gratifying wishes, and/or avoiding fears. However, this is done without anticipating negative consequences.

*Extensive description of defense levels published in Perry (2014).*

will provide instructions for coding defenses with the DMRS-Q online software<sup>1</sup> and syntax for the scoring. Finally, we will provide directions for data interpretations of the DMRS-Q qualitative and quantitative output.

## METHODS

### Measure Development

Based on the DMRS definition and function, and discriminations from near-neighbor defenses, we developed a pool of 300 items – 10 statements for each defense mechanism – that refer to verbal and nonverbal expressions, distorted perceptions, personal mental states, relational dynamics, and way of coping that emerge on occasions when the subject experiences internal or external stress or conflict. A group of researchers trained on the DMRS was asked to indicate the five items for each defense mechanism that best captured a full range of manifestations according to the DMRS criteria. Following reviewers' comments and basing on item's clarity, simplicity, and non-redundancy, we selected the best five items for each defense mechanisms obtaining a final set of 150 items that constitute the DMRS-Q. We decided to select the DMRS-Q item pool, based on

the coverage of manifestations of each DMRS defense, rather than on maximizing internal consistency of the items to overall defense score. This methodological approach was based on author's hypothesis that reproducing the widely validated DMRS in an easy-to-use Q-sort version would guarantee strong psychometric properties because of the gold-standard theoretical background. Although we are aware that this is far from the usual methodological approach applied for the development of new psychometric tools, our preliminary analyses on validity and reliability of the DMRS-Q (Di Giuseppe et al., 2014; Békés et al., 2021; Tanzilli et al., 2021) confirmed our hypothesis on the importance of a strong theoretical base for a measure with statistically relevant properties.

### Definitions and Function of Defense Mechanisms and Defense Mechanisms Rating Scales Q-Sort Items

The DMRS-Q provides five items for each of the 30 defense mechanisms included in the hierarchy. A comprehensive overview of definitions, functions and DMRS-Q items is provided below. **Tables 2–8** display DMRS-Q items for each defense included in each defense level; they are reported in descending order of defensive maturity. The following descriptions of the individual defenses are reproduced or adapted from the DMRS manual (Perry, 1990), with permission of the

<sup>1</sup><https://webapp.dmrs-q.com/login>



author, JP to provide the definitional basis for the DMRS-Q items in **Tables 2–8**.

### High-Adaptive Defense Level: Affiliation

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by turning to others for help or support. By affiliating with others, the individual can express him or herself, confide problems, and feel less alone or isolated with a conflict or problem. This may also result in receiving advice or concrete help from the “auxiliary ego” that improves the individual’s ability to cope. Confiding leads to an increase in the individual’s coping capacity as the other individual supplies emotional validation and support. Affiliation does not include trying to make someone else responsible for dealing with one’s own problems, nor does it imply coercing someone to help, or acting helpless to elicit help. Affiliation is not shown simply by belonging to an organization (e.g., church, social club, Alcoholics Anonymous) or by seeing a counselor or therapist. Rather it is demonstrated by the give and take around conflicts and problems that occurs in the context of belonging to the organization, or by the confiding with others.

#### Function

Affiliation allies the individual’s emotional attachment needs with the wish to cope effectively with internal conflict or external stressors. The ability to cope is enhanced by seeking support from others, while attachment needs are also satisfied. Others may enhance the individual’s repertoire of ego skills by help with advice, modeling, planning, judgment, role playing, practicing, etc. Usually this is accompanied by a reduction in subjective tension achieved through expressing one’s feelings and sharing one’s conflicts.

### High-Adaptive Defense Level: Altruism

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by dedication to fulfilling the needs of others, in part as a way of fulfilling his or her own needs. By using altruism, the individual receives some partial gratification either vicariously or as a response from others. The subject is usually aware to some extent that his or her own needs or feelings underlie altruistic actions. There may also be a direct reward or overt self-interested reason for the subject’s altruistic actions. To rate altruism present, there must be a clear, demonstrable, functional relationship between the individual’s feelings and the altruistic response.

#### Function

Altruism gratifies social and attachment needs while dealing with emotional conflict through helping others. In many cases, the conflict revolves around distress over past examples of confronting stressful situations for which one needed help that was somehow unavailable or insufficient. Altruism channels affects, such as anger, and experiences, such as powerlessness, into socially helpful responses that also enhance the individual’s sense of mastery over the past.

### High-Adaptive Defense Level: Anticipation

#### Definition

The individual mitigates emotional conflicts, or internal or external stressors, by not only considering realistic, alternative solutions and anticipating emotional reactions to future problems, but experiencing the future distress by mentally bringing the distressing ideas and affects together. This rehearsal allows the individual to prepare a better adaptive response to the anticipated conflict or stressor.

#### Function

Using anticipation allows the individual to mitigate the effects of future stressors or conflicts. It requires being able to tolerate the anxiety attendant to imagining how a future situation may be distressing. By affective rehearsal (e.g., ‘how will I feel when this occurs?’) and planning future responses, the subject decreases distressing aspects of the future stressor. Anticipation also increases the likelihood of positive external outcomes and more positive emotional responses.

### High-Adaptive Defense Level: Humor

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by emphasizing the amusing or ironic aspects of the conflict or stressor. Humor tends to relieve the tension around conflict in a way that allows everyone to share in it, rather than being at one person’s expense, as in derisive or cutting remarks. An element of self-observation or truth is often involved.

#### Function

Humor allows some expression of affects and wishes that are involved with conflict or stressor. Whenever conflict or external stressors block full expression of the affects or satisfaction of wishes, humor allows some symbolic expression of them and of the source of the conflict. The frustration emanating from the conflict is transiently relieved in a way that both self and others can smile or laugh at. This is especially evident around issues of the human condition in which certain stressors are inescapable.

### High-Adaptive Defense Level: Self-Assertion

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by expressing one’s feelings and thoughts directly to achieve goals. Self-assertion is not coercive or indirect and manipulative. The goal or purpose of the self-assertive behavior is usually made clear to all parties affected by it.

#### Function

Self-assertion deals with emotional conflict through the direct expression of one’s feelings or wishes, and thereby relieves the anxiety or distress that occurs whenever internal or external countervailing forces prevent expression. Self-assertion does not require that the individual get his or her own way to be successful as a defense or adaptive response. Rather, it is also emotionally useful because it allows the individual to function (1) without the anxiety or tension that builds whenever feelings and wishes are unexpressed and (2) without a sense of shame or guilt for not

speaking up for oneself in emotionally conflictual situations. The emotional consequences are worse when self-assertion is blocked by internal prohibitions, rather than by external factors alone, such as by a domineering person in authority.

### High-Adaptive Defense Level: Self-Observation

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by reflecting on his or her own thoughts, feelings, motivation, and behavior. The person can “see himself as others see him” in interpersonal situations, and as a result is better able to understand other people’s reactions to him or her. The defense is not synonymous with simply making observations or talking about oneself.

#### Function

This defense allows the person to make the best adaptation to the demands of external reality based on having an accurate view of one’s own affects, wishes and impulses, and behavior. While self-observation does not change one *per se*, it is a precursor for seeking better adaptations of internal states to external reality. This defense allows the individual to grow and adapt better as he or she deals with stress.

### High-Adaptive Defense Level: Sublimation

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by channeling rather than inhibiting potentially maladaptive feelings or impulses into socially acceptable behavior. This defense is to be rated present only when a strong functional relationship can be demonstrated between the feelings and response pattern. Classic examples of the use of sublimation are sports and games used to channel angry impulses, or artistic creation that expresses conflicted feelings.

#### Function

Sublimation allows the expression of wishes, impulses, or affects that the subject voluntarily inhibits because of their potentially negative social repercussions. The subject channels them instead into socially acceptable expression. The original aims and objects of the impulses, wishes, and affects are often modified considerably, resulting in a creative activity or product. For example, a hostile-competitive urge may be channeled into competitive sports or work, or sexual impulses may be expressed through creative dance or art. The result of sublimation is that the original impulses, etc. are allowed some expression while the resulting activity or product may also bring some positive social approval or reward.

### High-Adaptive Defense Level: Suppression

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by voluntarily avoiding thinking about disturbing problems, wishes, feelings, or experiences temporarily. This may entail putting things out of one’s mind until the right time to deal with them: it is postponing not procrastinating. Suppression may also entail avoiding thinking about something at the time because it would distract from engaging in another

activity which one must do (e.g., not dwelling on tangential problems in order to deal with one pressing problem). The individual can call the suppressed material back to conscious attention readily, since it is not forgotten.

#### Function

Suppression keeps both the idea and affect associated with a stressor out of awareness in the service of attending to something else; however, suppressed material may be voluntarily brought back into full awareness. Distressing feelings are acknowledged but dealing with them is postponed until the subject feels more able or the timing is more appropriate. Neurotic anxiety is minimized, since the material is not repressed, although anticipatory anxiety may still be present until the stressor is dealt with.

### Obsessional Defense Level: Isolation of Affects

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by being unable to experience simultaneously the cognitive and affective components of an experience, because the affect is kept from consciousness. In the defense of isolation, the subject loses touch with the feelings associated with a given idea (e.g., a traumatic event) while remaining aware of the cognitive elements of it (e.g., descriptive details). Only the affect is lost or detached while the idea is conscious. It is the converse of repression, where the affect is retained but the idea is detached and unrecognized. Sometimes the affect can be detached temporarily from its associated idea. The affect is felt later without association to the original experience and idea. Instead, there is an intervening neutral interval between cognizance of the idea and experience of the associated affects.

#### Function

Individuals who feel threatened by or anxious over the conscious experience of feelings can still deal with the related ideas and events comfortably when their associated affects are separated and kept out of awareness. Very often the isolated affects are associated with anxiety, shame, or guilt that would emerge if experienced directly. The tradeoff for avoiding the associated anxiety, shame, or guilt is that the individual misses out on experiencing the feelings in a way that adds evaluative information and which may be useful in making choices.

### Obsessional Defense Level: Intellectualization

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by the excessive use of abstract thinking to avoid disturbing feelings.

#### Function

Intellectualization is a defense against affects or impulses in which the idea representing the affect or impulse is kept conscious and expressed as a generalization, thereby detaching or distancing the subject from the affect or impulse itself. The felt quality of emotions is lost, as is the urge in any impulse. The cognitive elements remain conscious, although in generalized or impersonal terms. The subject commonly refers to his or

**TABLE 2 |** High-adaptive defense level: Definition, function and DMRS-Q items of defenses affiliation, altruism, anticipation, humor, self-assertion, self-observation, sublimation, and suppression.

Defense mechanism	DMRS-Q items
Affiliation	<p>ITEM 22: Whenever the subject brings a personal problem to someone for help or advice, the subject is not expecting the other to take care of it, but rather to help come up with a solution which the subject will then implement.</p> <p>ITEM 25: The subject describes an important conflict or external stress in which affiliation played a major emotional role in coping as evident by the description of characteristics of the help received, the individuals or organization involved, and the sense that something was taken away from the experience.</p> <p>ITEM 44: When the subject describes seeking help from others, there is a sense of having learned something from the interchange.</p> <p>ITEM 66: When confronted with emotional conflict or stressful situations, the subject describes confiding in someone. Emotionally meaningful sharing led to enhancement of coping skills, or direct assistance beyond what the subject would have done alone.</p> <p>ITEM 93: When dealing with an emotionally difficult situation, the subject reports that talking to others helps the subject think through how best to handle the problem.</p>
Altruism	<p>ITEM 11: The subject helps others who are experiencing a problem they cannot adequately deal with alone. The problem appears to have a personal meaning to the subject related to similar experiences in the subject's past (e.g., 'It made me feel good to help someone in the same position that I once found so difficult.').</p> <p>ITEM 15: The subject finds it personally rewarding to help others who are suffering.</p> <p>The subject participates in organizations or groups that help other people in direct person-to-person ways. In this context, the subject gives direct help to others, which the subject apparently finds rewarding.</p> <p>ITEM 104: The subject reacts to a difficult or dangerous situation for someone else by interposing him or herself to protect the other person. While not reckless, the subject may put him or herself at personal physical or material risk in doing so.</p> <p>ITEM 132: The subject helps others who are at a loss to cope with a problem or situation, possibly including standing up to authority. It is clear that the subject obtains some personal gratification or mastery from the meaning of helping, beyond any overt reward obtained.</p>
Anticipation	<p>ITEM 43: Ahead of an important performance or occasion, the subject practices imagining him or herself in the situation to be both better prepared and less anxious.</p> <p>ITEM 46: The subject describes small events in his or her life in which he or she characteristically mentions thinking about their outcomes ahead of time and emotionally preparing in some way for them.</p> <p>ITEM 62: In confronting a new situation or an unknown task, the subject tries ahead of time to be aware of the emotional challenges and plan for whatever resources that will aid and comfort the subject in the new situation.</p> <p>ITEM 65: The subject describes emotionally meaningful vignettes of upcoming stressful situations in which the subject fully prepared him or herself emotionally as to how to handle it.</p> <p>ITEM 78: In dealing with interpersonal conflicts, the subject tries to imagine how others might respond in planning how to deal with them, but without obsessing or over planning.</p>
Humor	<p>ITEM 18: The subject makes amusing or ironic comments about embarrassing situations to diffuse them.</p> <p>ITEM 37: The subject can make humorous remarks about him or herself or others without saying negative, hurtful, or deprecating things.</p> <p>ITEM 40: In confronting difficult situations which the subject cannot change, the subject uses humor about the situation to mitigate the negative feelings arising.</p> <p>ITEM 51: The subject diffuses a difficult situation with others by making a pertinent joke that centers on some important point that all can acknowledge without being at anyone's expense, thereby fostering cooperation.</p> <p>ITEM 119: When confronted by a situation fraught with competitive, hostile, or jealous feelings, the subject reveals something about him or herself in a self-deprecatory, ironic, or amusing way to diffuse the tension.</p>
Self-assertion	<p>ITEM 23: When pursuing something desirable, including a relationship with someone, the subject can use his or her talents and charms to attract the other, without feeling ashamed or guilty if unsuccessful.</p> <p>ITEM 90: When the subject has a physical or emotional or practical problem, the subject takes steps to deal with his or her needs – possibly including initiating getting help – rather than ignore them or hope they will take care of themselves.</p> <p>ITEM 105: When someone is impolite, dismissive, or derogatory toward the subject, the subject can stand up for him or herself appropriately, even if the subject cannot change the other's attitude or command an apology.</p> <p>ITEM 109: The subject can disagree with others and express opinions without being overly hostile, devaluing, or manipulative of others.</p> <p>ITEM 146: When confronted with emotionally difficult situations, the subject expresses his or her thoughts, wishes, or feelings clearly and directly without inhibition or excess.</p>
Self-observation	<p>ITEM 9: When talking with someone about a personally charged topic, the subject displays an accurate view of him or herself and can see how he or she appears from the other person's point of view.</p> <p>ITEM 32: When confronting emotionally important problems, the subject can reflect upon relevant personal experiences and explore emotional reactions. This allows the subject to adjust better to limitations and compromises, possibly leading to more fulfilling outcomes.</p> <p>ITEM 58: In interpersonal conflicts, the subject uses an understanding of his or her reactions to facilitate understanding others' points of view or subjective experiences. This may make the subject a better negotiator or collaborator.</p> <p>ITEM 77: When considering an emotionally important decision, the subject explores his or her own motives and limitations to arrive at a more fulfilling decision.</p> <p>ITEM 91: When the subject reflects on past experiences, he or she can relive distressing feelings and make connections between events and feelings and develop understanding thereby changing how the subject views the past and possibly similar situations in the present.</p>
Sublimation	<p>ITEM 14: In describing any personal artistic or creative activities – such as writing, music, art, or acting – the subject appears to transform emotional conflicts or unfulfilled wishes from elsewhere in life, helping to shape the creative activity or product.</p> <p>ITEM 36: The subject describes emotional conflictual situations in which some of the feelings or dissatisfaction are channeled into creative or artistic activities. The resulting creative products – such as a poem or painting – give the subject a sense of mastery or relief from the conflicts.</p>

*(Continued)*

**TABLE 2 |** (Continued)

Defense mechanism	DMRS-Q items
	<p>ITEM 63: Whenever engaging in a creative activity, the subject finds the process of creation itself satisfying, apart from any satisfaction with the final product.</p> <p>ITEM 97: Following experiences of emotional distress or conflict, the subject engages in sports or other physical activities which are an invigorating outlet for any lingering frustrations.</p> <p>ITEM 100: Following some strong experiences, the subject engages in his or her ordinary activities but with less effort, greater accomplishment and more pleasure than they normally would require or yield.</p>
Suppression	<p>ITEM 49: When presented with an external demanding situation over which the subject has no control, the subject can accept the demand, putting negative feelings aside to deal with what must be done.</p> <p>ITEM 117: When the subject experiences a desire that if acted upon would have bad consequences, the subject is able to decide consciously to put the desire aside and not act upon it.</p> <p>ITEM 128: When the subject experiences a salient personal limitation or problem, rather than pretending it is not a problem, the subject acknowledges and accepts it, which allows the subject to avoid exacerbating problems. For example, acknowledging an addiction and accepting that one must avoid using the desired substance.</p> <p>ITEM 131: When attending to something emotionally important, if interrupted by something more urgent, the subject attends to the interruption as needed, but later returns and finishes dealing with what had to be postponed.</p> <p>ITEM 150: When presented with an emotionally charged situation, the subject can postpone dealing with his or her feelings to attend to the things that need to be done immediately. The feelings don't get in the way or distract the subject, because the subject is able to give them adequate attention later.</p>

**TABLE 3 |** Obsessional defense level: Definition, function and DMRS-Q items of defenses isolation of affects, intellectualization and undoing.

Defense mechanism	DMRS-Q items
Isolation of affects	<p>ITEM 28: When telling an emotionally meaningful story, the subject states that he or she does not have specific feelings that one would expect, although the subject recognizes that he or she should feel something.</p> <p>ITEM 31: In talking about a meaningful, emotionally charged experience, the subject talks in a detached way, as if he or she is not in touch with the feelings that should surround it.</p> <p>ITEM 39: The subject clearly describes the details of either positive or distressing or traumatic experiences but fails to show any attendant emotion in tone of voice, facial expression, or bodily expression.</p> <p>ITEM 107: The subject talks as if emotionally detached from whatever he says about himself or his experiences.</p> <p>ITEM 140: The subject describes events with good detail, but without mention of any attendant feelings, like a reporter describing the narrative of someone's life, but devoid of personal reactions.</p>
Intellectualization	<p>ITEM 4: When confronting personal issues, the subject tends to ask general questions, as if getting general information or answers from others will elucidate his or her own feelings and concerns. As a result, personal reactions are kept at a distance.</p> <p>ITEM 26: The subject talks about his personal experiences by making general statements that appear accurate but somehow avoid revealing specific personal feelings and reactions.</p> <p>ITEM 53: There is a lifeless quality to most of the subject's descriptions of his feelings and reactions, because the subject tries to explain them intellectually rather than experience or express them. For example: 'My present predicament is an inevitable product of my parents' extreme expectations and other parental experiences when growing up.'</p> <p>ITEM 57: The subject distances him or herself from his or her own feelings by speaking about him or herself in the second or third person a lot, as if the subject were talking about someone else.</p> <p>ITEM 60: Whenever focusing on personal issues or experiences the subject tends to generalize or even discuss things in a logical or scientific way, thereby keeping his feelings and experiences very distant.</p>
Undoing	<p>ITEM 48: When another person tries to clarify a statement made by the subject, the subject says thing like 'well, not really' or 'not exactly' followed by qualifications that do not clearly clarify things. Because the subject is wary of committing him or herself to any statement, the listener may be unsure as to the subject's definite opinion.</p> <p>ITEM 67: The subject spontaneously describes some of his or her actions which are followed by actions that are of the opposite intent, as if every action must be balanced by an equal but opposite action. The subject is aware of the contradiction which may seem vexing or ironic.</p> <p>ITEM 70: The subject prefaces a strong statement about a topic with a disclaimer, to the effect that what he or she is about to say may not be true.</p> <p>ITEM 81: The subject conveys opinions about something or someone with a series of opposite or contradictory statements, as if uncomfortable with taking a clear stand one way or the other.</p> <p>ITEM 83: After the subject has done something that probably results in a feeling of guilt or shame, the subject makes an act of reparation, as if sorry. However, the subject focuses on the act but avoids dealing with the sense of guilt or shame as one would whenever making a normal apology.</p>

her experience in general terms or in the second or third person. One does not have to be bright or intelligent to use intellectualization. It is simply a cognitive strategy for minimizing the felt importance of problems in one's affective life. Like other defenses, it can sometimes be seen in those with intellectual disabilities and organic brain syndromes.

### Obsessional Defense Level: Undoing *Definition*

The individual deals with emotional conflicts, or internal or external stressors, by behavior designed to symbolically make amends for negate previous thoughts, feelings, or actions.



### Function

In this defense the subject expresses an affect, impulse or commits an action which elicits guilt feelings or anxiety. He or she then minimizes the distress by expressing the opposite effect, impulse, or action. The act of reparation then removes the individual from experiencing the conflict. In conversation the subject's statements are immediately followed by qualifications bearing the opposite meaning from the original statement. To the observer this coupling of statement with contradictory statement may make it difficult to see what the subject's primary feeling or intention really is. Misdeeds may be followed by acts of reparation to the intended object of the misdeed. The subject appears compelled to erase or undo his or her original action.

### Neurotic Defense Level: Repression

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by being unable to remember or be cognitively aware of disturbing wishes, feelings, thoughts or experiences.

#### Function

Repression is a defense that protects the subject from being aware of what he is experiencing or has experienced in the past. The subject may experience a particular affect, impulse, or desire, but the actual awareness of what it is, that is, the idea associated with it, remains out of awareness. While the emotional elements are clearly present and experienced, the cognitive elements remain outside of consciousness.

### Neurotic Defense Level: Dissociation

#### Definition

The individual deal with emotional conflicts, or internal or external stressors, by a temporary alteration in the integrative functions of consciousness or identity. In the defense of dissociation, a particular affect or impulse which the subject is not aware of operates in the subject's life out of normal awareness. Both the idea and associated affect or impulse remain out of awareness but are expressed by an alteration in consciousness. While the subject may be dimly aware that something unusual takes place at such times, full acknowledgment that his or her own affect or impulses are being expressed is not made. Dissociation may result in a loss of function or in uncharacteristic behavior.

#### Function

Dissociated material is commonly experienced as too threatening, too conflict-laden, or too anxiety-provoking to be allowed into awareness and fully acknowledged by the subject. Examples of common threatening material include recollection of a trauma with attendant fear of death and feelings of powerlessness, or a sudden impulse to kill an intimate associate. Dissociation allows expression of the affect or impulse by altering consciousness which allows the individual to feel less guilty or threatened.

### Neurotic Defense Level: Reaction Formation

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by substituting behavior, thoughts, or feelings

that are diametrically opposed to his or her unacceptable thoughts or feelings.

#### Function

In reaction formation an original impulse or affect is deemed unacceptable by the subject and an unconscious substitution is made. Feelings, impulses, and behaviors of opposite emotional tone are substituted for the original ones. The observer does not see the alteration, *per se*, but only the end product. By supplanting the original unacceptable feelings by its opposite, the subject avoids feelings of guilt. In addition, the substitution may gratify a wish to feel morally superior. Reaction formation is reasonably inferred when a subject reacts to an event with an emotion opposite in tone to the usual feelings evoked in people.

### Neurotic Defense Level: Displacement

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by generalizing or redirecting a feeling about or a response to an object onto another, usually less threatening, object. The person using displacement may or may not be aware that the affect or impulse expressed toward the displaced object was really meant for someone else.

#### Function

Displacement allows the expression of an affect, impulse, or action toward a person or other object with some similarity to the actual object which initially aroused the affect or impulse. The affect or impulse is fully expressed and acknowledged but is misdirected to a less conflictual target. Displacement allows more expression and gratification, albeit toward the wrong targets, than other neurotic level defenses.

### Minor Image-Distorting Defense Level: Devaluation

#### Definition

The individual deals with emotional conflicts or internal or external stressors by attributing exaggeratedly negative qualities to oneself or others.

#### Function

Devaluation refers to the use of derogatory, sarcastic, or other negative statements about oneself or others to boost self-esteem. Devaluation may fend off awareness of wishes or the disappointment when wishes go unfulfilled. The negative comments about others usually cover up a certain sense of vulnerability, shame or worthlessness which the subject experiences vis a vis expressing his own wishes and meeting his own needs.

### Minor Image-Distorting Defense Level: Idealization

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by attributing exaggerated positive qualities to self or others.

#### Function

In the defense of idealization, the subject describes real or alleged relationships to others (including institutions, belief systems, etc.) who are powerful, revered, important, etc. This usually

**TABLE 4 |** Neurotic defense level: Definition, function and DMRS-Q items of defenses repression, dissociation, reaction formation, and displacement.

