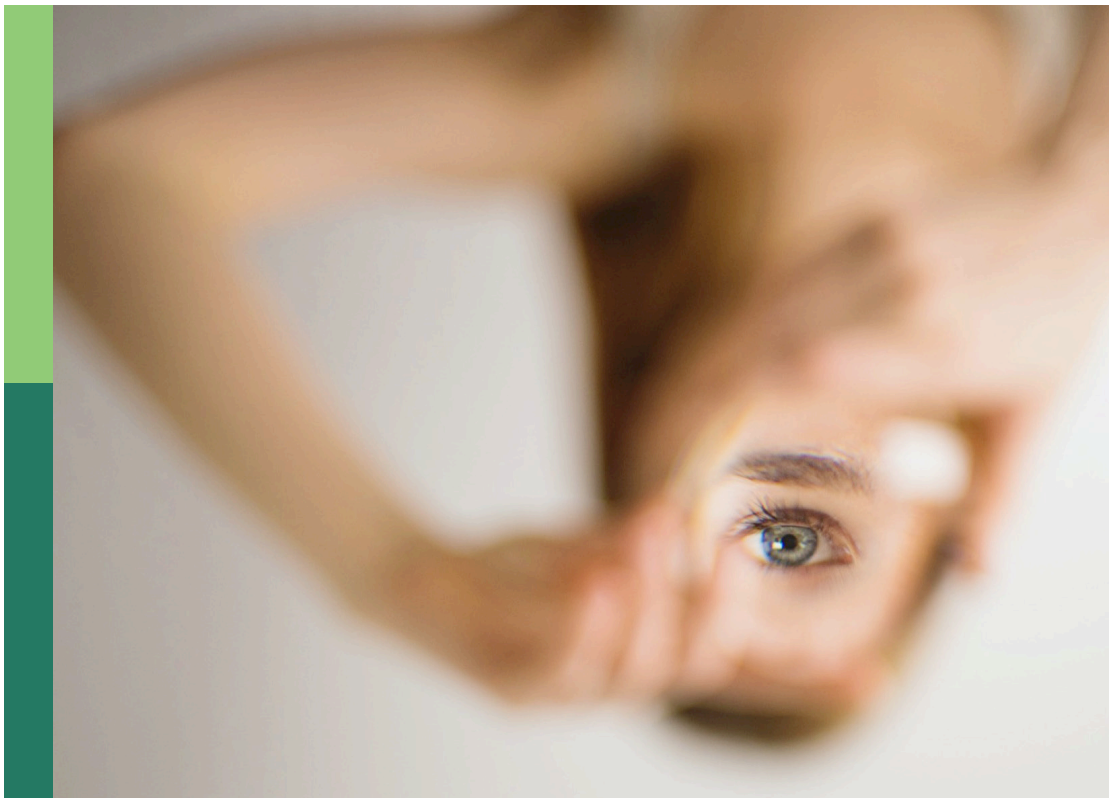
frontiers | Research Topics

Emotional regulation and human flourishing: theoretical and empirical perspectives

Edited by
Claudia Navarini, Blaine Fowers, Juan Andrés Mercado and Angelo Panno

Coordinated by
Pía Valenzuela

Published in
Frontiers in Psychology



ISSN 1664-8714
ISBN 978-2-8325-6201-7
DOI 10.3389/978-2-8325-6201-7

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

Emotional regulation and human flourishing: theoretical and empirical perspectives

Topic editors
Claudia Navarini — European University of Rome, Italy
Blaine Fowers — University of Miami, United States
Juan Andrés Mercado — Pontifical University of the Holy Cross, Italy
Angelo Panno — European University of Rome, Italy

Topic coordinator
Pía Valenzuela — Pontificia Università della Santa Croce, Italy

Citation
Navarini, C., Fowers, B., Mercado, J. A., Panno, A., Valenzuela, P., eds. (2025). *Emotional regulation and human flourishing: theoretical and empirical perspectives*. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-8325-6201-7

Table of contents

frontiers | Frontiers in Psychology

TYPE Editorial
PUBLISHED 19 March 2025
DOI 10.3389/fpsyg.2025.1565130

OPEN ACCESS

EDITED AND REVIEWED BY
Walter Tschugguel,
Medical University of Vienna, Austria

*CORRESPONDENCE
Pía Valenzuela
✉ p.valenzuela@pusc.it

RECEIVED 22 January 2025
ACCEPTED 26 February 2025
PUBLISHED 19 March 2025

CITATION
Valenzuela P, Navarini C, Mercado JA, Fowers B and Panno A (2025) Editorial: Emotional regulation and human flourishing: theoretical and empirical perspectives. *Front. Psychol.* 16:1565130. doi: 10.3389/fpsyg.2025.1565130

Editorial: Emotional regulation and human flourishing: theoretical and empirical perspectives

Pía Valenzuela[1]*, Claudia Navarini[2], Juan A. Mercado[1], Blaine Fowers[3] and Angelo Panno[2]

[1]Faculty of Philosophy, Pontificia Università della Santa Croce, Rome, Italy, [2]Department of Health and Life Sciences, Università Europea di Roma, Rome, Italy, [3]Department of Educational and Psychological Studies, University of Miami, Coral Gables, FL, United States

KEYWORDS

emotions, reason, regulation, flourishing, meaning, action, motive, virtue

Editorial on the Research Topic
Emotional regulation and human flourishing: theoretical and empirical perspectives

The relationship between emotional regulation and human flourishing has emerged as a vital area of interdisciplinary inquiry, bridging philosophy, psychology, and education (Gross, 1999, 2015; Thompson, 1994; Tamir, 2016; Kristjánsson, 2018, 2019; Mercado, 2020; Mercado and Valenzuela, 2020). Historically, emotions have often been perceived as obstacles to reason and social harmony, a viewpoint that has shaped much of Western thought (Scheler, 1973; Arnold, 1960; Goldie, 2000). However, contemporary research reveals that emotions are deeply intertwined with cognition and morality, playing a crucial role in shaping our perceptions, memories, and moral judgments (Steinbock, 2014; De Monticelli, 2018). Far from being mere disruptors, emotions guide human behavior in ways that enable effective responses to life's circumstances (Fredrickson, 2018; Navarini, 2023). Emotions serve a variety of functions such as facilitating communication, guiding decision-making, and promoting social bonding (Keltner and Haidt, 2001; Tyng et al., 2017; Šimić et al., 2021). For instance, anger heightens sensitivity to injustice, prompting actions that seek to restore fairness (Ekman, 1999), while emotions such as love and sympathy underpin the complex social bonds that define human relationships (Arnold, 1960).

This Research Topic of articles builds upon these insights by exploring the mechanisms and strategies that allow individuals to navigate their emotional landscapes in ways that promote flourishing. By integrating perspectives from psychology, philosophy, and beyond, the contributions delve into the cognitive, affective, and ethical dimensions of emotion regulation, positioning it as a cornerstone of wellbeing (Fowers et al., 2021, 2024). Through this lens, the research examines how individuals regulate emotions not only to feel better but also to align their responses with meaningful life goals and societal values (Panno et al., 2013; Mercado, 2021).

A recurring theme in these studies is the call for a broader understanding of emotional experiences and/or the construct of flourishing. The work of De Jesús Gómez and Cornu-Labat challenges conventional constructs such as emotional intelligence, advocating instead for the concept of "affectivity," which captures the full spectrum of all

affective experiences and not only the emotional ones. This perspective invites researchers to rethink the scope of emotional regulation, suggesting the term "affective regulation", which emphasizes its integrative potential in shaping individual realities.

Similarly, Martínez-Priego et al. conduct the complex of systematically reviewing models of emotion regulation, juxtaposing contemporary frameworks with classical philosophical insights. Their valuable analysis highlights a critical gap in existing approaches: the lack of integration between hedonic goals, which prioritize pleasure, and eudaimonic aspirations, which focus on growth and meaning. Revisiting the insights of Aristotle, Descartes and Darwin, the authors underscore the need for models that balance these dimensions, fostering a deeper understanding of flourishing as a multidimensional construct.

The interplay between motivation and emotional regulation is examined by Curren and Park through the lens of Self-Determination Theory. Their work critiques the limitations of goal-directed models, advocating for an approach that aligns emotional regulation with self-determination and eudaimonic functioning. This perspective not only broadens the scope of emotion regulation research but also underscores its relevance to human flourishing.

The theoretical implications of emotional regulation extend to practical applications in the work of Ruiz-Fuster et al. Drawing on Magda Arnold's concept of the "self-ideal," they propose a framework that links emotional regulation with constructive life goals, and thus, motivation, providing a pathway for individuals to align their emotional responses with their aspirations. Emotional regulation can be fostered by meaningful goals, which facilitate, in turn, a flourishing life. This holistic approach encompasses all dimensions of wellbeing, integrating psychological and eudaimonic aspects while also providing valuable insights for interventions addressing emotion dysregulation.

A different perspective on flourishing comes from Novak and Kiknadze, who critically examine the role of positive and negative emotions in defining the "good life." Their work challenges the privileging of positive emotions in many flourishing models, arguing for a more nuanced understanding that respects cultural diversity and individual differences. By advocating for balance and complexity, their analysis invites researchers to reconsider simplistic notions of wellbeing.

Innovative approaches to emotion regulation are also evident in the therapeutic domain. Hauke et al. integrate embodiment into Cognitive Behavioral Therapy, emphasizing the bidirectional relationship between body and psyche. By incorporating physical sensations and movements, their approach enhances emotional meaning-making, offering new pathways for therapeutic interventions. This embodied perspective highlights the potential of emotion regulation techniques to address prelinguistic and hard-to-access emotional experiences.

The complexities of emotion dysregulation, particularly during adolescence, are explored by Cristofanelli et al.. Their study examines how social immaturity, self-representation issues, and thought process challenges contribute to emotional dysregulation. By shedding light on these dynamics, the research provides critical insights for developing targeted interventions that support emotional health during this pivotal stage of development.

The protective role of purpose in life— a key component of eudaimonic wellbeing— is explored by Barcaccia et al., who link it to reduced depressive symptoms and enhanced resilience in adolescents. Their findings emphasize that purpose in life can foster emotional regulation as part of identity formation, highlighting its critical role in navigating the challenges of adolescence.

Other contributions highlight the influence of external factors on emotional regulation. Ríos-Rodríguez et al. review the benefits of contact with nature, emphasizing its potential to reduce stress and enhance emotional wellbeing. Sansone extends this discussion by focusing on the role of mindful parenting and secure attachment in fostering emotional health. Her work underscores the relational and embodied nature of emotional regulation, situating it within the broader context of societal and community support.

The complexities of emotional regulation in the context of trauma are explored by Rojas-Saffie et al.. Their interdisciplinary study examines the symptomatology of post-traumatic stress disorder (PTSD), traditionally viewed as a form of emotional dysregulation. Drawing on Thomistic anthropology, they explore the adaptive potential of PTSD symptoms as mechanisms of regulation. While the authors ultimately conclude that PTSD symptomatology aligns more closely with dysregulation, their nuanced approach highlights the interplay between voluntary and involuntary emotional processes, offering a foundation for rethinking therapeutic interventions.

Similarly, De Vincenzo et al. investigate emotional regulation in the context of chronic pain. Their study of patients with autoimmune inflammatory rheumatic diseases emphasizes the role of cognitive reappraisal and experiential avoidance in maintaining wellbeing despite pain. By demonstrating how psychological flexibility can mitigate the impact of pain on emotional wellbeing, the authors provide a roadmap for integrating emotional regulation into pain management strategies, paving the way for innovative clinical applications.

Philosophical dialogues further enrich this Research Topic. Rojas-Saffie and García-Matte explore emotional self-regulation through Thomistic anthropology, offering a nuanced perspective that integrates reason, virtue, and emotional habits. Their interdisciplinary approach bridges psychological and philosophical insights, contributing to a deeper understanding of how self-regulation shapes personality and ethical behavior.

Taken together, these contributions reveal the multifaceted nature of emotional regulation as a contributor to flourishing. There is no flourishing without emotional (or affective) regulation, and emotional regulation does not reach its deepest meaning unless it is directed toward a flourishing, fulfilled life (Valenzuela, 2022, 2024). This Research Topic emphasizes the integrative potential of emotional regulation, encompassing cognitive, affective, and social dimensions. By addressing the interplay between motive, value, and action, the research presented in this journal issue advances our understanding of how emotions shape individual and collective wellbeing.

The practical implications of this work are significant, offering actionable insights for education, therapy, and policy. From developing mindfulness-based programs to designing interventions for trauma survivors, the studies in this Research Topic demonstrate the transformative potential of emotion regulation strategies. By embracing the complexity of emotions, researchers and practitioners can foster a more comprehensive approach to wellbeing, one that recognizes the cultural,

developmental, and ethical dimensions of human flourishing (Fowers et al., 2024).

Emotion regulation is not merely a cognitive process but a fundamental aspect of what it means to live well. By integrating perspectives from diverse disciplines, this Research Topic paves the way for a richer understanding of how emotions influence our lives. It is our hope that these contributions will inspire further exploration, deepening our appreciation of the role of emotions in fostering individual and societal flourishing.

Author contributions

PV: Project administration, Writing – original draft, Writing – review & editing. CN: Writing – review & editing, Writing – original draft. JM: Writing – review & editing, Writing – original draft. BF: Writing – review & editing, Writing – original draft. AP: Writing – review & editing, Writing – original draft.

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.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

Publisher's note

References

Arnold, M. B. (1960). *Emotion and Personality*. New York, NY: Columbia University Press.

De Monticelli, R. (2018). "Sensibility, values and selfhood. For a phenomenology of the emotional life," in *The New Yearbook for Phenomenology and Phenomenological Philosophy* (London: Routledg), 195–211.

Ekman, P. (1999). "Basic emotions," in *Handbook of Cognition and Emotion*, eds. T. Dalgleish and M. J. Power (Hoboken, NY: John Wiley & Sons), 45–60.

Fowers, B. J., Carroll, J. S., Leonhardt, N. D., and Cokelet, B. (2021). The emerging science of virtue. *Persp. Psychol. Sci.* 16, 118–147. doi: 10.1177/1745691620924473

Fowers, B. J., Novak, L. F., Calder, A. J., and Kiknadze, N. C. (2024). Can a theory of human flourishing be formulated? Toward a science of flourishing. *Rev. General Psychol.* 28, 123–142. doi: 10.1177/10892680231225223

Fredrickson, B. (2018). "The biological underpinnings of positive emotions and purpose," in *The Social Psychology of Living Well,* eds. R. Bau meister and J. Forgas (Hove: Psychology Press), 163–180.

Goldie, P. (2000). *The Emotions: A Philosophical Exploration*. Oxford: Clarendon Press.

Gross, J. J. (1999). "Emotion and emotion regulation," in *Handbook of Personality: Theory and Research,* eds. L. A. Pervin and O. P. John (New York: Guildford Press), 525–552.

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Keltner, D., and Haidt, J. (2001). "Social functions of emotions at four levels of analysis," in *Emotions in Social Psychology: Essential Readings*, ed. W. G. Parrott (London: Psychology Press), 175–184.

Kristjánsson, K. (2018). *Virtuous Emotions*. Oxford: Oxford University Press.

Kristjánsson, K. (2019). *Flourishing as the Aim of Education. A neo-Aristotelian View*. London: Routledge.

Mercado, J. A. (2020). "Harmonising reason and emotions: common paths from plato to contemporary trends in psychology," in *Desire and Human Flourishing. Perspectives from Positive Psychology, Moral Education and Virtue Ethics* (Cham: Springer), 89-105.

Mercado, J. A. (2021). Desire, purpose, and the meaningful life. Forum. *Supplem. Acta Philosophica* 7, 49–84. doi: 10.17421/2498-9746-07-04

Mercado, J. A., and Valenzuela, P. (2020). Introduction: virtues, suffering and the search for meaning. at the crossroads of philosophy and psychology. *Acta Philosophica*. 29:1. doi: 10.19272/202000701001

Navarini, C. (2023). "Virtud, phronesis y regulacion de las emociones: una via para la educacion del caracter," in *Formación Integral Universitaria. Una Respuesta a Los Desafíos de la Persona y la Universidad de hoy,* eds. J. A. Cleary and V. Perez Moreira (Santiago: Ediciones Universidad Finis Terrae), 292–318.

Panno, A., Lauriola, M., and Figner, B. (2013). Emotion regulation and risk taking: Predicting risky choice in deliberative decision making, *Cognit. Emot.* 27, 326–334 doi: 10.1080/02699931.2012.707642

Scheler, M. (1973). *Ordo Amoris, in Selected Philosophical Essays*. Evanston, IL: Northwestern University Press.

Šimić, G., Tkalčić, M., Vukić, V., Mulc, D., Španić, E., Šagud, M., et al. (2021). Understanding emotions: origins and roles of the amygdala. *Biomol. Ther*. 11:823. doi: 10.3390/biom11060823

Steinbock, A. (2014). *Moral Emotions: Reclaiming the Evidence of the Heart*. Evanston, IL: Northwestern University Press.

Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Personal. Soc. Psychol. Rev*. 20, 199–222. doi: 10.1177/1088868315586325

Thompson, R. A. (1994). Emotion regulation: a theme in search of definition. *Monogr. Soc. Res. Child Dev*. 59, 25–52. doi: 10.1111/j.1540-5834.1994.tb01276.x

Tyng, C. M., Amin, H. U., Saad, M. N., and Malik, A. S. (2017). The influences of emotion on learning and memory. *Front. Psychol*. 8:235933. doi: 10.3389/fpsyg.2017.01454

Valenzuela, P. (2022). Fredrickson on flourishing through positive emotions and Aristotle's eudaimonia. *Conatus* 7, 37–61. doi: 10.12681/cjp.25202

Valenzuela, P. (2024). "The value of emotions based on Magda B. Arnold and Barbara L. Fredrickson theories," in *Human Flourishing Collection* (Rome: EDUSC).

frontiers | Frontiers in Psychology

TYPE Brief Research Report
PUBLISHED 27 September 2023
DOI 10.3389/fpsyg.2023.1250279

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Romualdas Malinauskas,
Lithuanian Sports University, Lithuania
Francesca Strappini,
University of Bologna, Italy

*CORRESPONDENCE
Barbara Barcaccia
barbara.barcaccia@uniroma1.it

RECEIVED 30 June 2023
ACCEPTED 30 August 2023
PUBLISHED 27 September 2023

CITATION
Barcaccia B, Couyoumdjian A, Di Consiglio M, Papa C, Cancellieri UG and Cervin M (2023) Purpose in life as an asset for well-being and a protective factor against depression in adolescents.
Front. Psychol. 14:1250279.
doi: 10.3389/fpsyg.2023.1250279

Purpose in life as an asset for well-being and a protective factor against depression in adolescents

Barbara Barcaccia[1,2]*, Alessandro Couyoumdjian[1], Micaela Di Consiglio[1], Carolina Papa[1], Uberta Ganucci Cancellieri[3] and Matti Cervin[4]

[1]Department of Psychology, Sapienza University of Rome, Rome, Italy, [2]Associazione di Psicologia Cognitiva APC and Scuola di Psicoterapia Cognitiva Srl SPC, Rome, Italy, [3]University for Foreigners "Dante Alighieri" of Reggio Calabria, Reggio Calabria, Italy, [4]Department of Clinical Sciences, Lund University, Lund, Sweden

Purpose in life, which is a central component of the eudaimonic paradigm of well-being, has been sparsely examined in adolescence. This is unfortunate as adolescence is characterised by identity development and is a key period for the onset of mental disorders. To inform future research on well-being and purpose in life in adolescents, we drew factors from several fields of research, including mental health and psychological factors, and explored which factors were most strongly associated with purpose in life. Data were collected in a sample of 444 Italian adolescents (M_{age} = 16.30 [SD = 1.50], range: 14 to 20 years; 58% girls) and associations with mental health (stress, anxiety, depression, anger), psychological traits (mindfulness, self-hate, self-inadequacy, self-reassurance, isolation), and sociodemographic variables (age, sex, place of birth) were examined. Regression, dominance, and network analyses indicated that a stronger sense of purpose in life was associated with lower depressive symptoms, higher levels of self-reassurance, and being born in Italy. Our findings suggest that purpose in life is an important asset for well-being in adolescents and may protect against depression. Future longitudinal and/or experimental research should examine the potential protective role of purpose in life in relation to adolescent depression and how self-reassurance and sociodemographic factors (e.g., immigrant background) are involved.

KEYWORDS

purpose in life, well-being, stress, anxiety, depression, self-reassurance, adolescents

Introduction

Adolescence is a crucial time for establishing the bases of well-being and mental health. Indeed, most mental disorders onset during adolescence, with the peak age being 14.5 years, and almost half of all children develop a mental disorder before reaching adulthood (Solmi et al., 2022). The most common adolescent mental health problems are depression and anxiety (Kessler et al., 2007). A plethora of research has shown that such symptoms negatively impact overall development, social relationships, and academic performance and result in substantial personal, social and economic costs (Gore et al., 2011; Auerbach et al., 2014; Copeland et al., 2014; Hetrick et al., 2016; Monroe et al., 2019). The other side of the coin, that of adolescent well-being, has been less explored.

The hedonistic and the eudaimonic approaches are the two main theoretical frameworks of well-being. The hedonistic approach emphasises positive emotions and subjective well-being,

whereas the eudaimonic approach emphasises psychological well-being in the form of a "flourishing" life, with scope and meaning, and living a life coherent with one's true self (Diener, 1984; Ryan and Deci, 2012). In the eudaimonic framework, feeling a purpose in life is a key element (Ryff and Keyes, 1995; Deci and Ryan, 2008; Ryff and Singer, 2008), while it is less pronounced in the hedonistic paradigm (Malin et al., 2017). Ryff and Keyes (1995) describe six facets of psychological well-being: (1) "self-acceptance" (a positive evaluation of oneself and one's past), (2) "personal growth," (3) "positive relations with others," (4) "environmental mastery" (the ability to effectively manage one's life and the surrounding world), (5) "autonomy" (a sense of self-determination), and (6) "purpose in life" (the belief that one's life is meaningful and purposeful).

Purpose can be defined as "a long-term, forward-looking intention to accomplish aims that are meaningful to oneself as well as impacting the world beyond oneself" (Malin et al., 2017, p. 1201). Purpose also implies the setting of goals and a sense of hope for the future, and rather than being dictated by the society, family or peers, these values and goals emerge from the individual's own motivation and aspiration (Bundick, 2011). Yet, while it is a subjective experience, it also goes beyond the self and includes other people's well-being and motivations to contribute to the community (Bronk et al., 2009; Bronk, 2014). Furthermore, purpose in life can be considered an aim that inspires and guides the choice of goals (McKnight and Kashdan, 2009), which can be attainable or not, but are nonetheless pursued (Bronk and Finch, 2010).

A growing body of literature has begun to shed light on the crucial role that having a sense of purpose plays in promoting well-being, as well as protecting individuals against the risks of psychopathology. Moreover, research has shown that individuals with a greater purpose in life have better psycho-physical health throughout the life span (Kim et al., 2019; Pfund and Lewis, 2020).

Previous studies in adults and older adults have found that the presence of purpose in life and of conceptually similar constructs, such as meaning in life, is negatively associated with symptoms of depression and anxiety, and plays a beneficial role in counteracting them (Pearson et al., 2015; Yek et al., 2017; Salt et al., 2018; Laird et al., 2019; Crego et al., 2021; Mei et al., 2021; Yager and Kay, 2023). Indeed, a recent meta-analysis showed significant negative associations of purpose in life with depression and anxiety in both healthy and clinical populations (Boreham and Schutte, 2023). Loneliness, which is a correlate of depressive and anxious symptomatology, is negatively associated with general well-being and with purpose in life (Bondevik and Skogstad, 2000). In particular, social exclusion has been found to negatively impact the degree to which individuals experience a sense of purpose (Stillman and Baumeister, 2009).

Regarding the population of adolescents, a longitudinal study (Chen and Cheng, 2020) on high school students showed that increases in purpose predicted increased satisfaction with life and decreased depressive symptoms among both girls and boys. Along these lines, Chen et al. (2021) found that the presence of meaning in life was negatively associated with symptoms of depression and anxiety, and in another study, a greater goal orientation was associated with lower symptoms of depression (Askeland et al., 2020). Recently, found that greater purpose exploration and commitment was associated with lower depression and higher hope, prosocial tendency, self-efficacy and life satisfaction in high-school students. Overall, the presence of meaning and purpose in life has been linked to better psychological adjustment variables and also to improved academic performance in youth (Pizzolato et al., 2011; Abdul Kadir and Mohd, 2021).

While several studies have examined how purpose in life is associated with feelings of depression, anxiety and loneliness, little is known about associations with another important human emotion, anger. It has been hypothesised that higher levels of anger may be linked to a greater sense of purpose, as anger might enhance motivation to strive towards a challenging goal (Tamir, 2016; Wilson and Hill, 2023). Some studies indicate that anger is negatively associated with psychological well-being (Diong and Bishop, 1999), but specific associations with purpose in life have rarely been examined.

Dispositional mindfulness, i.e., the capacity of paying attention to the present moment in a non-judgmental and non-reactive fashion (Kabat-Zinn, 2015) is thought to positively affect purpose in life. Although relatively few studies have examined this directly, some evidence of a positive association has been published (Crego et al., 2021).

Purpose in life has also been linked to the ways in which a person relates to oneself, where self-warmth, self-reassurance and self-compassion are of relevance and entail "a positive and warm attitude for the self that allows acceptance, compassion and understanding of flaws and failures as part of the human condition" (Castilho et al., 2015, p. 154; Castilho et al., 2015, p. 154). Specifically, self-compassion has been defined as being warm and reassuring toward oneself at times of suffering and failure, rather than spending time and energy in self-deprecation or harsh self-criticism (Germer and Neff, 2013). Experiencing warm and reassuring feelings toward oneself has been linked to better well-being, including to a sense of purpose in life (Neely et al., 2009). Furthermore, individuals who are more other-forgiving and less revengeful experience greater well-being, including purpose in life (Lawler-Row and Piferi, 2006), and lower psychopathology (Barcaccia et al., 2022) also among adolescents (Barcaccia et al., 2019). Conversely, feelings of unforgiveness negatively affect the capacity of finding meaning and purpose (Akhtar et al., 2017).

Most research on purpose in life has been conducted with adults, whereas the number of studies on adolescents is relatively small. The present work aims at filling this gap by delving into the multifaceted relations between purpose in life and other important psychological variables in adolescents, with a specific focus on its potential as a protective mechanism against psychopathology, namely depression. Indeed, adolescence represents a key period during which the foundations of well-being are built: it has been suggested that when adolescents live their lives with a purpose, they experience psychological well-being (Witten et al., 2019). During adolescence, the individual starts thinking about who they are and who they want to be in the future (Hill et al., 2021; Ratner et al., 2023). The adolescent years are also characterised by increased capacity for abstract thinking, which allows for reflecting about meaning and purpose in life, including setting proximal and distant goals for one's own life (Sawyer et al., 2012). Research suggests that purpose in life during adolescence promotes adaptive growth (Pfund and Lewis, 2020), may play a role in identity development (Burrow and Hill, 2011) and improves overall well-being (Bronk and Finch, 2010; Ratner et al., 2023). Similar to findings in adults, purpose in life in adolescence is positively associated with positive affect, subjective well-being, and life

satisfaction (Burrow and Hill, 2011; Bronk, 2014; Pfund and Lewis, 2020). Purpose has also been linked to desirable personality characteristics that may contribute to healthy development, such as compassion, gratitude, generosity and conscientiousness (Burrow and Hill, 2011; Malin et al., 2017). Furthermore, adolescents with a strong sense of purpose tend to do better academically (Yeager and Bundick, 2009; Yeager et al., 2014).