Defense mechanism	DMRS-Q items
Repression	<p>ITEM 13: The subject keeps unpleasant things vague: he or she has trouble remembering or can't recall specific examples, when at least some should be forthcoming. This may include loss of memory for whole periods of time (e.g., childhood).</p> <p>ITEM 47: At points when a topic is emotionally loaded, the subject forgets what he or she is talking about and seems to get lost while talking.</p> <p>ITEM 50: When discussing a topic that brings up negative, conflicting feelings, the subject prefers to keep things vague, reflected in very vague, general or inexact statements.</p> <p>ITEM 108: The subject cannot remember certain facts which would normally not be forgotten, such as a distressing incident, reflecting some uneasy feelings about the topic.</p> <p>ITEM 136: When certain feelings or wishes would arise, the subject gives some evidence of them – such as crying or appearing anxious but cannot clearly identify in words the specific feeling or the specific ideas that give the wish a clear meaning.</p>
Dissociation	<p>ITEM 8: The subject behaves or says something in a very uncharacteristic way that expresses an uninhibited impulse operating out of the subject's usual control, yet the subject is surprised by it (e.g., "I threw a glass of water in my friend's face, but I don't know what made me do it").</p> <p>ITEM 27: The individual describes fugue states, amnesia (not alcoholic blackouts), multiple personality, spontaneous trance states, or temporary loss of sensory or motor function.</p> <p>ITEM 30: In response to an emotionally charged situation, the subject suddenly becomes confused, depersonalized, "spaced out," or can't think or talk about the topic. Consciousness becomes clouded to a lesser or greater extent.</p> <p>ITEM 41: In response to a distressing topic or situation, the subject develops a symptom, such as headache, stomach pain, or loss of an ability to do something, which temporarily eclipses awareness of what was distressing. The symptom may have a symbolic relationship to the type of distress.</p> <p>ITEM 73: The subject associates with or is fascinated by people who do very uninhibited, dramatic, or socially outrageous things, which appear to express some of the subject's own inhibited wishes. Nonetheless, the subject is unaware of any such connection.</p>
Reaction formation	<p>ITEM 52: When confronting a personal wish about which the subject may feel guilty, the subject does not acknowledge or express it, but substitutes an opposite attitude against the wish, for instance, a desire is supplanted by renunciation or anger at anything to do with the desire.</p> <p>ITEM 55: The subject is very compliant, agreeing to most everything the interviewer points out, when some disagreement and discussion would be expected.</p> <p>ITEM 74: In dealing with people who are angry or abusive, the subject is cooperative and nice and eager to please, failing to express any negative feelings which might be expected.</p> <p>ITEM 96: In relationships, the subject has an attitude of giving much more than he or she receives but is unaware of the imbalance.</p> <p>ITEM 99: In fearful situations, the subject does not show expected fear, but reacts with exaggerated enthusiasm or courage, failing to acknowledge the fear.</p>
Displacement	<p>ITEM 1: In dealing with an important problem that makes the anxious, the subject prefers to focus on minor or unrelated matters instead, which distracts the subject away from the central problem, for example, cleaning or organizing rather than working on projects that need to be done.</p> <p>ITEM 64: The subject directs strong feelings toward a person or object who has little to do with the subject but who may bear similarities to someone significant to the subject. The subject may be somewhat puzzled by the 'reason' for the strength of these feelings.</p> <p>ITEM 69: When confronting emotionally charged topics, the subject tends not to address concerns directly and fully but wanders off to tangentially related topics that are emotionally easier for the subject to discuss or prefers to pay attention to someone else dealing with a similar situation. This can include preferring to read or watch a film portraying people dealing with similar problems.</p> <p>ITEM 122: When discussing an affect-laden event, the subject expresses more feelings directed toward incidental details or issues than about the major point or effect of the event, perhaps appearing "picky."</p> <p>ITEM 125: The subject gets irritated easily by minor things that bother him or her and tends to lose a focus on the main things that need attention.</p>

serves as a source of gratification as well as protection from feelings of powerlessness, unimportance, worthlessness, and the like. The defense accomplishes a sort of alchemy of worthiness by association. The subject believes certain others to be good and powerful in an exaggerated way and while able to acknowledge factual aspects of any faults or shortcomings in the idealized person, they dismiss their significance, thereby preserving a sterling image of the person, or object.

### Minor Image-Distorting Defense Level: Omnipotence *Definition*

Omnipotence is a defense in which the subject responds to emotional conflict or internal and external stressors by acting superior to others, as if one possessed special powers or abilities.

### *Function*

This defense commonly protects the subject from a loss of self-esteem that is a consequence whenever stressors trigger feelings of disappointment, powerlessness, worthlessness, and the like. Omnipotence subjectively minimizes the

latter experiences, although they may remain objectively obvious to others. Self-esteem is artificially propped up at the expense of positively distorting one's self-evaluation in response to real experiences which bring up contrary feelings.

### Disavowal Defense Level: Denial

#### *Definition*

The individual deals with emotional conflicts, or internal or external stressors, by refusing to acknowledge some aspect of external reality or of his or her experience that would be apparent to others. The subject actively denies that a feeling, behavioral response, or intention (regarding the past or present) was or is not present, even though its presence is considered more than likely by the observer. The subject is blinded to both the ideational and emotional content of what is denied. This excludes 'psychotic denial' in which the subject refuses to acknowledge a physical object or event within the subject's field in the present time.

**TABLE 5 |** Minor image-distorting defense level: Definition, function and DMRS-Q items of defenses devaluation of Self-image, devaluation of other's image, idealization of self-image, idealization of other's image, and omnipotence.

Defense mechanism	DMRS-Q items
Devaluation of self-image	<p>ITEM 12: The subject says demeaning things about him – whether somewhat funny or not – such as “I am so-ooooo stupid.”</p> <p>ITEM 29: The subject makes a lot of unwarranted negative, sarcastic, or biting statements about the self, but the individual can acknowledge some of their positive aspects, if these are pointed out.</p> <p>ITEM 34: When experiencing failure, disappointment, shame or loss of self-esteem, the subject dismisses the issue by saying something negative about him or herself, then dismisses the problem by moving to another topic and avoids focusing on the feelings.</p> <p>ITEM 56: The subject is preoccupied with real or exaggerated faults in him or herself, although he or she can acknowledge some realistic positive aspects, if these are pointed out.</p> <p>ITEM 147: When confronted by a personal disappointment the subject makes negative comments about him or herself but then avoids further discussion of the disappointment in any detail.</p>
Devaluation of other's image	<p>ITEM 54: When a topic brings with it feelings of disappointment, shame or loss of self-esteem, the subject dismisses the issue by finding some fault or criticism elsewhere or by uttering obscene comments about it.</p> <p>ITEM 82: The subject devalues others' accomplishments or motives, to minimize their significance, but he or she quickly dismisses such topics rather than dwell on them.</p> <p>ITEM 85: When asked to discuss something about him or herself, the subject diverts the focus to saying negative things about others, as if devaluing others will raise his or her own self-esteem.</p> <p>ITEM 111: The subject has negative things to say about a lot of individuals or objects, although he or she can acknowledge some of their positive aspects, if these are pointed out.</p> <p>ITEM 143: The subject makes sarcastic or biting statements about others to minimize their positive qualities and dismiss any competition or threat they may pose.</p>
Idealization of self-image	<p>ITEM 38: When confronted with any negative aspects of him or herself, the subject appears to downplay or ignore them by substituting talk about positive self-attributes instead.</p> <p>ITEM 71: The subject makes many references to how important he or she is with an emphasis on self-image, rather than real accomplishments which might make the person important to others.</p> <p>ITEM 87: The subject tells stories in which others are saying positive things about him or herself.</p> <p>ITEM 133: The subject takes pleasure in referring a lot to his or her own positive but superficial attributes, like being beautiful, lovable, smart, well-dressed, worthy, a center of attention. This may be true even if the subject longs for qualities that are only imagined, wished for, or in the past.</p> <p>ITEM 135: When confronted with problems, the subject prefers to dwell on his or her own positive qualities, such as being lovable, smart, beautiful, creative, “the best,” as if those qualities will take care of the problems.</p>
Idealization of other's image	<p>ITEM 16: The subject makes many references to how important certain people or objects are with an emphasis on their image, rather than real abilities or accomplishments which might make the person or object important to others.</p> <p>ITEM 17: The subject tells stories in which he or she says glowing positive things about another person or object, without giving much detail to back it up.</p> <p>ITEM 95: When confronted with problems, the subject prefers to dwell on the positive qualities of others on whom he or she relies, such as being lovable, smart, beautiful, creative, “the best,” as if those qualities will take care of the problems.</p> <p>ITEM 138: The subject takes pleasure in referring a lot to positive but superficial attributes of others, like being beautiful, lovable, smart, well-dressed, worthy, a center of attention. This may be true even if the subject longs for qualities that are only imagined, wished for, or in the past.</p> <p>ITEM 139: When confronted with any negative aspects of others important to the subject, the subject appears to downplay or ignore them, by substituting talk about the positive image or attributes instead.</p>
Omnipotence	<p>ITEM 7: The subject talks about how capable he or she is of influencing events or famous and important people. However, the emphasis is on the sense of personal power or abilities, rather than the detailed stories that support the claims as real.</p> <p>ITEM 10: The subject acts in a very self-assured way and asserts an ‘I can handle anything’ attitude, in the face of problems that he or she in fact cannot fully control.</p> <p>ITEM 68: The subject makes clearly false statements about his own special powers and abilities (these may or may not be delusional).</p> <p>ITEM 126: There is excessive bravado in discussing problems or personal accomplishments that stands out as excessive or unrealistic.</p> <p>ITEM 129: The subject is very grandiose in describing personal plans, accomplishments or abilities, perhaps comparing him or herself to famous people.</p>

### Function

Neurotic denial serves to prevent the subject who uses it and anyone querying him from recognizing specific feelings, wishes, intentions, or actions for which the subject might be responsible. The denial avoids admitting or becoming aware of a psychic fact (idea and feeling) which the subject believes would bring him aversive consequences (such as shame, grief, or other painful affect). The evidence for this is clear whenever a subject breaks through his own denial and experiences shame or other emotion at what he learns about himself, often apologizing to the interviewer and so forth.

### Disavowal Defense Level: Rationalization

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by devising reassuring or self-serving but incorrect explanations for his or her own or others' behavior.

#### Function

Rationalization involves the substitution of a plausible reason for a given action or impulse on the subject's part, when a motive that is more self-serving or difficult to acknowledge

is evident to the outsider. While the underlying covert motivation may be selfish, it may also involve caring or loving feelings which the subject finds uncomfortable. The subject is usually thought to be unaware or minimally aware of his true underlying motive; instead, he or she sees only the substituted, more socially acceptable reason for the action. The subject's reasons commonly have nothing to do with any personal satisfaction, and thus disguise his or her real impulse or motive, although any related affect may still show.

### Disavowal Defense Level: Projection

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by falsely attributing his or her own unacknowledged feelings, impulses, or thought to others. The subject disavows his or her own feelings, intentions, or experience by means of attributing them to others, usually by whom the subject feels threatened and to whom the subject feels some affinity.

#### Function

Non-delusional projection allows the subject to deal with emotions and motives which make him feel too vulnerable (especially to shame or humiliation) to admit having himself. Instead he concerns himself with these same emotions and motives in others. The use of projection therefore commits the subject to a continual concern with those on whom he has projected his inner feelings as a way to minimize awareness of them himself.

### Disavowal Defense Level: Autistic (or Schizoid) Fantasy

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by excessive daydreaming as a substitute for human relationships, more direct and effective action, or problem solving. Fantasy denotes the use of daydreaming as either a substitute for dealing with or solving external problems or as a way of expressing and satisfying one's feelings and desires. While the subject may be aware of the 'I'm just pretending' quality of

**TABLE 6 |** Disavowal defense level: Definition, function and DMRS-Q items of defenses denial, rationalization, projection, and autistic fantasy.

Defense mechanism	DMRS-Q items
Denial	<p>ITEM 20: When confronted with topics that might be personally meaningful, the subject denies they are important and refuses to talk about them further.</p> <p>ITEM 33: Contrary to the evidence from the interview, the subject claims to have done something that in all likelihood he or she did not do, and may become irritated if confronted with any discrepancy.</p> <p>ITEM 121: Whenever talking about potentially distressing events or experiences, the subject strongly claims not to have any feelings about the topic, although this seems highly unlikely.</p> <p>ITEM 124: Whenever asked about things the subject did or felt, the subject denies any involvement, does not want to talk about them or avoids explaining his or her reluctance.</p> <p>ITEM 137: The subject is hard to talk with, responding to many questions with answers like "no" or "not really" and does not elaborate, rather than giving some fuller answers which one would normally expect.</p>
Rationalization	<p>ITEM 19: To avoid taking responsibility for one's actions or misdeeds, the subject makes excuses or points out others' contributions to the problem, thereby minimizing his or her own role.</p> <p>ITEM 42: The subject avoids feelings of guilt or shame by justifying his actions or by referring to external reasons that impelled him to act.</p> <p>ITEM 59: When discussing a problem that the subject contributed to, the subject explains his or her own actions far more than necessary, as if explaining away his or her own fault.</p> <p>ITEM 86: Whenever confronted about his or her own feelings or intentions, the subject avoids acknowledging them by giving a plausible explanation that covers up the real subjective reasons.</p> <p>ITEM 120: Whenever discussing something uncomfortable about him or herself, the subject tries to convince someone else of a more positive explanation, as if lying to him or herself about the truth.</p>
Projection	<p>ITEM 112: When others comment or inquire about the subject's own feelings, actions, or intentions, the subject is very elusive or frankly denies the material, but the subject subsequently talks about similar feelings, actions, intentions, etc., in others.</p> <p>ITEM 115: When experiencing or confronted with a problem, the subject shames, humiliates, or blames someone else for the problem, ignoring his or her own role.</p> <p>ITEM 123: An attitude of suspiciousness or prejudice toward a group of other individuals, allows the subject not to express an interest in the same motives or feelings but remain blind to them in him or herself.</p> <p>ITEM 134: When others ask the subject questions, the subject is suspicious about others' real reasons or motives for the question.</p> <p>ITEM 141: The subject perceives others as untrustworthy, unfaithful, or manipulative when there is no objective basis for these concerns. This may even appear paranoid.</p>
Autistic fantasy	<p>ITEM 2: The subject has repetitive or serial daydreams to which he or she retreats in lieu of real life social relationships.</p> <p>ITEM 24: The subject daydreams a lot, not in a way that leads to creative planning or action, but simply for its own gratification, in lieu of action.</p> <p>ITEM 106: In dealing with some problems, the subject prefers to daydream about solutions, as a substitute for planning direct, realistic, and effective actions.</p> <p>ITEM 110: Whenever being self-assertive would be helpful, the subject may act passively but later withdraw into fantasies of being assertive or aggressive toward others as a compensation.</p> <p>ITEM 148: The subject gets intensely involved in fantasy roles or actions that express wishes and feelings that the subject does not express in real life. For example, living out a role in a social situation or game or which has no connection to real life ways in which the subject expresses him or herself.</p>



the fantasy, nonetheless, it may be the closest that he or she ever comes to expressing or gratifying the need for satisfying interpersonal relationships.

### **Function**

Fantasy allows the subject to obtain some temporary, vicarious gratification by daydreaming a solution to a real-world problem of conflict. The subject feels good while using fantasy and momentarily bypasses the conviction of powerlessness. In fact, during fantasy the opposite conviction (i.e., grandiosity) may be in operation, that one can do anything. Fantasy is maladaptive only when it short-circuits rather than rehearses attempts to deal with the real world by substituting dream world gratification. Sometimes, there may be a wholesale substitution of daydream activity in the place of real world attempts to meet needs and solve conflicts. This occurs without any loss of the ability to perceive and test external reality. The subject knows the difference between reality and fantasy life.

## **Major Image-Distorting Defense Level: Splitting**

### **Definition**

The individual deals with emotional conflicts, or internal or external stressors, by viewing himself or herself or others as all good or all bad, failing to integrate the positive and negative qualities of the self and others into cohesive images; often the same individual will be alternately idealized and devalued. Splitting of self-images often occurs alongside splitting of others' images, since they both were learned in response to the unpredictability of one's early significant others. In splitting of self-images, the subject demonstrates that he has contradictory views, expectations, and feelings about himself which he cannot reconcile into one coherent whole.

The self-images are divided into polar opposites: at a given time the subject's awareness is limited to those aspects of the self having the same emotional feeling tone. He sees himself in "black or white" terms. At one point in time the subject believes he himself has good attributes, such as being loving, powerful, worthy, or correct, and having good feelings, or he believes the opposite: that he is bad, hateful, angry, destructive, weak, powerless, worthless, or always wrong and has only negative feelings about himself. The subject cannot experience himself as a more realistic mixture of both positive and negative attributes.

In splitting of other's images (object images), the subject demonstrates that his views, expectations, and feelings about others are contradictory and that he cannot reconcile these differences to form realistic and coherent views of others. Object images are divided into polar opposites, such that the subject can only see one emotional aspect or side of the object at a time. Objects are experienced in black or white terms. Splitting is revealed in two major ways. The subject may initially describe an object wholly in one way but later describe that same object in opposite ways. Second, each object is simply lumped with other objects into good and bad, positive and negative camps. When the subject uses splitting of object images, he cannot integrate anything that doesn't match his immediate experience of and feeling about a given object. All the attributes with the same feeling tone are highlighted, and

contradictory views, expectations, or feelings about the object are excluded from emotional awareness, although not necessarily from cognitive awareness.

### **Function**

Splitting of object images and self-images is the subject's defense against the anxiety of ruining the good images of people by allowing bad aspects of them to intrude upon the good. Splitting of self-images has one adaptive function: it minimizes the anxiety the subject would experience attempting to match his view of himself with how significant others will in fact see him and treat him. Instead, when seeing himself one way, the subject continues to see himself in the same valence no matter how others see him and treat him; contradictions then aren't allowed into experience. This minimizes the disruptive, anxiety-provoking effects of trying to predict unpredictable people. The disadvantage is that the subject's view of himself then becomes inflexible to the environmental realities, and the switch from good to bad views of himself is also unpredictable. This leaves the subject insensitive to more reasonable, predictable, and potentially more rewarding relationships outside of his original learning environment. In a better environment, the subject suffers from what was paradoxically so protective originally: an insensitivity to experiencing contradictory views of the self. Splitting of object images and self-images is the subject's defense against the anxiety of ruining the good images of people by allowing bad aspects of them to intrude upon the good. Splitting of object images limits the anxiety the subject would feel in trying to discriminate how others will respond when he experiences or expresses his needs, feelings, etc. To see others as all good or all bad eliminates the anxiety-provoking task of trying to discern how others will behave toward the self, a task the subject believes to be impossible. Instead, the subject quickly categorizes people into good and bad camps based on subtle initial cues (e.g., "he frowned when I spoke, so he hates me") or based largely on internal feeling states (e.g., "I feel so bad that I know you must hate me, so why should I open up to you?"). The defense is maladaptive, however, because the subject acts as unpredictably and irrationally toward others as he himself was treated; he forgoes the rewards he might attain if he were flexible in how he interacts with others. Using this defense, the subject wins some friends and makes some enemies, but not in a realistic way that considers the aggregate of others' actual characteristics.

## **Major Image-Distorting Defense Level: Projective Identification**

### **Definition**

In projective identification the subject has an affect or impulse which he finds unacceptable and projects onto someone else, as if it was really that other person who originated the affect or impulse. However, the subject does not disavow what is projected – unlike in simple projection – but remains fully aware of the affects or impulses, and simply misattributes them as justifiable reactions to the other person! Hence, the subject eventually admits his affect or impulse, but believes it to be a reaction to those same feelings and impulses in

**TABLE 7 |** Major image-distorting defense level: Definition, function and DMRS-Q items of defenses splitting of self-image, splitting of other's image, and projective identification.

Defense mechanism	DMRS-Q items
Splitting of self-image	<p>ITEM 3: The subject has periods of saying highly positive things about him or herself, and other periods saying highly negative things about him or herself, without appearing to notice the contradiction and without addressing it, other than to feel confused about him or herself at moments.</p> <p>ITEM 6: The subject speaks of him or herself in a wholly negative way at times, as if there is nothing positive or redeeming about him or herself.</p> <p>ITEM 98: The subject expresses a series of highly unrealistic positive attributes about him or herself whereas at another point the subject sees only negatives in him or herself. The subject dismisses attempts to see things in a balanced more realistic way.</p> <p>ITEM 142: The subject tends to highlight objects with an emotional meaning that matches his or her own emotional tone at the moment. Any feeling that doesn't match this is ignored or denied.</p> <p>ITEM 145: Whenever saying something negative about him or herself, the subject rejects others' attempts to explore positive or more balanced views, and paradoxically becomes even more confirmed in his or her own worthlessness.</p>
Splitting of other's image	<p>ITEM 35: The subject experiences other people and objects in "black or white" terms, failing to form more realistic views that balance positive and negative aspects of them.</p> <p>ITEM 61: The subject attributes unrealistic positive characteristics to an object, such as being all-powerful, omni-benevolent, a savior. Because of the unrealistic belief that the positive object will take care of one's problems, the subject ignores the need to take care of some of his or her own needs.</p> <p>ITEM 92: The subject attributes unrealistic negative characteristics to an object, such as being all-powerful, malevolent, threatening. As a result, he or she makes some effort to protect him or herself from its influence, even though this response appears unwarranted or exaggerated.</p> <p>ITEM 94: The subject fails to recognize that someone may be untrustworthy, hurtful, or manipulative and does not draw obvious conclusions based on their behavior. This generally results in using very poor judgment about how others will treat the subject.</p> <p>ITEM 114: The subject expresses hatred toward someone or something and refuses to acknowledge anything that does not confirm the hatred.</p>
Projective identification	<p>ITEM 72: Sometimes the subject gets angry or fearful toward someone for no apparent reason, but then accuses the other person of intending to make him or her feel that way.</p> <p>ITEM 75: At times the subject's feelings merge with those of another person and the subject assumes the other's feelings and needs are exactly the same as the subject's own. He or she then tends to "put words in the other's mouth."</p> <p>ITEM 101: In conversations, the subject sometimes seems confused about distinguishing his or her own feelings from those of the other person.</p> <p>ITEM 103: When the subject gets upset at someone, he or she gets very angry and loses control, but then blames the other person for making him or her lose control. Nonetheless, the subject may feel some guilt for losing control.</p> <p>ITEM 113: The subject feels provoked by someone when no obvious provocation is apparent. As the subject becomes angry, accusatory or verbally abusive, the subject provokes the same negative feelings in the other which the subject mistakenly believed the other person had at the outset.</p>

others. The subject confuses the fact that it was he himself who originated the projected material. This defense is seen most clearly in a lengthy interchange in which the subject initially projects his feelings but later experiences his original feelings as reactions to the other. Paradoxically, the subject often arouses the very feelings in others he at first mistakenly believed to be there. It is then difficult to clarify who did what to whom first. This process is more extensive than simple projection, which involves the denial and subsequent external attribution of an impulse. Projective identification involves attribution of an image so that the whole object is seen and reacted to in a distorted light.

### Function

Projective identification is the defense of the traumatized person who felt irrationally responsible for his or her traumas. The defense is called into play when interpersonal cues stimulate memories of traumatic situations or interchanges or their residues. The individual experiences the other person as doing something to him or herself that is threatening, which make him or her feel powerless. The subject reacts to this imagined (or partially real) threat by attacking and believing that his or her own actions are justified, despite provoking the other. Guilt over having aggressive wishes toward the other person emerges and is handled by identification with the other, reinforced 'by the belief that the alleged threat attack on oneself is deserved. Paradoxically the subject often induces the very feeling of powerlessness

and guilt in others that he or she feels, which may result in others backing away.

## Action Defense Level: Passive Aggression

### Definition

The individual deals with emotional conflicts, or internal or external stressors, by indirectly and unassertively expressing aggression toward others. There is a facade of overt compliance masking covert resistance toward others. Passive aggression is characterized by venting hostile or resentful feelings in an indirect, veiled, and unassertive manner toward others. Passive aggression often occurs in response to demands for independent action or performance by the subject or when someone has disappointed the subject's wish or sense of entitlement to be taken care of, regardless of whether the subject has made this wish known. This term includes 'turning against the self.'

### Function

The person using passive-aggression has learned to expect punishment, frustration, or dismissal if he or she expresses needs or feelings directly to someone who has power or authority over him or her. The subject feels powerless and resentful. This expectation is most pronounced in hierarchical power relationships. Resentment is expressed by a passive stance: that the subject is entitled to the very things he doesn't speak up for or that he is entitled to special dispensation. There is also some pleasure taken in the discomfort that the passive aggressive

behavior causes others. Passive expression of anger through stubborn, inept, procrastinating, and forgetful behavior is quickly learned as a way to express: the conviction that the subject has the right to remain passive while expecting his needs to be met; to appear well-intentioned on the surface (overtly compliant), thus avoiding retaliation for the direct expression of affects, needs, or resentment; to express the resentment experienced toward those making demands by covert noncompliance that annoys others and obtain some satisfaction or vengeance, even if it means hurting oneself. In extremes, the resentment is not just expressed indirectly toward the other, but in fact, is turned 180 degrees around toward the self (turning against the self) to get at the other.

### Action Defense Level: Help-Rejecting Complaining

#### Definition

Help-rejecting complaining (formerly called hypochondriasis, which term we do not use as it can be confused with the symptom disorder) involves the repetitious use of a complaint or series of complaint in which the subject ostensibly asks for help. However, covert feelings of hostility or resentment toward others are expressed simultaneously by the subject's rejection of the suggestions, advice, or whatever others offer. The complaints may consist of either somatic concerns or life problems. Either type of complaint is followed by a 'help-rejecting complainer' response to whatever help is offered.

#### Function

Help-rejecting complaining is a defense against the anger the subject experiences whenever he or she feels the need for

emotional reliance on others. The anger rises from the conviction, or often the experience that nobody will really satisfy the subject's perceived needs. The subject expresses the anger as an indirect reproach by rejecting help as "not good enough" while continuing to ask for more of it. Instead of driving the other person away by the expression of anger, the use of help-rejecting complaining binds the person to the subject by the overt request for help. The subject's expression of helplessness over the problem at hand reflects a sense of powerlessness to get the right help, comfort, and attention, while discharging resentment for the expected disappointment that enough help will not be forthcoming.

### Action Defense Level: Acting Out

#### Definition

The individual deals with emotional conflicts, or internal or external stressors, by acting without reflection or apparent regard for negative consequences. Acting out involves the expression of feelings, wishes or impulses in uncontrolled behavior with apparent disregard for personal or social consequences. It usually occurs in response to interpersonal events with significant people in the subject's life, such as parents, authority figures, friends, or lovers. This definition is broader than the original concept of acting out transference feelings or wishes during psychotherapy. It includes behavior arising both within and outside of the transference relationship. It is not synonymous with "bad behavior," or with any symptom *per se*, although acting out often involves socially disruptive or self-destructive behavior. So-called acting out

**TABLE 8 |** Action defense level: Definition, function and DMRS-Q items of defenses acting out, help-rejecting complaining, and passive aggression.

Defense mechanism	DMRS-Q items
Passive aggression	<p>ITEM 45: At times when expressing an opinion or wish might be helpful, the subject fails to express himself adequately, instead finding indirect, even annoying ways to show his or her opposition to the influence of others, for example, being silent.</p> <p>ITEM 88: The subject fails to stand up for his or her interests and seems to let bad things happen to him or herself that could be prevented, maybe even assuming a "martyr" role.</p> <p>ITEM 89: While outwardly cooperative or compliant, the individual procrastinates and refuses to do things on time or as asked, even when it would be easy to do so.</p> <p>ITEM 102: When angry toward someone significant, the subject takes anger out on himself instead of expressing it directly.</p> <p>ITEM 116: The subject has "a chip on his or her shoulder" or a grudge, and seems to find reasons to feel unfairly treated, even when he or she is not.</p>
Help-rejecting complaining	<p>ITEM 21: The subject complains spontaneously about how others don't really care, or have made his or her problems worse, even when there is clear evidence that others have tried to help.</p> <p>ITEM 84: The subject recites a litany of issues and problems but does not appear to be engaged in solving them, but rather prefers to complain.</p> <p>ITEM 127: The subject tends to exaggerate his or her complaints about a life problem or somatic symptom, making them seem worse or more significant than they are.</p> <p>ITEM 130: The subject complains about life issues or problems as if each were insoluble, and systematically rejects others' suggestions about ways of handling them.</p> <p>ITEM 149: When the subject brings up a problem to discuss, others try to address the problem, but in response the subject skips to a different problem, thereby dismissing rather than engaging others in any suggestions offered.</p>
Acting out	<p>ITEM 5: The subject loses his or her temper easily.</p> <p>ITEM 76: In response to interpersonal disappointment or disagreement the subject tends to act impulsively, without reflection or considering the negative consequences.</p> <p>ITEM 80: The subject is often inhibited from expressing him or herself, but sometimes acts in uncontrolled ways to get or do something he or she wants, ignoring normal constraints.</p> <p>ITEM 118: Whenever the subject feels angry, disappointed or rejected by someone, the subject resorts to uncontrolled behaviors as an escape from distressing feelings, such as binge-eating, drinking, sexual escapades, drug use, reckless driving, or getting into trouble.</p> <p>ITEM 144: The subject tends to express feelings, wishes or impulses directly in behavior, not only words, without prior thought. However, afterward, he or she may feel guilty or expect some punishment.</p>

behaviors, such as physical fighting, or compulsive drug use, must show some relationship to affects or impulses that the person cannot tolerate to serve as evidence for the defense of acting out.

### Function

Acting out allows the subject to discharge or express feelings and impulses rather than tolerate them and reflect on the painful events that stimulate them. The following elements are present. First, the subject has feelings or urges which he is inhibited from expressing. Experiencing the original impulse quickly results in a rise in tension and anxiety. Second, the individual bypasses awareness and ceases any attempt to delay, reflect upon, or plan a strategy to handle the impulse or feeling. Rather it is directly expressed in behavior without prior thought. This results in the expression of rather raw aggression, sex, attachment, or other impulses without taking the consequences into account. Following acting out, reflection may return, and the subject commonly feels guilty or expects some punishment, unless a further defense comes into play, such as denial or rationalization (“I was so angry, I had to do it. It was his fault for stirring me up.”). Acting out is maladaptive because it does not mitigate the effects of the internal conflict, and it often brings upon the subject serious, negative, external consequences.

### Coding Procedure

The DMRS-Q is a computer-based measure that can be used for clinical, research and teaching purposes by registering on the DMRS-Q platform (see text footnote 1 for registration and login). The software use is free of charge and provides the user with several functions, such as starting a new coding, revising previous ratings, downloading outputs and scoring sheets. At present the DMRS-Q is available in English and in Italian, although other languages may be added on the platform after appropriate validation.

Like most Q-sort tools, the DMRS-Q coding procedure follows the rules of ranking items into a force distribution (Block, 1978; Brown, 1993, 1995). The 150 items must be ordered into seven ordinal ranks, corresponding to increasing level of descriptiveness, intensity or frequency. Higher ranks are less populated and include items that best describe the most characteristic defensive patterns activated by an individual. Conversely, lower ranks are more populated and include items that either do not apply or are only somewhat descriptive of the individual's defensive profile. In ascending order of descriptiveness, DMRS-Q ranks are as follows: rank 1 (60 items) = not used at all; rank 2 (30 items) = very rarely used; rank 3 (20 items) = slightly or rarely used; rank 4 (16 items) = medium or sometimes used; rank 5 (10 items) = intensive or often used; rank 6 (8 items) = very intensive or frequently used; rank 7 (6 items) = almost always used. When all items are correctly ordered into the DMRS-Q forced distribution, as displayed in **Figure 2**, the rating is complete and ready to be sent for scoring output. For detailed directions of the DMRS-Q rating procedure a video-tutorial is available at <https://www.youtube.com/watch?v=PP1ykSrGLkY&t=87s>.



### Clinical Data and Training

Data required for a stable DMRS-Q rating might vary with the aim of its use. Coders must have sufficient information of the evaluated subject's defensive functioning, directly observed or obtained from records. Since recorded and transcribed data are not essential, the DMRS-Q can be applied in multiple contexts. The required time for a DMRS-Q coding decreases depending on rater's experience, ranging from about 60 min in the very first ratings to less than 15 min for expert coders. A 6-h training is highly suggested for reaching high reliability on all DMRS-Q quantitative scores, although a recent study demonstrated that untrained raters obtain acceptable to excellent reliability on most DMRS-Q scales (ICC ranging from 0.60 to 0.91) (Békés et al., 2021). In any case, for the correct use of the DMRS-Q it is essential to read the present manual for understanding the theoretical and methodological background behind the measure.

### Scoring System

The DMRS-Q scoring procedure is made with a software that extracts DPN and quantitative scores from the completed DMRS-Q rating. Formulas for quantitative scoring are displayed in **Table 9**.



**TABLE 9 |** DMRS-Q quantitative scoring system.

Items labels									
#	Defense	#	Defense	#	Defense	#	Defense	#	Defense
1	Displacement	31	Isolat_Affect	61	Splitting_Self	91	Self_Observat	121	Denial
2	Autis_Fantasy	32	Self_Observat	62	Anticipation	92	Splitting_Self	122	Displacement
3	Splitting_Other	33	Denial	63	Sublimation	93	Affiliation	123	Projection
4	Intellectualizat	34	Devaluat_Self	64	Displacement	94	Splitting_Self	124	Denial
5	Acting_Out	35	Splitting_Self	65	Anticipation	95	Idealizat_Other	125	Displacement
6	Splitting_Other	36	Sublimation	66	Affiliation	96	React_Format	126	Omnipotence
7	Omnipotence	37	Humor	67	Undoing	97	Sublimation	127	Help_Rej_Com
8	Dissociation	38	Idealizat_Self	68	Omnipotence	98	Splitting_Other	128	Suppression
9	Self_Observat	39	Isolat_Affect	69	Displacement	99	React_Format	129	Omnipotence
10	Omnipotence	40	Humor	70	Undoing	100	Sublimation	130	Help_Rej_Com
11	Altruism	41	Dissociation	71	Idealizat_Self	101	Proj_Identic	131	Suppression
12	Devaluat_Self	42	Rationalization	72	Proj_Identic	102	Passive_Aggr	132	Altruism
13	Repression	43	Anticipation	73	Dissociation	103	Proj_Identic	133	Idealizat_Self
14	Sublimation	44	Affiliation	74	React_Format	104	Altruism	134	Projection
15	Altruism	45	Passive_Aggr	75	Proj_Identic	105	Self_Assertion	135	Idealizat_Self
16	Idealizat_Other	46	Anticipation	76	Acting_Out	106	Autis_Fantasy	136	Repression
17	Idealizat_Other	47	Repression	77	Self_Observat	107	Isolat_Affect	137	Denial
18	Humor	48	Undoing	78	Anticipation	108	Repression	138	Idealizat_Other
19	Rationalization	49	Suppression	79	Altruism	109	Self_Assertion	139	Idealizat_Other
20	Denial	50	Repression	80	Acting_Out	110	Autis_Fantasy	140	Isolat_Affect
21	Help_Rej_Com	51	Humor	81	Undoing	111	Devalu_Other	141	Projection
22	Affiliation	52	React_Format	82	Devalu_Other	112	Projection	142	Splitting_Other
23	Self_Assertion	53	Intellectualizat	83	Undoing	113	Proj_Identic	143	Devalu_Other
24	Autis_Fantasy	54	Devalu_Other	84	Help_Rej_Com	114	Splitting_Self	144	Acting_Out
25	Affiliation	55	React_Format	85	Devalu_Other	115	Projection	145	Splitting_Other
26	Intellectualizat	56	Devaluat_Self	86	Rationalization	116	Passive_Aggr	146	Self_Assertion
27	Dissociation	57	Intellectualizat	87	Idealizat_Self	117	Suppression	147	Devaluat_Self
28	Isolat_Affect	58	Self_Observat	88	Passive_Aggr	118	Acting_Out	148	Autis_Fantasy
29	Devaluat_Self	59	Rationalization	89	Passive_Aggr	119	Humor	149	Help_Rej_Com
30	Dissociation	60	Intellectualizat	90	Self_Assertion	120	Rationalization	150	Suppression

Label	Defense mechanism	Scoring
<b>Individual defense scores</b>		
D30	Suppression	$[(\text{Sum of items 49, 117, 128, 131, and 150}) - 5] \times 100/234$
D29	Sublimation	$[(\text{Sum of items 14, 36, 63, 97, and 100}) - 5] \times 100/234$
D28	Self-observation	$[(\text{Sum of items 9, 32, 58, 77, and 91}) - 5] \times 100/234$
D27	Self-assertion	$[(\text{Sum of items 23, 90, 105, 109, and 146}) - 5] \times 100/234$
D26	Humor	$[(\text{Sum of items 18, 37, 40, 51, and 119}) - 5] \times 100/234$
D25	Anticipation	$[(\text{Sum of items 43, 46, 62, 65, and 78}) - 5] \times 100/234$
D24	Altruism	$[(\text{Sum of items 11, 15, 79, 104, and 132}) - 5] \times 100/234$
D23	Affiliation	$[(\text{Sum of items 22, 25, 44, 66, and 93}) - 5] \times 100/234$
D22	Isolation of affects	$[(\text{Sum of items 28, 31, 39, 107, and 140}) - 5] \times 100/234$
D21	Intellectualization	$[(\text{Sum of items 4, 26, 53, 57, and 60}) - 5] \times 100/234$
D20	Undoing	$[(\text{Sum of items 48, 67, 70, 81, and 83}) - 5] \times 100/234$
D19	Repression	$[(\text{Sum of items 13, 47, 50, 108, and 136}) - 5] \times 100/234$
D18	Dissociation	$[(\text{Sum of items 8, 27, 30, 41, and 73}) - 5] \times 100/234$
D17	React formation	$[(\text{Sum of items 52, 55, 74, 96, and 99}) - 5] \times 100/234$
D16	Displacement	$[(\text{Sum of items 1, 64, 69, 122, and 125}) - 5] \times 100/234$
D15	Devaluation other's image	$[(\text{Sum of items 54, 82, 85, 111, and 143}) - 5] \times 100/234$
D14	Devaluation self-image	$[(\text{Sum of items 12, 29, 34, 56, and 147}) - 5] \times 100/234$
D13	Idealization other's image	$[(\text{Sum of items 16, 17, 95, 138, and 139}) - 5] \times 100/234$

(Continued)

TABLE 9 | (Continued)

Label	Defense mechanism	Scoring
D12	Idealization self-image	[(Sum of items 38, 71, 87, 133, and 135) – 5]*100/234
D11	Omnipotence	[(Sum of items 7, 10, 68, 126, and 129) – 5]*100/234
D10	Denial	[(Sum of items 20, 33, 121, 124, and 137) – 5]*100/234
D9	Rationalization Sum of items 19, 42, 59, 86, and 120) – 5]*100/234	
D8	Projection	[(Sum of items 112, 115, 123, 134, and 141) – 5]*100/234
D7	Autistic fantasy	[(Sum of items 2, 24, 106, 110, and 148) – 5]*100/234
D6	Projective identification	[(Sum of items 72, 75, 101, 103, and 113) – 5]*100/234
D5	Splitting of self-image	[(Sum of items 3, 6, 98, 142, and 145) – 5]*100/234
D4	Splitting of object’s image	[(Sum of items 35, 61, 92, 94, and 114) – 5]*100/234
D3	Passive aggression	[(Sum of items 45, 88, 89, 102, and 116) – 5]*100/234
D2	Help-rejecting complaining	[(Sum of items 21, 84, 127, 130, and 149) – 5]*100/234
D1	Acting out	[(Sum of items 5, 76, 80, 118, and 144) – 5]*100/234
Label	Defense level	Scoring
Defense level scores		
L7	High adaptive	Sum of D23, D24, D25, D26, D27, D28, D29, and D30
L6	Obsessional	Sum of D20, D21, and D22
L5	Neurotic	Sum of D16, D17, D18, and D19
L5a	Hysterical	Sum of D18 and D19
L5b	Other neurotic	Sum of D16 and D17
L4	Minor image-distorting	Sum of D11, D12, D13, D14, and D15
L3	Disavowal	Sum of D7, D8, D9, and D10
L2	Major image-distorting	Sum of D4, D5, and D6
L1	Action	Sum of D1, D2, and D3
Label	Defensive category	Scoring
Defensive category scores		
C3	Mature	Sum of D23, D24, D25, D26, D27, D28, D29, and D30
C2	Neurotic	Sum of D16, D17, D18, D19, D20, D21, and D22
C1	Immature	Sum of D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, and D15
C1a	Depressive	Sum of D1, D2, D3, D4, D5, D6, D8, D14, and D15
C1b	Other immature	Sum of D7, D9, D10, D11, D12, and D13
Label	Scoring	
Overall defensive functioning		
ODF	(L1/100)*1 + (L2/100)*2 + (L3/100)*3 + (L4/100)*4 + (L5/100)*5 + (L6/100)*6 + (L7/100)*7	

For further information about the scoring system please contact the corresponding author.

Although the scoring software has not yet been uploaded in the DMRS-Q web-app in order to protect it from hackers, we will include it after the publication of the present article. This upgrade will allow the DMRS-Q web-app to automatically calculate qualitative and quantitative scores after each evaluation and immediately deliver the DMRS-Q report to the user.


## RESULTS

### The Defense Mechanisms Rating Scales Q-Sort Report

Like the original DMRS, the DMRS-Q provides qualitative and quantitative scores reflecting the individual's defensive

functioning. Qualitative scores are displayed as the *Defensive Profile Narratives* (DPN), a case description of the most characteristic ways the subject handles internal conflict and external stressors. The DPN comprises all items sorted in ranks 6 and 7 ( $N = 14$ ) and coded as highly descriptive of the subject's defensive profile. The DMRS-Q software automatically lists these items and indicates the defense level and individual defense mechanism associated with each item. **Figure 3** shows an example of a DPN displayed in the DMRS-Q report.

In addition to DPN, the DMRS-Q report provides the following quantitative scores: a summary Overall Defensive Functioning (ODF), ranging from 1 to 7; proportional scores for seven defense levels (see **Table 1** for review); and proportional scores for 30 individual defense mechanisms (see **Tables 2–8** for



Data: dd/mm/yyyy hh:mm:ss  
Code: DMRSQXXXXXX

DEFENSIVE PROFILE NARRATIVES - Qualitative results

Item	Description	Defense mechanism	Defense level
49	When presented with an external demanding situation over which the subject has no control, the subject can accept the demand, putting negative feelings aside to deal with what must be done.	SUPPRESSION	LEVEL 7: HIGH-ADAPTIVE DEFENSES
53	There is a lifeless quality to most of the subject's descriptions of his feelings and reactions, because the subject tries to explain them intellectually rather than experience or express them. For example: 'My present predicament is an inevitable product of my parents' extreme expectations and other parental experiences when growing up'.	INTELLECTUALIZATION	LEVEL 6: OBSESSIVE DEFENSES
60	Whenever focusing on personal issues or experiences the subject tends to generalize or even discuss things in a logical or scientific way, thereby keeping his feelings and experiences very distant.	INTELLECTUALIZATION	LEVEL 6: OBSESSIVE DEFENSES
64	The subject directs strong feelings toward a person or object who has little to do with the subject but who may bear similarities to someone significant to the subject. The subject may be somewhat puzzled by the 'reason' for the strength of these feelings.	DISPLACEMENT	LEVEL 5: NEUROTIC DEFENSES
85	When asked to discuss something about him or herself, the subject diverts the focus to saying negative things about others, as if devaluing others will raise his or her own self-esteem.	DEVALUATION OF OTHERS-IMAGE	LEVEL 4: MINOR IMAGE-DISTORTION DEFENSES
89	While outwardly cooperative or compliant, the individual procrastinates and refuses to do things on time or as asked, even when it would be easy to do so.	PASSIVE AGGRESSION	LEVEL 1: ACTION DEFENSES
4	When confronting personal issues, the subject tends to ask general questions, as if getting general information or answers from others will elucidate his or her own feelings and concerns. As a result, personal reactions are kept at a distance.	INTELLECTUALIZATION	LEVEL 6: OBSESSIVE DEFENSES
50	When discussing a topic that brings up negative, conflicting feelings, the subject prefers to keep things vague, reflected in very vague, general or inexact statements.	REPRESSION	LEVEL 5: NEUROTIC DEFENSES
59	When discussing a problem that the subject contributed to, the subject explains his or her own actions far more than necessary, as if explaining away his or her own fault.	RATIONALIZATION	LEVEL 3: DISAVOWAL DEFENSES
72	Sometimes the subject gets angry or fearful towards someone for no apparent reason, but then accuses the other person of intending to make him or her feel that way.	PROJECTIVE IDENTIFICATION	LEVEL 2: MAJOR IMAGE-DISTORTION DEFENSES
91	When the subject reflects on past experiences, he or she can relive distressing feelings and make connections between events and feelings and develop understanding thereby changing how the subject views the past and possibly similar situations in the present.	SELF-OBSERVATION	LEVEL 7: HIGH-ADAPTIVE DEFENSES
111	The subject has negative things to say about a lot of individuals or objects, although he or she can acknowledge some of their positive aspects, if these are pointed out.	DEVALUATION OF OTHERS-IMAGE	LEVEL 4: MINOR IMAGE-DISTORTION DEFENSES
119	When confronted by a situation fraught with competitive, hostile, or jealous feelings, the subject reveals something about him or herself in a self-deprecatory, ironic, or amusing way to diffuse the tension.	HUMOR	LEVEL 7: HIGH-ADAPTIVE DEFENSES
125	The subject gets irritated easily by minor things that bother him or her and tends to lose a focus on the main things that need attention.	DISPLACEMENT	LEVEL 5: NEUROTIC DEFENSES

FIGURE 3 | Defensive Profile Narrative (PDN) of a patient assessed with the DMRS.

**FIGURE 3 |** Defensive Profile Narrative (PDN) of a patient assessed with the DMRS.

review). Future updates in the web-app software will also add scores for defensive categories and subcategories. Quantitative scores are displayed in both numerical and graphical forms in the DMRS-Q report, which can be downloaded from the user dashboard at any time.

## Clinical Vignette and Defense Mechanisms Rating Scales Q-Sort Rating

One example of how to use the DMRS-Q in clinical setting is offered by the following vignette. A brief description of patient-therapist interactions during the session is used for the DMRS-Q rating with no additional information about

patient's demographics, diagnosis, length of treatment, nor therapist's approach, experience, etc. A summary of qualitative and quantitative evaluation of patient's defense mechanisms analyzed with the DMRS-Q is displayed in **Table 10**. The 14 items coded as the best descriptive of the patient's defensive functioning in the session were included in the qualitative defensive profile (DPN), while all item scores contributed to the quantitative scores displayed in the graphics.

*The session started with the patient telling his negative experience with his lawyer and his attempt to solve a financial issue. While reporting on how the therapy had been helping him in enhancing his engagement in professional problems, the patient described himself with very devaluing terms. Even when the therapist tried to support him, saying that he was not aware*

**TABLE 10 |** Qualitative and quantitative DMRS-Q evaluation of the described in the clinical vignette.**Qualitative scores – Defensive profile narratives**

When confronted with topics that might be personally meaningful, the subject denies they are important and refuses to talk about them further.

The subject complains spontaneously about how others don't really care, or have made his or her problems worse, even when there is clear evidence that others have tried to help.

At times when expressing an opinion or wish might be helpful, the subject fails to express himself adequately, instead finding indirect, even annoying ways to show his or her opposition to the influence of others, for example, being silent.

The subject recites a litany of issues and problems but does not appear to be engaged in solving them, but rather prefers to complain.

When others comment or inquire about the subject's own feelings, actions, or intentions, the subject is very elusive or frankly denies the material, but the subject subsequently talks about similar feelings, actions, intentions, etc. in others.

Whenever talking about potentially distressing events or experiences, the subject strongly claims not to have any feelings about the topic, although this seems highly unlikely.

When telling an emotionally meaningful story, the subject states that he or she does not have specific feelings that one would expect, although the subject recognizes that he or she should feel something.

In talking about a meaningful, emotionally charged experience, the subject talks in a detached way, as if he or she is not in touch with the feelings that should surround it.

The subject avoids feelings of guilt or shame by justifying his actions or by referring to external reasons that impelled him to act.

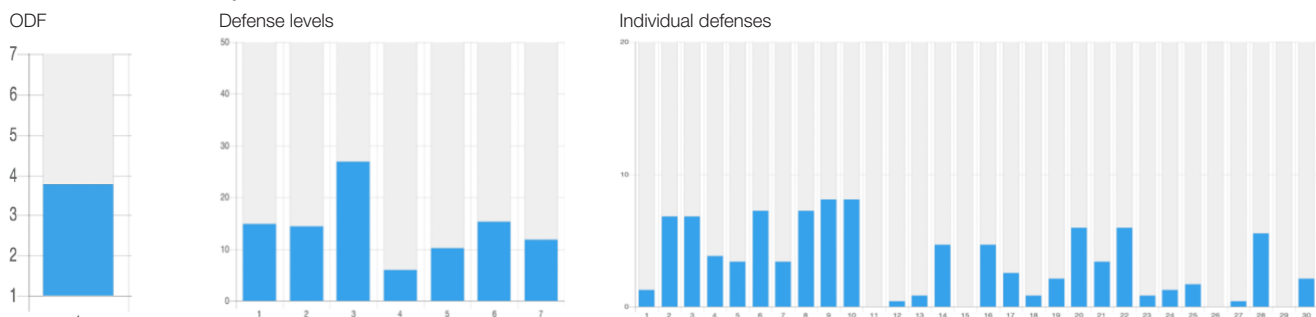
At times the subject's feelings merge with those of another person and the subject assumes the other's feelings and needs are exactly the same as the subject's own. He or she then tends to 'put words in the other's mouth.'

Whenever confronted about his or her own feelings or intentions, the subject avoids acknowledging them by giving a plausible explanation that covers up the real subjective reasons.

When angry toward someone significant, the subject takes anger out on himself instead of expressing it directly.

The subject expresses hatred toward someone or something and refuses to acknowledge anything that does not confirm the hatred.

When experiencing or confronted with a problem, the subject shames, humiliates, or blames someone else for the problem, ignoring his or her own role.

**Quantitative scores – Graphics**

Defense levels: 1 = Action; 2 = Minor image-distorting; 3 = Disavowal; 4 = Major image-distorting; 5 = Neurotic; 6 = Obsessional; 7 = High adaptive

Individual defenses: 1 = Acting out; 2 = Help-rejecting complaining; 3 = Passive aggression; 4 = Splitting of object's image; 5 = Splitting of self-image; 6 = Projective identification; 7 = Autistic fantasy; 8 = Projection; 9 = Rationalization; 10 = Denial; 11 = Omnipotence; 12 = Idealization of self-image; 13 = Idealization of other's image; 14 = Devaluation of other's image; 15 = Devaluation of self-image; 16 = Displacement; 17 = Reaction formation; 18 = Dissociation; 19 = Repression; 20 = Undoing; 21 = Intellectualization; 22 = Isolation of affects; 23 = Affiliation; 24 = Altruism; 25 = Anticipation; 26 = Humor; 27 = Self-assertion; 28 = Self-observation; 29 = Sublimation; 30 = Suppression

of that difficulty, the patient made sarcastic comments toward the therapist and switched to another topic: the relationship with his girlfriend. The patient complained a lot about how frustrating this relationship was and justified his anger as the result of feeling too much pressure and low empathy at the same time. He made lots of devaluing comments about his girlfriend, although he could still see some positive aspects of her. Moreover, he reported on a series of passive aggressive behaviors toward a number of people (e.g., delay in return phone calls, calling up his ex-girlfriend, feeling bored in the session, feeling the therapist detached from him). Most of the session was characterized by the patient complaining about several aspects of his life, including the therapy, in which he had experienced ambivalence, detachment and frustration. When the therapist tried to interpret these feelings as defensive responses to the experience of a temporary unavailability of significant people, the patient denied the interpretation and perceived the therapist as manipulative. Despite therapist's interpretations of his opposition, silence and emotional distancing as reactions to feeling frustrated by not getting what he wants when he wants, the patient

rejected them and became even more oppositional. Toward the end of the session, after many therapist's attempts of interpreting patient's maladaptive pattern, the patient could finally reflect upon it and became more collaborative. However, his reflections were influenced by generalization, detachment and ambivalence. The patient described himself as stuck in silence, his inability to talk about his feelings, to see things in a different way. At this point the patient was able to let the therapist help him and get involved in a shared exploration of his fears, needs and desires. He reflected on his difficulty in listening to his girlfriend's trouble but somehow justified it as a need of physical connection. However, when the therapist made further interpretations of the patient's fantasy of emotional fusion, the patient seemed to reactivate the projective pattern, which was promptly interrupted by the therapist. This allowed the patient to keep reflecting in an ambiguous manner instead of complaining and activating all sorts of immature defense mechanisms.