To inform research on how well-being in adolescents can be understood and improved, the aim of this study is to conduct a theory-informed exploration of purpose in life in adolescence. We will draw factors from several fields of research, including mental health (i.e., symptoms of depression, stress, anxiety and anger), psychological traits (i.e., mindfulness, attitudes towards oneself), isolation, and sociodemographic information (e.g., age, gender and background). The study is conducted in an exploratory fashion, but we expect that several factors will be uniquely associated with purpose in life and that the strongest association will emerge in relation to depressive symptoms.

Method

Participants and procedure

The sample comprised 444 adolescents with a mean age of 16.30 (SD = 1.50, range: 14 to 20). A majority were girls ($n = 257$, 57.9%) and the rest boys ($n = 187$, 42.1%) and a vast majority were born in Italy ($n = 418$, 94.1%). The study is part of a larger research project assessing a number of dimensions associated with adolescent mental health and well-being, which has been conducted across high schools located in various Italian regions. Data collection for the present study took place in five different high schools, and an opportunity sampling procedure without exclusion criteria was used. The headmasters of five high schools were notified via e-mail, where the purpose of the study was explained. All headmasters approved that the students at their schools could complete a battery of questionnaires during regular class hours. Students were subsequently invited to take part in the study, and written informed consent was obtained by the parents/guardians of underage students (<18), whereas those who were of legal age (≥18) signed their own informed consent. All potential participants were assured that the collection of data was anonymous and voluntary. After written consent was obtained, participants received a link to an electronic survey on the online platform LimeSurvey, where they completed the questionnaires. The collection of data was obtained in a single session in their classrooms, where they completed the online survey in a quiet classroom environment, with a research assistant and a teacher present. Participants needed approximately 35 min to complete the battery. The study was conducted according to the Declaration of Helsinki and approved by the schools' boards and the ethics committee of Roma Tre University.

Measures

The Life Engagement Test (LET; Scheier et al., 2006) is a 6-item questionnaire that evaluates the extent to which an individual has a sense of meaning and purpose in life. Respondents rate the extent to which they agree with each statement on a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). The six items are: "There is not enough purpose in my life" (reverse scored), "To me, the things I do are all worthwhile," "Most of what I do seems trivial and unimportant to me" (reverse scored), "I value my activities a lot," "I do not care very much about the things I do" (reverse scored), "I have lots of reasons for living." After reverse scoring, all scores are summed, with higher scores indicating greater purpose in life. The internal consistency of the LET in the present study was adequate ($\alpha = 0.76$, $\omega = 0.76$).

The reverse translation procedure from English into Italian was carried out by two independent translators. The LET was translated into Italian by a bilingual clinical psychologist, experienced in research on adolescents and familiar with this instrument of measure. Afterwards it was back-translated into English by a professional translator. Points of divergence were resolved by conference (Brislin, 1980).

The Depression Anxiety and Stress Scale-21 (DASS-21; Lovibond and Lovibond, 1995a; Lovibond and Lovibond, 1995b; Bottesi et al., 2015) is a 21-item questionnaire evaluating levels of depression, anxiety and stress over the previous week. Respondents rate how much each statement applies to them on a 4-point Likert scale, from 0 (never) to 3 (almost always). Each subscale is composed of seven items. The internal consistency of all DASS-21 subscales was good in the present sample (depression, $\alpha = 0.89$, $\omega = 0.89$; anxiety, $\alpha = 0.83$, $\omega = 0.84$; stress, $\alpha = 0.85$, $\omega = 0.85$).

The Forms of Self-Criticizing and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004; Petrocchi and Couyoumdjian, 2016) is a 22-item questionnaire assessing self-criticism in response to failures or setbacks. Two subscales measure two different facets of self-criticism, "inadequate self" and "hated self," whereas the third subscale measures the capability of being reassuring and supportive to oneself. Respondents rate how much each statement applies to them on a 5-point Likert scale (from 0 = "not at all like me" to 4 = "extremely like me"). The internal consistency of the three FSCRS scales was good to excellent (Self-hate, $\alpha = 0.82$, $\omega = 0.83$; Self-inadequacy, $\alpha = 0.91$, $\omega = 0.91$; Self-reassurance, $\alpha = 0.86$, $\omega = 0.86$).

Child and Adolescent Mindfulness Measure (CAMM; Greco et al., 2011; I-CAMM; Ristallo et al., 2016) is a 10-item questionnaire assessing mindfulness in children and adolescents. Respondents rate how much each statement applies to them on a 5-point Likert scale ranging from 0 (never true) to 5 (always true). In the current dataset the internal consistency of the I-CAMM was adequate ($\alpha = 0.77$, $\omega = 0.78$).

State-Trait Anger Expression Inventory-2 Child and Adolescent (STAXI-2C/*A*; Brunner and Spielberger, 2009; Lonigro et al., 2015) is a 35-item questionnaire measuring anger in children and adolescents across five subscales: trait anger, state anger, anger expression-in, anger expression-out, and anger control. For the purpose of this study, we only used the trait anger subscale (10 items), which assesses chronic feelings of anger as opposed to state anger, which is more fluctuating. The scale had adequate internal consistency in the present sample ($\alpha = 0.79$, $\omega = 0.79$).

Trait Forgivingness Scale (TFS; Berry et al., 2005; Barcaccia et al., 2018) measures dispositional forgiveness and includes 7 statements, to which participants rate how much each applies to them on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The scale had adequate internal consistency in the present sample ($\alpha = 0.72$, $\omega = 0.72$).

Self-Compassion Scale (SCS) (Neff, 2003; Petrocchi et al., 2014) is a 26-item scale that measures several aspects related to self-compassion. It includes six subscales: self-kindness, common humanity, mindfulness, self- judgment, isolation and over-identification. In the present study, we only included the isolation subscale (4 items) which showed good internal consistency ($\alpha = 0.86$, $\omega = 0.87$).

Statistical analysis

The sample size depended on the number of participating schools and how many adolescents consented to participate and thus was not predetermined. However, the resulting sample of 444 provided us with adequate statistical power (0.84) to detect even a small effect (quantified as a regression coefficient) in a multiple linear regression model. Similarly, the sample size provided us with reasonably adequate statistical power (0.69) to detect a group difference of moderate size even for the most unbalanced group comparison (born in versus outside of Italy). Associations between purpose in life and the other study variables were analysed in several ways. First, we used t-tests to compare groups (boys/girls, being born in/outside of Italy). Second, we examined the zero-order Pearson correlations between purpose in life and age and all the mental health and psychological trait variables. To parse out unique associations, we conducted a linear regression model with purpose in life as the dependent variable and all other variables as independent variables. Multicollinearity was examined by estimating the Variance Inflation Factor (VIF) for each independent variable and values above 5 were considered to be potentially concerning. The regression analysis was followed-up by dominance analysis, in which all possible subset models of independent variables were tested to examine the degree of unique variation in the dependent variable accounted for by each independent variable. To further explore unique associations among variables, we estimated a network using all study variables. In a network, each variable is depicted as a circle and each unique association as a line. Unique associations were estimated as partial correlations using partial correlations using the R library *BGGM*. Because we included a mix of continuous and binary variables, we used a semi-parametric copula model based on ranked likelihood to estimate the partial correlations, which can range from −1 to +1. All network associations were estimated using 5,000 posterior samples and 95% credible intervals were used to control for false positive rate. The network analysis was conducted because it is a conservative method to explore associations between variables (partial correlations instead of regression coefficients) and because it does not assume a causal relation between variables. Because the study was largely exploratory, an alpha level of 0.05 and credible intervals of 95% were used as indicators of statistical significance.

Results

Participants varied in their purpose in life (see Figure 1 for histograms for boys and girls separately). Boys (M = 23.24 [3.92]) reported significantly higher purpose in life than girls (M=22.39 [3.91]), but the effect size was small ($t[442] = 2.26$, $p = 0.02$, Cohen's $d = 0.22$). Homogeneity of variance could not be assumed in this model, but the Welch *t*-test statistic yielded very similar results

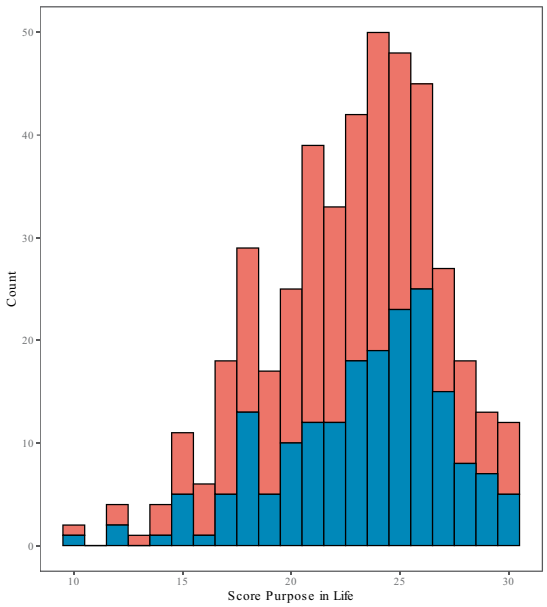


FIGURE 1
Histogram showing the distribution of purpose in life scores for boys and girls, with the upper bars indicating the count for girls.

($t[400.6] = 2.26$, $p = 0.02$). Age was not significantly correlated with purpose in life ($r = -0.06$, $p = 0.25$). Participants born in Italy (M = 22.95 [3.91]) reported significantly higher purpose in life than those born outside of Italy (M = 19.58 [2.91]) and the effect size was large ($t[442] = 4.32$, $p < 0.001$, Cohen's $d = 0.87$) and homogeneity of variance could be assumed.

The zero-order correlations between purpose in life and stress, anxiety, depression, anger, self-hate, self-inadequacy, self-reassurance, mindfulness, forgiveness, and isolation alongside means and standard deviations are in Table 1. To examine normality of the included continuous variables reported in Table 1, we computed the Skewness and Kurtosis values for each variable. All Skewness values were in the range of −0.49 to 1.05 and all Kurtosis values in the range of −0.70 to 0.50, indicating no apparent violation of normality. Several variables were significantly and weakly to moderately correlated with purpose in life, with the strongest associations emerging in relation to depression (negative association), self-hate (negative association) and self-reassurance (positive association).

To get a better sense of which variables were most uniquely associated with purpose in life, we conducted a linear regression model with purpose in life as the dependent variable and all other measured variables including age, sex, and being born in versus outside of Italy, as independent variables. The model was statistically significant ($p < 0.001$) and explained 41.0% of the variation in purpose in life. No independent variable had a VIF above 5 (the highest VIF was 3.27 for depressive symptoms) and the Durbin–Watson test yielded a value of 1.05, indicating no severe autocorrelation. Results of the regression model are presented in Table 2. Higher scores on depression, self-hate, and self-inadequacy were significantly associated with lower purpose in life scores. Further, being a girl, being born in Italy, and scoring higher on the self-reassurance scale were associated with higher purpose in life scores.

TABLE 1 Means and standard deviations and zero-order correlations among study variables.

	M (SD)	Stress	Anxiety	Depression	Anger	Self-hate	Self-inadequacy	Self-reassurance	Mindfulness	Forgiveness	Isolation
Purpose in life	21.58 (4.10)	−0.35**	−0.37**	−0.53**	−0.23**	−0.51**	−0.39**	0.51**	−0.32**	0.02	−0.41**
Stress	9.52 (4.19)	–	0.70**	0.76**	0.52**	0.50**	0.59**	−0.38**	0.54**	−0.18**	0.52**
Anxiety	23.95 (7.24)		–	0.66**	0.40**	0.53**	0.51**	−0.37**	0.53**	−0.15**	0.49**
Depression	26.07 (5.92)			–	0.43**	0.62**	0.63**	−0.51**	0.53**	−0.10*	0.62**
Anger	28.00 (6.69)				–	0.36**	0.49**	−0.24**	0.48**	−0.28**	0.49**
Self-hate	9.52 (4.19)					–	0.72**	−0.64**	0.48**	−0.28**	0.49**
Self-inadequacy	23.95 (7.24)						–	−0.58**	0.63**	−0.07	0.73**
Self-reassurance	26.07 (5.92)							–	−0.32**	0.09	−0.50**
Mindfulness	28.01 (6.69)								–	−0.10*	0.59**
Forgiveness	21.15 (5.10)									–	−0.10*
Isolation	11.73 (4.07)										–

TABLE 2 Results from the linear regression model with purpose in life as the dependent variable.

	B	Standardized beta	*p*
Stress	0.09	0.11	0.11
Anxiety	−0.02	−0.02	0.68
Depression	**−0.28**	**−0.37**	**< 0.001**
Anger	−0.05	−0.04	0.40
Self-hate	**−0.17**	**−0.18**	**< 0.01**
Self-inadequacy	**0.08**	**0.15**	**0.03**
Self-reassurance	**0.19**	**0.28**	**< 0.001**
Mindfulness	−0.04	−0.06	0.22
Forgiveness	−0.04	−0.04	0.37
Isolation	−0.08	−0.08	0.18
Age (years)	0.02	0.01	0.86
Sex (boy = 1, girl = 0)	**−0.81**	**−0.10**	**0.01**
Born in Italy (yes = 1, no = 0)	**2.97**	**0.18**	**< 0.001**

Statistically significant associations are highlighted in bold.

Dominance analysis showed that depression explained most unique variance in purpose in life (9.5%) followed by self-reassurance (9.1%), self-hate (7.0%), being born in Italy (3.6%), isolation (3.3%), self-inadequacy (2.6%), anxiety (2.3%), stress (2.1%), mindfulness (1.6%), being a boy (0.7%), anger (0.7%), forgiveness (0.1%), and age (0.0%).

Last, we estimated a network to capture the full associative structure of all study variables. The network structure is presented in Figure 2. In line with the regression and dominance analyses, purpose in life was uniquely linked to depression (partial correlation = −0.29), self-reassurance (partial correlation = 0.28), and being born in Italy (partial correlation = 0.46).

Discussion

Few studies have examined purpose in life in adolescents, which is a key component in the eudaimonic framework of well-being. The present study was conducted to guide future research about how to best understand feelings of purpose in adolescents and which research avenues may be most important to pursue. In order to achieve these goals, we selected a range of variables that have been theoretically and/or empirically linked to purpose in life in previous research. A focus on purpose in life, and in extension well-being in adolescence (Witten et al., 2019) is important to better understand the development and maintenance of adolescent mental health and illness and how adolescents can achieve their full potential and flourish (Ciarrochi et al., 2013). Considering that most mental disorders typically begin during adolescence (Jones, 2013; Solmi et al., 2022), this is a crucial period for prevention of mental health conditions and promotion of well-being.

In line with our expectations, depressive symptoms and purpose in life were strongly and negatively associated. Our results confirm previous findings on the role of purpose in life, which prior research has found to be strongly associated with depression, both in adults (Pearson et al., 2015; Salt et al., 2018; Crego et al., 2021), and in

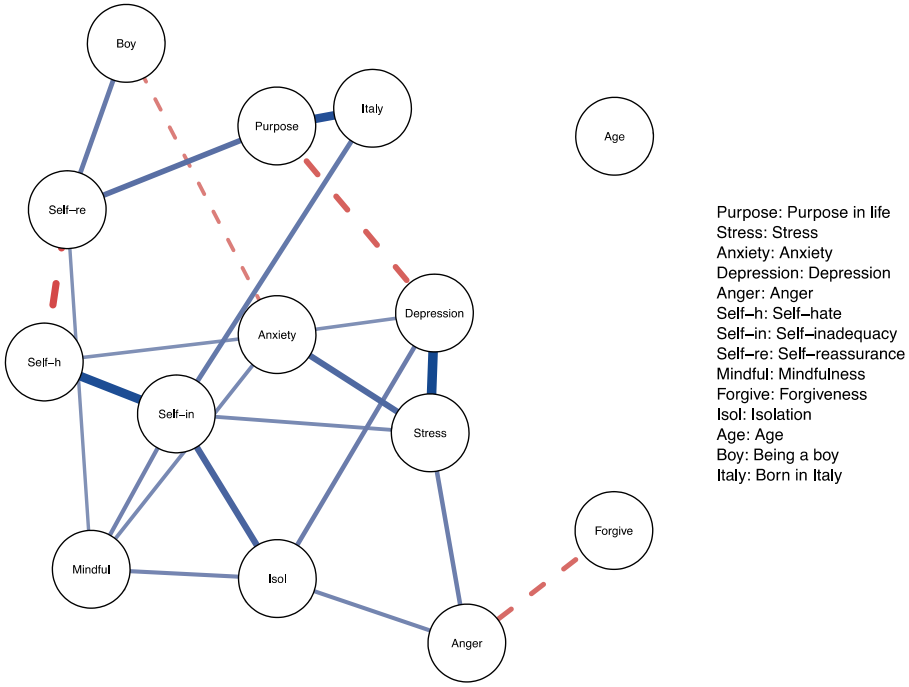


FIGURE 2
Associative network structure of study variables. Each circle represents a variable and each line a statistically significant partial correlation. Wider lines indicate stronger partial correlations. Solid lines indicate a statistically significant positive partial correlation and dashed lines indicate a statistically significant negative partial correlation. Variables are placed according to their associations with each other, with more strongly associated variables being places closely together and variables with many associations with other variables being places centrally.

adolescents: increases in purpose predicted increased satisfaction with life and decreased depression in high school students (Chen and Cheng, 2020); meaning in life was negatively associated with depression and anxiety in middle and high school students (Chen et al., 2021); greater goal orientation was associated with lower depression in adolescents aged 16–19 (Askeland et al., 2020). In summary, purpose in life (and conceptually similar constructs) has been linked to better overall psychological adjustment variables, and our findings confirm that having a sense of purpose in life plays a crucial role in enhancing adolescents' well-being and protecting them from depression.

Of note, depressive symptoms and purpose in life were uniquely associated in all statistical models. Loss of interest and low mood are core symptoms of depression, and many depressed individuals experience hopelessness (American Psychiatric Association, APA, 2013). As engagement, hope and a future-oriented outlook are integral to purpose in life, the strong link to depressive symptoms is not surprising. It can be speculated that participants with a greater purpose in life had clearer goals, were more hopeful and motivated to reach their goals, and engaged more in personal meaningful activities. In fact, engaging in valued and meaningful activities is a form of behavioral activation, which is known to protect against depression (Hooker et al., 2020).

Adolescents who had greater purpose in life were also less critical about themselves and more compassionate, with the clearest association emerging in relation to self-reassurance: purpose and self-reassurance were uniquely associated in both the regression and network models. Self-reassurance refers to the ability to be reassuring, compassionate and encouraging towards oneself at times of setbacks and failure (Germer and Neff, 2013; Petrocchi et al., 2019). It is possible that this trait protects against self-criticism and self-hate, which in turn may impede efforts to engage in life and one's own goals. In the present study, self-reassurance was also uniquely linked to self-hate, supporting this hypothesis. It is also possible that having purpose means being more enterprising, i.e., more used to actively engage in achieving goals, and at the same time more accustomed to the possibility of failure, seen as part of human condition. Therefore, those adolescents whose lives are characterised by purpose and commitment, are also more capable of considering setbacks and failures as normal hindrances occurring in everyone's life, and may be more capable of reassuring themselves when things go wrong. Our results shed light on the crucial role that purpose in life plays in shaping psychological well-being of adolescents: having a sense of purpose may not only decrease the risk of depression but also contribute to overall well-being and quality of life, confirming findings from previous studies on the beneficial role of purpose in life (Pizzolato et al., 2011; Askeland et al., 2020; Chen and Cheng, 2020; Abdul Kadir and Mohd, 2021; Chen et al., 2021), and suggesting the potential benefits of promoting a sense of purpose as a preventive measure against depression and as a means of promoting well-being among adolescents.

Further, there was no significant association between being a boy and purpose in life in the full network of variables. However, being a boy was closely linked to higher self-reassurance, which in turn was linked to purpose, indicating that self-reassurance is important to explain the differences between boys and girls in the present study.

In line with our exploratory stance, all available information was analysed in relation to purpose in life. Regarding sociodemographic

information, few variables were available (age, gender, and birth place). A surprising but interesting finding was the clear association between being born in or outside of Italy, where adolescents being born in Italy reported a substantially stronger feeling of purpose in life. Interestingly, in the network, birthplace was uniquely linked only to purpose in life and stronger feelings of self-inadequacy, indicating that this variable was of particular relevance to purpose in life. Our findings regarding birthplace are partially in line with previous studies suggesting that well-being may be lower in immigrant adolescents when compared to their native peers (Borraccino et al., 2018; Alivernini et al., 2020), but are not consistent with previous data indicating that immigrant youth, when compared to their native counterparts, show higher well-being (Sam et al., 2008; Van Geel and Vedder, 2010; Dimitrova, 2011; Güngör and Perdu, 2017).

This study has a number of limitations that must be acknowledged. Firstly, our results are based on data collected from a convenience sample, which may impact representativity. Secondly, all data were self-reported. Thirdly, the cross-sectional nature of the study does not allow for causal inference, which could be better investigated in future experimental or longitudinal studies.

The present study was conducted in an exploratory fashion to increase knowledge about purpose in life in adolescents. In line with our hypothesis, a clear link emerged in relation to depression. Because of the cross-sectional nature of the study, future research needs to examine how purpose and depressive symptoms are linked longitudinally. While it is reasonable to assume that purpose protects against depressive symptoms, depression is a heterogeneous and complex disorder with a complex aetiology and it is possible or even likely that the relation between purpose in life and depressive symptoms is reciprocal. We also found a clear association between self-reassurance and purpose in life, which is intriguing as this suggests that the capacity of being encouraging and compassionate towards oneself may be in important factor to consider in prevention and health promotion during adolescence, but again longitudinal or experimental studies are needed. Last, we found a strong association between having an immigrant background and experiencing lower purpose in life. While this association was very clear in the present study, it is only partially in line with previous research, and thus should be further examined.

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 humans were approved by Ethics Committee of Roma Tre University, Rome, Italy. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent was obtained from the parents/guardians of underage students, whereas those who were of legal age signed their own informed consent.

Author contributions

BB, MC, and AC contributed to conception and design of the study and wrote the first draft of the manuscript. MDC and CP organised the database and contributed to the data interpretation and editing of the manuscript. UGC supervised the study and edited the manuscript. MC performed the statistical analysis and wrote the results section. All authors contributed to the article and approved the submitted version.

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

References

Abdul Kadir, N. B. Y., and Mohd, R. H. (2021). The 5Cs of positive youth development, purpose in life, hope, and well-being among emerging adults in Malaysia. *Front. Psychol.* 12:641876. doi: 10.3389/fpsyg.2021.641876

Akhtar, S., Dolan, A., and Barlow, J. (2017). Understanding the relationship between state forgiveness and psychological wellbeing: a qualitative study. *J. Relig. Health* 56, 450–463. doi: 10.1007/s10943-016-0188-9

Alivernini, F., Cavicchiolo, E., Manganelli, S., Chirico, A., and Lucidi, F. (2020). Students' psychological well-being and its multilevel relationship with immigrant background, gender, socioeconomic status, achievement, and class size. *Sch. Eff. Sch. Improv.* 31, 172–191. doi: 10.1080/09243453.2019.1642214

American Psychiatric Association, APA (2013). *Diagnostic and statistical manual of mental disorders* (*5th*). Arlington, VA: APA

Askeland, K. G., Bøe, T., Breivik, K., La Greca, A. M., Sivertsen, B., and Hysing, M. (2020). Life events and adolescent depressive symptoms: protective factors associated with resilience. *PLoS One* 15:e0234109. doi: 10.1371/journal.pone.0234109

Auerbach, R. P., Admon, R., and Pizzagalli, D. A. (2014). Adolescent depression: stress and reward dysfunction. *Harv. Rev. Psychiatry* 22, 139–148. doi: 10.1097/HRP.0000000000000034

Barcaccia, B., Milioni, M., Pallini, S., and Vecchio, G. M. (2018). Resentment or forgivingness? The assessment of forgiveness in Italian adolescents. *Child Indicator Res.* 11, 1407–1423. doi: 10.1007/s12187-017-9483-6

Barcaccia, B., Pallini, S., Pozza, A., Milioni, M., Baiocco, R., Mancini, F., et al. (2019). Forgiving adolescents: far from depression, close to well-being. *Front. Psychol.* 10:1725. doi: 10.3389/fpsyg.2019.01725

Barcaccia, B., Salvati, M., Pallini, S., Saliani, A. M., Baiocco, R., and Vecchio, G. M. (2022). The bitter taste of revenge: negative affect, depression and anxiety. *Curr. Psychol.* 41, 1198–1203. doi: 10.1007/s12144-020-00643-1

Berry, J. W., Worthington, E. L., O'Connor, L. E., Parrott, L., and Wade, N. G. (2005). Forgivingness, vengeful rumination, and affective traits. *J. Pers.* 73, 183–226. doi: 10.1111/j.1467-6494.2004.00308.x

Bondevik, M., and Skogstad, A. (2000). Loneliness, religiousness, and purpose in life in the oldest old. *J. Relig. Gerontol.* 11, 5–21. doi: 10.1300/J078v11n01_03

Boreham, I. D., and Schutte, N. S. (2023). The relationship between purpose in life and depression and anxiety: A meta-analysis. *J. Clin. Psychol.* doi: 10.3389/fpsyg.2023.23576

Borraccino, A., Charrier, L., Berchialla, P., Lazzeri, G., Vieno, A., Dalmasso, P., et al. (2018). Perceived well-being in adolescent immigrants: it matters where they come from. *Int. J. Public Health* 63, 1037–1045. doi: 10.1007/s00038-018-1165-8

Bottesi, G., Ghisi, M., Altoè, G., Conforti, E., Melli, G., and Sica, C. (2015). The Italian version of the depression anxiety stress scales-21: factor structure and psychometric properties on community and clinical samples. *Compr. Psychiatry* 60, 170–181. doi: 10.1016/j.comppsych.2015.04.005

Brislin, R. W. (1980). Cross-cultural research methods, *Environment and culture. Human behavior and environment. 4.* (Eds.) I. Altman, A. Rapoport and J. F. Wohlwill (Boston, MA: Springer).

Bronk, K. C. (2014). *Purpose in life: a critical component of positive youth development* New York, NY: Springer.

Bronk, K. C., and Finch, W. H. (2010). Adolescent characteristics by hope of long-term aim in life. *Appl. Dev. Sci.* 14, 35–44. doi: 10.1080/10888690903510331

Bronk, K. C., Hill, P. L., Lapsley, D. K., Talib, T. L., and Finch, H. (2009). Purpose, hope, and life satisfaction in three age groups. *J. Posit. Psychol.* 4, 500–510. doi: 10.1080/17439760903271439

Brunner, T. M., and Spielberger, C. D. (2009). *STAXI-2 C/A: state-trait anger expression inventory-2, child and adolescent: professional manual*. Lutz, FL: Psychological Assessment Resources.

Bundick, M. J. (2011). The benefits of reflecting on and dis- cussing purpose in life in emerging adulthood. *New Dir. Youth Dev.* 2011, 89–103. doi: 10.1002/yd.430

Burrow, A. L., and Hill, P. L. (2011). Purpose as a form of identity capital for positive youth adjustment. *Dev. Psychol.* 47, 1196–1206. doi: 10.1037/a0023818

Castilho, P., Pinto-Gouveia, J., and Duarte, J. (2015). Evaluating the multifactor structure of the long and short versions of the self-compassion scale in a clinical sample. *J. Clin. Psychol.* 71, 856–870. doi: 10.1002/jclp.22187

Chen, H. Y., and Cheng, C. L. (2020). Developmental trajectory of purpose identification during adolescence: links to life satisfaction and depressive symptoms. *J. Adolesc.* 80, 10–18. doi: 10.1016/j.adolescence.2020.01.013

Chen, Q., Wang, X., He, X., Ji, L., Liu, M., and Ye, B. (2021). The relationship between search for meaning in life and symptoms of depression and anxiety: key roles of the presence of meaning in life and life events among Chinese adolescents. *J. Affect. Disord.* 282, 545–553. doi: 10.1016/J.JAD.2020.12.156

Ciarrochi, J., Kashdan, T., and Harris, R. (2013). The foundations of flourishing. T. B. Kashdan and J. Ciarrochi (Eds.), *Mindfulness, acceptance, and positive psychology: The seven foundations of well-being* (pp. 1–29). Oakland, United States: Context Press.

Copeland, W. E., Angold, A., Shanahan, L., and Costello, E. J. (2014). Longitudinal patterns of anxiety from childhood to adulthood: the Great Smoky Mountains study. *J. Am. Acad. Child Adolesc. Psychiatry* 53, 21–33. doi: 10.1016/j.jaac.2013.09.017

Crego, A., Yela, J. R., Gómez-Martínez, M. Á., Riesco-Matías, P., and Petisco-Rodríguez, C. (2021). Relationships between mindfulness, purpose in life, happiness, anxiety, and depression: testing a mediation model in a sample of women. *Int. J. Environ. Res. Public Health* 18:925. doi: 10.3390/ijerph18030925

Deci, E. L., and Ryan, R. M. (2008). Hedonia, eudaimonia, and well-being: an introduction. *J. Happiness Stud.* 9, 1–11. doi: 10.1007/s10902-006-9018-1

Diener, E. (1984). Subjective well-being. *Psychol. Bull.* 95, 542–575. doi: 10.1037/0033-2909.95.3.542

Dimitrova, R. (2011). Children's social relationships in the northern Italian school context: evidence for the immigrant paradox. *J. Mod. Ital. Stud.* 16, 478–491. doi: 10.1080/1354571X.2011.593756

Diong, S.-M., and Bishop, G. D. (1999). Anger expression, coping styles, and well-being. *J. Health Psychol.* 4, 81–96. doi: 10.1177/135910539900400106

Germer, C. K., and Neff, K. D. (2013). Self-compassion in clinical practice. *J. Clin. Psychol.* 69, 856–867. doi: 10.1002/jclp.22021

Gilbert, P., Clarke, M., Hempel, S., Miles, J. N., and Irons, C. (2004). Criticizing and reassuring oneself: an exploration of forms, styles and reasons in female students. *British J. Clin. Psychol.* 43, 31–50. doi: 10.1348/014466504772812959

Gore, F. M., Bloem, P. J., Patton, G. C., Ferguson, J., Joseph, V., Coffey, C., et al. (2011). Global burden of disease in young people aged 10–24 years: a systematic analysis. *Lancet* 377, 2093–2102. doi: 10.1016/S0140-6736(11)60512-6

Greco, L. A., Baer, R. A., and Smith, G. T. (2011). Assessing mindfulness in children and adolescents: development and validation of the child and adolescent mindfulness measure (CAMM). *Psychol. Assess.* 23, 606–614. doi: 10.1037/a0022819

Güngör, D., and Perdu, N. (2017). Resilience and acculturative pathways underlying psychological well-being of immigrant youth. *Int. J. Intercult. Relat.* 56, 1–12. doi: 10.1016/j.ijintrel.2016.10.005

Hetrick, S. E., Cox, G. R., Witt, K. G., Bir, J. J., and Merry, S. N. (2016). Cognitive behavioral therapy (CBT), third-wave CBT and interpersonal therapy (IPT) based interventions for preventing depression in children and adolescents. *Cochrane Database Syst. Rev.* 2016:CD003380. doi: 10.1002/14651858.CD003380.pub4

Hill, P. L., Burrow, A. L., and Strecher, V. J. (2021). Sense of purpose in life predicts greater willingness for COVID-19 vaccination. *Soc. Sci. Med.* 284:114193. doi: 10.1016/j.socscimed.2021.114193

Hooker, S. A., Masters, K. S., Vagnini, K. M., and Rush, C. L. (2020). Engaging in personally meaningful activities is associated with meaning salience and psychological well-being. *J. Posit. Psychol.* 15, 821–831. doi: 10.1080/17439760.2019.1651895

Jones, P. B. (2013). Adult mental health disorders and their age at onset. *Br. J. Psychiatry* 202, s5–s10. doi: 10.1192/bjp.bp.112.119164

Kabat-Zinn, J. (2015). Mindfulness. *Mindfulness* 6, 1481–1483. doi: 10.1007/s12671-015-0456-x

Kessler, R. C., Merikangas, K. R., and Wang, P. S. (2007). Prevalence, comorbidity, and service utilization for mood disorders in the United States at the beginning of the twenty-first century. *Annu. Rev. Clin. Psychol.* 3, 137–158. doi: 10.1146/annurev.clinpsy.3.022806.091444

Kim, E. S., Delaney, S. W., and Kubzansky, L. D. (2019). Sense of purpose in life and cardiovascular disease: underlying mechanisms and future directions. *Curr. Cardiol. Rep.* 21, 135–111. doi: 10.1007/s11886-019-1222-9

Laird, K. T., Krause, B., Funes, C., and Lavretsky, H. (2019). Psychobiological factors of resilience and depression in late life. *Transl. Psychiatry* 9:88. doi: 10.1038/s41398-019-0424-7

Lawler-Row, K. A., and Piferi, R. L. (2006). The forgiving personality: describing a life well lived? *Pers. Individ. Diff.* 41, 1009–1020. doi: 10.1016/j.paid.2006.04.007

Lonigro, A., Schneider, B. H., Laghi, F., Baiocco, R., Pallini, S., and Brunner, T. (2015). Is cyberbullying related to trait or state anger? Child psychiatry hum. *Dev.* 46, 445–454. doi: 10.1007/s10578-014-0484-0

Lovibond, P. F., and Lovibond, S. H. (1995a). The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with the Beck depression and anxiety inventories. *Behav. Res. Ther.* 33, 335–343. doi: 10.1016/00057967(94)00075-u

Lovibond, S. H., and Lovibond, P. F. (1995b). *Manual for the depression anxiety stress scales. 2nd* Edn Sydney, NSW: Psychology Foundation of Australia.

Malin, H., Liauw, I., and Damon, W. (2017). Purpose and character development in early adolescence. *J. Youth Adolesc.* 46, 1200–1215. doi: 10.1007/s10964-0170642-3

McKnight, P. E., and Kashdan, T. B. (2009). Purpose in life as a system that creates and sustains health and well-being: an integrative, testable theory. *Rev. Gen. Psychol.* 13, 242–251. doi: 10.1037/a0017152

Mei, Z., Lori, A., Vattathil, S. M., Boyle, P. A., Bradley, B., Jin, P., et al. (2021). Important correlates of purpose in life identified through a machine learning approach. *Am. J. Geriatr. Psychiatry* 29, 488–498. doi: 10.1016/j.jagp.2020.09.018

Monroe, S. M., Slavich, G. M., and Georgiades, K. (2019). The social environment and life stress in depression. In *Handbook of depression*. Eds. I. H. Gotlib and C. L. Hammen 340–360. New York, NY: Guilford.

Neely, M. E., Schallert, D. L., Sarojanni, A. E., Ae, S. M., Roberts, R. M., and Chen, Y.-J. (2009). Self-kindness when facing stress: the role of self-compassion, goal regulation, and support in college students' well-being. *Motiv. Emot.* 33, 88–97. doi: 10.1007/s11031-0089119-8

Neff, K. D. (2003). The development and validation of a scale to measure self-compassion. *Self Identity* 2, 223–250. doi: 10.1080/15298860309027

Pearson, M. R., Brown, D. B., Bravo, A. J., and Witkiewitz, K. (2015). Staying in the moment and finding purpose: the associations of trait mindfulness, decentering, and purpose in life with depressive symptoms, anxiety symptoms, and alcohol-related problems. *Mindfulness* 6, 645–653. doi: 10.1007/s12671-014-0300-8

Petrocchi, N., and Couyoumdjian, A. (2016). The impact of gratitude on depression and anxiety: the mediating role of criticizing, attacking, and reassuring the self. *Self Identity* 15, 191–205. doi: 10.1080/15298868.2015.1095794

Petrocchi, N., Dentale, F., and Gilbert, P. (2019). Assurance, not self-esteem, serves as a buffer between self-criticism and depressive symptoms. *Psychol. Psychother. Theory Res. Pract.* 92, 394–406. doi: 10.1111/papt.12186

Petrocchi, N., Ottaviani, C., and Couyoumdjian, A. (2014). Dimensionality of self-compassion: translation and construct validation of the self-compassion scale in an Italian sample. *J. Ment. Health* 23, 72–77. doi: 10.3109/09638237.2013.841869

Pfund, G.N., and Lewis, N.A. (2020). Aging with purpose: developmental changes and benefits of purpose in life throughout the lifespan. P.L. Hill and M. Allemand (Eds.) *Personality and healthy aging in adulthood. International perspectives on aging*, *26*, pp.26–42. Springer, Cham

Pizzolato, J. E., Brown, E. L., and Kanny, M. A. (2011). Purpose plus: supporting youth purpose, control, and academic achievement. *New Dir. Youth Dev.* 2011, 75–88. doi: 10.1002/yd.429

Ratner, K., Li, Q., Zhu, G., Estevez, M., and Burrow, A. L. (2023). Daily adolescent purposefulness, daily subjective well-being, and individual differences in autistic traits. *J. Happiness Stud.* 24, 967–989. doi: 10.1007/s10902-02300625-7

Ristallo, A., Schweiger, M., Oppo, A., Pergolizzi, F., Presti, G., and Moderato, P. (2016). Misurare la mindfulness in età evolutiva: Proprietà psicometriche e struttura fattoriale della versione italiana della Child and Adolescent Mindfulness Measure (I-CAMM). *Psicoter. Cogn. Comport.* 22, 297–315.

Ryan, R. M., and Deci, E. L. (2012). Multiple identities within a single self. *Handbook of Self and Identity*, 2, 225–246.

Ryff, C. D., and Keyes, C. (1995). The structure of psychological well- being revisited. *J. Pers. Soc. Psychol.* 69, 719–727. doi: 10.1037/00223514.69.4.719

Ryff, C. D., and Singer, B. H. (2008). Know thyself and become what you are: A eudaimonic approach to psychological well-being. *J. Happiness Stud.* 9, 13–39. doi: 10.1007/s10902-006-9019-0

Salt, E., Wiggins, A. C., Rayens, M. K., Johnson, R., Hardy, J. K., Segerstrom, S., et al. (2018). The relationship between life purpose with depression and disability in acute low Back pain patients. *Orthop. Nurs.* 37, 287–291. doi: 10.1097/NOR.0000000000000480

Sam, D. L., Vedder, P., Liebkind, K., Neto, F., and Virta, E. (2008). Immigration, acculturation and the paradox of adaptation in Europe. *Eur. J. Dev. Psychol.* 5, 138–158. doi: 10.1080/17405620701563348

Sawyer, S. M., Afifi, R. A., Bearinger, L. H., Blakemore, S. J., Dick, B., Ezeh, A. C., et al. (2012). Adolescence: A foundation for future health. *Lancet* 379, 1630–1640. doi: 10.1016/S0140-6736(12)60072-5

Scheier, M. F., Wrosch, C., Baum, A., Cohen, S., Martire, L. M., Matthews, K. A., et al. (2006). The life engagement test: assessing purpose in life. *J. Behav. Med.* 29, 291–298. doi: 10.1007/s10865-005-9044-1

Solmi, M., Radua, J., Olivola, M., Croce, E., Soardo, L., de Pablo, G. S., et al. (2022). Age at onset of mental disorders worldwide: large-scale meta-analysis of 192 epidemiological studies. *Mol. Psychiatry* 27, 281–295. doi: 10.1038/s41380021-01161-7

Stillman, T. F., and Baumeister, R. F. (2009). Uncertainty, belongingness, and four needs for meaning. *Psychol. Inq.* 20, 249–251. doi: 10.1080/10478400903333544

Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Personal. Soc. Psychol. Rev.* 20, 199–222. doi: 10.1177/1088868315586325

Van Geel, M., and Vedder, P. (2010). The adaptation of non-western and Muslim immigrant adolescents in the Netherlands: an immigrant paradox? *Scand. Jf. Psychol.* 51, 398–402. doi: 10.1111/j.1467-9450.2010.00831.x

Wilson, M. E., and Hill, P. L. (2023). Activist purpose orientation: definition and predictors. *Soc. Personal. Psychol. Compass* 17:e12725. doi: 10.1111/spc3.12725

Witten, H., Savahl, S., and Adams, S. (2019). Adolescent flourishing: a systematic review. *Cogent Psychol.* 6:1640341. doi: 10.1080/23311908.2019.1640341

Yager, J., and Kay, J. (2023). Purpose in life: addressing transdiagnostic psychopathologies concerning patients' sense of purpose. *J. Nerv. Ment. Dis.* 211, 411–418. doi: 10.1097/NMD.0000000000001657

Yeager, D., and Bundick, M. (2009). The role of purposeful work goals in promoting meaning in life and in schoolwork during adolescence. *J. Adolesc. Res.* 24, 423–452. doi: 10.1177/0743558409336749

Yeager, D. S., Henderson, M. D., Paunesku, D., Walton, G. M., D'Mello, S., Spitzer, B. J., et al. (2014). Boring but important: a self-transcendent purpose for learning fosters academic self-regulation. *J. Pers. Soc. Psychol.* 107, 559–580. doi: 10.1037/a0037637

Yek, M. H., Olendzki, N., Kekecs, Z., Patterson, V., and Elkins, G. (2017). Presence of meaning in life and search for meaning in life and relationship to health anxiety. *Psychol. Rep.* 120, 383–390. doi: 10.1177/0033294117697084

frontiers | Frontiers in Psychology

TYPE Perspective
PUBLISHED 25 April 2024
DOI 10.3389/fpsyg.2024.1409377

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Angelo Campodonico,
University of Genoa, Italy

*CORRESPONDENCE
Randall Curren
✉ Randall.curren@rochester.edu

RECEIVED 29 March 2024
ACCEPTED 11 April 2024
PUBLISHED 25 April 2024

CITATION
Curren R and Park SS (2024) Flourishing and integrative emotion regulation: an SDT perspective.
Front. Psychol. 15:1409377.
doi: 10.3389/fpsyg.2024.1409377

Flourishing and integrative emotion regulation: an SDT perspective

Randall Curren[1]* and Sieun Sienne Park[2]

[1]Department of Philosophy, University of Rochester, Rochester, NY, United States, [2]Warner Graduate School of Education, University of Rochester, Rochester, NY, United States

This paper presents a Self-Determination Theory (SDT) perspective on the relationship between human flourishing and emotion regulation. It argues that SDT's organismic approach to motivation, development, and wellness enables it to directly address this relationship, placing emotion regulation within comprehensive conceptions of eudaimonic functioning (i.e., flourishing) and regulation (i.e., self-determination). This is in contrast to the dominant goal-directed process model of emotion regulation, which addresses only limited aspects of well-being, ignores forms of motivation that are essential to flourishing, and blurs the line between emotion regulation and other forms of regulation.

KEYWORDS

flourishing, emotion, regulation, self-determination theory, integration, basic psychological needs

1 Introduction

In their common uses, the terms *well-being* and *flourishing* pertain to how well a person's life is going. Lives have multiple aspects that are encompassed by these terms, and the various aspects of well-being or flourishing tend to be functionally interrelated (Bishop, 2015). Competing philosophical theories of well-being have nevertheless been framed as conceptions of what is "ultimately" good for a person (Alexandrova, 2017, pp. 157–161). These theories have revolved around subjective mental states, preference or goal attainment, or things that objectively suit our nature, such as good relationships. Equating well-being with subjective well-being (Diener, 1984) is one of several options in this conflicted theoretical terrain, but for the purposes of researching and promoting well-being we arguably need a more comprehensive conception and measure of it (Ryan and Deci, 2001; Martela and Ryan, 2023). The term *eudaimonic well-being* was first introduced in psychology in 2001 as a comprehensive conception of well-being inspired by Aristotle's conception of *eudaimonia* or flourishing (Ryan and Deci, 2001), and the term *flourishing* has subsequently come into widespread use. There have been dozens of attempts to define flourishing (Vitterosø, 2016; Martela and Sheldon, 2019), but they coalesce around defining it as follows:

> Flourishing = ongoing healthy growth and functioning involving fulfillment of human potential that is in some sense "positive" and is personally meaningful, satisfying, and (at least sometimes) enjoyable.

A widely accepted definition of *emotion regulation* (ER) is that it refers to activities people engage in to influence what emotions they have, when they have them, and how they experience or express them (Gross, 1998, 2015). On its face, this is an over-broad definition. It is over-broad because there are limitless activities in which people might engage to influence the emotions they have, from booking a space flight in order to experience awe to committing suicide to escape unbearable shame, and many of these activities have nothing to do with making oneself less emotionally dysregulated. The concepts of emotional regulation and dysregulation are evidently contrastive, and it is unclear how either could be defined without reference to emotional functioning that is healthy or consistent with well-being or flourishing. A better definition of ER would thus be:

> Emotion Regulation = efforts to make emotional functioning healthier or more compatible with well-being or flourishing.

This implies a conceptual relationship between flourishing and emotion regulation, but many questions remain.

If emotions are a category of affective states that are to some extent amenable to regulation (Gross, 2024, pp. 4–5) and flourishing were nothing more than subjective well-being, defined as a preponderance of positive over negative affect, then ER could be a form of affect regulation that contributes directly to flourishing. The goal of ER might be to experience more positive affect, less negative affect, or both, and thereby achieve greater flourishing. Flourishing is not simply subjective well-being, however, so this would be an unacceptably simplistic view of the relationship between flourishing and ER.

Flourishing pertains primarily to qualities of agency and life activities, so understanding the role of ER in flourishing will almost certainly require that ER be understood in the context of agency more broadly. Self-Determination Theory (SDT) offers a helpfully comprehensive framework. Our purpose in what follows is to outline an SDT perspective on *integrative emotion regulation* (IER) and its role in flourishing, contrasting it with the goal-directed process model of ER developed by Gross and colleagues (Gross 1998, 2015; Gross and Ford 2024).

2 A self-determination theory perspective on flourishing

SDT is an organismic theory of human motivation, development, and well-being that has been developed over several decades on the basis of widely replicated research (Ryan and Deci, 2017; Ryan, 2023). The explanatory core of SDT's growing structure of sub-theories is Basic Psychological Needs Theory (BPNT), which posits universal psychological human needs (BPNs) to experience *autonomy* (self-directedness congruent with personal values and sense of self), *relatedness* (a cooperative social climate and affirming relationships), and *competence* (experiencing oneself as capable). Satisfaction of these needs is associated with active fulfillment of agentive, social, and creative potential (Ryan and Deci, 2001; Ryan et al., 2013), and a central, cross-culturally replicated finding in SDT is that the satisfaction of all three BPNs is essential to and predictive of well-being, measured in a variety of ways (Ryan et al., 2023).

Agentive potential and the related need for autonomy are manifested in the innate tendencies of human beings to act, explore, socialize, and self-integrate that SDT refers to as *intrinsically* (i.e., innately and non-instrumentally) motivated. Development of potential is seen as occurring largely through such intrinsically motivated activity in psychologically need-supportive conditions that allow individuals to pursue what interests them, experiencing enjoyment and personal efficacy, while adopting goals and values from their environments through processes of self-integration (Ryan and Deci, 2017; Curren and Ryan, 2020). Intrinsically motivated activity, the internalization and integration it entails, and enactment of integrated values are core characteristics of a flourishing life, as defined above; flourishing involves fulfilling one's potential in positive ways and SDT explains the inherent meaning, satisfaction, and pleasure in such fulfillment of potential as largely arising though satisfaction of BPNs.

Consider the need for relatedness, which is essentially a need to experience relating to others and others relating to oneself and each other in ways that affirm everyone's value as persons. Acts of valuing other people for themselves arise from a motivational condition in which such valuing has been integrated into a self that is relatively coherent with respect to cognitive, motivational, and emotional functioning. There is a great deal of evidence indicating that satisfaction of the relatedness need requires such motivation and that instrumentalization of human encounters frustrates the BPN for relatedness (Curren and Ryan, 2020). Instrumental or *extrinsic* life goals (such as wealth, image, and fame) have similarly been shown to yield less self-actualization and vitality, and more depression, anxiety, and physical ill-health than *intrinsic* life goals (such as good relationships, personal growth, and community service) (Ryan and Deci, 2017, pp. 272–292; Bradshaw et al., 2023). Differences in goal orientations are thus predictive of more and less flourishing lives, as are differences in how well-integrated people are. Fuller integration or harmonization of cognitive, motivational, and emotional functioning is only possible when internalized goals and values align with autonomous fulfillment of potential that satisfies all three BPNs. The role of emotion in the integrative functioning characteristic of flourishing gives rise to SDT's concept of *integrative emotion regulation* (IER).

3 Integrative emotion regulation

SDT regards ER as an aspect of the integrative processes through which people form coherent selves, rather than merely strategies to align emotions with goals. As defined in SDT, IER involves taking interest in one's emotions, tolerating and accepting them, and integrating them with other aspects of a coherent self (Ryan et al., 2006; Ryan and Deci, 2017; Roth et al., 2018). IER is not focused on manipulating, downregulating or reframing emotions, but rather on first understanding their significance for

one's needs, values, and goals. This understanding facilitates greater autonomous regulation and related positive consequences (Schultz and Ryan, 2015; Roth et al., 2019, p. 2). "The combination of freedom to experience emotions as they are and to use emotions as a guide for adaptive behavior is precisely what characterizes emotional integrative functioning," writes Brenning et al., (2015, p. 573). IER is thus "a way of assimilating emotion-laden experiences" that is facilitated by basic need supports, both developmentally (Brenning et al., 2015) and situationally (Roth et al., 2018; Ryan and Vansteenkiste, 2023, p. 19). SDT research on IER has focused on developmental and situational precursors and its advantages over other types of emotion regulation such as emotional suppression (ES; denying, avoiding, or otherwise pushing away emotions) and emotional distancing (ED; downregulating, reframing, or minimizing emotions) in regulating negative or positive emotions. In short, IER goes beyond a view that emotion should be "managed" so as not to get in the way of one's goals, treating them instead as important informational inputs to the integrative functioning that is characteristic of flourishing.

4 The goal-directed process model of emotion regulation

The more dominant approach to emotion regulation (ER) is essentially a schema for distinguishing types and aspects of regulative strategies and points of entry for them in the unfolding of an emotion (Gross, 1998, 2015; Gross and Ford, 2024). This "process model" relies (Gross, 2024, p. 3) on Moors' goal-directed theory of emotion (Moors, 2017, 2022), which regards all behavior, including "emotional behavior," as causally explained by "a dual-process model with a parallel-competitive architecture in which (a) the goal-directed process is the default determinant of non-emotional as well [as] emotional behavior, and (b) the stimulus-driven process is the exception" (Moors, 2022, p. 69). Rather than seeing emotions as stimulus-driven, this "response evaluation theory" sees emotions as arising "during person-situation transactions that have particular meaning to the individual in light of currently active goals" (Gross, 2024, p. 3). Moors and Gross are both explicit (Moors, 2022, p. 65; Gross, 2024, p. 3) in drawing on cybernetic or "control" theories in seeing emotions as "arising through a series of iterative cycles comprising four elements (1) a *situation* (2) *attention* that determines which aspects of the situation are perceived; (3) *evaluation* or *appraisal* of the situation in light of currently active goals; and (4) a *response* to the situation" (pp. 3–4). Negative emotions are seen as arising, like all behaviors, from "the detection of a discrepancy between a stimulus and a goal," and ER is seen as initiation of "action control cycles" intended to diminish or eliminate the discrepancy (Moors, 2017, p. 72). Building on this, Gross's *process model of emotion regulation* Gross (1998, 2015) distinguishes four stages of the process and five families of ER strategies distinguished by the stages of emotion generation at which they intervene: situational, attentional (e.g., redirection), cognitive (e.g., reappraisal), and response modulation (e.g., suppression). Adaptive regulation involves actively working on emotions so as to minimize their disruptive influences and maximize their support for goal driven behaviors.

5 Discussion

We suggested in our introductory remarks that understanding the role of ER in flourishing will almost certainly require that ER be understood in the context of regulation or self-determination more broadly. We have argued that Self-Determination Theory (SDT) offers a sufficiently comprehensive framework. It situates ER and instrumentally motivated action within a more comprehensive theory of motivation, development, and flourishing that posits key roles in flourishing for intrinsic and integrated forms of motivation that include non-instrumental valuing of persons, relationships, and activities. By contrast, the process model of ER suffers from some critical limitations:

1. The process model treats ER and action generally as instrumental with respect to whatever goals a person has, but, as SDT research has shown, not all goals are equally compatible with flourishing. It follows that successful ER, as the process model understands it, is not necessarily conducive to flourishing and may even suppress it. SDT is able to discriminate *healthy* or *adaptive* ER (i.e., IER) from unhealthy or dysfunctional ER, through its criteria of coherent integrated functioning, but the process model cannot. It is concerned more narrowly with the effectiveness of ER for achieving whatever goal is dominant for a person in a particular situation, regardless of how well the goal is integrated into a coherent self and life.
2. The process model's reliance on a radically goal-directed theory of emotion implicitly commits it to a wider theory of behavioral causation or *motivation* that ignores well-established findings in motivation science. It is thereby arguably precluded from addressing human flourishing, which necessarily involves people relating to others and engaging in activities in ways that exhibit intrinsic and integrated valuing. By contrast, SDT addresses intrinsically motivated acts and the role of BPNs in motivation, flourishing, and regulating the internalization and integration of goals and values.
3. As noted in the introduction, the process model relies on an over-broad definition of ER, blurring the line between ER and other forms of regulation. In doing so, it implies a wider research agenda and policy reach than is warranted by inviting us to focus on such things as regulating the emotions that students experience in taking tests (Harley and Pekrun, 2024), rather than focusing on providing what students need to flourish, as SDT has (Curren, 2023).
4. Finally, SDT's comparative studies of IER and other modes of ER suggest that IER has advantages associated with it being more autonomy facilitative, sustainable, and less effortful (Roth et al., 2019). Gross and colleagues could stipulate that individuals can adopt emotional integration as an emotion goal, but their process model lacks the theoretical resources to support this. To meaningfully propose emotional integration as a possible emotion goal within the process model would be to take SDT's Organismic Integration Theory on board and

thereby abandon the radically goal-directed theory of human agency on which the process model is grounded.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

RC: Conceptualization, Writing – original draft, Writing – review & editing. SP: Conceptualization, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Acknowledgments

The authors are grateful to Richard M. Ryan for his encouragement and comments on a draft of this article.