**Table 10** displays PND and graphics of patient's defensive functioning, including ODF, defense levels, and individual



defenses scores. Defensive maturity fell in the range of severe depression or personality disorders ( $ODF < 4$ ; Presniak et al., 2010; Perry and Bond, 2012; Di Giuseppe et al., 2019), with about 70% of immature defenses in use during the session, in particular those belonging to disavowal defense level. Looking at the use of individual defense mechanisms, the legend shows that patient's predominant defenses were help-rejecting complaining, passive aggression, projecting identification, projection, rationalization, and denial. This defensive constellation indicates a depressive, resistant and passive aggressive patient inclined to withdraw inside himself and view his problems as externally caused, instead of dealing with his internal conflicts and external stressful situations.

## DISCUSSION

The utility of studying defenses with the DMRS approach is that it reveals the psychological function behind the use of defense mechanisms, the unconscious motives for protecting oneself from intolerable emotional experiences. It could be the need of withdrawing anger, the threat of self-esteem failures, the shame of guilt experienced in confronting with unacceptable thoughts and many others. Any of these functions suggests what internal conflicts the individual is experiencing and how adaptive is his or her defensive functioning. In the present article we described the theoretical and methodological background of the DMRS-Q, illustrated its computerized and free-of-charge online use, provided directions for coding and described the interpretation of results.

While the assessment of defense mechanisms has been a controversial issue debated among scholars for more than a century, in recent years research, including that with the DMRS (Perry, 1990) convinced the American Psychiatric Association to include in the DSM-IV a provisional axis for the assessment of the hierarchy of defense mechanisms (American Psychiatric Association, 1994). However, the excellence of this highly valid and reliable method is unfortunately accompanied by its time-consuming training and coding costs, which led to the elimination of the defense axis in the DSM-5 because of lack of empirical findings supporting the theory (Vaillant, 1992).

With the development of the Q-sort version of the DMRS we provided a computerized and easy-to-use clinician-report measure for the assessment of the whole hierarchy of defense mechanisms observable in the routine practice of both dynamic and non-dynamic practitioners, as other have found (Starrs and Perry, 2018).

Apart from the well-established theory behind their development, the advantages of using this DMRS-based measure are numerous. First, the ODF score informs on how adaptive the individual's defensive reaction is to internal conflicts and external stressful situations. This score can also be used as an outcome measure due to its strong correlation with other indexes of well-being. Second, the tripartite defensive category proportional scores tell to what extent the patient uses mature, middle-range and immature defenses. These scores are

often used for a summary picture of the individual's defensive functioning. Third, the seven defense level proportional scores reflect the prevalent defenses that have common functions at each level, and how much this contributes to ODF. Fourth, the 30 individual defense proportional scores provide a picture of the patient's characteristic defense mechanisms, which reflects the most specific detailed level of defense assessment. These scores can capture differences between similar diagnostic categories, such as personality disorders (Maffei et al., 1995; Lingiardi and Giovanardi, 2017; Di Giuseppe et al., 2019, 2020d; Kramer, 2019), and reflect moment-to-moment micro-changes during the psychotherapy process (Hilsenroth and Pitman, 2019; Leibovich et al., 2020; Prout et al., 2021). Fifth, in addition to other DMRS measures (Perry, 1990; Di Giuseppe et al., 2020a), the DMRS-Q provides the patient's defensive profile, a qualitative description of the most characteristic defensive patterns that contribute to determine the individual's DPN (see the "Defensive Profile Narratives" in **Table 10**). Therapists can benefit from the use of all the above DMRS-Q scoring levels, in particular the individual defenses. These can guide therapeutic interventions to address desired changes in the patient's defensive profile, thereby fostering therapeutic alliance and alleviating symptoms. Sixth, another remarkable quality of the DMRS-Q is its excellent support for teaching defense mechanisms. The use of simple examples of defensive responses provided by the DMRS-Q items, similar to the examples in the original DMRS Manual (Perry, 1990), can help the students' understanding of definitions and functions of defense mechanisms. Moreover, the five items describing each defense mechanism can help in understanding differences in various occurrences of the same defense, especially the ones used uncommonly. Seventh, the main unique strengths of the DMRS-Q system are the short training required for its reliable use, the lack of necessity for transcriptions for coding defenses, and the free unlimited access to the DMRS-Q software from any electronic device connected to the internet. The estimated time for a DMRS-Q coding is approximately 15 min for expert trained raters who habitually code more than three sessions per week. This allows clinicians to code patients' defense mechanisms after each session or a group of sessions and monitoring changes in defensive functioning during the therapeutic process (Wampold and Imel, 2015; Tanzilli et al., 2017, 2018, 2020).

The DMRS-Q has also some limitations that need consideration. First, the DMRS-Q is based on the Q-sort methodology, which requests the use of a *a priori* determined forced distribution that might limit the rater's decision-making in the rank-ordering process. Second, the need for sufficient information on the patient's defensive functioning is essential to ensure that the rater's clinical inference for scoring all items into the forced distribution has an adequate evidentiary basis. Finally, the evaluation of defensive functioning is made on the overall defensive profile including all defensive phenomena observed. This methodology does not allow for the detection of specific defense mechanisms in use in particular moments, which is instead possible by applying the original DMRS to transcripts of clinical interviews or therapy sessions.

According to preliminary validation studies, the DMRS-Q seems a valid and reliable tool for the assessment of defense mechanisms in clinical settings, where the requirements for the use of the original DMRS are often unavailable (Di Giuseppe et al., 2014; Békés et al., 2021). A recent study (Békés et al., 2021) demonstrated that graduate students who received 6-h training reached excellent inter-rated reliability on the ODF (ICC = 0.90), good to excellent on defensive categories (ICC ranging from 0.83 to 0.92), and acceptable to excellent on the seven defense levels (ICC ranging from 0.74 to 0.92), with the only exception of major image-distorting defense level (ICC = 0.42) which is usually the less reliable scale due to the low base-rate of these defense mechanisms. On the other hand, non-trained students also showed excellent ICC on the ODF (ICC = 0.88) and acceptable to excellent on most DMRS-Q scales (ICC ranging from 0.60 to 0.91), except for the obsessional defense level (Békés et al., 2021). Good criterion validity was found in both clinical (Di Giuseppe et al., 2014) and community samples (Di Giuseppe et al., 2020a). Moreover, comparisons with mentalization and attachment showed great convergent and discriminant validity (Tanzilli et al., 2021). These results demonstrated that the DMRS-Q has very promising psychometric properties that must be confirmed by future studies on larger and more stratified samples.

## CONCLUSION

The systematic assessment of defense mechanisms in clinical settings is very important for monitoring the therapeutic process

and aiding clinicians in choosing how to intervene in response to defenses used in the session (Fonagy et al., 2008; Gabbard, 2014; Conversano, 2021). The use of valid and reliable measures based on the gold-standard theory is essential for ensuring that what we observe is properly operationalized. The DMRS-Q is an easy-to-use, low-cost, computerized tool with promising psychometric properties can help clinicians in monitoring changes in defense mechanisms during the treatment, as suggested by others (Bhatia et al., 2017; Barber and Solomonov, 2019). The automatic scoring procedure provides a comprehensive report of qualitative and quantitative information on patient's defensive functioning that can be used for clinical, research, and teaching purposes. The ease of use of the DMRS-Q makes this measure a potential candidate for fostering the observer-rated assessment of defense mechanisms in routine clinical practice and in process-outcome research.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## AUTHOR CONTRIBUTIONS

The authors contributed in equal part to this work and approved it for publication. Both authors contributed to the article and approved the submitted version.

## REFERENCES

- American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edn. Washington, DC: American Psychiatric Association.
- American Psychiatric Association (2013). *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edn. Washington, DC: American Psychiatric Publishing.
- Barber, J. P., and Solomonov, N. (2019). Toward a personalized approach to psychotherapy outcome and the study of therapeutic change. *World Psychiatry* 18, 291–292. doi: 10.1002/wps.20666
- Békés, V., Prout, T. A., Di Giuseppe, M., Wildes Ammar, L., Kui, T., Arsena, G., et al. (2021). Initial validation of the defense mechanisms rating scales Q-sort: a comparison of trained and untrained raters. *Mediterr. J. Clin. Psychol.* 9. doi: 10.13129/2282-1619/mjcp-3107
- Berney, S., de Roten, Y., Beretta, V., Kramer, U., and Despland, J. N. (2014). Identifying psychotic defenses in a clinical interview. *J. Clin. Psychol.* 70, 428–439.
- Bhatia, M., Petraglia, J., de Roten, Y., and Drapeau, M. (2017). Do therapists practicing psychoanalysis, psychodynamic therapy and short-term dynamic therapy address patient defenses differently? *Arch. Psychiatry Psychother.* 19, 7–14. doi: 10.12740/APP/69642
- Block, J. (1978). *The Q-Sort Method in Personality Assessment and Psychiatric Research*. Palo Alto, CA: Consulting Psychologists Press.
- Boldrini, T., Lo Buglio, G., Giovanardi, G., Lingardi, V., and Salcuni, S. (2020). Defense mechanisms in adolescents at high risk of developing psychosis: an empirical investigation. *Res. Psychother.* 23:456. doi: 10.4081/ripppo.2020.456
- Brown, S. R. (1993). A primer on Q methodology. *Operant Subjectivity* 16, 91–138.
- Brown, S. R. (1995). Q methodology as the foundation for a science of subjectivity. *Operant Subjectivity* 18, 1–16.
- Conversano, C. (2021). The psychodynamic approach during COVID-19 emotional crisis. *Front. Psychol.* 12:670196. doi: 10.3389/fpsyg.2021.670196
- Conversano, C., and Di Giuseppe, M. (2021). Psychological factors as determinants of chronic conditions: clinical and psychodynamic advances. *Front. Psychol.* 12:635708. doi: 10.3389/fpsyg.2021.635708
- Cramer, P. (1987). The development of defense mechanisms. *J. Pers.* 55, 597–614. doi: 10.1111/j.1467-6494.1987.tb00454.x
- Cramer, P. (2015). Defense mechanisms: 40 years of empirical research. *J. Pers. Assess.* 97, 114–122. doi: 10.1080/00223891.2014.947997
- Di Giuseppe, M., Gennaro, A., Lingardi, V., and Perry, J. C. (2019). The role of defense mechanisms in emerging personality disorders in clinical adolescents. *Psychiatry* 82, 128–142. doi: 10.1080/00332747.2019.1579595
- Di Giuseppe, M., Perry, J. C., Lucchesi, M., Michelini, M., Vitiello, S., Piantanida, A., et al. (2020a). Preliminary reliability and validity of the DMRS-SR-30, a novel self-report based on the defense mechanisms rating scales. *Front. Psychiatry* 11:870. doi: 10.3389/fpsyg.2020.00870
- Di Giuseppe, M., Prout, T. A., Fabiani, M., and Kui, T. (2020b). Defensive profile of parents of children with externalizing problems receiving regulation-focused psychotherapy for children (RFP-C): a pilot study. *Mediterr. J. Clin. Psychol.* 8. doi: 10.6092/2282-1619/mjcp-2515
- Di Giuseppe, M., Miniati, M., Miccoli, M., Ciacchini, R., Orrù, G., Lo Sterzo, R., et al. (2020c). Defensive responses to stressful life events associated with cancer diagnosis. *Mediterr. J. Clin. Psychol.* 8, 1–22. doi: 10.6092/2282-1619/mjcp-2384
- Di Giuseppe, M., Perry, J. C., Conversano, C., Gelo, O. C. G., and Gennaro, A. (2020d). Defense mechanisms, gender, and adaptiveness in emerging personality disorders in adolescent outpatients. *J. Nerv. Ment. Dis.* 208, 933–941. doi: 10.1097/NMD.0000000000001230
- Di Giuseppe, M., Nepa, G., Prout, T. A., Albertini, F., Marcelli, S., Orrù, G., et al. (2021). Stress, burnout, and resilience among healthcare workers during the COVID-19 emergency: the role of defense mechanisms. *Int. J. Environ. Res. Public Health* 18:5258. doi: 10.3390/ijerph18105258

- Di Giuseppe, M., Perry, J. C., Petraglia, J., Janzen, J., and Lingardi, V. (2014). Development of a Q-sort version of the defense mechanism rating scales (DMRS-Q) for clinical use. *J. Clin. Psychol.* 70, 452–465. doi: 10.1002/jclp.22089
- Drapeau, M., de Roten, Y., Perry, J. C., and Despland, J. N. (2003). A study of stability and change in defense mechanisms during a brief psychodynamic investigation. *J. Nerv. Ment. Dis.* 191, 496–502. doi: 10.1097/01.nmd.0000082210.76762.ec
- Fonagy, P., Gergely, G., and Target, M. (2008). “Psychoanalytic constructs and attachment theory and research,” in *Handbook of Attachment: Theory, Research, and Clinical Applications*, eds J. Cassidy and P. R. Shaver (New York, NY: The Guilford Press), 783–810.
- Freud, S. (1894). “The neuro-psychoses of defence,” in *The Standard Edition of the Complete Psychological Works of Sigmund Freud (1893–1899) Early Psycho-Analytic Publications*, Vol. 3, ed. Strachey, J. (London: The Hogarth Press).
- Gabbard, G. O. (2014). *Psychodynamic Psychiatry in Clinical Practice*, 5th Edn. Washington, DC: American Psychiatric Association Publishing.
- Hilsenroth, M. J., and Pitman, S. R. (2019). “Working with cyclical relational patterns in contemporary psychodynamic psychotherapy,” in *Contemporary Psychodynamic Psychotherapy*, eds D. Kealy and J. S. Ogrodniczuk (Cambridge, MA: Academic Press), 19–31.
- Hilsenroth, M. J., Callahan, K. L., and Eudell, E. M. (2003). Further reliability, convergent and discriminant validity of overall defensive functioning. *J. Nerv. Ment. Dis.* 191, 730–737. doi: 10.1097/01.nmd.0000095125.92493.e8
- Hoffman, L., Rice, T., and Prout, T. A. (2016). *Manual of Regulation-Focused Psychotherapy for Children (RFP-C) with Externalizing Behaviors: A Psychodynamic Approach*. Abingdon-on-Thames: Routledge.
- Hoglund, P., and Perry, J. C. (1998). Defensive functioning predicts improvement in treated major depressive episodes. *J. Nerv. Ment. Dis.* 186, 238–243.
- Kernberg, O. F. (1988). Object relations theory in clinical practice. *Psychoanal. Q.* 57, 481–504.
- Kramer, U. (2019). Personality, personality disorders, and the process of change. *Psychother. Res.* 29, 324–336. doi: 10.1080/10503307.2017.1377358
- Leibovich, L., Front, O., McCarthy, K. S., and Zilcha-Mano, S. (2020). How do supportive techniques bring about therapeutic change: the role of therapeutic alliance as a potential mediator. *Psychotherapy* 57, 151–159. doi: 10.1037/pst0000253
- Lingiardi, V., and Giovanardi, G. (2017). Challenges in assessing personality of individuals with gender dysphoria with the SWAP-200. *J. Endocrinol. Invest.* 40, 693–703. doi: 10.1007/s40618-017-0629-7
- Lingiardi, V., Lonati, C., Delucchi, F., Fossati, A., Vanzulli, L., and Maffei, C. (1999). Defense mechanisms and personality disorders. *J. Nerv. Ment. Dis.* 187, 224–228. doi: 10.1097/00005053-199904000-00005
- Maffei, C., Fossati, A., Lingardi, V., Madeddu, F., Borellini, C., and Petrachi, M. (1995). Personality maladjustment, defenses, and psychopathological symptoms in nonclinical subjects. *J. Pers. Disord.* 9, 330–345. doi: 10.1521/pedi.1995.9.4.330
- Perry, J. C. (1990). *Defense Mechanism Rating Scales (DMRS)*, 5th Edn. Cambridge, MA: Perry, J. C.
- Perry, J. C. (2014). Anomalies and specific functions in the clinical identification of defense mechanisms. *J. Clin. Psychol.* 70, 406–418. doi: 10.1002/jclp.22085
- Perry, J. C., and Bond, M. (2012). Change in defense mechanisms during long-term dynamic psychotherapy and five-year outcome. *Am. J. Psychiatry* 169, 916–925.
- Perry, J. C., and Henry, M. (2004). Studying defense mechanisms in psychotherapy using the defense mechanism rating scales. *Def. Mech.* 136, 165–186.
- Presniak, M. D., Olson, T., and MacGregor, M. W. (2010). The role of defense mechanisms in borderline and antisocial personalities. *J. Pers. Assess.* 92, 137–145. doi: 10.1080/00223890903510373
- Prout, T. A., Rice, T., Chung, H., Gorokhovskiy, Y., Murphy, S., and Hoffman, L. (2021). Randomized controlled trial of regulation focused psychotherapy for children: a manualized psychodynamic treatment for externalizing behaviors. *Psychother. Res.* 1–16. doi: 10.1080/10503307.2021.1980626
- Starrs, C. J., and Perry, J. C. (2018). Coping action patterns as mechanisms of change across psychotherapies: three case examples of personality disorders with recurrent major depression. *J. Pers. Disord.* 32, 58–74. doi: 10.1521/pedi.2018.32.sup.58
- Tanzilli, A., Di Giuseppe, M., Giovanardi, G., Boldrini, T., Caviglia, G., Conversano, C., et al. (2021). Mentalization, attachment, and defense mechanisms: a psychodynamic diagnostic manual-2-oriented empirical investigation. *Res. Psychother.* 24:531. doi: 10.4081/ripppo.2021.531
- Tanzilli, A., Gualco, I., Baiocco, R., and Lingardi, V. (2020). Clinician reactions when working with adolescent patients: the therapist response questionnaire for adolescents. *J. Pers. Assess.* 102, 616–627. doi: 10.1080/00223891.2019.1674318
- Tanzilli, A., Lingardi, V., and Hilsenroth, M. (2018). Patient SWAP-200 personality dimensions and FFM traits: do they predict therapist responses? *Pers. Disord.* 9, 250–262. doi: 10.1037/per0000260
- Tanzilli, A., Muzi, L., Ronningstam, E., and Lingardi, V. (2017). Countertransference when working with narcissistic personality disorder: an empirical investigation. *Psychotherapy* 54, 184–194. doi: 10.1037/pst0000111
- Vaillant, G. E. (1971). Theoretical hierarchy of adaptive ego mechanisms: a 30-year follow-up of 30 men selected for psychological health. *Arch. Gen. Psychiatry* 24, 107–118. doi: 10.1001/archpsyc.1971.01750080011003
- Vaillant, G. E. (1977). *Adaptation to Life*. Boston, MA: Little, Brown.
- Vaillant, G. E. (1992). *Ego Mechanisms of Defense: A Guide for Clinicians and Researchers*. Washington, DC: American Psychiatric Press.
- Wampold, B. E., and Imel, Z. E. (2015). *The Great Psychotherapy Debate: The Evidence for What Makes Psychotherapy Work*, 2nd Edn. New York, NY: Routledge.

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Di Giuseppe and Perry. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Psychological Adaptive Mechanism Maturity, Age, and Depression Symptoms in Advanced-Stage Cancer Patients

Thomas Beresford<sup>1,2\*</sup>, Patricia U. Teschke<sup>3</sup>, Daniel Hipp<sup>2</sup> and Patrick J. Ronan<sup>4,5</sup>

<sup>1</sup>School of Medicine, University of Colorado, Aurora, CO, United States, <sup>2</sup>Rocky Mountain Regional VA Medical Center, VA Eastern Colorado Health Care System, Aurora, CO, United States, <sup>3</sup>SSM Health Care, St. Louis, MO, United States, <sup>4</sup>Sanford School of Medicine, University of South Dakota, Vermillion, SD, United States, <sup>5</sup>VA Medical Center-Sioux Falls, Sioux Falls, SD, United States

## OPEN ACCESS

### Edited by:

Mariagrazia Di Giuseppe,  
University of Pisa, Italy

### Reviewed by:

Federica Bellone,  
University of Messina, Italy  
Antonino Catalano,  
University of Messina, Italy

### \*Correspondence:

Thomas Beresford  
thomas.beresford@cuanschutz.edu

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychology

**Received:** 31 May 2021

**Accepted:** 21 September 2021

**Published:** 26 October 2021

### Citation:

Beresford T, Teschke PU, Hipp D and  
Ronan PJ (2021) Psychological  
Adaptive Mechanism Maturity, Age,  
and Depression Symptoms in  
Advanced-Stage Cancer Patients.  
Front. Psychol. 12:718476.  
doi: 10.3389/fpsyg.2021.718476

**Background:** Previously, we reported that the maturity of Psychological Adaptive Mechanism (PAM; alternatively, ego defense mechanism) endorsement, but not depression symptom severity, predicted 5-year survival rates in adult cancer patients and that study controlled for age as a significant variable. In this investigation, we hypothesized that greater PAM maturity would correlate significantly with age and with fewer depression symptoms in a larger sample.

**Methods:** In this cross-section study, adult cancer outpatients ( $N=293$ ) completed the Defense Style Questionnaire (DSQ), the Beck Depression Inventory (BDI), and provided additional clinical data. Spearman's correlation and multiple regression modeling provided statistical tests of the study hypotheses.

**Results:** Contrary to our hypothesis, DSQ PAM maturity endorsement did not correlate significantly with increasing age. Greater PAM maturity ratio on the DSQ ( $p < 0.0001$ ) and current antidepressant use ( $p < 0.05$ ), however, both provided inverse associations with total BDI symptom frequency ( $p < 0.01$ ). Age was inversely associated with BDI mood ( $p < 0.0001$ ) and somatic scores ( $p < 0.04$ ). Items that worsened BDI symptom frequency included self-reported mood-altering anti-cancer medications and any psychiatric history. Cancer stage, time since diagnosis, and chemotherapy treatment did not correlate with DSQ or BDI scores. Multiple regression analysis found that the correlated items accounted for 17.2% of the variance in mood symptoms and 4.9% in somatic symptoms. Specifically, adaptive maturity and age associated with fewer depression symptoms, while cancer medications affecting mood, and a previous psychiatric history each predicted higher frequency of depression scores.

**Conclusion:** The results suggest that PAM maturity likely predicts fewer depression symptoms while younger age associates with more depression symptoms in this clinical sample. Centrally, acting cancer medications, such as glucocorticoids, and any history of psychiatric disorder correlated with increased depression symptom frequencies. In this



cross-section study, antidepressant medications indicated higher frequencies of depressive symptoms, likely reflecting their use in persons previously diagnosed with depression. Further research should target factors that improve PAM maturity as a potential treatment target, especially in younger age groups.

**Keywords:** psychological adaptive mechanisms, age, adaptation, cancer, depression

## INTRODUCTION

In a previous study, we reported that the Maturity level of Psychological Adaptive Mechanisms (PAMs; alternately, “ego defense mechanisms”) independently predicted survival in a small sample of late-stage cancer patients scoring at the extremes on the Defense Style Questionnaire (DSQ) while extreme scores on the Beck Depression Inventory (BDI) did not (Beresford et al., 2006). In that sample, half of those who endorsed mature adaptive styles survived for 5 years, whereas half of those endorsing immature PAMs survived only 18 months. The study identified age as a significant confounding variable for which our statistical analysis controlled in arriving at those final survival data. The relationship between PAMs and age in this setting remains poorly understood, however, and to the best of our knowledge, no studies have examined hierarchical PAM maturity effects in relation to age and depression in cancer patients (Di Giuseppe et al., 2018).

In elegant longitudinal studies of non-pathologic samples followed over many decades, Vaillant observed that psychological adaptation matures over time, as primitive adaptive mechanisms evolve “into more mature mechanisms, rather than being abandoned or replaced” (Vaillant et al., 1986). His observations suggested that older age might predict greater maturity score endorsement when assessed in a clinical sample, such as in those suffering from cancer. That is, hypothetically, psychological and temporal maturity go hand in hand.

Posited links between age and depression in cancer patients continue to provide cause for debate. For example, large studies using the Hospital Anxiety and Depression Scale (HADS) reached conflicting results. One found depression to increase with age and another found depression more likely in younger rather than older adults (Carroll et al., 1993; Hinz et al., 2010). Yet another study found no age effect on depression occurrence among cancer patients (Aass et al., 1997). In the present study, we hypothesized that positive associations would occur between increasing age and greater PAM maturity, as well as, between increasing age and fewer depression mood symptoms in this sample of late-stage cancer patients.

## MATERIALS AND METHODS

### Study Design

This cross-section study analyzed data collected during summer months from 1999 through 2010. Fellowship grants from the National Cancer Institute through the University of Colorado Cancer Center and the Department of Psychiatry of the University

of Colorado School of Medicine funded this project. Summer research assistants were trained and certified in institutional requirements with respect to confidentiality, research ethics, and good clinical practices. All research assistants were supervised by the principal investigator (TB) who also supervised data collection as did permanent research staff members. All the research assistants received specific training in the administration of each of the instruments used in this study.

Prior to data collection, the research assistants explained the parameters of the study to potential subjects and obtained informed consent. Subjects who consented to the study then underwent a delirium screening examination and were asked to rate their pain, if present, on a linear-analog scale. Participants not excluded for either delirium or significant pain completed a brief demographic questionnaire. Finally, chart reviews verified items related to participants’ medical history, such as cancer diagnosis and stage.

### Participants

Study participants included cancer outpatients entered consecutively during the respective time periods. All participants were adults who consented to this Institutional Review Board approved study. In order to meet inclusion criteria for this study, participants: (1) presented with a diagnosis of cancer; (2) were free of delirium as assessed by a standard delirium scale (Trzepacz et al., 1988); (3) were either pain free or presented with minimal pain, as described below; and (4) agreed to participate voluntarily. Twenty potential subjects declined participation ( $N=20$  of 315); 14 provided no reason, four said the process was too long, and two reported feeling too tired. In accordance with privacy regulations, no further data were collected on those who declined consent.

Participants suffering from pancreatic or neuro-humoral secreting neoplasm, such as carcinoid or pituitary tumors, were excluded because of the known effects of these neoplasms on mood and affect. No patients were excluded due to pain of sufficient magnitude as to be subjectively distracting or greater than the first quartile of a linear-analog scale. Two patients who failed the delirium screen were excluded from the study. In this way, we accrued a total sample of 293 subjects who provided responses to the study instruments.