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

References

Alexandrova, A. (2017). *A philosophy for the science of well-being*. Oxford: Oxford University Press.

Bishop, M. A. (2015). *The good life: Unifying the philosophy and psychology of well-being*. Oxford: Oxford University Press.

Bradshaw, E. L., Conigrave, J. H., Steward, B. A., Ferber, K. A., Parker, P. D., and Ryan, R. M. (2023). A meta-analysis of the dark side of the American dream: evidence for the universal wellness costs of prioritizing extrinsic over intrinsic goals. *J. Pers. Soc. Psychol.* 124, 873–899. doi: 10.1037/pspp0000431

Brenning, K., Soenens, M., Van Petegem, S., and Vansteenkiste, M. (2015). Perceived maternal autonomy support: a longitudinal study. *Social Dev.* 24, 561–578.

Curren, R. (2023). "Social issues: a self-determination theory perspective" in *The Oxford handbook of self-determination theory*. ed. R. M. Ryan (New York: Oxford University Press).

Curren, R., and Ryan, R. M. (2020). Moral self-determination: the nature, existence, and formation of moral motivation. *J. Moral Educ.* 49, 295–315. doi: 10.1080/03057240.2020.1793744

Diener, E. (1984). Subjective well-being. *Psychol. Bull.* 95, 542–575. doi: 10.1037/0033-2909.95.3.542

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Rev. Gen. Psychol.* 2, 271–299. doi: 10.1037/1089-2680.2.3.271

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J. (2024). "Conceptual foundations of emotion regulation" in *Handbook of emotion regulation (3rd)*. eds. J. J. Gross and B. O. Ford (New York: Guilford).

Gross, J. J., and Ford, B. O. (2024). *Handbook of emotion regulation* (*3rd*). New York: Guilford.

Harley, J. M., and Pekrun, R. (2024). "Managing emotions in education: the emotion regulation in achievement situations model" in *Handbook of emotion regulation (3rd)*. eds. J. J. Gross and B. O. Ford (New York: Guilford).

Martela, F., and Ryan, R. M. (2023). Clarifying eudaimonia and psychological functioning to complement evaluative and experiential well-being: why basic psychological needs should be measured in national accounts of well-being. *Perspect. Psychol. Sci.* 18, 1121–1135. doi: 10.1177/17456916221141099

Martela, F., and Sheldon, K. M. (2019). Clarifying the concept of well-being: psychological need-satisfaction as the common core connecting eudaimonic and subjective wellbeing. *Rev. Gen. Psychol.* 23, 458–474. doi: 10.1177/1089268019880886

Moors, A. (2017). The integrated theory of emotional behavior follows a radically goal-directed approach. *Psychol. Inq.* 28, 68–75. doi: 10.1080/1047840X.2017.1275207

Moors, A. (2022). *Demystifying emotions: A typology of theories in psychology and philosophy*. Cambridge: Cambridge University Press.

Roth, G., Shahar, B. H., Zohar-Shefer, Y., Benita, M., Moed, A., Bibi, U., et al. (2018). Benefits of emotional integration and costs of emotional distancing. *J. Pers.* 86, 919–934. doi: 10.1111/jopy.12366

Roth, G., Vansteenkiste, M., and Ryan, R. (2019). Integrative emotion regulation: process and development from a self-determination theory perspective. *Dev. Psychopathol.* 31, 945–956. doi: 10.1017/S0954579419000403

Ryan, R. M. (2023). *The Oxford handbook of self-determination theory*. New York: Oxford University Press.

Ryan, R. M., Curren, R., and Deci, E. L. (2013). "What humans need: flourishing in Aristotelian philosophy and self-determination theory" in *The best within us: Positive psychology perspectives on eudaimonia*. ed. A. S. Waterman (Washington, D.C.: American Psychological Association)

Ryan, R. M., and Deci, E. L. (2001). On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. *Annu. Rev. Psychol.* 52, 141–166. doi: 10.1146/annurev.psych.52.1.141

Ryan, R. M., and Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford.

Ryan, R. M., Deci, E. L., Grolnick, W. S., and La Guardia, J. G. (2006). "The significance of autonomy and autonomy support in psychological development and psychopathology" in *Developmental psychopathology: 1 theory and methods*. eds. D. Cicchetti and D. Cohen. *2nd* ed (New York: Wiley)

Ryan, R. M., Duineveld, J. J., Di Domenico, S. I., Ryan, W. S., Steward, B., and Bradshaw, E. L. (2023). We know this much is (meta-analytically) true: a meta-review of meta-analytic findings evaluating self-determination theory. *Psychol. Bull.* 148, 813–842.

Ryan, R. M., and Vansteenkiste, M. (2023). "Self-determination theory: metatheory, methods, and meaning" in *The Oxford handbook of self-determination theory*. ed. R. M. Ryan (New York: Oxford University Press).

Schultz, P. P., and Ryan, R. M. (2015). "The "why," "what," and "how" of healthy self-regulation: mindfulness and well-being from a self-determination theory perspective" in. ed. B. D. Ostafin (New York: Springer)

Vitterosø, J. (2016). "The most important idea in the world: an introduction" in *Handbook of eudaimonic well-being*. ed. J. Vitterosø (Dordrecht: Springer)

Weinstein, N., Brown, K. W., and Ryan, R. M. (2009). A multi-method examination of the effects of mindfulness on stress attribution, coping, and emotional well-being. *J. Res. Pers.* 43, 374–385. doi: 10.1016/j.jrp.2008.12.008

frontiers | Frontiers in Psychology

TYPE Hypothesis and Theory
PUBLISHED 31 May 2024
DOI 10.3389/fpsyg.2024.1419202

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Giacomo Samek Lodovici,
Catholic University of the Sacred Heart, Italy
Angelo Campodonico,
University of Genoa, Italy

*CORRESPONDENCE
Juan Pablo Rojas-Saffie
✉ jrojas@uft.cl

RECEIVED 17 April 2024
ACCEPTED 06 May 2024
PUBLISHED 31 May 2024

CITATION
Rojas-Saffie JP and García-Matte N (2024) Emotional self-regulation and personality in the light of Thomas Aquinas's philosophical anthropology.
Front. Psychol. 15:1419202.
doi: 10.3389/fpsyg.2024.1419202

Emotional self-regulation and personality in the light of Thomas Aquinas's philosophical anthropology

Juan Pablo Rojas-Saffie[1,2]* and Nicolás García-Matte[1,2,3]

[1]Department of Psychology, Faculty of Education, Psychology and Family, Universidad Finis Terrae, Santiago, Chile, [2]Center for Research in Education, Psychology and Family (CIPEF), Faculty of Education, Psychology and Family, Universidad Finis Terrae, Santiago, Chile, [3]Millenium Institute for Depression and Personality Research (MIDAP), Doctoral Program in Psychotherapy, Faculty of Social Sciences and Faculty of Medicine, Pontificia Universidad Católica de Chile and Universidad de Chile, Santiago, Chile

This article aims to thoroughly understand the concept of emotional self-regulation (ESR) and its relationship with personality. Through an interdisciplinary dialogue between psychology and philosophy—specifically, the anthropology of Thomas Aquinas—three realities are proposed that could be considered as ESR. The conceptual relationship between ESR—understood as *operation*, *faculty* and *habit*—and personality is examined, specifically using the Five-Factor Model and the virtues model. Key findings include the need for consensus on a precise definition of ESR, the central role of reason as a faculty capable of ruling over emotions, the relevance of the distinction between ESR and self-control, and the understanding of ESR as a set of habits that include aspects of *prudence*, *temperance* and *fortitude*. Interdisciplinary dialogue seems to be a valuable intellectual approach to the advancement of the field of psychology.

KEYWORDS

emotions, affectivity, self-regulation, five-factor model, virtues, Thomistic anthropology, Integral psychology of the person

> *At all events we may firstly observe in living creatures both a despotical and a constitutional rule; for the soul rules the body with a despotic rule, whereas the intellect rules the appetites with a constitutional and royal rule. And it is clear that the rule of the soul over the body, and of the mind and the rational element over the passionate, is natural and expedient; whereas the equality of the two or the rule of the inferior is always hurtful* (Aristotle, 1916, *Politics, Book I, Chapter 5*).

1 Introduction

Emotional self-regulation (ESR) is a relatively recent notion within academic psychology. Although there is some prior history, the field of emotional regulation emerged strongly only

in the mid-1990s (Gross, 2015a). However, the idea that we can influence our emotions has been visible in Western thought for almost 2,500 years. For instance, Aristotle (1916, Book I, Chapter 5) proposed that human beings can exercise political mastery over their emotions, which is indispensable for achieving virtue and happiness.

An important aspect of this concept is inter-individual differences. Studies, as well as experience, show that people differ in their skill to manage their emotions. This is seen between people of different ages (e.g., Orgeta, 2009) and adults of the same cohort (e.g., Gross and John, 2003; Olderbak et al., 2023). While, at one end, some barely regulate their emotions and impulses, at the other, there are individuals who lack spontaneity due to their constant efforts to keep emotions under control. However, it can also be observed that many manage to control their affective world in an appropriate way. These differences constitute different stable patterns of behavior and can therefore be considered within the realm of personality.

Although the link between ESR and personality has already been addressed (e.g., Baumeister et al., 2006; Hoyle, 2006, 2010; Morf, 2006; McCrae and Löckenhoff, 2010), its nature remains unclear, as can be seen in the difficulty that arises when trying to answer what is ESR and how is its relationship with personality. Regarding the first question, the heterogeneity of definitions of ESR found in the scientific literature is striking, as will be shown later. It's unclear whether ESR is a common capacity or a skill that can be developed, as a personality domain (Roberts and Yoon, 2022). If we conceive ESR as a common capacity, then it would be independent of personality since the latter designates aspects in which people are unique (Allport, 1937). However, given that correlations have been shown between personality traits and ESR (Hoyle, 2006, 2010; McCrae and Löckenhoff, 2010), perhaps it is a skill. The problem is that if it is linked to certain traits, and the traits are biologically based and unintentionally developed according to the Five Factor Model (FFM) (Fowers et al., 2023), then we would have to conclude that ESR is exclusive to some personality types. Nevertheless, this is against the general belief that all people are capable of developing ESR toward a mature and healthy personality (Allport, 1937; Arnold, 1960).

The relationship between ESR and personality also poses difficulties. It is unclear whether ESR is a personality trait or a meta-trait situated "above" (Strauman and Wilson, 2010; Fowers et al., 2023). If it is a trait, it would be a unique one, because there is no other trait directly committed to the modulation and expression of the others. Moreover, if we consider it a meta-trait, we would have to consider it independently from personality, which seems contradictory to the evidence that some personality traits are more closely related to ESR (Hoyle, 2006, 2010; McCrae and Löckenhoff, 2010). Furthermore, it is not clear what psychological structure would be able to contain this meta-trait. Finally, people who successfully regulate their emotions distinguish themselves affectively and behaviorally from others, which is proper to the notion of personality. Therefore, it seems counterintuitive not to include ESR in personality.

Engaging in an interdisciplinary dialogue between psychology and philosophical anthropology, specifically Thomistic anthropology, seems appropriate to adequately address these questions. The psychological literature has come a long way in understanding self-regulation but has yet to reach a cross-cutting terminological agreement, let alone a consensus on its exact meaning. Philosophical anthropology, on the other hand, has a particular interest in understanding the nature of psychic phenomena and their appropriate formulation; indeed, it attempts to answer the ultimate questions about the human being (Asociación de Psicología Integral de la Persona, 2022; Redshaw and Ganea, 2022). In particular, the work of Thomas Aquinas seems quite suitable for addressing the topic of ESR since it offers a comprehensive theoretical framework about the human being, its structure, the relationship between its faculties, and the integration of rational and sensible aspects. In fact, the coherence and usefulness of his ideas has recently been verified in an article that analyzed the *Extended Process Model of the Emotion Regulation* proposed by Gross (1999) in the light of Aquinas's work (Marple et al., 2024). Furthermore, the Thomistic schema seems particularly appropriate because it provided the basis for *appraisal* theory (Arnold, 1960), which has been fundamental both for constructing different models of ESR (e.g., Lazarus, 1973; Gross, 2024) and also for exploring individual differences in emotion (e.g., Kuppens and Tong, 2010; Stemmler and Wacker, 2010).

In order to achieve the fruitfulness of this interdisciplinary dialogue, we will start by reviewing the scientific literature devoted to ESR. We will then introduce some Thomistic postulates, reviewing how they allow us to understand and classify the postulates in the literature. Finally, we will address the link between self-regulation and personality, considering the five-factor model (FFM) and the virtues model of the Aristotelian-Thomistic tradition.

2 Emotional self-regulation in psychological literature

Despite having its roots in developmental psychology, the concept of self-regulation emerges strongly at the end of "the era of radical behaviorism, [when] 'self-regulation' and other designations for the concept of will were banned from experimental psychology as 'unscientific'" (Kuhl, 2018, p. 542). This is how self-regulation begins to be considered a key mechanism in the interactionist perspective of *social cognitive theory,* concerning human agency (Bandura, 1991) and personality dynamics, where it describes how the motivation to achieve certain goals requires the self-regulatory force of will (Mischel and Ayduk, 2004). Thus, in these theories, self-regulation is understood as a mechanism that allows human beings to change their behavior, thoughts and emotions based on hierarchically organized norms, goals and standards of interaction (Carver and Scheier, 2001). Along these lines, some models have described the concept of self-regulation as an adaptive personality trait (Baumeister et al., 2006) or as a set of natural and adaptive actions of healthy individuals (Hoyle, 2010). However, emotional self-regulation only corresponds to a part of the general system described above. At the same time, it is nourished by the psychoanalytic tradition of psychic conflict between drives and external factors and by studies on stress and coping strategies (Gross, 1999).

In recent years, ESR has expanded strongly in the field of psychology (McRae and Gross, 2020) because at its core lies an idea that has been central to the Western view of mental health (Shanker, 2012) and to the ongoing maintenance of psychological well-being (Doré et al., 2016): we do not experience our emotions as passive observers, but actively influence them (Gross, 1999). This active conception of emotion has its roots in the moral philosophy of ancient Greece, from where it evolved throughout history and was incorporated into the medieval scholastic synthesis expounded by

Thomas Aquinas in the 13th century. It was also one of the first contributions of Magda Arnold (1960, 1973) to the field of cognitive emotion theory, integrating her experimental work with the conceptual framework of Thomistic psychology (Cornelius, 2006), as some authors have recently done (e.g., Lombardo, 2011; Gross et al., 2020).

Greatly influenced by Aquinas, Arnold (1960) proposed a cognitive theory of emotion whose major and most revolutionary contribution is to consider that every emotional response is preceded by an intuitive, momentary and personal judgment that evaluates the situation, called *appraisal* (Arnold and Gasson, 1954; Arnold, 1973). This concept stems from Thomistic anthropology, which proposes an internal sense called *cogitative*, which alludes to the faculty that evaluates what is perceived as convenient or harmful in the light of the individual's vital interests and from whose evaluation the affective movement arises (Aquinas, 1920, I, c. 78, a. 4). In this sense, an "emotion is not something that happens to us but something we do" (Arnold, n.d., p. 7, cited in Cornelius, 2006, p. 978).

While Arnold considered that emotions tend to help a person achieve his goals, they can sometimes get in the way of the *self-ideal*, so she proposed that *emotional control* could help a person not only to reduce or restrict their emotions, but to manage them in order to achieve an effective organization of the personality (Arnold and Gasson, 1954; Arnold, 1960). By strongly linking motivation to personality development, she considered that *emotional control* is only possible and necessary if there are goals that merit going against emotion, in that "emotional control means both a turning toward what is truly lovable from a human point of view and a turning away from things that exert too strong a pull" (Arnold, 1960, p. 278) through the use of reason. In this way, Arnold linked *emotional control* to personality development, integrating the contributions of Allport, Goldstein, and Maslow in her extended *appraisal theory* (Cornelius, 2006).

Richard Lazarus extended and deepened Arnold's *appraisal* concept (Moors et al., 2013), differentiating it from knowledge (Lazarus, 1999), by being more explicit in the motivational component of emotions (Reisenzein, 2006), linking the constructs of emotion and stress (Lazarus, 1991), and including the possibility that the person can *re-appraise* the situation, to maintain some control over the emotion —*emotion-focused coping*—, or the situation —*problem-focused coping*— (Lazarus, 1973). He thus argued for the interdependence of cognition, motivation and emotion in all person-environment relationships (Lazarus, 1999) and proposed that appraisal is influenced by circumstances in interaction with personality variables such as goals and beliefs (Smith and Lazarus, 1990). Lazarus managed to systematize Arnold's contributions from important observations that highlight the importance of ESR (Koole and Aldao, 2016), as he expressed in his early writings on the subject: "I have deliberately used the expression, 'self-regulation' to convey the theme that it is the person, appraising the personal and social requirements of an emotional situation, who manages his emotional reactions willfully" (Lazarus, 1973, p. 176).

Appraisal theory represents only one of the perspectives within the continuum of theories of emotion proposed in the field of psychology (Gross and Feldman Barrett, 2011). However, its singularity lies in the fact that it allows us to understand both the processes of emotion generation and emotion regulation, whose research has been surprisingly separate (Smith and Kirby, 2011) until their integration into a unified perspective (Yih et al., 2019) through Gross's (2015b) model of emotion regulation, possibly one of the most comprehensive at present (Hughes et al., 2020).

Indeed, Gross (1998, 2015a, 2024) has systematically contributed to the understanding of emotional regulation from the semantic distinction of other related concepts and from the description of the process itself. Gross (2024) coined the concept of affective regulation to include, in addition to emotional regulation, *mood regulation, coping or stress regulation, and self-control* of impulses. From the *appraisal* theory, Gross (2015b) understands emotional regulation as a process that seeks to increase (*up-regulate*) or decrease (*down-regulate*) the intensity, duration and/or quality of an emotion valued personally as good or bad in a particular situation. In this way, he proposes that emotional regulation is driven by goals that, although they may be explicit or implicit (for a review, see Gyurak et al., 2011), healthy or unhealthy (for a review, see John and Gross, 2004), are aimed at changing the emotion of another individual (*extrinsic emotion regulation or interpersonal regulation*, e.g., Niven et al., 2024) or the emotion of oneself (*intrinsic emotion regulation*), which is what he understands as *emotional self-regulation*.

Gathering the contributions of different emotion theorists (e.g., Arnold, 1960; Lazarus, 1991), Gross (2008) proposes the *Modal Model of Emotion*, from which he describes the mechanisms behind emotion as an iterative and cyclical sequence of four elements: situation, attention, appraisal and response. In addition, he proposes the *Extended Process Model of the Emotional Regulation* (see Gross, 2015b) to describe different stages, such as identification, strategy selection, implementation and monitoring. For Gross (2008), individual differences in emotional regulation seem to lie in the choice of regulatory strategies, which may consist of a selection or modification of the situation, an attentional deployment, a cognitive change — such as *re-appraisal*—, or a modulation of the response — as *expressive suppression*—.

In this regard, Koole (2009) proposes an organization of ESR strategies according to functions that may combine or conflict: Need-Oriented Strategies, focused on seeking pleasure and avoiding pain with a hedonic or adaptive goal (e.g., attentional avoidance and stress-induced eating); Goal-Oriented Strategies, focused toward the accomplishment of specific tasks or goals (e.g., reappraisal and suppression); and Person-Oriented Strategies, oriented toward the achievement of several whole-personality goals (e.g., meditation and expressive writing), seeking "integration, which is manifested in the coordinated functioning of personality systems traditionally considered antagonistic, such as positive vs. negative emotions, body vs. mind, passion vs. reason, and top-down vs. bottom-up processing" (Koole, 2009, p. 26). For this reason, two Person-Oriented Regulation Models will be reviewed, which are particularly interesting because they delve into the relationship between ESR and personality, as they propose a way to coordinate the overall functioning of the personality or *self*, promoting its flexibility, coherence and growth (Koole and Aldao, 2016).

In the first place, Personality Systems and Interactions (PSI) theory (Kuhl, 2000, 2018) "is an integrative framework that seeks to explain human personality functioning in terms of its underlying functional mechanisms" (Kuhl and Koole, 2004, p. 421), including the central role of will and the mediating role of emotion. Building on the Aristotelian theory of motivation (Kuhl, 2000) and considering will as a top-down regulation mechanism, the model distinguishes between

two volitional forms as the highest level of personality organization (Kuhl et al., 2021). The first, self-control, is understood as an explicit, conscious and effortful system that only responds to one goal at a time, metaphorically identified with an "inner dictatorship" (Kuhl and Koole, 2004), similar to Goal-Oriented Strategies (Koole, 2009). The second, self-maintenance, also called self-regulation, is a system capable of responding to goals that simultaneously satisfy a variety of aspects, thus resembling an "inner democracy" (Kuhl, 2018) and the Person-Oriented Strategies (Koole, 2009).

For Frijda (2013), the most valuable aspect of PSI theory is that it functionally understands regulation as effortful, voluntary, intentional and freely chosen. However, Kuhl et al. (2021) explain that these characteristics only define self-control, as it is an explicit processing system. On the contrary, self-regulation would operate at an implicit experiential level of personality integration toward a coherent identity (Kuhl et al., 2021), similar to the identified and integrated regulations of Self-Determination Theory (STD) (Ryan and Deci, 2019), where the person acts voluntarily driven by the value of the activity, first identified and then coherently integrated with the rest of the values. Along these lines, a distinction has emerged between *effortful* and *effortless willpower*, corresponding to self-control and self-regulation, respectively (see Quirin et al., 2021).

In the second place, the Strength Model of Self-Regulation (SMSR) (Baumeister, 2016; Baumeister and Vohs, 2016) proposes that self-control or self-regulation — used interchangeably by Vohs and Baumeister (2004) as regulation implies regular control — works like a muscle that can be exercised, but also fatigues when the available energy runs out (Baumeister et al., 2016). To understand its link to social relations, Baumeister and Exline (1999) designate self-control as the Master Virtue, in that the cardinal virtues described by Aquinas —prudence, justice, temperance and fortitude — would be based on the positive exercise of self-control and its main ingredients (standards, monitoring and operations), which in turn promote prosocial behaviors. However, Fowers (2008) comments that as long as the focus is on the control of desires, this position would be proper of a moral continence, while in the exercise of virtue, emotions and motivations are expressed adequately from the beginning of the action.

In their relation to personality, Baumeister and Exline (1999) explain that self-control is an operation that allows orienting desires toward the culture's standards and is, therefore, a capacity shared by people to consciously or automatically (in the case of virtues) exercise their willpower. "Translated into personality theory, this view implies that people have stable differences in their capacity for exerting self-control to achieve virtuous actions" (Baumeister and Exline, 1999, p. 1179), which in particular is observed in the self-consciousness, the monitoring, the pursuit of virtuous behavior, and the "moral muscle" strength, vulnerable to be depleted.

This ego-depletion effect has been strongly criticized by several studies (e.g., Dang, 2018), but the lack of conclusive evidence (Friese et al., 2019; Englert and Bertrams, 2021), continues the debate and the search for more robust explanations, such as those based on the use of glucose to moderate energy expenditure (Baumeister et al., 2016). Valued by Baumeister and Vohs (2016) — and criticized by others (e.g., Inzlicht and Marcora, 2016; Bertrams, 2020) — the creative proposal of a "central governor" (see Evans et al., 2016) resembles a central bank or monetary authority in a liberal regime, concerned with an economic outlook for energy resources, in that they uphold the regulation of all operations.

Throughout the literature review of the concept of ESR, two major difficulties have emerged in its study in relation to personality. First, a large number of concepts have been proposed to indicate aspects related to emotion regulation, the most important being self-control and self-regulation, but even these have not been properly defined or distinguished in a transversal way in the field of psychology. As Quirin et al. (2021) puts it, "without a clear theory for drawing distinctions, neglecting to distinguish between effortful and effortless willpower (i.e., self-control vs. self-regulation) may more likely" (p. 3), and thus the study of their relationship to personality becomes more complex. For instance, while some authors make clear distinctions between the concepts of self-regulation and self-control (e.g., Kuhl et al., 2021; Gross, 2024), others use them interchangeably (e.g., Lazarus, 1991; Baumeister and Exline, 1999) or allude to them with other concepts, such as emotional control (e.g., Arnold, 1960).

Second, much of the research on personality differences has focused more on describing ESR processes and strategies rather than addressing the motivations that explain interindividual differences, i.e., the focus has been on describing how people regulate their emotions, and less on why they do it in a certain way and not in another (Tamir, 2016; Hughes et al., 2020). Based on this question, distinguishing between goals — desired emotional states (e.g., less sadness) — and motives — desired outcomes (e.g., doing well on an exam) — in emotion regulation helps to understand more clearly the process behind selection and, in turn, attending to the taxonomy that distinguishes between the different motives for regulating emotions— hedonic, directed at the emotion itself, vs. instrumental, oriented toward its possible benefits—, allows for a deeper understanding of the mechanisms of emotion regulation (for a review, see Tamir, 2016). From this taxonomy, the Big Five has been exposed as the ideal model for predicting ESR goals typically pursued according to personality traits (Kobylińska and Kusev, 2019), including, for instance, the positive association between Neuroticism and impression management goals related to the image an individual wants to project to others (Eldesouky and English, 2019). It has also been evidenced that the stages of identification, selection and implementation of ESR (Gross, 2015b) are strongly related to the Big Five taxonomy (for a review, see Barańczuk, 2019; Hughes et al., 2020).

This focus goes back to the contributions of Aristotle and Thomas Aquinas to understand the relationship of emotional regulation to ethical virtues, the latter being also known as habitual dispositions of character, which are context-sensitive and goal-oriented. Indeed, emotional regulation has been defined as a skill that is part of the cultivation of virtue (Carron, 2022; Krettenauer and Stichter, 2023), as well as one of the four primary functions of the virtue model of *phronesis* or *practical wisdom*, specifically linked to empathy and perspective-taking (Darnell et al., 2022). Thus, the level of emotional regulation would be a sign of the excellence of the virtuous person's character, whose emotional harmony allows him to approach the good life of *flourishing* (Fowers, 2008), an ultimate sense of well-being that can be related to a specific type of ESR: mentalized affectivity (Jurist et al., 2023). Thomistic theories of emotional generation and types of appetite have even been integrated with the *Extended Process Model of the Emotion Regulation* by Gross (2015b), in particular the strategy of *re-appraisal*, finding among its results the importance of people using their will correctly (Marple et al., 2024). Thus, in recent years, there has been an increased interest in bringing the philosophical thought of Aristotle and Aquinas into dialogue with psychology due to its

TABLE 1 Thomas Aquinas's scheme of human faculties.

Psychic dimension	Cognitive faculties		Appetitive faculties	
Rational dimension	Reason	Faculty that allows the human being to understand, reason and rule over emotions.	Will	Faculty that allows the human being to tend toward the intangible good and make choices.
Sensitive dimension	Internal senses	Memory: faculty that stores images in terms of lived experiences.	Sensitive appetite	Concupiscible appetite: faculty that tends toward tangible good, insofar as delectable.
		Cogitative: faculty that evaluates images as convenient or harmful.		
		Imagination: faculty that forms the internal image of the external stimulus.		Irascible appetite: faculty that tends toward the tangible good, insofar as arduous.
		Common sense: faculty that integrates the information of the stimuli.		
	External senses	Faculties oriented to sense the external world, such as touch, taste, smell, hearing, and sight.		

potential to understand the human being in a unified way, overcome the fragmentation of the discipline (Spalding et al., 2019) and clearly distinguish the different concepts.

Aristotelian-Thomistic philosophical anthropology states that living beings possess a vital principle called soul (Aquinas, 1920, I, c. 75, a. 1). Plants possess a vegetative soul, which is the vital principle of plant operations, such as feeding, growing and reproducing. Animals possess a sensitive soul, which enables them to feel, appetite and move. Finally, humans possess a rational soul, which allows us to understand and desire. For these authors, the higher levels of life assume the perfections of the lower levels, which would explain why animals are also capable of the operations of plants without having to resort to a duplicity of souls. The same is true of human beings, in whose rational soul the vegetative, sensitive and rational dimensions can be distinguished, without losing their uniqueness (1920, I, c. 76, in c.).

Of particular interest for the understanding of ESR is the distinction between the sensitive and rational dimensions of the human soul. For Aquinas (1920, I, c. 78, a. 1; a. 2; a. 3; a. 4), there are some faculties that are common to humans and animals, such as the capacity to feel stimuli –*external senses*–, to integrate them, to store them, to value them –*internal senses*– and to emotionally react to them –*sensitive appetite*–. This affective response, called *passion*[1], consists of an inclination toward what is perceived as convenient, and a consequent rejection of what is perceived as harmful. On the other hand, there are some exclusive faculties in human beings, such as the capacity to understand and to become aware –*reason*–, and the capacity to love the intangible good and to make free choices –*will*–, as can be seen in Table 1.

For Aristotle and Thomas Aquinas, human beings reach fullness to the extent that they live according to their reason and driven by their emotions, for which it is necessary to admit a kind of dominion over their passions (Botkin, 1921). Aquinas affirms that the sensitive appetite is naturally receptive to the command of reason (1920, I, c.81, a. 3; 1999, a. 8) through the inner sense called *cogitative*. Reason, by its universal type of cognition, moves this internal sense to carry out a particular cognition, thus triggering the movement of the sensitive appetite in the form of emotion (Aquinas, 1920, I-II, c. 17, a. 7), as can be seen in Figure 1.

3 Interdisciplinary dialogue

To facilitate the dialogue, we have structured the interdisciplinary analysis around two main questions: (1) What is ESR? and (2) How is its relationship with personality?

3.1 What is ESR?

As was reviewed in the theoretical framework, the concept of ESR has been used to refer to different realities that, despite having some aspects in common, are not the same. In order to propose an orderly classification, we will use the Thomistic categories of *operation*, *faculty* and *habit* (see Figure 2). The operation, also called act, is any movement or change performed by an individual, whether external (e.g., breathing, walking, speaking) or internal (e.g., feeling, understanding). The faculty, also called *operative power*, is the capacity common to every human being to perform human operations (e.g., locomotion, senses, appetites and reason). This capacity can be actualized, as when an action is performed, or kept latent, as when we know that we can do something, although we are not performing it (Aquinas, 1920, I, c. 77, a. 6). Finally, the habit is a stable quality that the faculty can acquire, which enables the individual to perform its operation when he wants to (Aquinas, 1920, I-II, c. 51, a. 1), outstandingly, with promptitude and delight (Aquinas, 1999, a. 1) or, in some cases, at least "without sadness" (Id, a. 10, ad. 15). It is necessary to admit this notion because although all human beings can perform the same kind of operations (since we possess the same faculties), only some develop qualities to operate more perfectly. For instance, we are all capable of reasoning, but only some develop *science*, that is, the skill to reason with rigor and fluency in a field of knowledge.

1 Admittedly, this concept is not completely equivalent to emotion (Dryden, 2016), but they are similar enough to be considered interchangeable in this article.

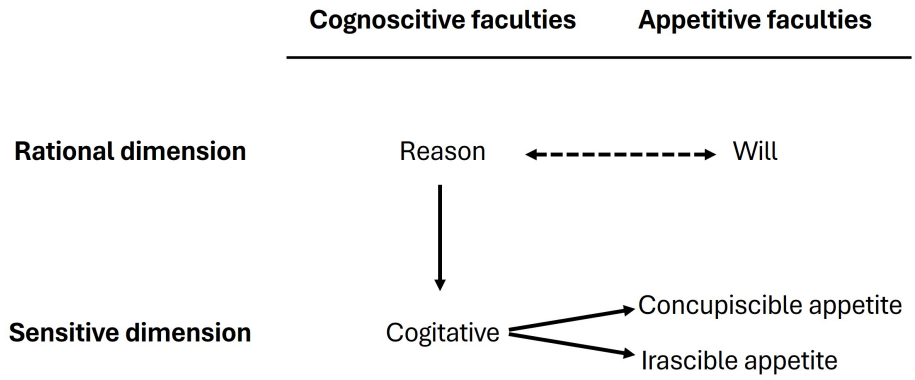


FIGURE 1
Reason commands over sensitive appetites through the *cogitative*. Reason can be moved by the will, and vice versa.

Faculty → Operation

Faculty (+ Habit) → Enhanced operation

FIGURE 2
Relationship between operation, faculty and habit.

Based on this scheme, it is necessary to distinguish three different realities that could be called ESR (see Table 2). First, the operation of ESR, i.e., the activity that an individual performs to regulate his emotions at a given moment. This activity should not be seen as an isolated act, but rather as a process involving multiple operations (Gross, 2015b). Second, the ESR faculty, i.e., the common capacity that allows human beings to regulate their emotions. Third, the habit of ESR, i.e., the acquired skill that enables an individual to regulate his emotions in an outstanding manner, with promptitude and delight.

This distinction is relevant because the ESR categories do not necessarily occur together in the same individual. For instance, a person with emotion regulation skills might occasionally be driven by his emotions without regulating them. It could also happen that someone without ESR skills performs an ESR act if he prepares for it and makes an effort to do it. However, there are also individuals who, having the faculty to regulate their emotions, do not develop ESR skills and do not perform ESR acts.

Following this scheme, the appropriate definition of ESR would depend on the reality to be pointed out. However, when reviewing the definitions of ESR proposed in the literature, we realize that they do not seem to refer to the same reality. This could explain the difficulties in agreeing on a definition of the term. Table 3 shows some definitions of ESR and their possible relationship with our categorization. As can be seen, most of the definitions seem to understand ESR as an operation, only one as a faculty, and none as a skill.

Arnold (1960) understands the process of emotional control from the Thomistic model, but delves only into the operation itself of what is involved in approaching or withdrawing from an object from the *appraisal* of the *cogitative*, and does not present aspects of ESR as a faculty or habit. Lazarus focuses on the operation of coping, but distinguishes between the place of appraisal, which in the Thomistic model comes from the *cogitative*, and the role of knowledge, which is related to the faculty of reason as it focuses on general judgment. Gross's model emphasizes the processes of emotional generation and regulation, which can be understood as a concatenation of operations. On the other hand, the elements described in the *Modal Model of Emotion* (Gross, 2008) seem to be closely related to the Thomistic model, insofar as there is an object (situation) to which the senses are directed (attention), which leads to an initial and automatic evaluation of the object by the *cogitative* (appraisal), and which results in a movement of the passions toward that object (response). What would be missing in the *Extended Process Model of the Emotional Regulation* of Gross (2015b) is the role of reason and will in emotional regulation and the role of memory, the explanation of which is beyond the focus of this article.

The intention to include the will in the ESR is observed in both Baumeister's and Kuhl's models. The first understands the will from his SMSR as willpower, where any successful self-regulation implies a concatenation of operations involving effort and energy expenditure, organized by a central governor (Baumeister and Vohs, 2016). The second, on the other hand, understands the will from the PSI "as a set of central executive processes that regulate the person's thoughts, feelings, and actions in a top-down manner" (Kuhl and Koole, 2004, p. 422), where the two volitional modes of self-control and self-regulation are distinguished, each with a different system of governance from the will, where the category of ESR faculty is expressed from the Thomistic model. Thus, it is seen that it is the will that orders regulation, either as an inner-democracy (Kuhl, 2000) or like a monetary authority (Baumeister and Vohs, 2016).

For his part, Thomas Aquinas considers that the will performs three types of acts related to what is for the end: *choice, consent* and *use* (Aquinas, 1920, c. 13, intro). All three can be applied to the act of ESR. First, the will *consents* to those things that reason deliberates as appropriate (Id., c. 15, a. 3), e.g., that in this situation it is convenient to self-regulate in certain ways. Next, the will *chooses* some of the alternatives previously consented to (Id., c. 15, a. 3, ad. 3), e.g., that it is convenient to regulate this anger by trying to

TABLE 2 ESR categories derived from Thomistic categories.

Thomistic category	ESR categories	Definition	Example
Operation	ESR operation	Activity that an individual undertakes to regulate his emotions at a given moment.	The tennis match winner puts himself in his opponent's shoes and moderates his joy so as not to offend him.
Faculty	ESR faculty	Common capacity that allows human beings to regulate their emotions.	At a certain point in development, children become capable of calming themselves.
Habit	ESR habit	Acquired skill that allows an individual to regulate his emotions in an outstanding manner, with promptitude and delight.	A fraudster speaks so calmly that he makes everyone believe he is telling the truth.

TABLE 3 Definitions of ESR and their possible categorization.

ESR designation	Definition	ESR category
Emotional control	"Emotional control means both a turning toward what is truly lovable from a human point of view and a turning away from things that exert too strong a pull" (Arnold, 1960, p. 278).	Operation
Self-regulation of emotion	Self-regulation of emotion means "control not only over the overt behavior associated with an emotion (e.g., the expressive gestures and postures and instrumental action) but of the entire organized state that is subsumed under the emotion construct" and it also "dampens, eliminates, or alters the quality of emotional states" (Lazarus, 1973, pp. 172–173).	Operation
Emotion regulation	"Emotion regulation refers to the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998, p. 275).	Operation
Self-regulation and Self-control	"We define self-regulation as processes by which the self intentionally alters its own responses, including thoughts, emotions, impulses, performance, and behaviors, based on standards" (Baumeister and Vohs, 2016, p. 68).	Operation
Self-regulation	"We can describe self-regulation as a largely unconscious form of volition that involves, and yet goes beyond, the integrative intelligence of motives. Volitional self-regulation draws not only on those networks of experiences that are relevant for one's needs but on all autobiographical experiences that have contributed to the development of a coherent self-image" (Kuhl, 2018, p. 544).	Faculty

understand the one who offends me. Finally, the will *uses*, that is, it moves the other powers to perform some act (Id., c. 16, a. 1), for example, moves reason so that it commands the act of the sensitive appetite.

Now, Thomas Aquinas considers that, strictly speaking, reason is the faculty that regulates the emotions (Aquinas, 1920, I-II, c. 17, a. 7). Indeed, he considers reason as the central governor who rules over the passions "not by a 'despotic supremacy', which is that of a master over his slave; but by a 'politic and royal supremacy', whereby the free are governed, who are not wholly subject to command" (*Ibidem*). This does not mean that the will is unrelated to emotional regulation, because "command is an act of the reason presupposing, however, an act of the will" (Aquinas, 1920, I-II, c. 17, a. 1). In other words, reason is the faculty that properly regulates the passions, but it is the will that consents and chooses to regulate the emotions, and then moves reason to perform this activity.

Interestingly, no definition refers directly to SRE as a habit. However, it would be premature to conclude that this is due to researchers' disinterest in this reality. In fact, several ESR theories refer directly or indirectly to people's acquired ability to regulate their emotions. SMSR, for example, argues that ESR is like a trainable muscle (Baumeister, 2016). It is possible that the lack of definitions of ESR habit is simply due to a lack of interest in working out precise definitions, or simply because it seems too obvious to make explicit.

3.2 How is the relationship between ESR and personality?

To answer this question thoroughly, we must relate the three proposed categories of ESR to personality. However, personality is also a concept that has been approached in many ways, as evidenced by the dozens of definitions that have been proposed (Engler, 2009; Funder, 2015; Larsen and Buss, 2017; Cervone and Pervin, 2022). Knowing that there are many valid models, in this manuscript we will approach personality from the FFM, which is highly acknowledged in the personality literature (Roberts and Yoon, 2022), and from the virtues model, which is rooted in the Aristotelian-Thomistic tradition. The first approach views personality as composed of five broad dimensional traits with strong biological roots, whose basic tendencies are manifested in characteristic adaptations (McCrae and Costa, 1996). Like most personality models, it considers that "individuals are born with the rudiments of personality dimensions and that those dimensions generally unfold without intentional effort over time" (Fowers et al., 2023, p. 4). The second considers that people acquire stable qualities in the interaction of biological, environmental and personal factors, among which intentional effort to achieve what the individual understands as happiness stands out. The relationship between the two models is not yet fully clarified (for a review, see Fowers et al., 2023), so they will be considered separately.

3.2.1 The influence of personality on ESR as a habit

Let us start by reviewing the relationship between personality and ESR as a habit. Several authors have noted the correlation between personality traits and ESR using the FFM model. Specifically, they have found a significant association between high levels of Conscientiousness and ESR (Roberts et al., 2005b; Hoyle, 2006, 2010; McCrae and Löckenhoff, 2010; Barańczuk, 2019). This link is evident when considering the facets belonging to this trait: *competence/self-efficacy*, *orderliness*, *dutifulness*, *achievement striving*, *self-discipline*, and *deliberation/cautiousness*. On the other hand, an association has been found between low levels of Neuroticism and ESR (McCrae and Löckenhoff, 2010; Barańczuk, 2019). In turn, one of the aspects of this trait, *impulsiveness*, has been linked to low self-control (Hoyle, 2006, 2010).

However, when the relationship between FFM and Self-Regulation models is analyzed, it becomes clear that all traits play some role in the ESR. Extroversion is linked to *behavioral activation* and *sensation seeking*, which are significantly associated with lower *self-control*. Finally, although with less significance, *Openness* and *Agreeableness* are associated with ESR through *self-efficacy* and *behavioral inhibition*, respectively (McCrae and Löckenhoff, 2010).

Nevertheless, this link does not appear to be exactly linear. For instance, it has been found that too high levels of Conscientiousness can lead to a *maladaptive* ESR, highly rigid and overly persistent (Hoyle, 2006). In addition, it has been found that individuals with low Neuroticism and, at the same time, low Conscientiousness seem to have little interest in controlling their behavior (Costa and Piedmont, 2003). Other factors may mediate the link between personality and ERA. For instance, it has been proposed the importance of internal processes involving standards of behavior, the evaluation of one's behavior about these standards, affective reactions to such evaluations, and mechanisms for correcting these gaps (Hoyle, 2006, 2010; Gross, 1998, 2015a, 2024; McCrae and Löckenhoff, 2010).

A similar complexity can be found in the work of Thomas Aquinas, who suggests that some people possess a natural predisposition for acts of virtue, which require emotional mastery. This is equivalent to affirming that certain traits, especially insofar as they have strong biological roots, have greater ESR facilities. However, the same author clarifies that this tendency is not sufficient to achieve the attainment of virtue:

> There is another beginning of virtue which follows on individual nature, insofar as a man, by natural makeup or celestial influence, is inclined to the act of a given virtue. This inclination is a kind of beginning of virtue but is not perfected virtue, because for perfected virtue the governance of reason is needed, which is why the definition of virtue states that it is elective of the mean according to right reason. For if someone should follow such an inclination without the discernment of reason, he would frequently sin. Just as this beginning of virtue without the work of reason cannot have the perfect note of virtue, no more can any of the other beginnings of virtue mentioned (Aquinas, 1999, a. 8).

If we follow this analysis, reason would be responsible for mediating between innate personality tendencies and virtue. This faculty allows us to discern what is appropriate in each situation and also allows us to govern our emotions by putting in them their rule. To achieve this, reason moves the *cogitative*, the internal sense that judges stimuli as convenient or inconvenient for the vital interests of the subject (Aquinas, 1920, I, c. 78, a. 4). This evaluation, equivalent to the concept of appraisal (Arnold, 1960; Lazarus, 1991; Gross, 1998), triggers the emotions, which are nothing other than the movement of the sensitive appetite. In this way, the emotions can be considered open to reason (Aquinas, 1920, I, c. 81, a. 3) and subject to its rule (Aquinas, 1920, I-II, c. 17, a. 7), which means "regulated." Consequently, although natural tendencies are principles of virtue, they cannot ensure the right operation of the faculty without reason.

Now, Thomas Aquinas explains that reason needs to be strengthened by the virtue of prudence, also known as *phronesis*, in order to investigate and judge what is appropriate in each circumstance and to execute it (Aquinas, 1920, II-II, c. 47, a. 8). Related to this, the current literature is addressing the high context sensitivity of ESR, because it tends to operate in the interaction between person, situation and strategy, as proposed by the interactionist framework of a *personalized science of emotion* (for a review, see Doré et al., 2016). From this perspective, in emotional regulation, both the context (for a review, see Aldao, 2013) and flexibility (for a review, see Kobylińska and Kusev, 2019) become particularly relevant in order to assess the effectiveness of ESR strategies. The close relationship between prudence and ESR was noted by Baumeister and Exline (1999), who stated "Prudence is obviously a matter of self-control" (p. 1174). To illustrate the similarities between this virtue and ESR it is useful to read Aquinas's description of the parts of prudence:

> Of these eight, five belong to prudence as a cognitive virtue, namely, *memory*, *reasoning*, *understanding*, *docility* and *shrewdness*: while the three others belong thereto, as commanding and applying knowledge to action, namely, *foresight*, *circumspection* and *caution*. The reason of their difference is seen from the fact that three things may be observed in reference to knowledge. In the first place, knowledge itself, which, if it be of the past, is called *memory*, if of the present, whether contingent or necessary, is called *understanding* or *intelligence*. Secondly, the acquiring of knowledge, which is caused either by teaching, to which pertains *docility*, or by discovery, and to this belongs to *eustochia*, i.e., "a happy conjecture," of which *shrewdness* is a part, which is a "quick conjecture of the middle term," as stated in Poster. i, 9. Thirdly, the use of knowledge, in as much as we proceed from things known to knowledge or judgment of other things, and this belongs to *reasoning*. And the reason, in order to command a right, requires to have three conditions. First, to order that which is befitting the end, and this belongs to *foresight*; secondly, to attend to the circumstances of the matter in hand, and this belongs to *circumspection*; thirdly, to avoid obstacles, and this belongs to *caution* (Aquinas, 1920, II-II, c. 48, a. 1).

Returning to Aquinas's thoughts on the innate factors favoring the formation of habits, we find a text in which he states that any natural predisposition to a certain virtue is, at the same time, an obstacle to the attainment of another:

> It should be said that there can be a natural inclination with respect to the object of one virtue but not with respect to all because the natural disposition which inclines to one virtue inclines to the opposite of another virtue. For instance, one naturally disposed to courage, which is the pursuit of the arduous, is less disposed to patience, which consists in restraining the passions of the irascible. Thus we see that animals naturally inclined to the act of one virtue are inclined to a vice contrary to another virtue, as the Eon who is bold is also naturally cruel. Such natural inclinations to this or that virtue suffice for animals who are incapable of achieving the perfect good according to virtue but pursue some limited good. But men are made to achieve the perfect good according to virtue and must therefore have an inclination to all the acts of virtue, which, since it cannot be from nature, must come from reason, in which are found the seeds of all the virtues (Aquinas, 1999, a. 8, ad. 10).

This exposition introduces a nuance not very present in contemporary literature: emotions can be divided into two broad groups and require different self-regulatory skills. Indeed, Thomas Aquinas, in line with Aristotle and taken up by Arnold (1960), admits two types of emotions: those that drive toward goods insofar as they are goods, and those that bring goods closer insofar as they are challenging to attain (Aquinas, 1920, I, c. 80, a. 2). The former correspond to the activity of the concupiscible appetite —love, desire and pleasure, and their opposites, hatred, rejection and displeasure— and the latter to the irascible —hope, audacity, their opposites, despair, fear, and anger, which has no opposite—. The concupiscible needs to be perfected through the habit of temperance, which regulates desires and pleasures (Aquinas, 1920, II-II, c. 141, a. 3). On the other hand, the irascible requires the habit of fortitude, which allows firmness in the face of pain and danger (Aquinas, 1920, II-II, c. 123, a. 11).

If we admit the need for two different skills to govern emotions, we would have to consider two types of ESR: one focused on moderating pleasurable emotions and the other on maintaining high spirits in the face of danger. This distinction has already been slipped into the literature on self-regulation, as when it is stated that self-control can inhibit —restrain impulsive behavior— or activate —initiating and sustaining effortful activity— (McCrae and Löckenhoff, 2010; Kuhl, 2018). Following Thomas Aquinas's proposition that the disposition for some virtues is an obstacle to attaining others, we could argue that personality traits associated with ESR, understood as behavioral inhibition, could be inversely related to ESR, understood as activation. For instance, we might consider that an individual with high Conscientiousness is prone to inhibit pleasurable emotions that divert him from his goals. However, this does not mean he is simultaneously inclined to pursue challenging goals, especially those involving risk, uncertainty and a certain degree of improvisation. According to the literature, the latter seems more associated with individuals with high *Extraversion*, who tend to possess little self-control.

Let us now consider the relationship between the virtues model and the ESR understood as a habit. For this ESR to emerge, it is necessary to develop prudence, temperance and fortitude. First of all, *prudence*, which enables the human being to discern what is appropriate in each circumstance and, at the same time, to command over the appetites (Aquinas, 1920, II-II, c. 47, a. 8). However, this virtue alone is not sufficient for proper emotional regulation, for if the appetites are not well disposed to be governed by reason, then the act will be imperfect, for it will lack the required emotionality and force. Thomas Aquinas illustrates this with a metaphor: in the making of a work, the artist must be well disposed, that is, he must be skilled in what he does, but the instrument he uses must also be well disposed (Aquinas, 1920, I-II, c.56, a. 4). Following this image, the well-disposed instrument corresponds to the sensitive appetite, the faculty that enables human beings to experience affective tendencies toward the good, or in other words, that allows them to feel emotions. This faculty is divided into concupiscible and irascible. As explained above, the first needs *temperance*, and the second needs *fortitude* in order to be able to follow reason with docility.

The incorporation of justice as a necessary virtue for the SRE is debatable. Indeed, we need it to prefer the common good to the individual good, from which stems much of the human motivation to self-regulation (Aquinas, 1920, I-II, c. 56, a. 6). Moreover, justice is attributed to the order of external operations (Aquinas, 1920, c. 61, a. 2). However, the role of the will in the ESR, according to the Thomistic scheme, is antecedent to the command of reason. It could be said that the will explains the motivation to perform acts of SRE, but it is not part of those acts. Thus, people with diverse motivations are capable of self-regulating their emotions, which includes virtuous motivations —such as doing good to others—, vicious motivations —such as stealing without being caught— or morally neutral motivations —such as sailing or climbing mountains—. This is not to exclude the role of the will in SRE, since, as we shall see, it is particularly relevant for understanding the self-regulation of the continent person. It is simply a matter of affirming that, strictly speaking, justice does not seem to be part of the SRE.

In addition to virtue, Thomas Aquinas, following Aristotle, postulates other moral habits. If *virtue* is the habit that orders the reason and the appetites toward the true good (Botkin, 1921), *vice* is the habit that orders them toward the apparent good or evil (Aquinas, 1920, I-II, c. 71, a. 1). In this case, reason is vigorised to perform evil, and the appetites are made docile to follow reason in its evil purpose, as in the case of the individual who is skilled in stealing. Arnold (1960) had already raised this difference when she commented that "such control of emotion implies a worth-while self-ideal to provide a focus for a man's striving. A man may develop habits of right action (they used to be called virtues) or he may fall into habits of indulgence (formerly called vices)" (p. 278).

In addition to *virtue* and *vice*, the existence of an imperfect virtue, *continence*, is posited since it implies some perfection in reason but not in the appetites (Aquinas, 1920, II-II, c. 155, a. 1). In this case, the individual understands rationally what is proper and desires it voluntarily, but encounters an obstacle in his emotions, which inclines him to the contrary. Although he manages to follow the path indicated by reason, thanks to his will, his operations are neither harmonious nor satisfactory, as he experiences emotional tension. Finally, we have the lack of habit, *incontinence*, in which the individual also understands what is appropriate and desires it; however, the force of his passions habitually drags him to do what seems to him to be wrong. Thus, emotional satisfaction is followed by guilt, unlike the vicious individual who takes pleasure in his actions.

From these moral habits, one can proceed to the elaboration of a true characterology, depending on which habit is the most predominant in the individual's life. Inspired by Aristotle, Fowers (2008) is perhaps the first to incorporate this characterology into the contemporary psychological literature. He also includes *bestiality*,

TABLE 4 Aristotelian character types, their relationship to psychic faculties and to ESR as a habit.

Character type	Reason	Sensory appetite	Will	ESR habit
Virtue	Right	Docile	Firm (effortless)	Perfect
Continence	Right	Indocile	Firm (effortful)	Imperfect
Incontinence	Right	Indocile	Weak	Faulty
Vice	Distorted	Docile	Firm	Maladaptive
Bestiality	Overruled by emotions	It is which governs	Weak	None

which would be equivalent to the state of an individual habitually dominated by his emotions to such an extent that he cannot practically reflect or take conscience of his actions. The relationship of this characterology to the disposition of the psychic faculties —and to the ESR as a habit— can be seen in Table 4.