### Study Measures

Participants provided demographic and medical data, which included type and stage of cancer and time since cancer diagnosis. Diagnosis and staging were verified by medical record review. Staff also documented whether participants had a prior psychiatric history or reported current antidepressant use, and

the patient's own report of any other current anti-cancer medications that affected their mood.

### Defense Style Questionnaire

The DSQ was first developed by Bond and validated in subsequent studies as a qualitative and quantitative measure of PAMs (Andrews et al., 1993; Perry and Hoglend, 1998; Bond, 2004). It is a 40 item questionnaire that lists behavioral strategies by which individuals adapt to stressful events in their lives. This questionnaire presents 20 different adaptive styles, with two items for each PAM. Subjects are asked to agree or disagree with each statement on a 9-point Likert-type scale and a mean score for each mechanism is obtained by averaging the scores of the two items corresponding to each adaptive style.

Based in part on Vaillant's empirical work (Vaillant, 1971, 1985; Soldz and Vaillant, 1998), Bond and colleagues assigned DSQ scores into three groups of psychological adaptive styles: immature, neurotic, and mature (Andrews et al., 1993). Stratifying the scores in this manner allows calculation of category means for each of the three groups for each participant.

### Beck Depression Inventory

The BDI was developed by Beck and colleagues and validated by several studies as a tool for measuring frequency and severity of depressive symptoms (Beck et al., 1961; Beck and Steer, 1984; Enns et al., 1998; Richter et al., 1998; Aben et al., 2002). The BDI presents questions on specific depressive symptoms and asks respondents to rate their occurrence on a scale ranging from "rarely" to "often." Each item is scored, yielding a summed total BDI score. In this version of the BDI, mood symptoms (items 1–14) can be separated from somatic symptoms (items 15–21) and analyzed separately.

### Statistical Analysis

Calculation of the mean scores for each of the three DSQ domains (immature, neurotic, and mature) for each participant allowed analysis of the relationships among PAM maturity, age, and depression symptoms. The DSQ calculation added up the points corresponding to each category and divided the sum by the number of adaptive mechanisms corresponding to that domain. For example, in order to calculate the mature mean score, the scores corresponding to sublimation, humor, anticipation, and suppression on the DSQ were added together and then divided by 4. Next, we calculated an adaptive maturity ratio score for each subject by dividing each mean "Mature" DSQ score by the respective mean "Immature" DSQ score.

To facilitate descriptive analyses of time since diagnosis, those data were assigned codes as the follows: 1 for greater than 6 months from date of diagnosis to the date study instruments were completed, 2 for less than 6 months but greater than 1 month, 3 for less than 1 month but greater than 2 weeks, and 4 for less than 2 weeks.

Calculated Spearman's correlation determined the presence and statistical power of correlations between variables. This was followed by a multiple regression analysis to characterize predicted relationships.

## RESULTS

### Descriptive Statistics

This study included 293 cancer outpatients (Table 1), ranging in age from 22 to 87 years ( $M = 56.5$ ,  $SD = 11.6$ ). Participants included 156 females (53.2%) and 137 males (46.8%). By cancer stage, 20 participants were classified as Stage I (6.8%), 25 as Stage II (8.5%), 65 as Stage III (22.2%), and 174 as Stage IV (59.4%); nine participants (3.1%) had neoplasms for which stage was undetermined or unavailable. Data were collected on cancer diagnosis for each participant; however, frequency of each type was not evaluated, as the wide variety of cancer diagnoses made direct analysis by type unfeasible. Examples of cancer diagnoses in this sample included the following: breast, ovarian, prostate, testicular, colon, rectal, gastric, esophageal, oral, lung, brain, skin, and hematological malignancies.

### Main Hypotheses

**Adaptive maturity and age:** No direct correlation appeared between age and adaptive maturity. Cancer stage, time since diagnosis, and current chemotherapy did not reach correlation significance with either PAM maturity or total BDI scores; therefore, these variables were not included in follow-up analyses. Age was correlated with gender, which reflects the study cohort in which female participants were younger than males.

**Age and Depressive Symptoms:** A Spearman's rank correlation was performed to determine the presence and extent of correlations between variables (Table 2). Age significantly, and inversely, correlated with total BDI scores ( $r = -0.23$ ,  $p < 0.0001$ ), as well as BDI subscale mood symptom scores ( $r = -0.26$ ,  $p < 0.0001$ ) and somatic symptom scores ( $r = -0.12$ ,  $p < 0.04$ ). Factors associated with BDI-mood symptom scores included as: Self-reported current anti-neoplastic medications that affect mood ( $r = 0.21$ ,  $p < 0.001$ ), any psychiatric history ( $r = 0.15$ ,  $p < 0.01$ ), and adaptive maturity ratio ( $r = -0.24$ ,  $p < 0.0001$ ).

**TABLE 1 |** Age, gender, and cancer stage distribution of study sample.

	n	%
<b>Age</b>		
< 40	25	8.53
40–59	138	47.10
60–79	121	41.30
>79	6	2.05
Data Missing	3	1.02
<b>Gender</b>		
Females	156	53.24
Males	137	46.76
<b>Stage</b>		
I	20	6.83
II	25	8.53
III	65	22.18
IV	174	59.39
Data missing or N/A	9	3.07
Total	<b>293</b>	<b>100</b>

**TABLE 2 |** Intercorrelations among predictor and dependent variables ( $N=293$ ).

	1	2	3	4	5	6	7	8	9	10	11	12
1												
2	-0.040											
3	-0.228**	-0.271**										
4	-0.260**	-0.241**	0.860**									
5	-0.123*	-0.234**	0.859**	0.498**								
6	-0.099	0.026	0.201**	0.214**	0.131*							
7	-0.017	-0.033	0.138*	0.154**	0.057	0.290**						
8	-0.038	0.001	0.083	0.136*	-0.001	0.352**	0.468**					
9	0.139*	-0.095	-0.075	-0.083	-0.034	-0.082	-0.113	-0.181**				
10	0.001	0.049	0.053	0.028	0.073	0.037	-0.029	0.033	0.075			
11	-0.003	0.019	0.049	0.012	0.081	0.062	0.065	0.040	-0.012	-0.071		
12	-0.141*	0.020	0.044	0.059	0.024	0.044	-0.010	-0.046	-0.024	0.044	0.049	

1, age; 2, mature/immature ratio; 3, BDI total scores; 4, BDI-mood scores; 5, BDI-somatic scores; 6, self-reported cancer medications affecting mood; 7, psychiatric history; 8, current antidepressant use; 9, gender; 10, cancer stage; 11, time since diagnosis; and 12, current chemotherapy.

\*Correlation is significant at the 0.05 level (two tailed).

\*\*Correlation is significant at the 0.01 level (two tailed).

Counterintuitively, current antidepressant use ( $r=0.14$ ,  $p<0.02$ ) and depression symptoms were positively and significantly associated, meaning that antidepressant use indicated more, rather than fewer, BDI-mood symptoms.

## Exploratory Analyses

**Associations with BDI-Mood Symptom Variables:** To explore these data further, we hypothesized that (1) greater adaptive maturity each would predict lower frequencies of depressive mood symptoms and (2) that any psychiatric history and cancer medications reported as affecting mood, each, would predict more frequent mood and somatic depressive symptoms.

A multiple regression analysis tested these hypotheses (Table 3). Results of the analysis indicated that the overall model was significant,  $\Delta F(4,283)=15.87$ ,  $p<0.001$ , and accounted for 17.2% of the overall variance in BDI-mood subscale scores (Adj.  $R^2=0.172$ ). More specifically, age ( $t=4.76$ ,  $p<0.001$ ) and PAM maturity ( $t=4.71$ ,  $p<0.001$ ) inversely correlated with the BDI-mood ratings. Cancer medications affecting mood ( $t=2.06$ ,  $p<0.05$ ) and a previous psychiatric history ( $t=2.71$ ,  $p<0.01$ ) each indicated worsening BDI-mood subscale scores. These findings confirmed their respective hypotheses and suggested that older cancer patients and those who employ more mature coping styles are less likely to endorse depressive mood symptoms than younger patients, or those with less mature coping mechanisms.

**Associations With BDI-Somatic Symptom Variables:** We further hypothesized that adaptive maturity, age, medications affecting mood, and psychiatric history would significantly predict the BDI-somatic depressive symptoms. A second multiple regression analysis tested this (Table 4). Results indicated that the overall model was significant,  $[\Delta F(4,283)=4.72$ ,  $p=0.001]$ , accounting for 4.9% of the overall variance in BDI-somatic symptoms (Adj.  $R^2=0.049$ ). However, only adaptive maturity ( $t=3.43$ ,  $p=0.001$ ) and cancer medications affecting mood ( $t=1.96$ ,  $p<0.05$ ) were significantly predictive of BDI-somatic symptoms. Age ( $t=1.78$ ,  $p=0.077$ ) and previous psychiatric history ( $t=0.057$ ,  $p=0.95$ ) did not predict somatic scores.

## DISCUSSION

Results revealed that both lower PAM maturity and younger age predicted depression mood symptoms in cancer patients, supporting our hypothesis that increasing age and PAM maturity are independently associated with fewer mood symptoms. However, contrary to our hypothesis, age alone did not directly associate with PAM maturity scores. To our knowledge, this is the first study that has investigated lack of an association between age and PAM maturity specifically in cancer patients.

## Limitations

This study's limitations include its seasonal funding support. Stable funding for a continuous period of time would allow for a more systematic sampling and recruitment of a larger participant population and inclusion of one or more appropriate comparison groups. Furthermore, the study instruments used in this investigation provided ease of use as a best compromise in assessing complex target symptoms and behaviors. The DSQ remains a rudimentary tool for assessing PAMs (Perry and Hogle, 1998). The senior author has developed a clinical recognition algorithm to address this imprecision, a method that itself requires validity and reliability testing (Beresford, 2012, 2014).

The BDI scores indicate depressive symptom frequency and severity, but the BDI does not diagnose clinical depressive disorders. The BDI version used in this study was the revised version 1, chosen in our view for a potentially greater relevance to a cancer patient sample. Subsequent revisions to the BDI replaced weight loss, body image changes, and somatic preoccupation with concentration difficulty, worthlessness, and loss of energy items, yielding the BDI II version. Studies in non-cancer samples have found small differences in mean ratings for certain symptoms of depression and overall slightly higher mean scores for BDI II compared to its earlier version (Beck and Steer, 1984; Beck et al., 1996).

Like most other studies in this field, the present study offers only a cross-section assessment of its target variable. In respect

**TABLE 3 |** Multiple regression for age, mature/immature ratio, medications affecting mood, and prior psychiatric history<sup>a</sup>, and BDI cognitive scores<sup>b</sup>.

Variables	Adj. $R^2$	$\Delta R^2$	$F$	$B$	$SE$	$\beta$	sig.
(Constant)	0.172	0.183	15.87	10.615	1.131		0.000
Age				-0.079	0.017	-0.257	0.000
Mature/Immature ratio				-1.329	0.282	-0.254	0.000
Medications affecting mood				0.881	0.428	0.121	0.041
Psychiatric Hx				1.654	0.610	0.159	0.007

<sup>a</sup>Predictor variables: age, mature/immature ratio, medications affecting mood, and psychiatric history.<sup>b</sup>Dependent variable: BDI cognitive scores.**TABLE 4 |** Multiple regression for age, mature/immature ratio, medications affecting mood, and prior psychiatric history<sup>a</sup>, and BDI-somatic scores<sup>b</sup>.

Variables	Adj. $R^2$	$\Delta R^2$	$F$	$B$	$SE$	$\beta$	sig.
(Constant)	0.049	0.062	4.72	8.920	1.085		0.000
Age				-0.028	0.016	-0.103	0.077
Mature/Immature ratio				-0.930	0.271	-0.198	0.001
Medications affecting mood				0.803	0.411	0.123	0.052
Psychiatric Hx				-0.034	0.586	-0.004	0.954

<sup>a</sup>Predictor variables: age, mature/immature ratio, medications affecting mood, and psychiatric history.<sup>b</sup>Dependent variable: BDI cognitive scores.

to age alone, cross-section studies present clear limitations in establishing the variables associated with age that can inform the care of cancer patients. One study reported that younger cancer patients are more likely to endorse depression mood symptoms, a finding consistent with several studies, but contrary to others (Given et al., 1994; Kurtz et al., 1994; Smith et al., 2002; Mystakidou et al., 2005; Wong-Kim and Bloom, 2005; Agarwal et al., 2010; Lo et al., 2010). A large study of 1,529 cancer inpatients in cross-section and 2037 controls found that younger adults with cancer scored significantly higher in depression compared to the age-matched control group (Hinz et al., 2010). But in that study, the difference disappeared in older age groups, suggesting possibly higher baseline depression rates in older patients. Conversely, a number of studies report a positive association between age and depression (Carroll et al., 1993; Smith et al., 2002; Mystakidou et al., 2005), while others reported no age effect (Given et al., 1994; Kurtz et al., 1994; Aass et al., 1997).

Part of the difficulty in assessing depression in cancer patients is symptom overlap. Both advanced-stage cancers and the side effects of chemotherapy may include anorexia, cachexia, sleeping difficulties, and fatigue, all of which may closely resemble the somatic symptoms of depression. While the distinction may be more apparent in a clinician conducted assessment, we have yet to find standardized questionnaires that can easily distinguish depression-related physical symptoms from cancer-related depression-like symptoms.

## Clinical Context

The BDI has been widely used in studies involving cancer patients (Leigh et al., 1987; Richardson et al., 1990; Chang et al., 2004; Mainio et al., 2005, 2006; Beresford et al., 2006). One advantage is its ability to separate mood and somatic

symptoms of depression, allowing interpretation in the context of cancer. For instance, one study that investigated the somatic versus mood subscales in 213 cancer patients versus controls found that the inter-group score differences occurred in the somatic scores (Wedding et al., 2007). Another study compared BDI scores for cancer inpatients with their healthy next of kin and with physically healthy patients hospitalized for suicide attempt (Plumb and Holland, 1977). BDI-somatic symptoms significantly differentiated hospitalized and non-hospitalized subjects, but not cancer inpatients from suicidal patients. The BDI-mood scale did not separate cancer inpatients from next of kin; however, both groups scored significantly lower than the suicide attempt group. While these findings support the prominence of somatic symptoms in depression, they also raise questions about the specificity of the somatic scale in the absence of mood symptoms in the setting of cancer.

The disparate reports on the effect of age on depression among cancer patients may reflect the lack of standardized depression assessment tools for this clinical population, as well as differences in study designs and sample populations. It may, however, also indicate that other unaccounted variables could be playing a role in this association. This evidence taken together with our findings that both mature adaptation and increased age predicted fewer depression mood symptoms in cancer patients could suggest a possible role of PAM maturity often unaddressed clinically.

Vaillant's longitudinal studies found PAM maturity to increase age (Vaillant, 1971, 1985; Vaillant et al., 1986). Some cross-section studies have reported a negative association between age and endorsement of maladaptive mechanisms (Whitty, 2003). Others have found no age differences in younger and older adults (Tuulio-Henriksson et al., 1997; Segal et al., 2007). Change versus stability of adaptive mechanisms likely requires longitudinal



study design rather than cross-section exploration, particularly among young adults (Diehl et al., 1996; Tuulio-Henriksson et al., 1997; Whitty, 2003; Segal et al., 2007; Yu et al., 2008). Since the previous studies mentioned here involved non-clinical populations, it is difficult to predict the comparability of their findings in a clinical sample, particularly in the setting of cancer.

Immature PAMs have been associated with adverse outcomes in Sjogren's disease (Hyphantis et al., 2011), multiple sclerosis (Hyphantis et al., 2008), inflammatory bowel disease (Hyphantis et al., 2005, 2010), chronic obstructive pulmonary disease (Albuquerque et al., 2011), and diabetes mellitus (Martino et al., 2020). Endorsement of immature mechanisms has also been linked to depression (Akkerman et al., 1992; Bond, 2004; Bronnec et al., 2005; Blaya et al., 2006; Sharma and Sinha, 2010) and anxiety (Bond, 2004; Blaya et al., 2006) in the general population, but there are only limited data in cancer patients. One study of 100 patients with primary liver cancer reported a positive correlation between depressive symptoms and endorsement of immature defense mechanisms, consistent with our present findings (Wan et al., 2003).

Although we could find no other studies investigating the role of age in adaptative maturity and depression in cancer patients, there have been a few reports on the role of coping styles in this setting. A study of 199 early stage lung cancer patients undergoing surgical intervention found an inverse correlation between depressive symptoms and age, and between depressive symptoms and adaptive coping styles (Walker et al., 2006). Another in 80 women with breast cancer also found higher depressive symptom endorsement in younger patients and in those who demonstrated maladaptive coping styles (Compas et al., 1999). While coping styles and adaptive mechanisms are measured differently, these indirect findings further support a role for psychological adjustment mechanisms in respect to age and depression.

## Clinical Application

Statistical models presented above accounted for a total of about one-fifth of the variance in BDI mood and somatic symptoms in this study. Future research should focus on identifying these variables and how they affect younger versus older adult cancer patients' depression. For everyday clinical use, three of the associated variables bear mention. First, the self-report of cancer therapy medications affecting mood appeared to influence the production of depression symptoms. While this warrants further analysis, our first impression suggests that untreated glucocorticoid effects may contribute a significant clinical share. Second, any psychiatric history appeared to contribute its weight in ways that require further delineation of specific histories and conditions. Last, and most surprising on its face, the presence of an antidepressant medication appeared to increase, rather than lessen, the BDI symptom frequencies. The relationship may not have been causal, however, since more depression symptoms indicate antidepressant intervention clinically and antidepressant effectiveness is outside the scope of this study.

An overall suggestion from this study's data, therefore, may serve to sharpen the focus of improving depression treatment in cancer patients (1) who show less mature PAMs, (2) who are younger rather than older, (3) who report mood changes on the anti-neoplastic medications, and (4) who report a

preexisting psychiatric history. Improved clinical care will require PAM characterization of subgroups of cancer patients for whom specific treatments, such as supportive or other forms of psychotherapy, can result in significant improvement during cancer diagnosis and treatment.

## Conclusion

While age alone does not predict PAM maturity in the setting of cancer, both advanced age and greater PAM maturity, independently, lessen the risk of depression in cancer patients. While age is independent of treatment, PAMs invoke the possibility of active treatment aimed at increasing PAM maturity and lessening the effects both of cancer and the depression related to it. Effecting positive changes in PAM maturity point toward targeted psychotherapy as a potential specific treatment in cancer conditions. Whether achieved through experience or psychological treatment, PAM maturity can lessen the psychological damage of cancer and in so doing potentially prolong survival.

## DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Colorado Multiple Institutional Review Board. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

TB: principal investigator and author. PT: co-investigator, data manager, and co-author. DH: co-investigator, data analysis, and co-author. PR: editor, co-investigator, reference coordinator, and co-author. All authors contributed to the article and approved the submitted version.

## FUNDING

Dr.'s Beresford and Ronan receive partial support from Department of Veterans Affairs Merit Review Award, I01BX004712. Dr. Ronan receives support from NIMH 1 R01 MH122954 (P.J.R.), NIH NIGMS U54GM128729, both through the Great Plains Veterans Research Foundation.

## ACKNOWLEDGMENTS

We thank the summer research assistants who contributed to this study, as well as the University of Colorado Cancer Center for their assistance in this study. We especially thank Brandon Schmidt, M.A., and E. Brie Thumm, Ph.D. who assisted in data collection and analysis.

## REFERENCES

- Aass, N., Fossa, S. D., Dahl, A. A., and Moe, T. J. (1997). Prevalence of anxiety and depression in cancer patients seen at the Norwegian radium hospital. *Eur. J. Cancer* 33, 1597–1604. doi: 10.1016/S0959-8049(97)00054-3
- Aben, I., Verhey, F., Lousberg, R., Lodder, J., and Honig, A. (2002). Validity of the beck depression inventory, hospital anxiety and depression scale, SCL-90, and Hamilton depression rating scale as screening instruments for depression in stroke patients. *Psychosomatics* 43, 386–393. doi: 10.1176/appi.psy.43.5.386
- Agarwal, M., Hamilton, J. B., Moore, C. E., and Crandell, J. L. (2010). Predictors of depression among older African American cancer patients. *Cancer Nurs.* 33, 156–163. doi: 10.1097/NCC.0b013e3181bdef76
- Akkerman, K., Carr, V., and Lewin, T. (1992). Changes in ego defenses with recovery from depression. *J. Nerv. Ment. Dis.* 180, 634–638. doi: 10.1097/00005053-199210000-00004
- Albuquerque, S. C., Carvalho, E. R., Lopes, R. S., Marques, H. S., Macedo, D. S., Pereira, E. D., et al. (2011). Ego defense mechanisms in COPD: impact on health-related quality of life and dyspnea severity. *Qual. Life Res.* 20, 1401–1410. doi: 10.1007/s11136-011-9884-9
- Andrews, G., Singh, M., and Bond, M. (1993). The Defense style questionnaire. *J. Nerv. Ment. Dis.* 181, 246–256. doi: 10.1097/00005053-199304000-00006
- Beck, A. T., and Steer, R. A. (1984). Internal consistencies of the original and revised Beck depression inventory. *J. Clin. Psychol.* 40, 1365–1367. doi: 10.1002/1097-4679(198411)40:6<1365::AID-JCLP2270400615>3.0.CO;2-D
- Beck, A. T., Steer, R. A., Ball, R., and Ranieri, W. (1996). Comparison of Beck depression inventories-IA and -II in psychiatric outpatients. *J. Pers. Assess.* 67, 588–597. doi: 10.1207/s15327752jpa6703\_13
- Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., and Erbaugh, J. (1961). An inventory for measuring depression. *Arch. Gen. Psychiatry* 4, 561–571. doi: 10.1001/archpsyc.1961.01710120031004
- Beresford, T. P. (2012). *Psychological Adaptive Mechanisms: Ego Defense Recognition in Practice and Research*. New York: Oxford University Press.
- Beresford, T. P. (2014). Clinical assessment of psychological adaptive mechanisms in medical settings. *J. Clin. Psychol.* 70, 466–477. doi: 10.1002/jclp.22090
- Beresford, T. P., Alfors, J., Mangum, L., Clapp, L., and Martin, B. (2006). Cancer survival probability as a function of ego defense (adaptive) mechanisms versus depressive symptoms. *Psychosomatics* 47, 247–253. doi: 10.1176/appi.psy.47.3.247
- Blaya, C., Dornelles, M., Blaya, R., Kipper, L., Heldt, E., Isolan, L., et al. (2006). Do defense mechanisms vary according to the psychiatric disorder? *Braz. J. Psychiatry* 28, 179–183. doi: 10.1590/s1516-44462006000300007
- Bond, M. (2004). Empirical studies of defense style: relationships with psychopathology and change. *Harv. Rev. Psychiatry* 12, 263–278. doi: 10.1080/10673220490886167
- Bronnec, M., Corruble, E., Falissard, B., Reynaud, M., Guelfi, J. D., and Hardy, P. (2005). Reports on defense styles in depression. *Psychopathology* 38, 9–15. doi: 10.1159/000083965
- Carroll, B. T., Kathol, R. G., Noyes, R. Jr., Wald, T. G., and Clamon, G. H. (1993). Screening for depression and anxiety in cancer patients using the hospital anxiety and depression scale. *Gen. Hosp. Psychiatry* 15, 69–74. doi: 10.1016/0163-8343(93)90099-A
- Chang, G., Orav, E. J., Tong, M. Y., and Antin, J. H. (2004). Predictors of 1-year survival assessed at the time of bone marrow transplantation. *Psychosomatics* 45, 378–385. doi: 10.1176/appi.psy.45.5.378
- Compas, B. E., Stoll, M. F., Thomsen, A. H., Oppedisano, G., Epping-Jordan, J. E., and Krag, D. N. (1999). Adjustment to breast cancer: age-related differences in coping and emotional distress. *Breast Cancer Res. Treat.* 54, 195–203. doi: 10.1023/A:1006164928474
- Di Giuseppe, M., Ciacchini, R., Micheloni, T., Bertolucci, I., Marchi, L., and Conversano, C. (2018). Defense mechanisms in cancer patients: a systematic review. *J. Psychosom. Res.* 115, 76–86. doi: 10.1016/j.jpsychores.2018.10.016
- Diehl, M., Coyle, N., and Labouvie-Vief, G. (1996). Age and sex differences in strategies of coping and defense across the life span. *Psychol. Aging* 11, 127–139. doi: 10.1037/0882-7974.11.1.127
- Enns, M. W., Cox, B. J., Parker, J. D., and Guertin, J. E. (1998). Confirmatory factor analysis of the Beck anxiety and depression inventories in patients with major depression. *J. Affect. Disord.* 47, 195–200. doi: 10.1016/s0165-0327(97)00103-1
- Given, C. W., Given, B. A., and Stommel, M. (1994). The impact of age, treatment, and symptoms on the physical and mental health of cancer patients. *Longitudinal Pers. Cancer* 74, 2128–2138. doi: 10.1002/1097-0142(19941001)74:7+<2128::aid-cnrcr2820741721>3.0.co;2-j
- Hinz, A., Krauss, O., Hauss, J. P., Hockel, M., Kortmann, R. D., Stolzenburg, J. U., et al. (2010). Anxiety and depression in cancer patients compared with the general population. *Eur. J. Cancer Care* 19, 522–529. doi: 10.1111/j.1365-2354.2009.01088.x
- Hyphantis, T. N., Christou, K., Kontoudaki, S., Mantas, C., Papamichael, G., Goulia, P., et al. (2008). Disability status, disease parameters, defense styles, and ego strength associated with psychiatric complications of multiple sclerosis. *Int. J. Psychiatry Med.* 38, 307–327. doi: 10.2190/PM.38.3.g
- Hyphantis, T., Mantis, D., Voulgari, P. V., Tsifetaki, N., and Drosos, A. A. (2011). The psychological defensive profile of primary Sjogren's syndrome patients and its relationship to health-related quality of life. *Clin. Exp. Rheumatol.* 29, 485–493
- Hyphantis, T. N., Tomenson, B., Bai, M., Tsianos, E., Mavreas, V., and Creed, F. (2010). Psychological distress, somatization, and defense mechanisms associated with quality of life in inflammatory bowel disease patients. *Dig. Dis. Sci.* 55, 724–732. doi: 10.1007/s10620-009-0762-z
- Hyphantis, T. N., Triantafyllidis, J. K., Pappa, S., Mantas, C., Kaltsouda, A., Cherakakis, P., et al. (2005). Defense mechanisms in inflammatory bowel disease. *J. Gastroenterol.* 40, 24–30. doi: 10.1007/s00535-004-1491-x
- Kurtz, M. E., Given, B., Kurtz, J. C., and Given, C. W. (1994). The interaction of age, symptoms, and survival status on physical and mental health of patients with cancer and their families. *Cancer* 74, 2071–2078. doi: 10.1002/1097-0142(19941001)74:7+<2071::aid-cnrcr2820741715>3.0.co;2-r
- Leigh, H., Percarpio, B., Opsahl, C., and Ungerer, J. (1987). Psychological predictors of survival in cancer patients undergoing radiation therapy. *Psychother. Psychosom.* 47, 65–73. doi: 10.1159/000288000
- Lo, C., Lin, J., Gagliese, L., Zimmermann, C., Mikulincer, M., and Rodin, G. (2010). Age and depression in patients with metastatic cancer: the protective effects of attachment security and spiritual wellbeing. *Ageing Soc.* 30, 325–336. doi: 10.1017/S0144686X09990201
- Mainio, A., Hakko, H., Timonen, M., Niemela, A., Koivukangas, J., and Rasanen, P. (2005). Depression in relation to survival among neurosurgical patients with a primary brain tumor: a 5-year follow-up study. *Neurosurgery* 56, 1234–1241. doi: 10.1227/01.NEU.0000159648.44507.7F
- Mainio, A., Tuunanen, S., Hakko, H., Niemela, A., Koivukangas, J., and Rasanen, P. (2006). Decreased quality of life and depression as predictors for shorter survival among patients with low-grade gliomas: a follow-up from 1990 to 2003. *Eur. Arch. Psychiatry Clin. Neurosci.* 256, 516–521. doi: 10.1007/s00406-006-0674-2
- Martino, G., Caputo, A., Bellone, F., Quattropiani, M. C., and Vicario, C. M. (2020). Going Beyond the visible in type 2 diabetes mellitus: Defense mechanisms and their associations With depression and health-related quality of life. *Front. Psychol.* 11:267. doi: 10.3389/fpsyg.2020.00267
- Mystakidou, K., Tsilika, E., Parpa, E., Katsouda, E., Galanos, A., and Vlahos, L. (2005). Assessment of anxiety and depression in advanced cancer patients and their relationship with quality of life. *Qual. Life Res.* 14, 1825–1833. doi: 10.1007/s11136-005-4324-3
- Perry, J. C., and Hoglend, P. (1998). Convergent and discriminant validity of overall defensive functioning. *J. Nerv. Ment. Dis.* 186, 529–535. doi: 10.1097/00005053-199809000-00003
- Plumb, M. M., and Holland, J. (1977). Comparative studies of psychological function in patients with advanced cancer—I. self-reported depressive symptoms. *Psychosom. Med.* 39, 264–276. doi: 10.1097/00006842-197707000-00007
- Richardson, J. L., Zarnekar, Z., Bisno, B., and Levine, A. (1990). Psychosocial status at initiation of cancer treatment and survival. *J. Psychosom. Res.* 34, 189–201. doi: 10.1016/0022-3999(90)90053-7
- Richter, P., Werner, J., Heerlein, A., Kraus, A., and Sauer, H. (1998). On the validity of the Beck depression inventory. *Rev. Psychopathol.* 31, 160–168. doi: 10.1159/000066239
- Segal, D. L., Coolidge, F. L., and Mizuno, H. (2007). Defense mechanism differences between younger and older adults: A cross-sectional investigation. *Ageing Ment. Health* 11, 415–422. doi: 10.1080/13607860600963588
- Sharma, P., and Sinha, U. K. (2010). Defense mechanisms in mania, bipolar depression and unipolar depression. *Psychol. Stud.* 55, 239–247. doi: 10.1007/s12646-010-0017-2

- Smith, A. B., Selby, P. J., Velikova, G., Stark, D., Wright, E. P., Gould, A., et al. (2002). Factor analysis of the hospital anxiety and depression scale from a large cancer population. *Psychol. Psychother.* 75, 165–176. doi: 10.1348/147608302169625
- Soldz, S., and Vaillant, G. E. (1998). A 50-year longitudinal study of defense use among inner city men: a validation of the DSM-IV defense axis. *J. Nerv. Ment. Dis.* 186, 104–111. doi: 10.1097/00005053-199802000-00006
- Trzepacz, P. T., Baker, R. W., and Greenhouse, J. (1988). A symptom rating scale for delirium. *Psychiatry Res.* 23, 89–97. doi: 10.1016/0165-1781(88)90037-6
- Tuulio-Henriksson, A., Poikolainen, K., Aalto-Setälä, T., and Lonnqvist, J. (1997). Psychological defense styles in late adolescence and young adulthood: a follow-up study. *J. Am. Acad. Child Adolesc. Psychiatry* 36, 1148–1153. doi: 10.1097/00004583-199708000-00025
- Vaillant, G. E. (1971). Theoretical hierarchy of adaptive ego mechanisms: a 30-year follow-up of 30 men selected for psychological health. *Arch. Gen. Psychiatry* 24, 107–118. doi: 10.1001/archpsyc.1971.01750080011003
- Vaillant, G. E. (1985). An empirically derived hierarchy of adaptive mechanisms and its usefulness as a potential diagnostic axis. *Acta Psychiatr. Scand. Suppl.* 319, 171–180. doi: 10.1111/j.1600-0447.1985.tb08533.x
- Vaillant, G. E., Bond, M., and Vaillant, C. O. (1986). An empirically validated hierarchy of defense mechanisms. *Arch. Gen. Psychiatry* 43, 786–794. doi: 10.1001/archpsyc.1986.01800080072010
- Walker, M. S., Zona, D. M., and Fisher, E. B. (2006). Depressive symptoms after lung cancer surgery: their relation to coping style and social support. *Psychooncology* 15, 684–693. doi: 10.1002/pon.997
- Wan, L., Gong, M., Liu, M., Chen, Y., and Long, T. (2003). The relationship between depressive symptom and immature defense mechanism in patients with primary liver cancer. *Chin. Ment. Health J.* 17:4
- Wedding, U., Koch, A., Rohrig, B., Pientka, L., Sauer, H., Hoffken, K., et al. (2007). Questioning depression in patients with cancer: contribution of somatic and affective symptoms to Beck's depression inventory. *Ann. Oncol.* 18, 1875–1881. doi: 10.1093/annonc/mdm353
- Whitty, M. T. (2003). Coping and defending: age differences in maturity of defence mechanisms and coping strategies. *Aging Ment. Health* 7, 123–132. doi: 10.1080/1360786031000072277
- Wong-Kim, E. C., and Bloom, J. R. (2005). Depression experienced by young women newly diagnosed with breast cancer. *Psychooncology* 14, 564–573. doi: 10.1002/pon.873
- Yu, Y., Chamorro-Premuzic, T., and Honjo, S. (2008). Personality and defense mechanisms in late adulthood. *J. Aging Health* 20, 526–544. doi: 10.1177/0898264308317535
- Disclaimer:** The views expressed in this article are those of the authors and do not necessarily reflect the position or policy of the Department of Veterans Affairs or the United States government.
- Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.
- Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Beresford, Teschke, Hipp and Ronan. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Defense Mechanisms and Repressive Coping Among Male Breast Cancer Patients

Rainer Weber<sup>1\*</sup>, Johannes C. Ehrenthal<sup>2†</sup>, Evamarie Brock-Midding<sup>3,4</sup>, Sarah Halbach<sup>3,4</sup>, Rachel Würstlein<sup>5</sup>, Christoph Kowalski<sup>6</sup> and Nicole Ernstmann<sup>3,4</sup>

<sup>1</sup> Department of Psychosomatic and Psychotherapy, Faculty of Medicine, University Hospital Cologne, Cologne, Germany,

<sup>2</sup> Department of Psychology, Faculty of Human Sciences, University of Cologne, Cologne, Germany, <sup>3</sup> Center for Health Communication and Health Services Research, Department for Psychosomatic Medicine and Psychotherapy, University Hospital Bonn, Bonn, Germany, <sup>4</sup> Center for Integrated Oncology (CIO Bonn), Bonn, Germany, <sup>5</sup> Breast Center, Department of Gynecology and Obstetrics (Comprehensive Cancer Center Munich), University Hospital of Munich (Ludwig Maximilian University), Munich, Germany, <sup>6</sup> German Cancer Society (DKG), Berlin, Germany

## OPEN ACCESS

### Edited by:

Tracy A. Prout,  
Yeshiva University, United States

### Reviewed by:

Vera Békés,  
Yeshiva University, United States  
John H. Porcerelli,  
University of Detroit Mercy,  
United States

### \*Correspondence:

Rainer Weber  
rainer.weber@uni-koeln.de

<sup>†</sup>These authors have contributed  
equally to this work

### Specialty section:

This article was submitted to  
Psychopathology,  
a section of the journal  
Frontiers in Psychiatry

Received: 31 May 2021

Accepted: 16 November 2021

Published: 10 December 2021

### Citation:

Weber R, Ehrenthal JC,  
Brock-Midding E, Halbach S,  
Würstlein R, Kowalski C and  
Ernstmann N (2021) Defense  
Mechanisms and Repressive Coping  
Among Male Breast Cancer Patients.  
Front. Psychiatry 12:718076.  
doi: 10.3389/fpsy.2021.718076

**Objectives:** The concept of defense mechanisms has undergone extensive revision and expansion since Freud first described these processes. Initially formulated as an unconscious repression of unpleasant memories, with further development focusing on the role of defense mechanisms in the regulation of internal conflicts, the concept shifted and evolved to incorporate the adaptation to external demands, including intrapsychic and interpersonal handling of burden of illness. In addition to defense mechanisms, coping provides another perspective on human adjustment to difficult life events. While there is substantial research on both coping and defense mechanisms in various psychiatric and somatic diseases, including cancer, little is known about defensive regulation, coping, and their interaction in male breast cancer patients.

**Methods:** The present study is part of the N-Male project conducted between 2016 and 2018 in Germany (Male breast cancer: patients' needs in prevention, diagnosis, treatment, rehabilitation, and follow-up care). Semi-standardized interviews with 27 male breast cancer patients were analyzed with regard to defense mechanisms. In addition, fear of progression and repressive coping was assessed by self-report.

**Results:** There was considerable variety in levels of defensive functioning as well as repressive coping in our sample. We found no difference in overall levels of defensive functioning between men with vs. without repressive coping. However, patients with repressive coping demonstrated a decoupled association between fear of progression and defensive functioning as compared to patients without repressive coping.

**Discussion:** The study provides the first evidence of disease processing in male breast cancer patients. Knowledge of patients' defense patterns and repressive coping seems promising for better planning targeted intervention strategies.

**Keywords:** defense mechanisms, male breast cancer, repressive coping, fear of progression, mixed-methods



## INTRODUCTION

The observation that the mind has the ability to protect itself from confrontation with unpleasant thoughts and memories was first described by Freud in the context of his hysteria studies (1). Defense was mainly seen as a pathological phenomenon, intimately linked to what was called neurotic symptoms at that time (2). The concept of defense has undergone many transformations up to now, and is still closely linked to psychodynamic approaches to psychopathology and intervention (3). Defense mechanisms can be described as automatic psychological processes that can protect the individual from fear as well as other, more general demands and stressors. In other words: With the help of defense mechanisms, that usually operate outside of conscious planning and coping, individuals can modify the experience of internal, mainly emotional states as well as the processing of information from the external world.

By that, the concept of defensive functioning provides a framework for describing and understanding regulatory mental processes in mental disorders as well as life stressors or serious chronic stressors such as a cancer diagnosis. However, these expansions of the defense concept incorporate several important questions. For example, are some mechanisms more adaptive than others? Do individuals differ with regard to their common levels and mechanisms of defensive operations? At the core of these questions is the dual function of defenses, already pointed out by Anna Freud (4), which proposes that defensive functioning can be pathological, but protective and affect-regulating as well. Instead of distinguishing between normal and pathological defense mechanisms, she suggested that it should be noted whether there is a balance between different defense mechanisms. That is, whether other defense mechanisms are used, or only a few or only one, and how intensively the defense mechanisms occur. Anna Freud's approach was influential in advancing the discussion of the benefits or harms of defenses. These questions have been controversially discussed in the context of an assumed dichotomy of "adaptive vs. non-adaptive" defenses (5).

Cramer (6) supports the argumentation of Anna Freud. She describes that mental health does not necessarily have to be related to mature defense mechanisms. Instead, it depends on the flexible use of defense mechanisms in different situations. Various studies show that the use of immature forms of defense can be considered a risk factor for the development of psychopathology (7–9). Granier et al. (10) postulate that there is a compelling relationship between mental health and emotional flexibility. Findings from personality research support these assumptions. Mature defense mechanisms such as humor, altruism, and sublimation are associated with adaptive functioning (11, 12). With reference to this theoretical line of development, there is widespread agreement that defense mechanisms can be described with a hierarchical model from "immature" to "mature" defenses (7, 13, 14).

There has been intensive research on defensive functioning for several decades. In general, findings support a hierarchical model of groups of defenses being related to overall lower levels of functioning (3). According to Perry (15) research

on defense mechanisms usually focuses on three different dimensions. The first dimension concerns the question of identifying defense mechanisms. Here, two different research traditions can be identified. On the one hand, the use of questionnaires (16) on the other hand the use of observer-rated measures (17). A second dimension relates to connections between defensive patterns and psychopathology, including personality disorders. For example, Perry et al. (18) examined four personality disorders (Schizotypal, Borderline, Antisocial, and Narcissistic). Immature defense mechanisms were central in all four personality disorders. Regarding specificity, there was for example a strong association between major image distorting defenses (e.g., splitting of self and other's images and the hysterical level defenses, dissociation, and repression) and borderline personality disorders. Another study by Hoglend and Perry (19) investigated the effect of defense mechanisms on the course of major depression. Here self observation on a high adaptive defense level at the beginning of psychotherapy was more often identified in those patients who improved more than predicted. The third dimension of research on defense mechanisms reflects on the question of the extent to which defense mechanisms can be changed in the course of psychotherapeutic treatment. Bond and Perry (9) reported about long term changes in defense styles with psychodynamic therapy for depressive, anxiety and personality disorders. In a recent study (20) it was shown that overall defensive functioning (ODF) and adaptive defenses increase over the course of treatment, whereas maladaptive and neurotic defenses did not change. A similar pattern was found by Schauenburg et al. (21) for individuals in inpatient psychotherapy. Here maladaptive defenses declined, adaptive defenses increased, while neurotic defenses remained stable. In a new review of changes in psychotherapies with personality disorders (22), defense mechanisms and an increase in insight play a crucial role for emotional and socio-cognitive change. In addition to the three dimensions of research on defense mechanisms described above, a branch of research has opened up in recent years that deals with the confrontation of serious illness, such as cancer.

In the meantime, the defense concept is also associated with newer concepts and clarifies the potential it has in describing human experience and behavior. For example recent findings on the relationship between mentalization, attachment, and defense mechanisms supports this. For example, patients with a secure attachment type showed a higher capacity for mentalization and the use of more mature defense mechanisms (23). At the same time, more research is needed on for example basic vs. applied aspects of defense mechanisms (3).

A broad conception of defense also incorporates other strategies for dealing with stressful, anxiety-producing demands and feelings from the research tradition of coping strategies. In contrast to defense mechanisms, coping strategies are traditionally understood to be used consciously and intentionally to restore mental equilibrium in the sense of an adjustment process (24, 25). The concepts of coping and defense originate from entirely different theories, namely psychoanalysis and stress theory. At the same time, especially concerning their regulatory aim, they might be regarded as two sides of the same coin.

Several authors have discussed the relationship between coping and defense. For example, Haan (5) postulated a hierarchical relationship (coping—defense—fragmentation). However, the influential group around Lazarus did not make a distinction between the two concepts and sees defense merely as a particular case of a higher-level coping concept (26). For a more detailed discussion see for example (27). At the same time, the coping research adds a possibly valuable perspective to the study of defenses as it has defined several conditions that may describe or determine phenomena which could be relevant for the availability and display of defensive operations under certain conditions, such as repressive coping.

## Repressive Coping

The concept of repressive coping style goes back to Weinberger's et al. (28) seminal paper and has stimulated intensive research especially in behavioral medicine. Garssen (29) defined "repressive coping" as the tendency to inhibit the experience and the expression of negative feelings or unpleasant cognition in order to prevent one's positive self-image from being threatened (p. 471). According to Weinberger et al. (28), the phenomenon of repressive coping is best described by a combination of anxiety and defensiveness that occurs in response to a stress-inducing event. A total of three groups can be differentiated: the first group is characterized by low anxiousness and low social desirability. The second group contains individuals who are highly anxious but comparatively low in social desirability. The third group comprises individuals who show levels of social desirability but express low levels of anxiety. These groups differ on one crucial point. Individuals who express a low level of anxiety and a higher level of social desirability (i.e., repressors) show physiological reactions (heart rate, increased skin conductance) that are not compatible with subjective ratings of distress, indicating some kind of bio-psychological de-coupling. These individuals also do not show stress-induced feelings (29, 30). The early work by Weinberger and numerous later studies found that repressors dissociate their somatic reactions from their perceptions of distress, and in potentially stressful situations, report low levels of distress and anxiety but exhibit high levels of physiological activity (31). A number of studies indicate that repressors avoid negative affect (32, 33). A significant, but not surprising extension of the concept lies in observing that an individual's repressive coping style is associated with poor health and somatic illness. Similar findings have been demonstrated in cancer patients and patients with coronary heart disease (31). The results of a meta-analysis by Mund and Mitte (34) indicate a higher risk for repressive copers to be affected with at least one of several investigated diseases, but especially cancer and hypertension. However, the exact associations remain unclear, as well as the direction of the effect, i.e., whether repressive coping increases the risk for somatic diseases, or the other way round.

## Male Breast Cancer

Male breast cancer is a rare condition. Around just one percent of all breast cancer cases in the western world are diagnosed in men (35, 36). The rates increased slightly (1973–1998) as shown by Giordano et al. (37). The mean age at diagnosis is between

60 and 70 years. The awareness for breast cancer in men and the correct interpretation of related symptoms is very low. The presence of a painless lump is the most frequent indicator (38). Relatedly, symptoms are often diagnosed too late (39). Because of the comparatively low prevalence of the disease, many health care providers never encounter a male breast cancer patient (40). The treatment of male breast cancer patients is largely based on available evidence for females (41). Wang et al. (42) found that mortality after cancer diagnosis was higher among male patients with breast cancer compared to female breast cancer patients. This disparity persisted even when controlling for clinical characteristics, access to care, and specific treatment factors. A related problem is stigmatization. Most stigmatization concentrates on sexual stigmatization and ignorance of male breast cancer and mostly occurs in cancer care systems and work-related contexts. It seems that breast cancer is still seen as a "woman's disease," as Midding et al. (43) pointed out in their paper. Emasculation (e.g., physical changes and changes in body image after treatment) can also lead to secondary stigmatization in the process of or after treatment. According to (44), most studies dealing with male breast cancer can be described as quantitative studies that focus on the disease's clinical aspects, such as risk factors, pathology issues, and treatment options. The authors criticize the focus on these purely medical aspects and call for more research attention to this disease's emotional challenges to men.

## Psychological Impact and Management of Breast Cancer in Woman and Men

In line with the lower prevalence rates, it is not surprising that knowledge about breast cancer's psycho-social factors is similarly lacking in men compared to a comparatively good database in female breast cancer patients (45, 46). Breast cancer can be a traumatic and stressful experience for women, but there are wide-ranging differences in the ways in which women respond and adapt to this disease (47). This study shows as well that income, cancer stage, fatigue and physical functioning are consistent predictors of adjustments. Psychosocial factors, such as optimism and anxiety, and perceived social support, coping strategies, and initial level of psychological functioning, were predictive of depression, anxiety, psychological distress, and quality of life in women with breast cancer. Lally and Brooks (48) were able to indicate the clinical usefulness of psychoeducational interventions that address the psychological adjustment needs of family members, spouses, and friends (supporters) who support women with early breast cancer in a systematic review. In line with these findings, Lewis et al. (49) reported that social support from family members and close friends is considered essential to be able to deal with the disease and its psycho-social consequences. France et al. (50) reported in a qualitative study that men prefer to talk exclusively to their wives. Similarly, effects of psycho-social support groups in women with breast cancer on coping with the disease and overall quality of life are well-documented (51). Again, research on the acceptance and effectiveness of appropriate support groups in men is lacking (44). According to Donovan and Flynn (52) female breast cancer

(and associated psychological factors) is the most widely studied form of malignancy. It incorporates questions of coping with the disease, with cancer manifesting as a stressful life event in various ways, depending on type of disease, prognosis, and the subjectively experienced impairments.

How individuals adapt to and deal with the disease condition, however, is closely related to defense mechanism and levels of defensive functioning. The research literature has shown that psychoanalytically defined defensive processes can be regularly observed in dealing with a threat caused by cancer (e.g., the diagnosis, the consequences of the disease) (Di Guiseppe, 2020). Hartmann has pointed out the special function of defense mechanisms and thus made a significant contribution to connecting coping strategies and defense mechanisms. Defense mechanisms in cancer have the above mentioned dual function: on the one hand, they keep threatening feelings, memories and the like away from consciousness, and thus represent an adjustment performance. On the other hand defense processes also fulfill coping tasks. From our point of view, those two sides of the same coin are inseparably linked, and it is essential to emphasize the beneficial aspect of defense processes already described by A. Freud. For example, denial that might set in after being told of a severe diagnosis, such as cancer, would probably not be seen as pathological *per se*. Whether denial will have a negative effect on adjustment, role performance, or health behavior will probably show over time, for example concerning flexibility of defensive functioning, but also considering the ability to make use of other defense mechanisms and coping strategies as well. Accordingly, defense mechanisms can be understood as part of a meaningful adaptive effort that helps to regulate stressful life events such as cancer (53).

Empirically, Giese-Davis et al. (54) could show that defense mechanisms have a significant impact on health behavior and survival in breast cancer patients. Beresford et al. (55) demonstrated significant differences in survival probability in breast cancer patients, comparing mature and immature defense mechanisms: here, the use of mature defense mechanisms was associated with a significantly higher probability of survival. As described above, a hierarchy of defense mechanisms has been established in research on defense mechanisms (7, 56, 57). In a cross-sectional study comparing female breast cancer patients with a control group, Perry et al. (58) showed that female breast cancer patients used more immature forms of defense (e.g., denial, splitting, idealization) than participants in the control group. Di Guiseppe et al. (59) came to comparable results in a study of 145 newly diagnosed cancer patients. Cancer patients showed higher use of repression, suppression, rationalization, and lower use of affiliation, undoing, and devaluation of self-image compared to controls. Similar to findings reported above, it needs to be taken into account that this does not indicate a cause for cancer, but that a diagnosis of cancer itself is a life stressor that demands intensive defensive regulatory functioning. Unfortunately, it remains unclear whether all these findings can be generalized to male breast cancer patients.

From a perspective of defensive functioning and coping, what challenges do men face when diagnosed with breast cancer? Are there requirements for men that go beyond those for women with

breast cancer? For example, analogous to the treatment of ductal breast carcinoma in women, adjuvant treatment with tamoxifen is the treatment of choice for male breast cancer patients. Despite the excellent tolerability, side effects can be described in the area of sexual dysfunction and loss of libido in men (60). Similarly, using a qualitative research design, Trusson and Quincey (61) addressed whether there would be differences between men and women in the experience of treatment-induced alopecia. It was found that both sexes experience hair loss as stressful, affecting gender identities and relationships. On the other hand, while men spoke more openly about the hair loss, preferably in a humorous manner, women tended to hold back in communicating about it and tended to hide the hair loss. Whether the diagnosis of breast cancer, which usually occurs in women, influences the perception of one's masculinity was examined in the study by Rayne et al. (62). No relationship was identified between affected masculinity and late presenting the symptoms in medical care. It must be noted that this finding is not in line with other studies that hypothesized a strong relationship between an affected masculinity and a delayed presentation of symptoms (52). Rayne et al. (62) discussed if the description of distress in the literature does not explain the difference between the burden of a cancer diagnosis (depression and anxiety) and specific problems with masculinity related to the fact of the male patients suffering from a woman's disease. There appears to be evidence that other factors may significantly impact the experience and management of male breast cancer than has been reported in the literature to date.

However, there are also similarities on the level of psychosocial burden in the face of cancer. For example, a significant concern for cancer patients is fear of cancer recurrence or fear of progression (63). While according to Pang and Humphris (64) related anxiety may be higher in women compared to men, there is again a research gap in male breast cancer:

To date, no study results are available on the occurrence and consequences of progression anxiety in men with breast cancer. In addition, to the best of our knowledge there is no study on defense mechanisms and their interrelationship with psychological variables in male breast cancer.

## Aims of the Study

Since the psychological consequences or processing in male breast cancer patients have been studied very little to none so far, we understand our research questions as in part descriptive, in part as hypothesis-testing, in part hypothesis-generating. As stated, to our knowledge, male breast cancer patients have not been studied on the topic of coping to date. Studies describing defense mechanisms in coping with the disease are entirely lacking. Likewise, studies dealing with the explanatory potential of repressive coping in male breast cancer patients are missing. Repressive coping may be an important aspect, as men with breast cancer face specific challenges in dealing with the disease, while at the same time experiencing a lack of support in the health-care system. Again, there is no research on patterns between defenses and repressive coping for this population.