According to this scheme, only the virtuous would possess the perfect habit of ESR: his reason is rightly ordered, the sensory appetite is docile to reason, and his will is firmly determined toward the good. This enables him to regulate his emotions so that he acts *by reason and with emotion*. He is aware when he experiences disordered emotions and can redirect them without much difficulty, which fits well with the concept of *effortless willpower* (Quirin et al., 2021). This is somewhat similar to the self-regulatory system proposed by Kuhl et al. (2021), in that it operates at an implicit, experiential level, which allows for personality identification and integration (Ryan and Deci, 2019). The vicious person seems to possess similar self-regulation skills; however, his reason has lost its sense of what is good, and so he misreads reality and fails to grasp what is truly convenient. For this reason, his self-regulation will never be fully adaptive and may disintegrate personality: he acts *by distorted reason and with emotion*. The continent, on the other hand, has some degree of self-regulation; however, he depends on a will that operates in opposition to emotions. Therefore, its possibilities of inhibiting them are limited, which fits well with *effortful willpower* (Quirin et al., 2021). His ESR closely resembles the model of self-control as moral muscle (Baumeister and Exline, 1999) and the self-control system of PSI (Kuhl, 2018), leading him to act *by reason and against emotion*. The incontinent is weak-willed; therefore, when emotions arise with vehemence, he cannot resist. He fails to regulate his affections, which makes his behavior defective: he acts *by emotion and against reason*. Finally, the bestial character is so governed by his emotions that his reason has been overruled. Without the rule of reason, no emotional regulation is possible: he acts *by emotion*.

3.2.2 The influence of personality on the ESR as an operation

The influence of personality on the operation of ESR is similar to its influence on the habit of ESR since habit is nothing but a stable disposition to operate in a certain way. Therefore, roughly speaking, the same conclusions apply to the ESR operation as to the habit. However, it is necessary to introduce a nuance. The personality traits proposed by the FFM model and the habits of the virtues model can be conceptualized as stable operative dispositions, i.e., habitual inclinations toward a certain activity. However, the relationship of dispositions is more robust concerning other dispositions than singular actions. An individual predisposed to acts of temperance is equally predisposed to acquiring the habit of temperance. However, for an individual poorly predisposed to these acts, it is easier to perform some isolated act of temperance than to acquire the virtue of temperance, for it requires many acts to form. Indeed, although less frequent, there is nothing to prevent individuals with low Conscientiousness from sometimes acting in a planned manner or, conversely, someone with low Neuroticism from sometimes being driven by their emotions. The reason is that, for the Thomistic system, temperament and personality are predispositions that condition action but do not determine it. Indeed, for Thomas Aquinas, the human being acted freely even under the most violent pressures of the environment and interfered with by one's emotions: as long as there is some degree of use of reason, there is always a choice to be made (Aquinas, 1920, I-II, c. 6, a. 4).

This is even clearer for those who possess some virtue. Indeed, virtue does not force one to act virtuously since virtue is a habit, and as such, is "something we use when we will" (Aquinas, 1920, I-II, c. 78, a. 2). For this reason, it is inconceivable that the virtuous person lacks the habit of ESR. However, it is perfectly admissible that he performs some unregulated act in isolation.

3.2.3 The influence of personality on ESR as a faculty

It does not appear that there is any personality influence on the occurrence or existence of the ESR faculty. In fact, all human beings possess the faculties involved in ESR, regardless of their personality traits, as Kuhl's (2018) PSI model proposed. Perhaps it could be studied whether the ESR faculty appears or is consolidated in some individuals earlier than others; in that case, it could also be examined whether this is exclusively due to biological factors or whether there could be some influence of temperament or personality. However, once adulthood is reached, it is considered that everyone, regardless of their personality traits or moral habits, possesses the capacity to regulate their emotions. Otherwise, some individuals would be exempted from legal and moral obligations since no one can be required to do what he is incapable of.

The philosophical foundation is that every operative disposition is a quality of some faculty. Faculties are ontologically prior to dispositions, and therefore, no disposition can create or bring into being a faculty. On the contrary, the faculties support the existence of dispositions and are thus some kind of cause of them.

3.2.4 The influence of the ESR as a faculty on the personality

ESR, understood as a common faculty or capacity, appears gradually in the individual from infancy, possibly as a function of brain development (Posner and Rothbart, 2000; Magen and Gross, 2010; McDermott and Fox, 2010). However, importance is also attributed to the environment, e.g., caregivers (Crocker and Park, 2004; Morf and Horvath, 2010). The emergence of this ESR has

been postulated as a key factor for personality development (Rothbart, 1981; Posner and Rothbart, 2000; Blair et al., 2010; Denissen et al., 2013). It can be observed that children are more impulsive than adults and that Neuroticism scores tend to decrease from adolescence into adulthood (Terracciano et al., 2005). Although this decrease in Neuroticism trait may be explained by the acquisition of ESR skills, it is also possible that brain maturation plays an important role. Indeed, the prefrontal cortex, which is closely related to emotional self-regulation processes, is continuously developed from birth to early adulthood (Magen and Gross, 2010). It could also be proposed that the child's early attachment to parents or caregivers plays a role, as ESR is taught by the regulatory activity of caregivers (Fonagy and Target, 2002). In addition, mentalization, which is also acquired thanks to caregivers, is seen as a critical step in the emergence of self-regulatory capacity (Schwarzer et al., 2021), which can be related to mentalized affectivity (Jurist et al., 2023).

According to the Thomistic scheme, virtues begin to develop at a very early age. Even if there is little use of reason or ESR, stable operative dispositions can be formed thanks to parents, who provisionally assume the role of reason (Palet, 2022). The development of the capacity for ESR, possibly simultaneously with the development of the capacity to reason, allows the individual to forge his habits by himself. In this way, the person begins to be the architect of his personality through his decisions.

3.2.5 The influence of the ESR as an operation over personality

The ESR operation does not seem to influence personality. From the FFM model, at least as McCrae and Löckenhoff (2010) put it, traits are strongly biologically based, develop involuntarily (Fowers et al., 2023) and are hardly modifiable (Roberts et al., 2005a). Therefore, no act of ESR would have any impact on personality.

The Thomistic system considers that a single operation is not sufficient for the acquisition of any habit (Aquinas, 1920, I-II, c. 51, a. 3). Therefore, unless there are many of them, the act of ESR does not influence the personality either. Now, in one who has already developed some habit, each act of ESR aligned with his character would reaffirm the previous inclination. Thus, the ESR acts have some influence on personality.

3.2.6 The influence of ESR as a habit on the personality

ESR as a habit is related to personality traits in two ways, depending on whether it is conceived as a skill included within personality traits or as a separate skill that interacts with them. Let us consider the first alternative. Several authors favor this option. McCrae and Löckenhoff (2010) have postulated that ESR would be implicated in the facet scales *Impulsiveness, Excitement seeking, Self-discipline,* and *Deliberation*. Fein and Klein (2011) postulated that ESR would be related to *assertiveness, activity, achievement striving, deliberation, dutifulness, self-discipline,* and *ideas*. However, these alternatives seem contrary to the Aristotelian-Thomistic position. If ESR were part of these personality traits, then it would share some properties common to all of them, such as being substantially influenced by genetics and essentially unrelated to the environment. In this case, character education would have minimal impact on personality traits, and thus also on ESR. This, as McCrae and Löckenhoff (2010) note, "is a startling conclusion, flying in the face of centuries of traditional wisdom and most accounts of personality functioning" (p. 161). By contrast, Aristotle and Thomas Aquinas consider education fundamental to acquiring virtues, and emotional mastery is undoubtedly a fundamental part of this acquisition.

Now, let us consider ESR habits as a separate skill from personality traits. This habit can be understood in two ways: as a perfect skill to modify affective states or as a skill to maintain appropriate behavior despite emotions (Fowers, 2008). In the first case, one could admit the influence of this habit on the rest of the personality since the habitual regulation of emotions would change its stable disposition. At least this is how Thomas Aquinas understands it, for whom the repetition of acts, for instance, of temperance, is capable of developing the virtue of temperance (Aquinas, 1920, I-II, c. 51, a. 2; c. 63, a. 2). In contrast, ESR understood as behavioral control would be an inferior form of ESR, just as continence is inferior to virtue, as discussed above. Although commendable, this type of ESR is more focused on the regulation of external behavior than on actual emotional change and, for that reason, focuses on emotional inhibition or suppression. As Baumeister and Vohs (2016) have noted, this control requires effort, and as the effort is limited, it eventually exhausts itself. If this type of ESR cannot modify emotions, then it is even less capable of modifying its habitual disposition. It is a matter of debate whether ESR, understood as self-control or continence, is a first step toward true emotion regulation, or whether it operates along a separate path and is therefore incapable of engendering long-term emotional change.

From the Thomistic point of view, the ESR understood as a habit, in the most profound sense, does not influence habits but is part of them. As explained above, ESR emerges when there is prudence, temperance and fortitude. It is unnecessary to conceptualize any new virtue to explain the individual's habitual disposition to fully control his emotions. Some authors have proposed that ESR would be a meta-virtue or meta-habit, i.e., an independent disposition, which would not be part of the personality. This has already been proposed directly by some authors (e.g., Strauman and Wilson, 2010; Fowers et al., 2023), and indirectly by others, for whom ESR is part of prudence, understood as a meta-virtue (e.g., Kristjánsson et al., 2021). For this to be true, this meta-virtue would have to consist of the invigoration of some power, but as we have argued, the invigoration of only one power is not enough for the fullness of self-regulation. Formulating that prudence, temperance and fortitude have a regulative dimension seems more appropriate. Indeed, prudence encompasses several acts, but not all are related to the ESR. Temperance and fortitude are eminently emotion-regulating virtues but focus on different types of emotions. In short, the ESR would not be strictly speaking a habit but a set of habits that include the part of prudence dedicated to the rule of appetites and the common capacity of temperance and fortitude to regulate emotions.

All this applies to understanding the habit of ESR as a perfect virtue. However, we can also understand it as an imperfect virtue, as in the case of continence. In this case, the ESR is partial because it only includes the conducting dimension of prudence but lacks the docility of the appetites. As its name says, the continent contains the emotional and behavioral expression of its emotions; he does not order them. Insofar as it is not the emotion itself that is regulated but rather the behavior, this type of regulation could be called behavioral self-regulation.

4 Discussion

The interdisciplinary dialogue, specifically with Thomistic anthropology, has not only allowed us to answer the major questions posed at the beginning but also to clarify some of the difficulties pointed out in the introduction. Firstly, with regard to terminology, it seems important to propose moving toward a common use of concepts, or at least toward making explicit the realities that we are signaling with them (Quirin et al., 2021). It is confusing when different terms point to the same thing or when a single term indicates different realities. Following important definitions of ESR, such as the one proposed by Gross (2015b), we have detected at least three realities that could be called ESR, which are sufficiently different to justify the search for greater terminological precision. The distinction between operation, faculty and habit has proven to be helpful for this purpose. It is possible that this distinction was evident in the minds of some scholars; if so, this article represents an advance by explicitly systematizing it.

Another contribution of the Thomistic approach to the understanding of ESR is its moral dimension, which was introduced by Arnold and Gasson (1954) 70 years ago, but tends to be little incorporated in the specialized literature. To exemplify this point, it is noticeable that there is a considerable difference between the skill of a pupil to simulate a severe cold in order to evade a test and that of a classmate who refrains from cheating when he remembers the kind of person he wants to become. Both students, indeed, share a particular skill to regulate their emotions. At the same time, however, we understand that there is a wide gap between them: a good educator will be sad for the first and proud of the second. We could go deeper and ask whether the first's cowardice might be the expression of a poor skill to self-regulate negative emotions such as fear of getting a bad grade or embarrassment at possible parental reprimand. In any case, especially if we focus on adolescents, the relationship between emotional regulation and concepts such as psychological maturity or human flourishing could be raised, which is far beyond the scope of this manuscript but has been reviewed in other studies (e.g., Barber et al., 2010; Richard-Sephton et al., 2023).

If the concept of ESR is complex, its connection to personality is even more. Given the scope of the subject, in this article we have restricted ourselves to the FFM, which considers personality as a set of unintentional qualities with a strong biological basis, and to the virtues model outlined by Aristotle and reordered by Fowers (2008), which considers the qualities acquired in the interaction between biology, environment and rationality.

Within the first model, it is important to highlight the relationship that has been found between some personality traits and ESR. However, whether these studies considered ESR as perfect emotional self-regulation or self-control in impulse restraint is unclear. Some clues suggest the second alternative, as when it is argued that high Consciousness can lead to an excess of control that prevents appropriate spontaneity of behavior (Hoyle, 2006, 2010). From the Thomistic point of view, such a trait could not be considered a perfect virtue, since it implies the proper adjustment of emotionality and behavior with respect to reality. Inhibition as a habitual mechanism seems closer to the notion of continence, which is admirable in that it curbs maladaptive tendencies but is imperfect in that it fails to achieve affective order. Reviewing the literature to establish whether virtue or continence has been studied is necessary.

In addition, we have seen that a series of cognitive processes modulate the relationship between personality traits and ESR. We have already hinted at the possible relationship that could be drawn between these processes and the qualities that make up prudence. Our proposal is that reason plays an important role in ESR. If so, the connection between the FFM's personality traits and the habit of ESR may not be so intense or even direct since the rational factor would be preponderant. This consideration overcomes hasty conclusions that might link ESR only to certain personality types, excluding the importance of education. If reason is essential, then all individuals, regardless of their personality traits, are suited to regulate their emotions successfully. This does not detract from the fact that some personality traits facilitate ESR. However, as we pointed out, the ease of regulating some emotions may imply a difficulty in regulating others. In sum, innate dispositions are relevant to acquiring ESR as a habit, but the critical factor would be reason.

It is true that some authors have already mentioned that ESR includes not only processes of affective moderation but also affective drive and maintenance (Gross, 2024). However, the literature seems much more focused on ESR, understood as the former. The Thomistic system can significantly help to adequately conceptualize this difference, providing valuable conceptual tools to systematize and advance the study of the second type of ESR. The concupiscible appetite, which tends toward what is convenient in the sensible order, and shuns what is harmful, is the one that must be perfected by temperance so that emotions do not distract the person from his purpose. On the other hand, the irascible, which rejects everything that opposes it in the pursuit of what is convenient and detrimental to it, is perfected by fortitude, enabling it to persevere in its purpose despite difficulties. When we consider things this way, it opens up the possibility that some personality traits associated with a lack of ESR may be associated with emotional regulation in situations requiring boldness, bravery, use of aggression, risk, activity, speed, strength, etc.

The distinction between *virtue* ESR and *continence* ESR is also relevant when considering how ESR influences personality. Only the first one would be capable of modifying the personality. This has some therapeutic implications. In fact, if psychotherapy involves some degree of modification of affective dispositions, then only the ESR that modulates emotions would be truly capable of producing change. In contrast, techniques related to impulse inhibition might have some practical utility but would not directly help to improve any disposition. As such, they could even have a negative effect in the long run, as psychotherapy based on impulse inhibition techniques would end up frustrating patients' hopes for real change in their way of feeling.

Perhaps it is no coincidence that the Person-Oriented Regulation Models described in the theoretical framework dialogue with similar anthropological currents, as does Personality Systems and Interactions (PSI) (Kuhl, 2000) with Aristotle, and Strength Model of Self-Regulation (SMSR) (Baumeister and Exline, 1999) with Thomas Aquinas. In particular, it is remarkable that to describe their models, they use analogies of political systems, such as "inner dictatorship" for the PSI self-control system, "inner democracy" for the PSI self-regulation system, and "central governor" for SMSR. This characteristic could echo Aristotelian-Thomistic philosophy, which proposes a "political government" of reason over emotions to guide the person toward developing his personality (Arnold, 1960).

The characterological scheme of Aristotle, replicated by Fowers (2008), seems particularly interesting in understanding the relationship between personality and ESR, understood in the broad sense of a set of stable operative dispositions. Each of the

five traits relates to the ESR in a different way. The nuances of this scheme reveal the complexity of the human soul grasped by the Greek philosopher and taken up by Aquinas in the 13th century. Undoubtedly, this scheme has much to contribute to understanding the different types of ESR and can be a tremendous contribution to future research.

Finally, it seems necessary to highlight the idea put forward at the end of the interdisciplinary dialogue. ESR, understood as a habit, is not fully identified with Aristotelian virtues. As we explained, it requires stable dispositions of reason, will and sensitive appetites. By positing that the ESR requires the coordinated action of several powers, it becomes more evident that it is a coordinated set of habits. In other words, it is a system of rational and appetitive dispositions that harmonize emotions according to the rule of reason. On the other hand, it cannot be considered part of the personality, as understood in the light of the FFM model. We have already explained our arguments: ESR cannot be a biologically based trait that occurs unintentionally. However, if we consider personality as the total set of operative dispositions, including intentional and unintentional ones, it could be considered part of it. In this case, the ESR would be part of the personality, not a trait nor a single habit, but a set of acquired habits, less or more facilitated by the temperamental traits of the personality.

5 Conclusion

This article has reviewed the concept of ESR and its connection to personality through the interdisciplinary dialogue between psychology and Thomistic anthropology. We hope our conclusions will help achieve a fine conceptualization of the ESR and its categories, which could also improve the associated empirical studies. Indeed, a good conceptualization favors a better operationalization. Although our aim is theoretical, in the sense that we propose to rethink the existing literature from an interdisciplinary paradigm, it is clear that our postulates will need to be proved in order to increase their legitimacy.

We have proposed that the link between ESR and personality can be understood in many ways. However, regardless of the different meanings of these concepts, it seems clear that it is possible to establish highly relevant, two-way relationships. This brings us back to the seminal contribution of Arnold and Gasson (1954) and Arnold (1960), a pioneer in the generative model of emotion, who noted early on that emotional control is always executed in pursuit of some personality-related goal. As we have already discussed, this has profound implications for the therapeutic field. With ESR being so central to personality development and the achievement of therapeutic goals, it seems appropriate to join the voices proposing its inclusion in psychotherapy, especially in diagnosis and clinical intervention (e.g., Dadomo et al., 2016; Fassbinder et al., 2016; Grecucci et al., 2016, 2017; for a review, see Gratz et al., 2015).

The Thomistic model is particularly suited to dialogue with the psychology of the ESR and personality. The depth of the Italian thinker and the magnitude of his work have not lost their relevance; on the contrary, we are witnessing a greening of his thought, which coincides with the 800th anniversary of his birth. This can be corroborated in the field of psychology (e.g., Echavarría, 2005; Cornelius, 2006; Dryden, 2016; De Haan, 2019; Navarini and de Monte, 2019; Cartagena, 2021; Asociación de Psicología Integral de la Persona, 2022; Cubillos, 2022; Droste, 2022; Rojas Saffie, 2022; Schell, 2022; Suazo, 2022; Verdier, 2022; Marple et al., 2024). We hope that this manuscript will contribute to the field of ESR and serve as an inspiration for the continuation of this fruitful interdisciplinary dialogue.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

JR-S: Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing. NG-M: Conceptualization, Investigation, Writing - original draft, Writing - review & editing, Visualization.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Acknowledgments

We thank Vicente Silva for his valuable comments on the manuscript, Nicolás Eyzaguirre for his help in translating the article, Daniel Contreras and Gonzalo Letelier for guiding us through the most difficult concepts, Carolina Barriga for encouraging us to write this article, and the Association of Integral Psychology of the Person for inspiring us to interdisciplinary dialogue and the rediscovery of Thomas Aquinas's work.

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

References

Aldao, A. (2013). The future of emotion regulation research: capturing context. *Perspect. Psychol. Sci.* 8, 155–172. doi: 10.1177/1745691612459518

Allport, G. W. (1937). *Personality: a psychological interpretation*. New York, NY: Holt.

Aquinas, T. (1920). *The summa Theologica*. London: Burns Oates and Washbourne.

Aquinas, T. (1999). *Disputed question on the virtues in general*. Indiana: St. Augustine's Press.

Aristotle (1916). *Politics*. Oxford: Oxford Press.

Arnold, M. B. (1960). *Emotion and personality. Vol. II. Physiological aspects*. London: Cassel and Company.

Arnold, M. B. (1973). Historical development of the concept of emotion. *Philos. Stud.* 22, 147–157. doi: 10.5840/philstudies19732224

Arnold, M. B., and Gasson, J. A. (1954). "Feelings and emotions as dynamic factors in personality integration" in *The human person: an approach to an integral theory of personality* Eds. M. B. Arnold and J. A. Gasson (New York, NY: Ronald Press), 294–313.

Asociación de Psicología Integral de la Persona (2022). Psicología integral de la persona. Bases para un meta-modelo de Psicología clínica. *Studium. Filosofía Teología* 25, 91–116. doi: 10.53439/stdfyt49.25.2022.91-116

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organ. Behav. Hum. Decis. Process.* 50, 248–287. doi: 10.1016/0749-5978(91)90022-L

Barańczuk, U. (2019). The five factor model of personality and emotion regulation: a meta-analysis. *Personal. Individ. Differ.* 139, 217–227. doi: 10.1016/j.paid.2018.11.025

Barber, L. K., Bagsby, P. G., and Munz, D. C. (2010). Affect regulation strategies for promoting (or preventing) flourishing emotional health. *Personal. Individ. Differ.* 49, 663–666. doi: 10.1016/j.paid.2010.06.002

Baumeister, R. F. (2016). "Limited resources for self-regulation: a current overview of the strength model" in *Self-regulation and ego control*, Eds. E. R. Hirt, J. J. Clarkson and L. Jia. (San Diego, CA: Academic Press), 1–17.

Baumeister, R. F., and Exline, J. J. (1999). Virtue, personality, and social relations: self-control as the moral muscle. *J. Pers.* 67, 1165–1194. doi: 10.1111/1467-6494.00086

Baumeister, R. F., Gailliot, M., DeWall, C. N., and Oaten, M. (2006). Self-regulation and personality: how interventions increase regulatory success, and how depletion moderates the effects of traits on behavior. *J. Pers.* 74, 1773–1802. doi: 10.1111/j.1467-6494.2006.00428.x

Baumeister, R. F., and Vohs, K. D. (2016). "Strength model of self-regulation as limited resource: assessment, controversies" in *Advances in Experimental Social Psychology*. eds. J. M. Olson and M. P. Zanna. vol. 54, (Elsevier), 78–128. doi: 10.1016/bs.aesp.2016.04.001

Baumeister, R. F., Tice, D. M., and Vohs, K. D. (2018). The strength model of self-regulation: conclusions from the second decade of willpower research. *Perspect. Psychol. Sci.* 13, 141–145. doi: 10.1177/1745691617716946

Bertrams, A. (2020). A schema-activation approach to failure and success in self-control. *Front. Psychol.* 11:573926. doi: 10.3389/fpsyg.2020.02256

Blair, C., Calkins, S., and Kopp, L. (2010). "Self-regulation as the interface of emotional and cognitive development: implications for education and academic achievement" in *Handbook of personality and self-regulation*. ed. R. H. Hoyle. (Hoboken, NJ: Wiley Blackwell), 64–90.

Botkin, F. R. (1921). *The theory of the emotions in the psychology of Thomas Aquinas [thesis dissertation]*: The University of Nebraska-Lincoln.

Carron, P. (2022). "Virtue cultivation and the skill of emotion regulation" in *Skill in ancient ethics: the legacy of China, Greece and Rome*. Eds. T. Angier and L. Raphals (Bloomsbury, UK: Bloomsbury Academic), 115–139.

Cartagena, N. L. (2021). Resilience, emotion regulation, and Thomas Aquinas. *Heythrop J.* 62, 485–497. doi: 10.1111/heyj.12349

Carver, C. S., and Scheier, M. F. (2001). "Optimism, pessimism, and self-regulation" in *Optimism and pessimism: Implications for theory, research, and practice*. ed. E. C. Chang (Washington DC: American Psychological Association), 31–51.

Cervone, D., and Pervin, L. A. (2022). *Personality: theory and research*. Hoboken, NJ: John Wiley & Sons.

Cornelius, R. R. (2006). Magda Arnold's Thomistic theory of emotion, the self-ideal, and the moral dimension of appraisal. *Cognit. Emot.* 20, 976–1000. doi: 10.1080/02699930600616411

Costa, P. T., and Piedmont, R. L. (2003). "Multivariate assessment: NEO-PI-R profiles of Madeline G" in *Paradigms of personality assessment*. ed. J. S. Wiggins (New York: Guilford Press), 262–280.

Crocker, J., and Park, L. E. (2004). The costly pursuit of self-esteem. *Psychol. Bull.* 130, 392–414. doi: 10.1037/0033-2909.130.3.392

Cubillos, C. (2022). El ser, la naturaleza y la Psicología: algunos apuntes sobre la interpretación psicológica del concepto de persona. *Studium. Filosofía Y Teología* 25, 129–140. doi: 10.53439/stdfyt49.25.2022.129-140

Dadomo, H., Grecucci, A., Giardini, I., Ugolini, E., Carmelita, A., and Panzeri, M. (2016). Schema therapy for emotional dysregulation: theoretical implication and clinical application. *Front. Psychol.* 7:1987. doi: 10.3389/fpsyg.2016.01987

Dang, J. (2018). An updated meta-analysis of the ego depletion effect. *Psychol. Res.* 82, 645–651. doi: 10.1007/s00426-017-0862-x

Darnell, C., Fowers, B. J., and Kristjánsson, K. (2022). A multifunction approach to assessing Aristotelian phronesis (practical wisdom). *Personal. Individ. Differ.* 196:111684. doi: 10.1016/j.paid.2022.111684

De Haan, D. D. (2019). Approaching other animals with caution: exploring insights from Aquinas's psychology. *New Blackfriars* 100, 715–737. doi: 10.1111/nbfr.12509

Denissen, J. J. A., van Aken, M. A. G., Penke, L., and Wood, D. (2013). Self-regulation underlies temperament and personality: an integrative developmental framework. *Child Dev. Perspect.* 7, 255–260. doi: 10.1111/cdep.12050

Doré, B. P., Silvers, J. A., and Ochsner, K. N. (2016). Toward a personalized science of emotion regulation. *Soc. Personal. Psychol. Compass* 10, 171–187. doi: 10.1111/spc3.12240

Droste, K. (2022). Una introducción a las pasiones humanas a la luz de santo Tomás de Aquino. *Studium. Filosofía Y Teología* 25, 117–127. doi: 10.53439/stdfyt49.25.2022.117-127

Dryden, J. (2016). Passions, affections, and emotions: methodological difficulties in reconstructing Aquinas's philosophical psychology. *Lit. Compass* 13, 343–350. doi: 10.1111/lic3.12261

Echavarría, M. F. (2005). *La praxis de la psicología y sus niveles epistemológicos según Santo Tomás de Aquino*. Girona: Documenta Universitaria.

Eldesouky, L., and English, T. (2019). Individual differences in emotion regulation goals: does personality predict the reasons why people regulate their emotions? *J. Pers.* 87, 750–766. doi: 10.1111/jopy.12430

Engler, B. (2009). *Personality theories: an introduction*. Houghton: Mifflin and Company.