This may be especially relevant in the context of dealing with cancer-related fears, such as fear of progression. Cancer patients in general have to cope with emotional distress like depression,

**TABLE 1 |** DMRS Hierarchy of defense categories, levels, and individual defense mechanisms adapted from Perry et al. (71).**I. Mature**

7 High adaptive Level (Mature): affiliation, altruism, anticipation, humor, self-assertion, self-observation, sublimation, suppression

**II. Neurotic**

6 Obsessional Level: intellectualization, isolation of affect, undoing

5 Other neurotic level: repression, dissociation and reaction formation, displacement

**III Immature**

4 Minor-image distorting level: devaluation of self or object images, idealization of self or object images, omnipotence

3 Disavowal Level: denial, projection, rationalization

2 Major image-distorting level: splitting of other's images, splitting of self-images, projective identification

1 Action level: acting out, hypochondrias, passive-aggression

anxiety, fear of progression of a life-threatening illness (65). For example Nakata et al. (63) could show in a sample of 927 female breast cancer patients that fear of progression was strongly associated with the need for psychological support ( $OR = 2.8$ ). We therefore hypothesized that higher cancer-related fears triggers the use of defenses in men with breast cancer, whereas individual factors such as repressive coping may influence this assumed association.

Aims of the current study were therefore (1) To describe defensive functioning, repressive coping, and fear of progression in a sample of male breast cancer patients, (2) To describe patterns of defensive functioning in relationship to repressive coping in male breast cancer patients, and (3) To explore the possible impact of repressive coping on an association between fear of progression and defensive functioning in male breast cancer patients.

## MATERIALS AND METHODS

The present study is part of the N-Male project conducted between 2016 and 2018 in Germany (Male breast cancer: patients' needs in prevention, diagnosis, treatment, rehabilitation, and follow-up care). The project was funded by the German Cancer Aid and approved by the Ethics Committee of the Medical Faculty of the University of Bonn (Reference Number: 087/16). The N-Male project is a cross-sectional observational study with a mixed-method approach (semi-standardized patient interviews and focus groups with health care providers and a standardized quantitative survey with different questionnaires before the interviews. Further information on the methods and results of the project is described elsewhere (40, 43, 66, 67).

### Sample and Study Design

The sample was composed in the sense of a non-probabilistic procedure according to the concept of theoretical sampling (68). Participants in the project were recruited nationwide through certified breast cancer centers, members of the Men with Breast Cancer network (Netzwerk Männer mit Brustkrebs e.V.), and invitations through newspaper advertisements. All participants had a confirmed breast cancer diagnosis (ICD-10 C50x or D05.X) and provided informed consent. One hundred men completed the quantitative survey, and a sub-sample of 27 participants was selected for the qualitative interviews

according to purposeful sampling (69). Two female project staff members (Ph.D. candidates) conducted the interviews. Both project staff members were trained with the interview and prepared for possible difficult interview situations (emotionality and gender role conflicts) by an experienced psychotherapist. The interview guide was developed in an interdisciplinary expert group consisting of scientists, a patient representative, a representative from the health care provider group, and a psychotherapist. The semi-standardized interview guide offered open-ended narrative prompts and the opportunity to ask follow-up and in-depth questions. Thematically, the questions referred to each step in the treatment process (diagnosis, treatment phase, rehabilitation, and aftercare). The interviews were audio-recorded (after written consent was given) and transcribed according to uniform transcription standards. Interviews were conducted in the patient's preferred environment. In most cases, they were conducted at the participants' homes.

### Defensive Functioning

The Defense Mechanisms Rating Scales (DMRS) is a quantitative observer-rated method (70), which was included in the Appendix in DSM-IV (56). Thirty defense mechanisms based on a hierarchical organization are part of this qualitative tool assigned to 7 different levels (High-adaptive, Obsessional, Neurotic, Minor image distorting, Disavowal level, Major image distorting, and Action level (the Psychotic defense level was not used in this study). In addition, these levels can be further specified in three defensive categories (Mature Defensive Category, Neurotic Defensive Category and Immature Defensive Category) (see Table 1).

Three different scores can be derived from the ratings: Individual defense score (an individual score calculated on the occurrence of defense used in a therapy session or an interview). Defense level score (their general level of adaptiveness hierarchically organizes the defense mechanisms. Each level can be calculated based on the used defenses). Overall Defensive Functioning (the ODF is obtained by taking the average of each defense level score. Its order weights this score in the hierarchical organization from 1—lowest to 7—highest), adapted from Perry et al. (71). Perry and Henry (72) proposed approximate reference scores for Overall Defensive Functioning Score (ODF) in clinical samples: "(1) Scores below 5.0 are associated with personality disorders or acute depression; (2) Scores between 5.0 and 5.5 are



associated with the neurotic character and symptom disorders: (3) scores from 5.5 to 6.0 are associated with average healthy neurotic functioning, while (4) scores above 6.0 are associated with superior healthy-neurotic functioning" (p. 176).

## Repressive Coping

### Marlowe Crown Social Desirability Scale

According to Weinberger et al. (28), repressive coping is assessed by using two different scales. One scale that measures manifest anxiety and another scale that measures defensiveness. This study's construct defensiveness is measured with the German 23-item version of the Marlowe Crown Social Desirability Scale (73, 74). The items, which can be answered with yes or no, refer to two different dimensions: socially desirable behavior that is, however, instead to be expected as unlikely (e.g., "No matter who I'm talking to, I'm always a good listener.") and to socially undesirable behavior that is, however, very likely (e.g., "I like to gossip at times."). The more often socially desirable but not expected events/items are answered with yes, and events/items characterized by openness are negated. The greater the tendency to present oneself with a socially desirable, idealized self-image.

### State-Trait-Anxiety Inventory

The STAI is a self-report questionnaire designed to assess anxiety effects (75). With 20 items each, a four-point Likert scale assesses current anxiety (state) and general anxiety (trait). The trait version was used in the study to capture the cross-situational level of anxiety. The results from both self-description instruments (manifest anxiety and defensiveness) are combined into one score (repressive coping). The repressive coping style is based on the median score of both scales. Respondents with an anxiety score (STAI) below the median and a defensiveness score above the median (Marlowe-Crown Desirability Scale) are classified as repressors. Non-repressors can be divided into three different groups, according to Weinberger et al. (28). Low-anxious individuals (with anxiety and defensiveness scores below the median), high anxious individuals (with anxiety scores above and defensiveness scores below the median), and defensive individuals (with anxiety and defensiveness scores above the median). Besides classifying non-repressors into three groups, it is also possible to make a dichotomous classification (repressors and non-repressors) (76). Due to the small number of patients, we chose this classification for the analysis. Following Wiltink et al. (77) the main critic refers to the use of a median split to classify a person as repressor or non-repressor. However, the classificatory system has been replicated in numerous studies (78).

## Fear of Progression

The short form of the Fear of Progression scale (FoP-Q-SF) is a self-report instrument for identifying and assessing progression anxiety (79). A total of 12 items (5 point-Likert scales from 1 = never to 5 = often) are spread over four dimensions: affective reactions, partnership/family, occupation, and loss of autonomy. Scores range between 12 and 60 points. Herschbach et al. (80) proposed a cut-off score. A dysfunctional level of fear of progression is indicated if patients score higher than 33 points.

## Procedure and Analysis

Two trained raters with a longstanding expertise in psychodynamic constructs and clinical assessment (RW, JCE) evaluated the transcribed interviews. First, five interviews were rated separately. The results were discussed and compared. Because of the low number of interviews and complexity of the instrument, we did not strive to formally calculate indices of rater agreement. On the level of mechanisms and frequency, the agreement was high. Subsequently, the sessions were distributed between the two raters and evaluated separately. There were two meetings to discuss open questions without actually talking about rating levels to minimize rater drift. We also calculated interrater agreement on levels of specific defense mechanisms operationalized as frequencies of those mechanisms before agreement discussion. In total, 15 categories of defense mechanisms were rated in the interviews, with a high levels of agreement between both raters ( $r = 0.94$ ,  $ICC_{2,1} = 0.95$ ).

We used descriptive statistics, Pearson-correlations, and ANOVA to portrait distributions, and to assess associations and differences regarding the key variables. To test the moderating influence of repressive coping on the association between fear of progression and overall ODF level of defensive functioning, we conducted bootstrapping-based moderation analyses (number of bootstrap samples  $M = 5,000$ ), which is especially robust given our sample size. To acknowledge the impact of possible covariates, we controlled for age and time since diagnosis as possibly relevant covariates. Those seemed especially relevant, as age may be a general factor influencing all variables, and time since diagnosis may be especially relevant for fear of progression. All analyses were conducted with IBM SPSS 25 and the PROCESS macro version 3.4 (81).

## RESULTS

There were a total of 124 male breast cancer patients who wished to participate in the study. Of these 124 patients, three patients were excluded again because they did not meet the inclusion criteria. Some interested patients could no longer participate in the study due to the severity of the disease or death. A pre-test was conducted with four patients to field test the questions. One hundred seventeen patients were sent the questionnaire package. The response rate was 88.0% ( $n = 103$ ). After reviewing the questionnaires (questionnaires with a proportion of missing values  $>30\%$  were excluded from the analysis), 100 patients were included in the analysis (adjusted response rate 85.5%). **Table 2** shows the socio-demographic and disease-related data of the sample. Data from the quantitative sample are in parentheses. Significant differences to the sample of 27 patients who were additionally interviewed could not be detected. One interview was conducted over the phone for logistical reasons. Unfortunately, there were repeated interruptions and poor recording quality, which made the interview incomparable to the other material, so it was excluded from the analysis.

On average, participants in the study are in their sixth decade in both samples (quantitative and qualitative sample), ranging 39–89 years. Most of the patients live in a relationship and have

**TABLE 2 |** Socio-demographic and disease-related characteristics of the whole sample.

	<i>n</i>	( <i>n</i> )	%	(%)	Mean	(mean)	Min	(min)	Max	(max)
<b>Sociodemographic characteristics</b>										
Age in years [missing 1 (2)]					64.8	(66.91)	42	(39)	89	(89)
<b>Living with a partner [missing 3 (6)]</b>										
Yes	19	(82)	79	(87.2)						
No	5	(12)	20.8	(12.8)						
<b>Children [missing 1 (6)]</b>										
Yes	20	(79)	76.9	(84.0)						
No	6	(15)	23.1	(16.0)						
<b>Education (multiple answers possible) [missing 1 (2)]</b>										
No-schooling-leaving certificate	0	(2)	0	(2.0)						
Lower school-leaving certificate	11	(41)	42.3	(41.8)						
Intermediate school-leaving certificate	8	(27)	30.8	(27.6)						
General or subject-specific university entrance qualification	11	(35)	42.3	(35.7)						
<b>Diagnose related characteristics</b>										
<b>Types of treatment received (multiple answers possible) [missing 0 (0)]</b>										
Surgery	27	(97)	100	(97.0)						
Chemotherapy	16	(56)	59.3	(56.0)						
Radiation therapy	16	(65)	69.3	(65.0)						
(Anti) Hormone therapy	22	(75)	81.5	(75.0)						
I do not know	1	(2)	3.7	(2.0)						
<b>First diagnosis [missing 2 (4)]</b>										
Yes	24	(92)	96.0	(95.8)						
No	1	(4)	4.0	(4.2)						
Time since first diagnosis (in years) [missing 1 (5)]					4.1	(3.61)	<1	(<1)	17	(20)

Qualitative sample  $N = 27$ ; quantitative sample ( $N = 100$ ). Numbers of quantitative sample in brackets.

children. Overall, the level of education is relatively high in both samples. Concerning the disease-specific data, almost all patients have undergone surgery, and chemotherapy was performed in about half of the patients. The proportion of patients who also underwent radiation therapy was high in both samples. Almost all patients were diagnosed with breast cancer for the first time, although the time window since diagnosis varied greatly, averaging just under 4 years.

## Defense Mechanisms in Male Breast Cancer Patients

**Table 3** shows the mean values and standard deviations of the defense categories (Mature, Neurotic, and Immature). Male breast cancer males have a mean ODF value of 5.62 ( $SD = 0.82$ ). However, to better understand the levels of different defense patterns in the group of male breast cancer patients, the ODF values can be related to clinical reference groups. About 30% of the respondents exhibited a mature form of defense organization in the transcripts (e.g., superior healthy neurotic functioning). In contrast, an almost equally large number of respondents reacted to the interview with defense patterns regularly found in patients with personality disorders (e.g., borderline) and depressive disorders (26.9%). The largest part of the sample, however, showed neurotic defense patterns in the interview.

**TABLE 3 |** Overall defensive functioning and defense categories.

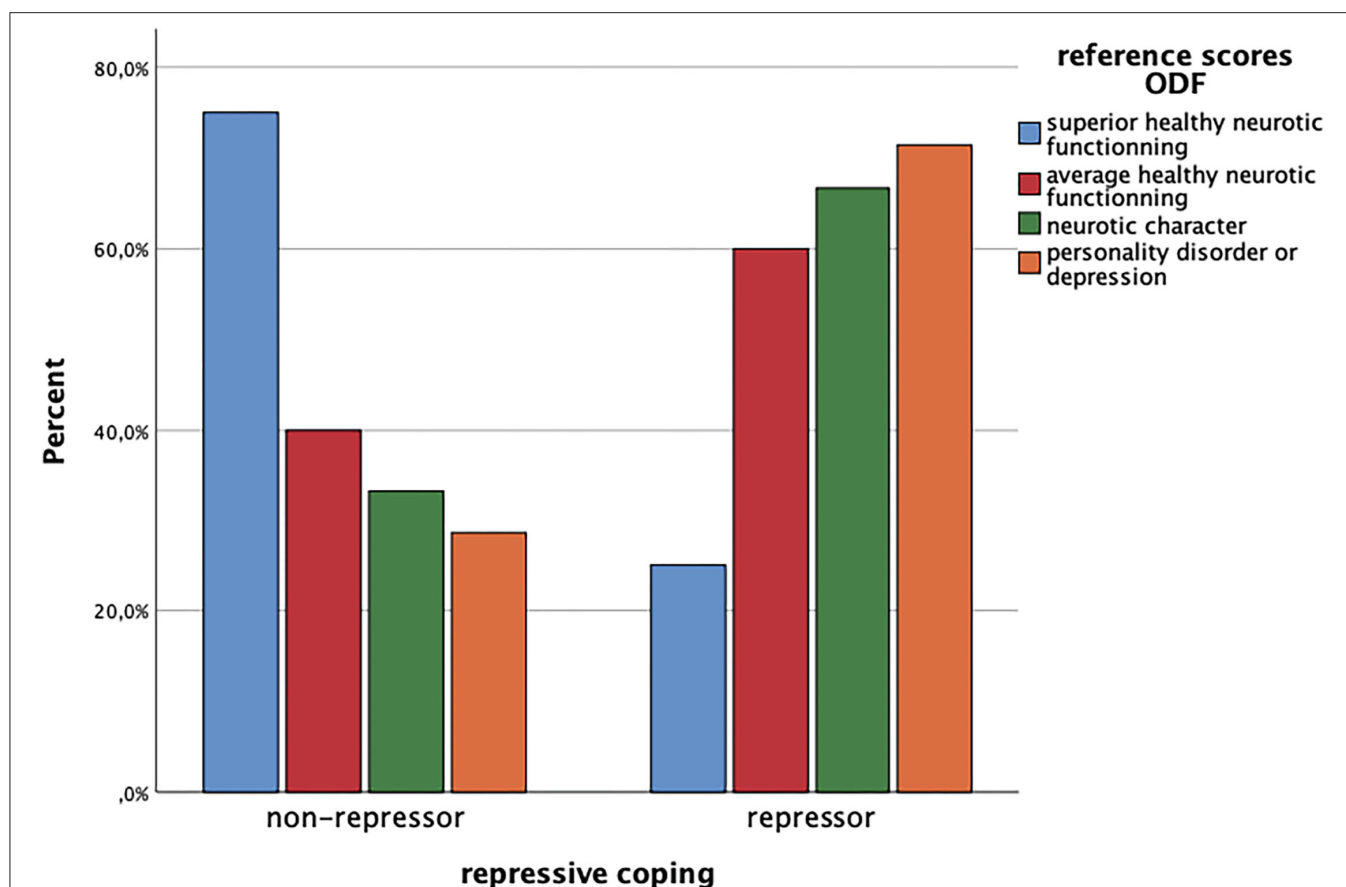
	Mean	SD
ODF (overall defensive functioning)	5.62	0.82
Mature	41.65	27.60
Neurotic	36.66	20.36
Immature	21.68	19.85

## How Is the Construct Repressive Coping Distributed?

In the analysis, 46.2% of the sample ( $N = 12$ ) were classified as non-repressors and 53.8% ( $N = 14$ ) as repressors. Both groups did not differ in relevant socio-demographic or disease-related data (age, marital status, disease duration). There was only one exception: patients classified as non-repressors had already had experience with breast cancer in their families ( $X^2(1, N = 26) r = 5.60, p < 0.05$ ).

## Defense Mechanisms and Repressive Coping

In a first step, we descriptively assessed the distribution of prototypical levels of defensive functioning in the group of repressive copers and non-repressors, and then tested differences in overall defensive functioning by means of ODF *via* ANOVA. While **Figure 1** seemingly indicates a comparatively higher use



**FIGURE 1 |** Reference scores ODF and repressive coping. ODF, overall defensive functioning categories of the Defense Mechanism Rating Scales (DMRS); FoP-Q-SF, Fear of Progression; repressive coping = category derived from Marlowe-Crown Social Desirability Scale and State-Trait-Anxiety Scale (STAI-Trait).

of more mature defense patterns (superior healthy neurotic functioning) in the non-repressors than patients included in the group of repressors, concerning overall ODF there was no significant difference [ $F_{(1,24)} = 3.40$ ,  $p = 0.08$ ] between non-repressors ( $M = 5.9$ ,  $sd = 0.83$ ) and repressors ( $M = 5.36$ ,  $sd = 0.75$ ).

### Associations Between Defense Mechanisms (ODF), Repressive Coping, and Fear of Progression (FoP-Q-SF)?

In addition to non-significant differences between repressors vs. non-repressors regarding ODF levels of defensive functioning, ODF was significantly associated with fear of progression ( $r = 0.43$ ,  $p < 0.05$ ). In other words, the higher the fear of a worsening of cancer, the higher levels of (more adaptive) defensive functioning. Regarding our hypothesis, bootstrapping-based analyses found that the association between fear of progression and overall defensive functioning while talking about cancer-related experiences was moderated by repressive coping. In other words, under conditions of no repressive coping, higher levels of fear of progression were associated with higher levels of (more adaptive) defensive functioning. Under conditions of

**TABLE 4 |** Association between fear of progression and defensive functioning (DMRS) in male breast cancer patients with vs. without repressive coping.

Variable	Coefficient	t	LLCI	ULCI
FoP-Q-SF	0.08	2.79*	0.02	0.13
Group (Repressive coping yes/no)	1.77	1.66	−0.48	4.01
FoP-Q-SF × group	−0.07	−2.16*	−0.13	−0.002
<b>Covariates</b>				
Age	−0.001	−0.58	−0.04	0.02
Years since diagnosis	0.01	0.22	−0.08	0.09

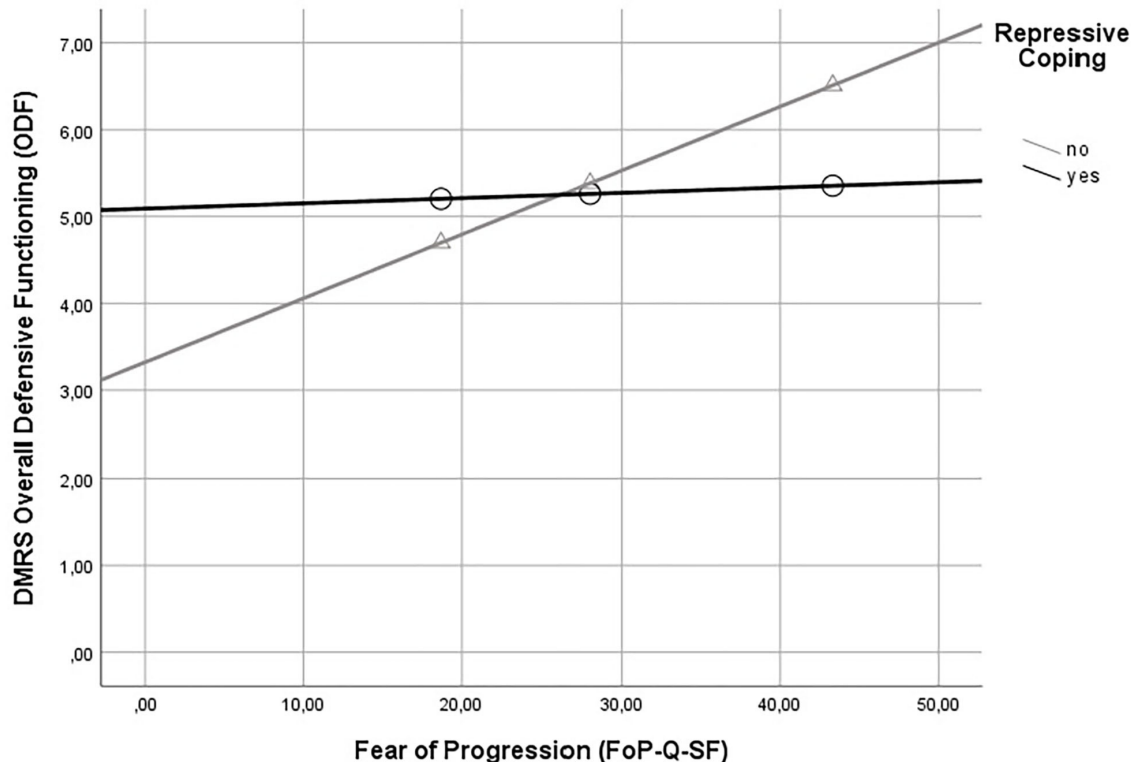
DMRS, Defense Mechanism Rating Scales; FoP-Q-SF, Fear of Progression; repressive coping = category derived from Marlowe-Crown Social Desirability Scale and State-Trait-Anxiety Scale (STAI-Trait). DMRS overall defensive functioning (ODF) served as the dependent variable.

\* $p < 0.05$ .

repressive coping as a regulatory style, there was no association between both variables (see **Table 4**; **Figure 2**).

## DISCUSSION

According to the low incidence of male breast cancer, studies dealing with psychosocial factors are rare and usually have small



**FIGURE 2 |** Moderation of the association between fear of progression and defensive functioning (DMRS) by repressive coping. DMRS, Defense Mechanism Rating Scales; FoP-Q-SF, Fear of Progression; repressive coping = category derived from Marlowe-Crown Social Desirability Scale and State-Trait-Anxiety Scale (STAI-Trait). DMRS overall defensive functioning (ODF) served as the dependent variable.

case numbers (44, 50). To the best of our knowledge, this is the first study that has looked at the relationship between defense mechanisms and the concept of repressive coping and other psychological variables in men with breast cancer. Due to the absence of comparative data from other studies with males, the results must be discussed from an exploratory perspective. Di Giuseppe et al. (82) summarized the relevant literature in their systematic review on defense mechanisms in cancer patients. A total of 15 studies were included in the analysis. Studies involving female breast cancer patients were the most represented, including other cancer types (e.g., colorectal carcinoma and cervical carcinoma). It is important to note that the assessment of defense mechanisms was very heterogeneous (self-reported questionnaires, projective tests, and clinician-reported rating scale), and there was only one study that used the DMRS. The latter study (58) examined women with breast cancer; there were fewer adaptive and neurotic and more immature defense patterns than in the control group. These results are consistent with female breast cancer patients (83). In this study, the DMRS was also used to capture defense mechanisms. In the analysis, the full range of High-adaptive defenses (e.g., affiliation, humor, and suppression), Major Image distorting defenses (e.g., splitting of self-images, splitting of other's, and projective identification), and Action defenses (e.g., acting out and passive-aggression) were found in the interviews.

The ODF score (Overall Defensive Functioning) as a measure of defensive mechanism maturity was below 5.0 for the sample (ODF = 4.70), corresponding to a relatively lower use of more mature defensive patterns. However, concerning comparing the ODF values of this sample with reference values of a clinical (psychiatric/psychotherapeutic) samples, defense mechanisms that are rather attributed to an immature defense organization cannot be described as maladaptive *per se*. This attribution could only be made if the patients had been diagnosed with psychopathological symptoms. As long as these data are not available, it must be assumed that some of the patients can only cope with the life-threatening disease and its consequences with difficulty and with the help of more immature defense mechanisms. This result is also in line with the theory of Anna Freud, according to which the question of whether a defense mechanism can be described as adaptive or maladaptive depends, among other things, on the time at which it occurs and its intensity. In addition, the average time between diagnosis and interview was about 4 years, ranging from less than a year to 17 years after diagnosis. In this case, a different state of threat can also be assumed. To better understand related questions, prospective studies would be needed that interview men at various points in the course of the disease since diagnosis.

The men interviewed in this study reacted differently to breast cancer diagnosis, subsequent treatment consequences



(all patients of the qualitative part of the study underwent mastectomy), and impact on their social life. Mature defense patterns were more pronounced than in the samples with female breast cancer patients. Strikingly, no male patients showed evidence of Major image distorting defenses or Action defenses. Accordingly, the maturity of the defense organization was high with an ODF score of  $>5$  (5.52). Since there are no studies to date that have recorded defense mechanisms in male breast cancer patients, only a comparison with female breast cancer patients or gender-mixed cancer samples can be made here. The ODF of our male sample is descriptively in the higher range of ODF compared to other studies that have investigated defense mechanisms in cancer. Di Giuseppe et al. (83) reported an ODF of 4.7 ( $SD = 0.54$ ) in a sample of female breast cancer patients with a formal diagnosis of breast cancer within the past 2 months. Zimmerman et al. (84) studied a group of cancer patients (men and women with different cancers) at different points in the disease course. Patients who were actively undergoing radiotherapy had the lowest ODF ( $ODF = 5.05$ ) comparatively, whereas cancer survivors and controls had significantly higher ODF values (5.32 and 5.63, respectively). These values also remained stable when controlling for gender.