Englert, C., and Bertrams, A. (2021). Again, no evidence for or against the existence of ego depletion: opinion on "a multi-site preregistered paradigmatic test of the ego depletion effect". *Front. Hum. Neurosci.* 15:658890. doi: 10.3389/fnhum.2021.658890

Evans, D. R., Boggero, I. A., and Segerstrom, S. C. (2016). The nature of self-regulatory fatigue and "ego depletion" lessons from physical fatigue. *Personal. Soc. Psychol. Rev.* 20, 291–310. doi: 10.1177/1088868315597841

Fassbinder, E., Schweiger, U., Martius, D., Brand-de Wilde, O., and Arntz, A. (2016). Emotion regulation in Schema therapy and dialectical behavior therapy. *Front. Psychol.* 7:1373. doi: 10.3389/fpsyg.2016.01373

Fein, E. C., and Klein, H. J. (2011). Personality predictors of behavioral self-regulation: linking behavioral self-regulation to five-factor model factors, facets, and a compound trait. *Int. J. Sel. Assess.* 19, 132–144. doi: 10.1111/j.1468-2389.2011.00541.x

Fonagy, P., and Target, M. (2002). Early intervention and the development of self-regulation. *Psychoanal. Inq.* 22, 307–335. doi: 10.1080/07351692209348990

Fowers, B. J. (2008). From continence to virtue: recovering goodness, character unity, and character types for positive psychology. *Theory Psychol.* 18, 629–653. doi: 10.1177/0959354308093399

Fowers, B. J., Novak, L. F., Kiknadze, N. C., and Selim, M. (2023). Is the concept of personality capacious enough to incorporate virtues? *Front. Psychol.* 14:1232637. doi: 10.3389/fpsyg.2023.1232637

Friese, M., Loschelder, D. D., Gieseler, K., Frankenbach, J., and Inzlicht, M. (2019). Is ego depletion real? An analysis of arguments. *Personal. Soc. Psychol. Rev.* 23, 107–131. doi: 10.1177/1088868318762183

Frijda, N. H. (2013). "Emotion regulation and free will" in *Decomposing the will*. eds. A. Clark, J. Kiverstein and T. Vierkant (New York: Oxford University Press), 199–220.

Funder, D. C. (2015). *The personality puzzle: seventh international. student*. New York: WW Norton & Company.

Gratz, K. L., Weiss, N. H., and Tull, M. T. (2015). Examining emotion regulation as an outcome, mechanism, or target of psychological treatments. *Curr. Opin. Psychol.* 3, 85–90. doi: 10.1016/j.copsyc.2015.02.010

Grecucci, A., Frederickson, J., and Job, R. (2017). Editorial: advances in emotion regulation: from neuroscience to psychotherapy. *Front. Psychol.* 8:985. doi: 10.3389/fpsyg.2017.00985

Grecucci, A., Recchia, L., and Fredericson, J. (2016). For a methodology of emotion regulation based on psychodynamic principles. *Int. J. Psychoanal. Educ.* 8, 4–13.

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Rev. Gen. Psychol.* 2, 271–299. doi: 10.1037/1089-2680.2.3.271

Gross, J. J. (1999). Emotion regulation: past, present, future. *Cognit. Emot.* 13, 551–573. doi: 10.1080/026999399379186

Gross, J. J. (2008). "Emotion and emotion regulation: personality processes and individual differences" in *Handbook of personality: theory and research*. *3rd* ed Eds. O. P. John, R. W. Robins, and L. A. Pervin (New York, NY: The Guilford Press), 701–724.

Gross, J. J. (2015a). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J. (2015b). The extended process model of emotion regulation: elaborations, applications, and future directions. *Psychol. Inq.* 26, 130–137. doi: 10.1080/1047840X.2015.989751

Gross, J. J. (2024). "Conceptual foundations of emotion regulation" in *Handbook of emotion regulation*. eds. J. J. Gross and B. Q. Ford (New York: The Guilford Press), 3–12.

Gross, J. J., and Feldman Barrett, L. (2011). Emotion generation and emotion regulation: one or two depends on your point of view. *Emot. Rev.* 3, 8–16. doi: 10.1177/1754073910380974

Gross, J. J., and John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J. Pers. Soc. Psychol.* 85, 348–362. doi: 10.1037/0022-3514.85.2.348

Gross, C., Titus, C. S., Vitz, P. C., and Nordling, W. J. (2020). "Emotional" in *A catholic Christian meta-model of the person*. eds. P. C. Vitz, W. J. Nordling and C. S. Titus (Sterling, VA: Divine Mercy University), 355–370.

Gyurak, A., Gross, J. J., and Etkin, A. (2011). Explicit and implicit emotion regulation: a dual-process framework. *Cognit. Emot.* 25, 400–412. doi: 10.1080/02699931.2010.544160

Hoyle, R. H. (2006). Personality and self-regulation: trait and information-processing perspectives. *J. Pers.* 74, 1507–1526. doi: 10.1111/j.1467-6494.2006.00418.x

Hoyle, R. H. (2010). "Personality and self-regulation" in *Handbook of personality and self-regulation* (Oxford: John Wiley and Sons), 1–18.

Hughes, D. J., Kratsiotis, I. K., Niven, K., and Holman, D. (2020). Personality traits and emotion regulation: a targeted review and recommendations. *Emotion* 20, 63–67. doi: 10.1037/emo0000644

Inzlicht, M., and Marcora, S. M. (2016). The central governor model of exercise regulation teaches us precious little about the nature of mental fatigue and self-control failure. *Front. Psychol.* 7:181762. doi: 10.3389/fpsyg.2016.00656

John, O. P., and Gross, J. J. (2004). Healthy and unhealthy emotion regulation: personality processes, individual differences, and life span development. *J. Pers.* 72, 1301–1334. doi: 10.1111/j.1467-6494.2004.00298.x

Jurist, E., Greenberg, D., Pizziferro, M., Alaluf, R., and Sosa, M. P. (2023). Virtue, well-being, and mentalized affectivity. *Res. Psychother.* 26, 710–718. doi: 10.4081/ripppo.2023.710

Kobylińska, D., and Kusev, P. (2019). Flexible emotion regulation: how situational demands and individual differences influence the effectiveness of regulatory strategies. *Front. Psychol.* 10:354525. doi: 10.3389/fpsyg.2019.00072

Koole, S. L. (2009). The psychology of emotion regulation: an integrative review. *Cognit. Emot.* 23, 4–41. doi: 10.1080/02699930802619031

Koole, S. L., and Aldao, A. (2016). "The self-regulation of emotion: theoretical and empirical advances" in *Handbook of self-regulation*, vol. 3 Eds. K. D. Vohs and R. F. Baumeister. (New York: The Guilford Press), 101–112.

Krettenauer, T., and Stichter, M. (2023). Moral identity and the acquisition of virtue: a self-regulation view. *Rev. Gen. Psychol.* 27, 396–409. doi: 10.1177/10892680231170393

Kristjánsson, K., Fowers, B., Darnell, C., and Pollard, D. (2021). Phronesis (practical wisdom) as a type of contextual integrative thinking. *Rev. Gen. Psychol.* 25, 239–257. doi: 10.1177/10892680211023063

Kuhl, J. (2000). "A functional-design approach to motivation and self-regulation: the dynamics of personality systems interactions" in *Handbook of self-regulation* Eds. M. Boekarts, P. R. Pintrich and M. Zeidner (San Diego, CA: Academic Press), 111–169.

Kuhl, J. (2018). "Individual differences in self-regulation" in *Motivation and action*. eds. J. Heckhausen and H. Heckhausen (Cham, Switzerland: Springer), 529–577.

Kuhl, J., and Koole, S. L. (2004). "Workings of the will. A functional approach" in *Handbook of experimental existential psychology*. eds. J. Greenberg, S. L. Koole and T. Pyszczynski, (New York: The Guilford Press), 417–436.

Kuhl, J., Quirin, M., and Koole, S. L. (2021). "The functional architecture of human motivation: personality systems interactions theory" in *Advances in motivation science*, vol. *8* (Amsterdam: Elsevier), 1–62.

Kuppens, P., and Tong, E. M. (2010). An appraisal account of individual differences in emotional experience. *Soc. Personal. Psychol. Compass* 4, 1138–1150. doi: 10.1111/j.1751-9004.2010.00324.x

Larsen, R. J., and Buss, D. M. (2017). *Personality psychology: domains of knowledge about human nature*. New York: McGraw Hill Education.

Lazarus, R. S. (1973). The self-regulation of emotion. *Philos. Stud.* 22, 168–180. doi: 10.5840/philstudies19732223

Lazarus, R. S. (1991). *Emotion & adaptation*. Oxford: Oxford University Press.

Lazarus, R. S. (1999). "The cognition-emotion debate: a bit of history" in *Handbook of cognition and emotion* (Hoboken, NJ: John Wiley & Sons), 3–20.

Lombardo, N. E. (2011). *The logic of desire: Aquinas on emotion*. Washington D.C.: The Catholic University Press.

Magen, E., and Gross, J. J. (2010). "The cybernetic process model of self-control: situation- and person-specific considerations" in *Handbook of personality and self-regulation*. ed. R. H. Hoyle (Oxford: Wiley Blackwell), 353–374.

Marple, C. A., Jeffrey, A., and Schnitker, S. A. (2024). Reappraisal as a means to self-transcendence: Aquinas's model of emotion regulation informs the extended process model. *Philos. Psychol.*, 1–28. doi: 10.1080/09515089.2024.2307991

McCrae, R. R., and Costa, P. T. (1996). "Toward a new generation of personality theories: theoretical contexts for the five-factor model" in *The five-factor model of personality: theoretical perspectives*. ed. J. S. Wiggins (New York: Guilford Press), 51–87.

McCrae, R. R., and Löckenhoff, C. E. (2010). "Self-regulation and the five-factor model of personality traits" in *Handbook of personality and self-regulation*. ed. R. H. Hoyle (Oxford: Wiley Blackwell), 145–168.

McDermott, J. M., and Fox, N. A. (2010). "Exploring response monitoring: developmental differences and contributions to self-regulation" in *Handbook of personality and self-regulation*. ed. R. H. Hoyle (Oxford: Wiley Blackwell), 91–113.

McRae, K., and Gross, J. J. (2020). Emotion regulation. *Emotion* 20, 1–9. doi: 10.1037/emo0000703

Mischel, W., and Ayduk, O. (2004). "Willpower in a cognitive-affective processing system" in *Handbook of self-regulation: research, theory, and applications*, Eds. R. F. Baumeister and K. D. Vohs. (New York: The Guilford Press), 99–129.

Morf, C. C. (2006). Personality reflected in a coherent idiosyncratic interplay of intra- and interpersonal self-regulatory processes. *J. Pers.* 74, 1527–1556. doi: 10.1111/j.1467-6494.2006.00419.x

Morf, C. C., and Horvath, S. (2010). "Self-regulation processes and their signatures: dynamics of the self-system" in *Handbook of personality and self-regulation*. ed. R. H. Hoyle (Oxford: Wiley Blackwell), 117–144.

Moors, A., Ellsworth, P. C., Scherer, K. R., and Frijda, N. H. (2013). Appraisal Theories of Emotion: State of the Art and Future Development. *Emotion Review*, 5, 119–124. doi: 10.1177/1754073912468165

Navarini, C., and de Monte, E. (2019). Fear as related to courage: an Aristotelian-Thomistic redefinition of cognitive emotions. *HUMANA. MENTE J. Philos. Stud.* 12, 167–189,

Niven, K., Hughes, D. J., Tan, J. K., and Wickett, R. (2024). Individual differences in interpersonal emotion regulation: what makes some people more (or less) successful than others? *Soc. Personal. Psychol. Compass* 18:e12951. doi: 10.1111/spc3.12951

Olderbak, S., Uusberg, A., MacCann, C., Pollak, K. M., and Gross, J. J. (2023). The process model of emotion regulation questionnaire: assessing individual differences in strategy stage and orientation. *Assessment* 30, 2090–2114. doi: 10.1177/10731911221134601

Orgeta, V. (2009). Specificity of age differences in emotion regulation. *Aging Ment. Health* 13, 818–826. doi: 10.1080/13607860902989661

Palet, M. (2022). *La familia, educadora del ser humano*. Pamplona: Pequeño Monasterio.

Posner, M. I., and Rothbart, M. K. (2000). Developing mechanisms of self-regulation. *Dev. Psychopathol.* 12, 427–441. doi: 10.1017/S0954579400003096

Quirin, M., Jais, M., Di Domenico, S. I., Kuhl, J., and Ryan, R. M. (2021). Effortless willpower? The integrative self and self-determined goal pursuit. *Front. Psychol.* 12:653458. doi: 10.3389/fpsyg.2021.653458

Redshaw, J., and Ganea, P. A. (2022). Thinking about possibilities: mechanisms, ontogeny, functions and phylogeny. *Philos. Trans. R. Soc. B Biol. Sci.* 377:20210333. doi: 10.1098/rstb.2021.0333

Reisenzein, R. (2006). Arnold's theory of emotion in historical perspective. *Cognit. Emot.* 20, 920–951. doi: 10.1080/02699930600616445

Richard-Sephton, P. B., Crisp, D. A., and Burns, R. A. (2023). The emotion regulation strategies of flourishing adults. *Curr. Psychol.* 43, 12816–12827. doi: 10.1007/s12144-023-05332-3

Roberts, B. W., Chernyshenko, O. S., Stark, S., and Goldberg, L. R. (2005b). The structure of conscientiousness: an empirical investigation based on seven major personality questionnaires. *Pers. Psychol.* 58, 103–139. doi: 10.1111/j.1744-6570.2005.00301.x

Roberts, B. W., Wood, D., and Smith, J. L. (2005a). Evaluating five factor theory and social investment perspectives on personality trait development. *J. Res. Pers.* 39, 166–184. doi: 10.1016/j.jrp.2004.08.002

Roberts, B. W., and Yoon, H. J. (2022). Personality psychology. *Annu. Rev. Psychol.* 73, 489–516. doi: 10.1146/annurev-psych-020821-114927

Rojas Saffie, J. (2022). Aportes de la Psicología integral de la persona para la comprensión de la afectividad humana. *Studium. Filosofía Y Teología* 25, 63–76. doi: 10.53439/stdfyt49.25.2022.63-76

Rothbart, M. K. (1981). Measurement of temperament in infancy. *Child Dev.* 52, 569–578. doi: 10.2307/1129176

Ryan, R. M., and Deci, E. L. (2019). "Brick by brick: the origins, development, and future of self-determination theory" in *Advances in motivation science*, (Amsterdam: Elsevier), 6 vol. 111–156.

Schell, P. (2022). La libertad en la vida psíquica. *Studium. Filosofía Y Teología* 25, 27–61. doi: 10.53439/stdfyt49.25.2022.27-61

Schwarzer, N. H., Nolte, T., Fonagy, P., and Gingelmaier, S. (2021). Mentalizing and emotion regulation: evidence from a non-clinical sample. *Int. Forum Psychoanal.* 30, 34–45. doi: 10.1080/0803706X.2021.1873418

Shanker, S. G. (2012). "Emotion regulation through the ages" in *Moving ourselves, moving others. Motion and emotion in Intersubjectivity, consciousness and Language Consciousness and Emotion Book Series*. eds. A. Foolen, U. M. Lüdtke, T. P. Racine and J. Zlatev (Amsterdam: John Benjamins Publishing Company), 105–138.

Smith, C. A., and Kirby, L. D. (2011). "The role of appraisal and emotion in coping and adaptation" in *The handbook of stress science: biology, psychology, and health*. eds. R. J. Contrada and A. Baum (New York: Springer Publishing Company), 195–208.

Smith, C. A., and Lazarus, R. S. (1990). Emotion and Adaptation. *Handbook of Personality: Theory of Research*. Eds. L. A. Pervin (New York: The Guilford Press). 609–637.

Spalding, T. L., Stedman, J. M., Gagné, C. L., and Kostelecky, M. (2019). *The human person: what Aristotle and Thomas Aquinas offer modern psychology*. Cham, Switzerland: Springer Nature.

Stemmler, G., and Wacker, J. (2010). Personality, emotion, and individual differences in physiological responses. *Biol. Psychol*. 84, 541–551. doi: 10.1016/j.biopsycho.2009.09.012

Strauman, T. J., and Wilson, W. A. (2010). "Individual differences in approach and avoidance: behavioral activation/inhibition and regulatory focus as distinct levels of analysis" in *Handbook of personality and self-regulation*. ed. R. H. Hoyle (Oxford: Wiley Blackwell), 447–473.

Suazo, B. (2022). Salud psíquica: una comprensión formal. *Studium. Filosofía Y Teología* 25, 11–26. doi: 10.53439/stdfyt49.25.2022.11-26

Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Personal. Soc. Psychol. Rev.* 20, 199–222. doi: 10.1177/1088868315586325

Terracciano, A., McCrae, R. R., Brant, L. J., and Costa, P. T. (2005). Hierarchical linear modeling analyses of NEO-PI-R scales in the Baltimore longitudinal study of aging. *Psychol. Aging* 20, 493–506. doi: 10.1037/0882-7974.20.3.493

Verdier, P. (2022). Hacia una Psicología integralmente humana: ¿es el hombre un objeto más de la naturaleza? *Studium. Filosofía Y Teología* 25, 77–90. doi: 10.53439/stdfyt49.25.2022.77-90

Vohs, K. D., and Baumeister, R. F. (2004). Understanding self-regulation *Handbook of self-regulation*. Eds. R. F. Baumeister and K. D. Vohs. (New York: The Guilford Press), 1–9.

Yih, J., Uusberg, A., Taxer, J. L., and Gross, J. J. (2019). Better together: a unified perspective on appraisal and emotion regulation. *Cognit. Emot.* 33, 41–47. doi: 10.1080/02699931.2018.1504749

frontiers | Frontiers in Psychology

TYPE Perspective
PUBLISHED 26 June 2024
DOI 10.3389/fpsyg.2024.1420588

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Emerald Henderson,
University of Birmingham, United Kingdom
Davide Clemente,
European University of Rome, Italy

*CORRESPONDENCE
Antonella Sansone
✉ antonella.sansone@alumni.bond.edu.au

RECEIVED 22 April 2024
ACCEPTED 05 June 2024
PUBLISHED 26 June 2024

CITATION
Sansone A (2024) The central role of mindful parenting in child's emotional regulation and human flourishing: a blueprint perspective. *Front. Psychol.* 15:1420588. doi: 10.3389/fpsyg.2024.1420588

The central role of mindful parenting in child's emotional regulation and human flourishing: a blueprint perspective

Antonella Sansone*

Faculty of Society and Design, School of Psychology, Bond University, Robina, Gold Coast, QLD, Australia

This article provides an innovative perspective of emotional-regulation and human flourishing which acknowledges the fundamental role of early parent–child experiences in shaping brain structure and functioning involved in emotional regulation and the central role of mindful parenting in facilitating emotional regulation in both parent and child (co-regulation). In this perspective paper the author underlines not only the central role of emotions and emotional regulation in human development and flourishing, but also the importance of maternal mental health, mindfulness, and a connected supportive community during pregnancy and postnatally in facilitating emotional regulation in both the caregiver and the infant and thus promoting secure attachment. The role of alloparenting and how we evolved to share childrearing is introduced, and emotional regulation is described not as an individual phenomenon but a relational embodied process. The associations between right brain functioning, mindfulness and secure attachment, all leading to emotional regulation, wellbeing, and resilience are described. Sharing findings and perspectives offer an opportunity for insights and reflection upon what strategies could be created to promote relational emotional regulation and wellbeing in early life, thus human flourishing leading to a peaceful society.

KEYWORDS

mindful parenting, child's emotional regulation, human flourishing, blueprint, attachment, mindfulness practice, maternal mental health, supportive community

Introduction

For centuries in Western culture emotions have been undervalued and regarded in a controversial way and as enemies of rationality and disruptive of cooperative social relationships. However, when well-regulated and well developed, they may be our finest form of rationality (MacMurray, 1992).

Emotional systems play a central role in human brain and dynamically interact with more evolved cognitive structures. Emotions change sensory, perceptual, and cognitive processing and guide behavior. Narvaez (2014) posits that moral development derives from earliest socio-emotional experiences with our caregivers. Therefore, emotions guide our perception of the world, our memories of the past and even our moral judgment of right and wrong, enabling us to respond to the current situation effectively and adapt. Yet, psychological theories often consider emotion and cognition as separate entities. Components of emotion systems (arousal, action tendencies, prospective motor control, intention) are generally placed in the brain stem,

hypothalamic structures, and cerebellum. The brain stem develops during embryonic stage and the networks are integrating across different areas of the brain (Panksepp, 1998). Affective feeling links brain stem, paralimbic and prefrontal structures.

Emotions and cognition often overlap throughout the brain. In fact, many of the brain systems are involved in both domains (Panksepp, 1998). In the neuronal cortex there is no distinction between cognition and emotion. Emotion and cognition work as a functional unity and are linked to behavior (Lewis, 2005). There is no emotion without thought, and thoughts in general evoke emotions. Greenspan and Shanker (2004) propose that emotions arise from multiple factors, including physical experiences, signals from others and meaning making. These components later become the source of a child's secure attachment, linguistic and cognitive advancement, and reflective capabilities. Caregivers' attuned responses to the infant's body cues, which express emotions and needs, influence the infant's subjective experience of sensations (including pain), affect and cognitions and her or his ability to cope with challenging emotions.

This paper perspective aligns with and empirically extends the current view in both developmental psychology and moral philosophy that emotions are infused with reason; that emotional regulation is primarily developed through early relationship with our primary caregivers; and that emotional regulation is a central element of moral virtue development and related human flourishing. Ancient philosophers like Aristotle had an integrative view of morality beyond reasoning (Aristotle, 1988). He argued that emotions had to be well trained to lead to human and moral virtues. All virtues fit into a larger worldview of human flourishing (eudaimonia) and excellence (arête). My perspective takes up a similar broader view of morality that has an emphasis on flourishing in terms of not only psychology but also neurobiology. Moral virtues development emerges from physiological emotional co-regulation between a child and caregiver in early life. It includes the acknowledgment of the role of the mammalian caregiving nature and its interactive nature (Sansone, 2021).

Under evolved conditions, humans aim for social flourishing, which is the development of emotional co-regulation and cooperative social abilities that prepare one to live life with wisdom (Narvaez, 2014). Poor relational experiences during sensitive periods of development hinder flourishing. Narvaez holds that human flourishing emerges from experiences of caregiver's receptivity to the child's needs in the moment, habitual reciprocal experiences that build empathy, compassion, and sympathetic action. An ethics of love advances flourishing (Fromm, 1956). For those who experienced abuse or neglect the path toward emotional regulation, trust, empathy, and flourishing may be hard. If student's flourishing is the aim of education (Kristjánsson, 2019), a neo-Aristotelian view, then mindful parenting, which enhances the cultivation of emotional regulation and relational embodied processes, can set the foundations of student flourishing. The blueprint perspective presented in this paper follows new directions in questioning how to educate young people toward a life of flourishing from life before birth.

Comprehending human flourishing requires an understanding of human development in the broad sense. Western longstanding assumptions that emotions are "nonrational, arbitrary, and subjective" have led to theories and practices that undermine humanity's essence (Johnson, 1993, p. 132). Narvaez (2014) conceives human flourishing as corresponding to the fluidity of human development and interconnectedness and interdependence of the many systems it comprises. In line with this view, this paper embraces an appreciation of our original mammalian cooperative nature and powerful nature of social and emotion development. These systems develop interdependently within the interrelationships with all entities in Nature.

There is a lot of meaningful overlap between the position advanced in this paper and the literature on phronesis (practical wisdom), especially as concerns emotional regulation and its part in moral virtue development and a flourishing life (Kristjánsson and Fowers, 2023). The new science of virtue suggests that virtues are the habitual traits that make it possible to live a good or flourishing life, and phronesis is then considered to encompass the wisdom an individual adopts to choose which virtues are appropriate in a specific situation, so that action leads to that flourishing life (Kristjánsson and Fowers, 2023). Phronesis is central because flourishing is seen to include the harmonious implementation of virtues of character within a fulfilled life. Therefore, flourishing is a complex concept within the new science of virtue. There is a need to create a new model of virtue development and flourishing by integrating elements of neo-Aristotelianism and phronesis with various current empirical findings from developmental science, neuroscience, mindfulness, pre-and perinatal psychology, and education. Virtue development implies cultivating apt emotional responses to specific situations. Emotional regulation is seen as one of the functions of phronesis leading to virtue development. Virtue development is a topic in the intersection of developmental psychology, including pre and perinatal development, moral psychology, and moral philosophy.

Section one of this paper describes the relationship between synchronized interactions between parent and child and the origins of emotional regulation and moral virtues development, and the possible adverse effects that occur when this affect synchrony is hindered and not followed by regulation. Section two underlines not only the central role of emotions and emotional regulation in human development and flourishing, but also the importance of maternal mental health, mindfulness, and a connected supportive community during pregnancy and postnatally in facilitating emotion regulation in both the caregiver and the infant and thus promote secure attachment. In section three, I propose that a blueprint of co-regulation between mother and baby forms during pregnancy and grows particularly fast during infancy. In section four, I use evidence and my insights to highlight how mindfulness-based support helps parenting and child development through cultivation of emotion regulation, improved co-regulation, right-to-right brain communication and ought thus to be a public health priority. Finally, in section five, the paper concludes with clinical implications and future directions.

Sharing findings and perspectives offer an opportunity for insights and reflection upon what strategies could be created to promote relational emotional regulation and wellbeing in early life, thus human flourishing.

Affect synchrony and the origins of emotional regulation

We know that the brain is a system of two brains, each of which has very different structural and functional properties, though complementary. The right brain has become of particular interest to the developmental sciences, as it undergoes a growth spurt and is

dominant in the first two years from about the 25th gestational week, before the verbal left developing later (Schore, 2005). This growth is only partially led by the genome, being mostly shaped by the emotional communications between caregiver and infant within the early attachment relationship. Because the right hemisphere is dominant for the emotional and corporal self, the experience-dependent maturation of the right brain plays a very important role in early development of the self (Schore, 1994).

Models have moved from Piagetian theories of cognitive development to psychobiological models of social–emotional development. Psychological sciences and psychiatry are moving from cognition to emotion as the central force in development and psychotherapy. The emergence of affective neuroscience has reflected into a new focus on the role of the right hemisphere for processing affective states and of the limbic system, the brain system that receives subjective information about emotions that guide behavior and allow the individual to adapt to a rapidly changing environment.

A substantial body of research reveals that the right brain is also the locum of essential self-regulatory structures which development is facilitated by attachment relationships. The primary goal for the infant is the creation of emotional communications and the development of self-regulation (Schore, 2005). A large body of evidence indicates that the infant's need for bonding and interactive emotional communication is present in prenatal life (Chamberlain, 2003; DiPietro, 2010; Sansone, 2021; Verny, 2021) and co-regulatory mechanisms can be facilitated at this critical time through the mother's mindful awareness of her unborn infant as a sentient conscious being capable of relational engagement (Sansone, 2021, 2024).