It is certainly not possible at this point to infer about gender-specific differences in the use of defense mechanisms in breast cancer. While ODF scores in our male breast cancer sample was descriptively higher than for example in Di Giuseppe et al. (83), this again can be related to general differences in sample selection and requires further research. As in Di Giuseppe's study female patients with a formal breast cancer diagnosis within the last 2 months were included, the sample is more likely to be newly diagnosed patients, who are usually characterized by uncertainty and anxiety and basic questions of intervention and survival, which makes it difficult to compare with our sample consisting of men with breast cancer and a time since diagnosis from more than 1 to 17 years. The results of Zimmermann's study are also difficult to compare with the data from this study. Here, too, is a difference in defensive behavior, which is certainly associated with the degree of threat. Patients who have to face a more or less recent diagnosis and the resulting treatment measures tend to use more immature forms of defense compared to patients who have been diagnosed for a longer time (e.g., cancer survivors).

## Relation of Defense Mechanisms to Repressive Coping and Other Variables?

No significant direct association could be demonstrated between the constructs repressive coping and defense mechanisms (ODF). Thus, the result suggests that both concepts may be conceptually similar, but measure different phenomena (25). Freud's work on hysteria focused attention on a person's unconscious reactions to unpleasant, anxiety-provoking thoughts and feelings. Mund and Mitte (34) noted that the defense operations used (Freud called the process *repression*) were described as pathogenic (conversion neurosis in hysteria). Nowadays, it is clear that regulatory defensive mechanisms have an essential function to which an individual can "automatically" fall back in stressful situations.

By that, defense mechanisms fulfill protective functions and can be considered an essential variable in affect regulation. In this respect, the results of this study show that belonging to the group of repressors or the group of non-repressor has a moderating influence on the handling of fear of progression, in terms of the maturity of the defense patterns expressed in the interview.

It is owed to medical progress and increasingly better psycho-social care that more and more cancer patients can be described as long-term survivors. Prognostic uncertainty plays a decisive role in the psychological experience of many patients (85). The results of our study are consistent with the results of other studies that generally focused on fear of recurrence or progression in cancer patients (female and male). Götze reports on a sample of 1,002 cancer patients (all cancers) 5 and 10 years after diagnosis. Levels of illness anxiety were higher in the 5-year cohort than in the 10-year cohort. Higher illness anxiety was associated with female sex, younger age, and elevated anxiety scores (86). In our sample, most patients were still below the 5-year mark after diagnosis. Accordingly, the level of anxiety expressed in the questionnaire was high. Patients classified as non-repressors showed a higher fear of progression. These patients seem to face their fears better, whereby they can fall back on more mature defense mechanisms than patients classified as repressors who do not want to acknowledge the threat. Their defense patterns can be described as correspondingly immature. In addition to the general call for further studies on psychosocial factors in male breast cancer patients, including comparative studies with female breast cancer patients already described, knowledge of patients' defense patterns and their expression in the area of repressive coping seems promising for better planning targeted intervention strategies.

## Strengths and Limitations

One strength of the study is the small, yet comparatively large and well-defined sample among this rare disease condition in men. Furthermore, we were able to report on a number of psychological variables for the first time in this clinical group, including defense mechanisms and repressive coping. Limitations relate for example to recruitment. Most participants in the study were recruited through the Men with Breast Cancer Network (Netzwerk Männer mit Brustkrebs e.V.), which does imply high levels of self-selection. Unfortunately, no figures are available on how long patients have been in contact with this network. However, it can be assumed that the information offered, the possibilities of exchanging information about the subjective experience of the disease at network meetings or private talks influenced the discussion of male breast cancer disease. An advantage of the study is undoubtedly also its disadvantage. More extensive studies are needed, especially comparative studies with female breast cancer patients. The gender effect in the processing of this threat of cancer has been shown in the results. In order to develop more targeted intervention measures for male breast cancer patients, this research desideratum is mandatory.

## Clinical Implications and Future Dimensions

The results of this study suggest that it should have been conducted much earlier. Men who suffer from this disease, which is quite rare compared to women, face a variety of challenges in addition to the threat of cancer. For example, men with breast cancer are co-treated in a more feminine setting specializing in treating women with breast cancer. This leads to the experience of stigma for some of the men affected (43). Therefore, the consideration of coping with the disease including the more conscious coping strategies and the more unconscious defense mechanisms seems to be very helpful for male breast cancer patients to recognize the distress and neediness, which may be hidden behind gender models. A better knowledge of the specific disease management could be followed by interventions, as early as possible. However, as already mentioned above, prospective controlled studies are needed for this purpose.

## DATA AVAILABILITY STATEMENT

According to the patient consent form, data are not available for scientific use by others than the project group members. Please direct any enquiries to Rainer Weber, rainer.weber@uni-koeln.de

## REFERENCES

- Freud S. The neuro-psychoses of defence. In: Strachey J, Freud A, Richards A, editors. *The Standard Edition of the Complete Work of Sigmund Freud*. London: Hogarth Press (1894). p. 41–61.
- Cramer P. Understanding defense mechanisms. *Psychodyn Psychiatry*. (2015) 43:523–52. doi: 10.1521/pdps.2015.43.4.523
- Levy KN, Keefe JR, Ehrenthal JC. 6 - Research support for psychodynamic constructs. In: Kealy D, Ogrodniczuk JS, editors. *Contemporary Psychodynamic Psychotherapy*. London: Academic Press (2019). p. 89–106.
- Freud A. *Normality and Pathology in Childhood. Assessments of Development*. New York, NY: International Universities Press (1965).
- Haan N. *Coping and Defending*. New York, NY: Academic Press. (1977).
- Cramer P. *Protecting the Self: Defense Mechanisms in Action*. New York: Guilford Press. (2006).
- Perry JC, Cooper SH. An empirical study of defense mechanisms: I. Clinical interview and life vignette ratings. *Arch Gen Psychiatry*. (1989) 46:444–52. doi: 10.1001/archpsyc.1989.01810050058010
- Lingiardi VCL, Delucci F, Fossati A, Vanzulli L, Maffei C. Defense mechanisms and personality disorders. *J Nerv Mental Dis*. (1999) 187:224–8. doi: 10.1097/00005053-199904000-00005
- Bond M, Perry JC. Long-term changes in defense styles with psychodynamic psychotherapy for depressive, anxiety, and personality disorders. *Am J Psychiatry*. (2004) 161:1665–71. doi: 10.1176/appi.ajp.161.9.1665
- Granieri A, La Marca L, Mannino G, Giunta S, Guglielmucci F, Schimmenti A. The relationship between defense patterns and DSM-5 maladaptive personality domains. *Front Psychol*. (2017) 8:e01926. doi: 10.3389/fpsyg.2017.01926
- Vaillant GE. Ego mechanisms of defense and personality psychopathology. *J Abnorm Psychol*. (1994) 103:44–50. doi: 10.1037/0021-843X.103.1.44
- Bond M. Empirical studies of defense style: relationships with psychopathology and change. *Harv Rev Psychiatry*. (2004) 12:263–78. doi: 10.1080/10673220490886167

## ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Ethics Committee Medical Faculty of the University of Bonn. The patients/participants provided their written informed consent to participate in this study.

## AUTHOR CONTRIBUTIONS

RWe and JE analyzed the interviews for defense mechanisms. RWe and JE drafted the first version of the manuscript and contributed equally to the manuscript. EB-M and SH conducted the interviews. RWe and JE performed the statistical analyses of this study. NE and CK planned the study and revised the manuscript in detail together with RWü. All authors contributed significantly to the article.

## FUNDING

This project (N-Male) was supported by the German Cancer Aid under Grant No. 111742.

## ACKNOWLEDGMENTS

We want to thank all the study participants who shared their experiences, worries, and fears with us in the interviews.

- Vaillant GE. Theoretical hierarchy of adaptive ego mechanisms: a 30-year follow up of men selected for psychological health. *Arch Gen Psychiatry*. (1971) 24:107–18. doi: 10.1001/archpsyc.1971.01750080011003
- Vaillant GE. *Empirical Studies of Ego Mechanisms of Defense*. Washington, DC: American Psychiatric Press (1986).
- Perry JC, Petraglia J, Olson TR, Presniak MD, Metzger JA. Accuracy of defense interpretation in three character types. In: Levy RA, Ablon JS, Kächele H, editors. *Psychodynamic Psychotherapy Research. Evidence-Based Practice and Practice-based Evidence*. New York, NY: Springer (2012). p. 417–47.
- Davidson K, Macgregor MW. A critical appraisal of self-report defense mechanism measures. *J Pers*. (1998) 66:965–92. doi: 10.1111/1467-6494.00039
- Perry JC, Lanni FF. Observer-rated measures of defense mechanisms. *J Pers*. (1998) 66:993–1024. doi: 10.1111/1467-6494.00040
- Perry JC, Presniak MD, Olson TR. Defense mechanisms in schizotypal, borderline, antisocial, and narcissistic personality disorders. *Psychiatry Interpers Biol Proc*. (2013) 76:32–52. doi: 10.1521/psyc.2013.76.1.32
- Høglend P, Perry JC. Defensive functioning predicts improvement in major depressive episodes. *J Nerv Ment Dis*. (1998) 186:238–43. doi: 10.1097/00005053-199804000-00006
- Babl A, Grosse Holtforth M, Perry JC, Schneider N, Dommann E, Heer S, et al. Comparison and change of defense mechanisms over the course of psychotherapy in patients with depression or anxiety disorder: evidence from a randomized controlled trial. *J Affect Disord*. (2019) 252:212–20. doi: 10.1016/j.jad.2019.04.021
- Schauenburg H, Willenborg V, Sammet I, Ehrenthal JC. Self-reported defence mechanisms as an outcome measure in psychotherapy: a study on the German version of the Defence Style Questionnaire DSQ 40. *Psychol Psychother*. (2007) 80:355–66. doi: 10.1348/147608306X146068
- Kramer U, Beuchat H, Grandjean L, Pascual-Leone A. How personality disorders change in psychotherapy: a concise review of process. *Curr Psychiatry Rep*. (2020) 22:41. doi: 10.1007/s11920-020-01162-3
- Tanzilli A, Di Giuseppe M, Giovanardi G, Boldrini T, Caviglia G, Conversano C, et al. Mentalization, attachment, and defense mechanisms: a Psychodynamic Diagnostic Manual-2-oriented empirical

- investigation. *Res Psychother Psychopathol Proc Outcome*. (2021) 24:31–41. doi: 10.4081/ripppo.2021.531
24. Parker JD, Endler NS. Coping and defense. A historical overview. In: Zeidler M, Endler NS, editors. *Handbook of Coping. Theory, Research and Application*. New York, NY: Wiley and Sons (1996). p. 3–23.
  25. Cramer P. Coping and defense mechanisms: what's the difference? *J Pers*. (1998) 66:919–46. doi: 10.1111/1467-6494.00037
  26. Cohen F, Lazarus RS. Coping with the stresses of illness. In: Stone GC, Cohen F, Adler NF, editors. *Health Psychology - A Handbook*. San Francisco, CA: Jossey Bass Publishers (1982). p. 217–54.
  27. Kramer U. Coping and defence mechanisms: what's the difference?—second act. *Psychol Psychother*. (2010) 83:207–21. doi: 10.1348/147608309X475989
  28. Weinberger DA, Schwartz GE, Davidson RJ. *Low-Anxious, High-Anxious, and Repressive Coping Styles: Psychometric Patterns and Behavioral and Physiological Responses to Stress*. *J Abnorm Psychol* (1979) 369–380. doi: 10.1037//0021-843x.88.4.369
  29. Garssen B. Repression: finding our way in the maze of concepts. *J Behav Med*. (2007) 30:471–81. doi: 10.1007/s10865-007-9122-7
  30. Asendorpf JB, Scherer KR. The discrepant repressor: differentiation between low anxiety, high anxiety, and repression of anxiety by autonomic-facial-verbal patterns of behavior. *J Pers Soc Psychol*. (1983) 45:1334–46. doi: 10.1037/0022-3514.45.6.1334
  31. Myers LB. The importance of the repressive coping style: findings from 30 years of research. *Anxiety Stress Coping*. (2010) 23:3–17. doi: 10.1080/10615800903366945
  32. Myers LB. Identifying repressors: a methodological issue for health psychology. *Psychol Health*. (2000) 15:205–14. doi: 10.1080/08870440008400301
  33. Myers LB, Derakshan N. Repressive coping and avoidance of negative affects. In: Nyklicek I, Temoshok L, Vingerhoets A, editors. *Emotional Expression and Health: Advances in Theory, Assessment and Clinical Applications*. Hove: Bruner Routledge (2004). p. 171–86.
  34. Mund M, Mitte K. The costs of repression: a meta-analysis on the relation between repressive coping and somatic diseases. *Health Psychol*. (2012) 31:640–9. doi: 10.1037/a0026257
  35. Miao H, Verkooijen HM, Chia KS, Bouchardy C, Pukkala E, Laronnigen S, et al. Incidence and outcome of male breast cancer: an international population-based study. *J Clin Oncol*. (2011) 29:4381–6. doi: 10.1200/JCO.2011.36.8902
  36. Ly D, Forman D, Ferlay J, Brinton LA, Cook MB. An international comparison of male and female breast cancer incidence rates. *Int J Cancer*. (2013) 132:1918–26. doi: 10.1002/ijc.27841
  37. Giordano SH, Cohen DS, Buzdar AU, Perkins G, Hortobagyi GN. Breast carcinoma in men - a population-based study. *Cancer*. (2004) 101:51–7. doi: 10.1002/cncr.20312
  38. Peate I. Caring for men with breast cancer: causes, symptoms and treatment. *Br J Nurs*. (2001) 10:975–81. doi: 10.12968/bjon.2001.10.15.5262
  39. Lautrup MD, Thorup SS, Jensen V, Bokmand S, Haugaard K, Hoejris I, et al. Male breast cancer: a nation-wide population-based comparison with female breast cancer. *Acta Oncol*. (2018) 57:613–21. doi: 10.1080/0284186X.2017.1418088
  40. Midding E, Halbach SM, Kowalski C, Weber R, Wurstein R, Ernstmann N. Social support of male breast cancer patients—a mixed-methods analysis. *Am J Mens Health*. (2019) 13:1557988319870001. doi: 10.1177/1557988319870001
  41. Da Silva TL. Male breast cancer: medical and psychological management in comparison to female breast cancer. *A Rev Cancer Treat Commun*. (2016) 7:23–34. doi: 10.1016/j.ctrc.2016.03.004
  42. Wang F, Shu X, Meszoely I, Pal T, Mayer IA, Yu Z, et al. Overall mortality after diagnosis of breast cancer in men vs. women. *JAMA Oncol*. (2019) 5:1589–96. doi: 10.1001/jamaoncol.2019.2803
  43. Midding E, Halbach SM, Kowalski C, Weber R, Wurstein R, Ernstmann N. Men with a “woman's disease”: stigmatization of male breast cancer patients—A mixed methods analysis. *Am J Mens Health*. (2018) 12:2194–207. doi: 10.1177/1557988318799025
  44. Nguyen TS, Bauer M, Maass N, Kaduszkiewicz H. Living with male breast cancer: a qualitative study of men's experiences and care needs. *Breast Care*. (2020) 15:6–13. doi: 10.1159/000501542
  45. Robinson JD, Metoyer KP, Bhayani N. Breast cancer in men: a need for psychological intervention. *J Clin Psychol Med Settings*. (2008) 15:134–9. doi: 10.1007/s10880-008-9106-y
  46. Thomas E. Original research: men's awareness and knowledge of male breast cancer. *Am J Nurs*. (2010) 110:32–7, 39–40. doi: 10.1097/01.NAJ.0000389672.93605.2f
  47. Brandão T, Schulz MS, Matos PM. Psychological adjustment after breast cancer: a systematic review of longitudinal studies. *Psychooncology*. (2017) 26:917–26. doi: 10.1002/pon.4230
  48. Lally RM, Brooks C. Psychoeducational interventions for supporters of women with breast cancer: an integrative review. *J Cancer Educ*. (2016) 31:626–32. doi: 10.1007/s13187-015-0883-3
  49. Lewis S, Willis K, Yee J, Kilbreath S. Living well? Strategies used by women living with metastatic breast cancer. *Qual Health Res*. (2016) 26:1167–79. doi: 10.1177/1049732315591787
  50. France L, Michie S, Barrett-Lee P, Brain K, Harper P, Gray J. Male cancer: a qualitative study of male breast cancer. *Breast*. (2000) 9:343–8. doi: 10.1054/brst.2000.0173
  51. Van Uden-Kraan CF, Drossaert CHC, Taal E, Shaw BR, Seydel ER, Van De Laar M, et al. Empowering processes and outcomes of participation in online support groups for patients with breast cancer, arthritis, or fibromyalgia. *Qual Health Res*. (2008) 18:405–17. doi: 10.1177/1049732307313429
  52. Donovan T, Flynn M. What makes a man a man? The lived experience of male breast cancer. *Cancer Nurs*. (2007) 30:464–70. doi: 10.1097/01.NCC.0000300173.18584.37
  53. Hartmann H. *Ego-Psychology and the Problem of Adaptation*. New York, NY: International Universities Press (1964).
  54. Giese-Davis J, Conrad A, Nouriani B, Spiegel D. Exploring emotion-regulation and autonomic physiology in metastatic breast cancer patients: repression, suppression, and restraint of hostility. *Pers Individ Dif*. (2008) 44:226–37. doi: 10.1016/j.paid.2007.08.002
  55. Beresford TP, Alfors J, Mangum L, Clapp L, Martin B. Cancer survival probability as a function of ego defense (adaptive) mechanisms versus depressive symptoms. *Psychosomatics*. (2006) 47:247–53. doi: 10.1176/appi.psy.47.3.247
  56. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Washington, DC: DSM-IV (1994).
  57. Di Giuseppe M, Perry JC, Petraglia J, Janzen J, Lingardi V. Development of a Q-sort version of the defense mechanism rating scales (DMRS-Q) for clinical use. *J Clin Psychol*. (2014) 70:452–65. doi: 10.1002/jclp.22089
  58. Perry JC, Metzger J, Sigal JJ. Defensive functioning among women with breast cancer and matched community controls. *Psychiatry*. (2015) 78:156–69. doi: 10.1080/00332747.2015.1051445
  59. Di Giuseppe M, Miniati M, Micoli M, Ciachini R, Orru G, Sterzo RL, et al. Defensive responses to stressful life events associated with cancer diagnosis. *Mediterr J Clin Psychol*. (2020) 8:1–19. doi: 10.6092/2282-1619/mjcp-2384
  60. Ruddy KJ, Giobbie-Hurder A, Giordano SH, Goldfarb S, Kerekoglou S, Winer EP, et al. Quality of life and symptoms in male breast cancer survivors. *Breast*. (2013) 22:197–9. doi: 10.1016/j.breast.2012.12.014
  61. Trusson D, Quincey K. Breast cancer and hair loss: experiential similarities and differences in men's and women's narratives. *Cancer Nurs*. (2021) 44:62–70. doi: 10.1097/NCC.0000000000000745
  62. Rayne S, Schnippel K, Thomson J, Reid J, Benn C. Male breast cancer has limited effect on survivor's perceptions of their own masculinity: a record review and telephone survey of patients in Johannesburg, South Africa. *Am J Men Health*. (2017) 11:246–52. doi: 10.1177/1557988316631512
  63. Nakata H, Halbach S, Geiser F, Stock S, Kowalski C, Enders A, et al. Health literacy, mental disorders and fear of progression and their association with a need for psycho-oncological care over the course of a breast cancer treatment. *Psychol Health Med*. (2020) 26:1–14. doi: 10.1080/13548506.2020.1772987
  64. Pang C, Humphris G. The relationship between fears of cancer recurrence and patient gender: a systematic review and meta-analysis. *Front Psychol*. (2021) 12:640866. doi: 10.3389/fpsyg.2021.640866
  65. Mehnert A, Koch U. Psychological comorbidity and health-related quality of life and its association with awareness, utilization, and need for psychosocial support in a cancer register-based sample

- of long-term breast cancer survivors. *J Psychosom Res.* (2008) 64:383–91. doi: 10.1016/j.jpsychores.2007.12.005
66. Ernstmann N, Midding E, Halbach S, Würstlein R, Weber R, Christmann S, et al. Breast cancer in men - health care professionals' perspectives on the multidisciplinary care of a rare disease. *Gesundheitswesen.* (2020) 82:614–9. doi: 10.1055/a-1005-6978
  67. Halbach SM, Midding E, Ernstmann N, Würstlein R, Weber R, Christmann S, et al. Male breast cancer patients' perspectives on their health care situation: a mixed-methods study. *Breast Care (Basel).* (2020) 15:22–9. doi: 10.1159/000501956
  68. Glaser BG, Strauss AL, Paul AT. *Grounded Theory. Strategien Qualitativer Forschung: Gesundheitswissenschaften Methoden.* Bern: Huber (2008).
  69. Corbin JM, Strauss AL. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* London: SAGE (2015).
  70. Perry JC. *Defense Mechanism Rating Scales.* Boston: The Cambridge Hospital (1990).
  71. Perry JC, Petraglia J, Olson TR, Presniak MD, Metzger JA. Accuracy of defense interpretation in three character types. In: Levy RA, Ablon JS, Kächele H. *Psychodynamic Psychotherapy Research - Evidence-Based Practice and Practice-Based Evidence.* New York, NY: Humana Press (2012). p. 417–47.
  72. Perry JC, Henry M. Studying defense mechanisms in psychotherapy using the defense mechanism rating scales. In: Hentschel U, Smith G, Draguns JG, Ehlers W. *Advances in Psychology, 136. Defense Mechanisms: Theoretical, Research and Clinical Perspectives.* New York, NY: Elsevier (2004). p. 165–92.
  73. Crown DP, Marlowe DA. A new scale of social desirability independent from psychopathology. *J Consult Clin Psychol.* (1960) 24:349–54. doi: 10.1037/h0047358
  74. Lück H, Timaeus E. (2014). Soziale Erwünschtheit (SDS-CM). *Zusammenstellung sozialwissenschaftlicher Items und Skalen (ZIS).* ZIS Version 15.00, GESIS, Köln. doi: 10.6102/zis170
  75. Spielberger CD, Gorsuch RL, Lushene RE. *STAI. Manual for the State-Trait-Anxiety-Inventory.* Palo Alto (1970).
  76. Myers LB, Vetere A. Repressors' responses to health-related questionnaires. *Br J Health Psychol.* (1997) 2:245–57. doi: 10.1111/j.2044-8287.1997.tb00539.x
  77. Wiltink J, Subic-Wrana C, Tuin I, Weidner W, Beutel ME. Repressive coping style and its relation to psychosocial distress in males with erectile dysfunction. *J Sex Med.* (2010) 7:2120–9. doi: 10.1111/j.1743-6109.2010.01787.x
  78. Derakshan N, Eysenck MW, Myers LB. Emotional information processing in repressors: the vigilance–avoidance theory. *Cogn Emot.* (2007) 21:1585–614. doi: 10.1080/02699930701499857
  79. Hinz A, Mehnert A, Ernst J, Herschbach P, Schulte T. Fear of progression in patients 6 months after cancer rehabilitation—a validation study of the fear of progression questionnaire FoP-Q-12. *Support Care Cancer.* (2015) 23:1579–87. doi: 10.1007/s00520-014-2516-5
  80. Herschbach P, Book K, Dinkel A, Berg P, Waadt S, Duran G, et al. Evaluation of two group therapies to reduce fear of progression in cancer patients. *Support Care Cancer.* (2010) 18:471–9. doi: 10.1007/s00520-009-0696-1
  81. Hayes AF. *Introduction to Mediation, Moderation, and Conditional Process Analysis. A Regression-Based Approach.* New York, NY: Guilford Press (2017).
  82. Di Giuseppe M, Ciacchini R, Micheloni T, Bertolucci I, Marchi L, Conversano C. Defense mechanisms in cancer patients: a systematic review. *J Psychosom Res.* (2018) 115:76–86. doi: 10.1016/j.jpsychores.2018.10.016
  83. Di Giuseppe M, Di Silvestre A, Lo Sterzo R, Hitchcott P, Gemignani A, Conversano C. Qualitative and quantitative analysis of the defensive profile in breast cancer women: a pilot study. *Health Psychology Open.* (2019) 6:2055102919854667. doi: 10.1177/2055102919854667
  84. Zimmerman TN, Porcerelli JH, Arterbery VE. Defensive functioning in cancer patients, cancer survivors, and controls. *Psychoanal Psychol.* (2019) 36:259–62. doi: 10.1037/pap0000225
  85. Götz H, Taubenheim S, Dietz A, Lordick F, Mehnert-Theuerkauf A. Fear of cancer recurrence across the survivorship trajectory: results from a survey of adult long-term cancer survivors. *Psychooncology.* (2019) 28:2033–41. doi: 10.1002/pon.5188
  86. Gräfe K, Zipfel S, Herzog W, Löwe B. Screening for psychiatric disorders with the Patient Health Questionnaire (PHQ). *Results Ger Validat Study Diagnost.* (2004) 50:171–81. doi: 10.1026/0012-1924.50.4.171

**Conflict of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Copyright © 2021 Weber, Ehrental, Brock-Midding, Halbach, Würstlein, Kowalski and Ernstmann. This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY). The use, distribution or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.



# Advantages of publishing in Frontiers



## OPEN ACCESS

Articles are free to read  
for greatest visibility  
and readership



## FAST PUBLICATION

Around 90 days  
from submission  
to decision



## HIGH QUALITY PEER-REVIEW

Rigorous, collaborative,  
and constructive  
peer-review



## TRANSPARENT PEER-REVIEW

Editors and reviewers  
acknowledged by name  
on published articles

## Frontiers

Avenue du Tribunal-Fédéral 34  
1005 Lausanne | Switzerland

**Visit us:** [www.frontiersin.org](http://www.frontiersin.org)

**Contact us:** [frontiersin.org/about/contact](http://frontiersin.org/about/contact)



## REPRODUCIBILITY OF RESEARCH

Support open data  
and methods to enhance  
research reproducibility



## DIGITAL PUBLISHING

Articles designed  
for optimal readership  
across devices



## FOLLOW US

@frontiersin



## IMPACT METRICS

Advanced article metrics  
track visibility across  
digital media



## EXTENSIVE PROMOTION

Marketing  
and promotion  
of impactful research



## LOOP RESEARCH NETWORK

Our network  
increases your  
article's readership