The infant's earliest interactions with the social environment occur through their developing motor and sensory capacities, especially hearing, smell, taste, and touch (Weller and Feldman, 2003; Ferrari et al., 2016). At around eight weeks, the social and emotional capacities progress dramatically. Through face-to-face interactions, the mother and infant engage in nonconscious facial, vocal, and gestural communications and synchronize their affective behavior. These emotional transactions expose the infant to high levels of social and cognitive information. The responsive mother picks up the nonverbal cues of her infant's internal arousal and psychobiological states, regulate them, and communicates them back to the infant (Schore, 2021). This process of responsiveness consists of a coordination of engagement, disengagement, and re-engagement. The empathic attuned mother picks up the infant's cues for re-engagement, thus synchronizing her interactions. The synchronized interactions promote the infant's capacity for emotional regulation and are fundamental to her or his healthy affective development. The dyad creates mutual regulatory systems of arousal, or co-regulation.

The mother's regulation of moments of misattunement or rupture in the mutual interactions allows for the infant's development of self-regulation. To be able to regulate rupture and repair the caregiver needs be able to monitor and regulate her own (especially negative) affects. The stress experienced by the infant through a misattunement allows the infant to learn to regulate her or his negative affect. By re-experiencing positive affect following negative experience the child learns that negative affect can be tolerated, and that relational stress can be regulated. Infant resilience emerges from this smooth transition from positive to negative and back to positive affect and is an indicator of adaptive capacity, secure attachment, and optimal mental health (Schore, 2005). Therefore, attachment is the result of the regulation of biological synchronicity within and between organisms. The attuned mother minimizes the infant's unpleasant states by comforting her or him while maximizing the positive affective states in interactive play. These predictable affective interactions with a primary caregiver provide the infant with a sense of safety and curiosity for the exploration of new socioemotional and physical environments. This ability is a marker of secure attachment, adaptive infant mental health, and human flourishing. These attuned interactions teach the child human virtues such as empathy, compassion, mutual understanding, and mutual respect, listening, trust and intimacy. Human beings' moral development and capacity for ethics, therefore, arises from earliest socio-emotional experiences with our caregivers (Narvaez, 2014).

Through these interactive emotional transactions – coordinated visual eye-to-eye cues, auditory vocalizations, and tactile and body gestures expressing emotions - the child also learns how to communicate emotional states from the mother's ability to communicate her own emotional states. These emotional communications between caregiver and infant correspond to an interpersonal neurobiology of right-to-right brain communications or neurobiology of attachment (Schore, 2021; Siegel, 2023). Although the left hemisphere is dominant for verbal language development, the early right hemisphere is more important to the broader aspects of communication, especially bodily, through all stages of life. Attuned responses to infant cues help the infant to organize his emotional and physiological experience leading to reflective functioning. Emotions and affect form "the source of symbols, the architect of intelligence, the integrator of processing capacities, and the psychological foundation of society" (Greenspan and Shanker, 2004, p. 46). So, emotional regulation can also form moral virtues, which in turn can be reinforcing tools for emotional regulation in adulthood.

When these positive predictable interactions and emotional transactions with the child do not occur, for example due to the parents' low emotional awareness and difficulties in emotional regulation consequent to high levels of stress, depression, anxiety or psychiatric conditions, there are possible adverse effects on the child's ability to regulate his or her emotions and other areas of development (Zimmer-Gembeck et al., 2022). I assume that the development of relational and communication skills and moral virtues may also be impaired.

The following section explores the role of communal caregiving and shared childcare in supporting maternal mental health, emotion co-regulation between caregiver and child, and more extensively, individual, and societal flourishing.

Alloparenting, emotional regulation, mental health, and human flourishing

Although the mother is usually the primary attachment figure in the first year, the child in the second year forms another important attachment relationship to the father, allowing the child to have a different arousal regulating and affect-attuning experience. In indigenous and traditional societies, the multiple attachments a child is exposed to within a connected supportive community, promotes optimal emotional, social, and moral development and a peaceful community (Konner, 2005; Sansone, 2021). As a result of the different interactions with multiple caregivers and shared care, the infant

forms internal working models of attachment, interactive representations of attachment relationships, which encode patterns of affect regulation and coping strategies for maintaining basic regulation and positive affect in the face of environmental challenges and stressors. Human capacities for empathy and mutual understanding evolutionary begun as a cooperative process through alloparenting or shared care (Hrdy, 2009). As humans, we have evolved to share childrearing and through community support, mother and child learnt to trust every member of the community and rely on their mindful care. To be able to trust them, mother and child had to be able to see the mind of the other – their feelings, thoughts, attention, awareness, and intention. This capacity for mind-reading and trust in receiving attentions from the community developed in the baby by default and became a source of self-regulation in both caregiver and infant (Sansone, 2021). Human mothers became naturally skilled at tuning into the internal states of the infant and facilitate emotional regulation. The right hemisphere that has been imprinted and organized by early relational experiences will remain for the rest of life dominant for the unconscious reception, expression, communication, and regulation of emotion, an essential function for creating and maintaining social relationships, especially intimate ones (Dimberg and Petterson, 2000). In a community in which these processes and an integrated communication between the caregiver and infant and between other community members and caregivers are supported, energy and information flow are shared with resonance. There is attunement with oneself as well as with the others - intra and interconnection (Siegel, 2023). The integrated communication between mother and infant during the first months facilitated by social resonance allows the two systems of the brain, left and right and all their functions involved, to integrate and foster a resilient life and human flourishing.

The right brain is also dominant for the regulation of fundamental physiologic, endocrinologic, immunologic, and cardiovascular functions, thus controlling vital functions that support survival and enables the organism to cope with stress. A growing body of data indicates a strong association between dysfunctions in mother-infant interactions, early programming of the hypothalamic–pituitary–adrenal axis, and brain development in pre-and perinatal critical periods and adult health and disease (Matthews, 2002; McGowan et al., 2008; Glover, 2014). Maternal stress, depression and anxiety during pregnancy and post-partum impact mother's sensitivity and responsiveness to her infant, thus mother-infant interactions and attachment and increases the risk of emotional, cognitive, behavioral, and social problems in children (Mason et al., 2011; Hayes et al., 2013; Brassel et al., 2020).

The Polyvagal Theory (Porges, 2011) further contributes to our understanding of the physiologic effects of attuned emotional interactions between parent and child. This early affect synchrony helps establish optimal vagal tone, which equals with proper functioning of the visceral organs controlled by the vagal nerve, which in turn is connected with brain centers. Both emotion regulation and prosocial abilities are tied to vagus nerve functioning, which is fostered by responsive parenting in the first years of life (Porges et al., 1994; Calkins, 1997). The vagus nerve is the tenth cranial nerve and the primary nerve of the parasympathetic nervous system, which is implicated in the regulation of multiple biological systems. When it functions poorly, a variety of adverse health outcomes can take place (digestion problems, such as irritable bowel, neuronal communication, such as seizures, and mental health, such as depression) as well as inflammation, a backdrop for many diseases (Groves and Brown, 2005), especially in our modern world. When functioning well, the vagus nerve improves physiological self-regulation (e.g., of glucose), attention, and emotional and behavior regulation as well as interpersonal interactions (Porges et al., 1994; Kok and Fredrickson, 2010).

Therefore, the vagus nerve also influences emotion and emotion regulation (Calkins, 1997; Porter, 2003). Recall how the right brain hemisphere, involved in emotions and nonverbal interactions, develops rapidly in early life. The vagal system is lateralized in the right hemisphere and tied to emotional regulation abilities. Research found that children with higher vagal tone, an indicator of good vagal functioning, were more cooperative and giving (Eisenberg and Eggum, 2008). Vagal tone has also been correlated with compassion and openheartedness toward others from different backgrounds (Stellar et al., 2015). This perspective could also explain the soaring rates of incommunicable diseases in our modern societies, where children's basic need for relational emotional attunement are often unmet. Having a history with chronic misattunement with one's caregivers predisposes people to difficulties in managing challenging emotions later in life, which has implications in social life (Dozier et al., 2001). Poor affect regulation caused by early adverse experiences may manifest itself through behavioral problems in the face of stress, such as temper tantrums and emotional withdrawal (Shaver and Mikulincer, 2002).

The following section proposes that a blueprint of co-regulation between mother and baby forms during pregnancy through relational embodied processes, affecting biological systems, in which memories of early experiences are stored.

A blueprint of emotional co-regulation

Infants' emotions are embedded in playful relationships, which therefore shape neurobiological development (Trevarthen and Aitken, 2001). Early experiences have profound effects on multiple biological systems involving emotions, cognitions, and symbols. Our bodies (e.g., breathing and heart rhythms, muscular tensions, posture) carry the traces of our experiences, including those in prenatal life. The kinds of emotional experience that the infant has with his caregivers, for instance whether pleasurable or traumatic, are "biologically embedded." While developing in another human body, the infant absorbs all the internal chemistry of maternal emotional/mental states (e.g., stress-hormone cortisol or feel-good hormones) through the placenta (Chamberlain, 2003; Glover, 2014). These influence gene activity and early programming of the hypothalamus-pituitary–adrenal axis of developing unborn infant (Matthews, 2002). In the prenatal and perinatal period of human life – the most critical ones – patterns of self-regulation may be forming because of shared energy and information flow stored in body memory, unborn infant brain's extraordinary plasticity and responsiveness to maternal emotions, mind states, and communications (Sansone, 2021). A blueprint of co-regulation between mother and baby forms during pregnancy and continues to grow particularly fast during infancy in synchrony with the mammalian caregiving nature and its interactive nature (Sansone, 2021).

After nine months' gestational synchrony, human mothers and newborns under natural conditions continue the interactional synchrony of sound and movement within the first hours after birth (Condon and Sander, 1974; Papousek and Papousek, 1992; Sansone, 2021). Repeated, positive synchronized mother-infant interactions organize, from prenatal life, the infant's capacities for self-regulation through proper functioning of the brain leading to integration (Papousek and Papousek, 1992; Sansone, 2021). Perceived stress interferes with the flow of information, and it becomes more difficult for the caregiver to synchronize their response with flexibility, facilitating co-regulation (Sansone, 2021). The attention of a mindful mother opens the way to a prenatal attuned relationship and prepares for continued synchrony after birth (Sansone, 2021; Sansone, 2024). Sansone proposes that ideally with a mindfulness facilitator, this practice can mitigate the effects of trauma and mental challenges, which undermine that foundational synchrony. Therefore, reducing maternal distress during pregnancy and mitigating the risk of postnatal mental health disorders and their impact on infant development is a vital public health priority.

The following section advances a case for the centrality of pre and perinatal mindful parenting in the early-years development of emotion regulation, and, by extension, human flourishing, which represents a novel contribution to the developmental discourse. I propose that being a mindful mother, aware of the effects of the relational bond between herself and her baby, can help mitigate maternal distress during pregnancy and postnatal mental health disorders, reducing the risk of developmental disorders in the baby and child.

The value of mindfulness to support emotional co-regulation

It is well established that early disruptions of the mother-infant attachment relationship may have adverse consequences on brain plasticity, integration, and resilience, and predisposes to later psychological disorders and suffering. Large and consistent body of developmental neuroscience research confirms the central role of the early attachment relationships in the neurobehavioral development, therefore future social–emotional and stress-regulation capacities of the developing individual and across generations (Cirulli et al., 2003; Brassel et al., 2020). A deeper understanding of the elements of support strategies that can mitigate the risks of postnatal depression, anxiety and stress could help maternal healthcare services provide prenatal support programs enabling mothers to cope with the challenges of the transition to childbirth and parenting (Sansone, 2024). This would minimize the risk of mental health and mother-infant relationship issues postpartum, thus facilitating emotional co-regulation and attunement between caregiver and infant leading to secure attachment, healthy social relationships, especially intimate, and human flourishing.

Mindfulness-based programs are a relatively new approach to the prevention and treatment of mental health problems. Mindfulness is a quality of human consciousness that can be independently assessed and is popularly defined by Jon Kabat Zin as "the awareness that arises from paying attention on purpose, in the present moment, and non-judgmentally, to the unfolding of experience moment by moment (Kabat-Zinn, 2003, p. 145). Mindfulness allows us to witness sensations, feelings, and thoughts as they arise in our body and mind, as 'objects' which can be observed directly without cognitive evaluation or elaboration, thus enabling us not to feel overwhelmed by them. Mindfulness promotes the internal attunement that is required by the interpersonal attunement between the caregiver and child that is foundation of secure attachment (Siegel, 2007).

Therefore, participating in a mindfulness-based program that significantly reduces levels of stress, depression, and anxiety and improves maternal wellbeing could reduce the risk for psychological disorders and health problems in the infant and child. Studies provided consistent evidence of mindfulness practices improving health outcomes during pregnancy and the post-partum period, promoting healthy behaviors that support the relationship between mothers and fathers and the transition to parenthood (Dhillon et al., 2017; Babbar et al., 2021; Leavitt et al., 2023). Mindfulness has been considered a protective factor fostering positive attachment and child development and behavior outcomes (Waters, 2016).

Mindful awareness involves techniques that help cope with worry by helping an individual attend to the present rather than the past and the future (Robins et al., 2012). For pregnant women and new mothers facing the challenges and stress of a significant period of transition, such skills are of particular importance to connect with their own feelings and thus to those of the baby to foster emotional co-regulation. Many parents find themselves beset by everyday preoccupations and expectations, which may generate stress and dissatisfaction with their lives. If pregnant mothers suffer from stress, depression, and/or anxiety, this has been found to impact their capacity to pick up their infant's body cues and respond to their needs, affecting the future regulatory processes within the mother-infant relationship (Montirosso et al., 2022).

By practicing present-moment awareness of both their child and their own thoughts and emotions without judgment and accepting them for what they "are," the parents may develop protective psychological strategies (Duncan et al., 2015). Research found that higher levels of mindfulness during pregnancy were negatively associated with depressive symptoms and positively associated with quality of prenatal attachment (Hicks et al., 2018; Sansone, 2024). These findings highlight the importance of promoting mindfulness, especially in parents at risk for depression or poor prenatal bonding. Antenatal maternal mindfulness has been associated with better self-regulation and lower levels of negative affect in 10-month-old infants (van den Heuvel et al., 2015). Studies identified associations between maternal mindfulness and response to infant stress with reduced reactivity, which indicates more responsive and attuned parenting behavior (Waters, 2016; Pickard et al., 2017). A wealth of research and theory on the implications of mindfulness for emotional experience shows that positive effects of mindfulness on emotional regulation, leading to behavioral change. A review of the literature exploring a variety of models of mindfulness revealed that mindfulness appears to improve emotion regulation by some of several mechanisms including (a) nonjudgmental awareness of challenging states which results in increased willingness to experience challenging emotions (b) a reduced reactivity to emotional stimuli and situations (c) increased emotional stability (Heppner et al., 2015).

There are associations between mindfulness awareness, secure attachment, and right hemisphere involvement outcomes. They all promote emotional regulation, wellbeing, and resilience. The interpersonal attunement that is the essence of secure attachment corresponds to the internal attunement in mindful awareness (Siegel,

2007). Both forms of attunement promote the capacity for intimate relationships, resilience, and well-being. Studies of secure attachment and those of mindful meditation have overlapping findings (Kabat-Zinn, 2003; Sroufe et al., 2005). They have found that both secure attachment and mindfulness meditation involve the growth of brain integrative areas, the corpus callosum, the hippocampus, and the prefrontal cortex and the overall connectome, which are also associated with well-being and human flourishing. In particular, the functions of the prefrontal cortex include regulation of body systems, balancing emotions, attuning to others, modulating fear, responding flexibly, empathy and compassions, intuition, and moral behavior (Siegel, 2007).

Figure 1 graphically represents the hypothesized relationships between mindful parenting, child's emotional regulation and human flourishing, with the mediating role of maternal mental health and emotion regulation and mother-baby co-regulation.

Finally, the presented evidence and insights have led to the highlight of clinical implications and proposal of future directions in the following section.

Clinical implications and future directions

Mindful awareness and all the related abilities fostered by it allows for integrative functioning of the nervous system through shared meaningful timing and gestures at the infant's own pace and without rushing. Therefore, promoting parents' mental wellbeing, acceptance of challenging emotions both within themselves and their infant, thus emotional regulation, and attuned responsiveness through mindfulness-based practices can impact their children's capacity for emotional regulation, resilience, and human flourishing. In instances of maternal and infant stressors that represent a threat to their mental health and the formation of co-regulatory capacities, health enhancement strategies should be adopted by pre and perinatal healthcare providers with a focus on fostering parental mindfulness and parent-infant attuned relationship (Sansone, 2024). It has been widely recognized that this early relationship from pregnancy lays the foundation for later child development and health well into adulthood (Cirulli et al., 2003; Brassel et al., 2020).

Mindfulness practice and a mindfulness-oriented therapy promote both sensitiveness and reflective functioning fundamental for parents' responsiveness and leading to the child's emotional self-regulation. In particular, mindfulness-based interventions encourage awareness of emotions and body sensations, enhancing stress tolerance and reducing reactivity, all abilities improving responsiveness, understanding of an infant's needs and feelings and emotional regulation, thus important for parenting (Hall et al., 2015).

These studies suggest that the isolation and human disconnection generated by our modern societies have impacted brain areas involved in our capacity for empathy, compassion, and all it goes with mindfulness. It is therefore insufficient to discuss human social functioning only as a psychological phenomenon. A crucial step toward developing wellbeing and human flourishing is the restoration or development of capacities for reciprocal communication from the very beginning of life. But this comes from community support and cooperation, not from isolation. Limbic resonance or relational attunement leads us toward unconditional love and reciprocity (Lewis et al., 2000). Relationships, to be attuned and emotionally regulated, especially with babies and young children, require practicing embodied emotional presence and slowing down. Mothers have evolved to be supported by a mindful community allowing them to nurture an undisturbed attuned relationship.

Practicing mindfulness and attending to others lead to the development of receptive attention and human values shifting.

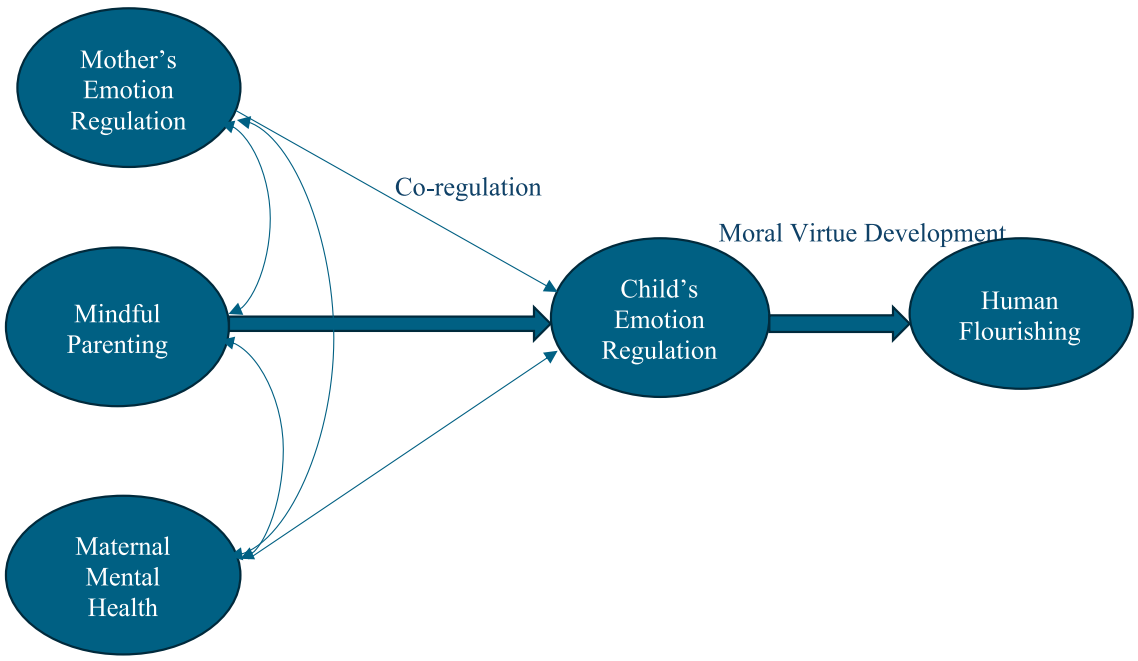


FIGURE 1
Relationship between mindful parenting, child's emotional regulation and human flourishing, with the mediating role of maternal mental health and emotional regulation.

Healthcare providers' positive altered traits fostered by mindfulness practice can benefit parenting and child development through a right brain to-right brain communication and heart-to-heart resonance. Neuroplasticity offers a scientific basis for a way of creating those lasting qualities of being we find in yogis and monks with repeated training. The benefits of mindfulness practice go beyond the health spectrum, including human and moral virtues of being and mindset shifting, which significantly promote parenting and attachment and a peaceful society.

Data availability statement

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author.

Author contributions

AS: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Acknowledgments

I am very grateful to all the pregnant mothers who generously participated in my PhD studies and all the becoming parents I have supported for several years for providing important insights about the invaluable role of mindful parenting. I am also grateful to the scholars who inspired my perspective and Bond University who offered me the golden opportunity to translate my insights into a PhD and be further inspired by the study participants.

Conflict of interest

The author declares 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

References

Aristotle, (1988). *Nicomachean ethics WD*. Ross, Trans. London, UK: Oxford University Press.

Babbar, S., Oyarzabal, A. J., and Oyarzabal, E. A. (2021). Meditation and mindfulness in pregnancy and postpartum: a review of the evidence. *Clin. Obstet. Gynecol.* 64, 661–682. doi: 10.1097/GRF.0000000000000640

Brassel, A., Townsend, M. L., Pickard, J. A., and Grenyer, B. F. S. (2020). Maternal perinatal mental health: associations with bonding, mindfulness, and self-criticism at 18 months' postpartum. *Infant Ment. Health J.* 41, 69–81. doi: 10.1002/imhj.21827

Calkins, S. D. (1997). Cardiac vagal tone indices of temperamental reactivity and behavioural regulation in young children. *Dev. Psychobiol.* 31, 125–135. doi: 10.1002/(SICI)1098-2302(199709)31:2<125::AID-DEV5>3.0.CO;2-M

Chamberlain, D. B. (2003). Communicating with the mind of a prenate: guidelines for parents and birth professionals. *J. Prenat. Perinat. Psychol. Health.* 18, 95–108.

Cirulli, F., Berri, A., and Alleva, E. (2003). Early disruption of the mother-infant relationship: effects on brain plasticity and implications for psychopathology. *Neurosci. Biobehav. Rev.* 27, 73–82. doi: 10.1016/S0149-7634(03)00010-1

Condon, W. S., and Sander, L. W. (1974). (1974). Neonate movement is synchronised with adult speech: interactional participation and language acquisition. *Science* 183, 99–101. doi: 10.1126/science.183.4120.99

Dhillon, A., Sparkes, E., and Rui, V. D. (2017). Mindfulness-based interventions during pregnancy: a systematic review and meta-analysis. *Mindfulness* 8, 1421–1437. doi: 10.1007/s12671-017-0726-x

Dimberg, U., and Petterson, M. (2000). Facial reactions to happy and angry facial expressions: evidence for right hemisphere dominance. *Psychophysiology* 37, 693–696. doi: 10.1111/1469-8986.3750693

DiPietro, J. A. (2010). Psychological and psychophysiological considerations regarding the maternal-foetal relationship. *Infant Child Dev.* 19, 27–38. doi: 10.1002/icd.651

Dozier, M., Stovall, K. C., Albus, K. E., and Bates, B. (2001). Attachment for infants in foster care: the role of caregiver state of mind. *Child Dev.* 72, 1467–1477. doi: 10.1111/1467-8624.00360

Duncan, L. G., Coatsworth, J. D., Gayles, J., Geier, M. H., and Geenberg, M. T. (2015). Can mindful parenting be observed? Relationships between observational ratings of mother-youth interactions and mothers-self-report of mindful parenting. *J. Fam. Psychol.* 29, 276–282. doi: 10.1037/a0038857

Eisenberg, N., and Eggum, N. D. (2008). "Empathy-related and prosocial responding: conceptions and correlates during development" in *Cooperation: The political psychology of effective human interaction*. eds. B. A. Sullivan, M. Snyder and J. L. Sullivan (Blackwell Publishing), 53–74.

Ferrari, G. A., Nicolini, Y., Demuru, E., Tosato, C., Hussain, M., Scesa, E., et al. (2016). Ultrasonographic investigation of human foetus responses to maternal communicative and non-communicative stimuli. *Front. Psychol.* 7:160. doi: 10.3389/fpsyg.2016.00354

Fromm, E. (1956). *The heart of loving: An enquiry into the nature of love*. New York: Harper & Row.

Glover, V. (2014). Maternal depression, anxiety and stress during pregnancy and child outcome; what needs to be done. *Best Pract. Res. Clin. Obstet. Gynaecol.* 28, 25–35. doi: 10.1016/j.bpobgyn.2013.08.017

Greenspan, S. I., and Shanker, S. I. (2004). *The first idea*. Cambridge, MA: Da Capo Press.

Groves, D. A., and Brown, V. J. (2005). Vagal nerve stimulation: a review of its applications and potential mechanisms that mediate its clinical effects. *Neurosci. Biobehav. Rev.* 29, 493–500. doi: 10.1016/j.neubiorev.2005.01.004

Hall, H. G., Beattie, J., Lau, R., East, C., and Anne, B. M. (2015). Mindfulness and perinatal mental health: a systematic review. Women. *Birth* 29, 62–71. doi: 10.1016/j.wombi.2015.08.006

Hayes, L. J., Goodman, S. H., and Carlson, E. (2013). Maternal antenatal depression, and infant disorganized attachment at 12 months. *Attach Hum. Dev.* 15, 133–153. doi: 10.1080/14616734.2013.743256

Heppner, W. L., Spears, C. A., Vidrine, J. I., and Wetter, D. W. (2015). "Mindfulness and emotion regulation" in *Handbook of mindfulness and self-regulation*. eds. B. Ostafin, M. Robinson and B. Meier (New York, NY: Springer).

Hicks, L. M., Dayton, C. J., Brown, S., Muzik, M., and Raveau, H. (2018). Mindfulness moderates depression and quality of prenatal attachment in expectant parents. *Mindfulness* 9, 1604–1614. doi: 10.1007/s12671-018-0907-2

Hrdy, S. B. (2009). *Mothers and others: The evolutionary origins of mutual understanding*. Cambridge, MA: Belknap Press.

Johnson, M. (1993). *Moral imagination: Implications of cognitive science for ethics*. Chicago: University of Chicago Press.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clin. Psychol. Sci. Pr.* 10, 144–156.

Kok, B. E., and Fredrickson, B. L. (2010). Indexed by vagal tone, reciprocally and prospectively predicts positive emotions and social connectedness. *Biol. Psychol.* 85, 432–436. doi: 10.1016/j.biopsycho.2010.09.005

Konner, M. (2005). "Hunter-gatherer infancy and childhood. The! Kung and others" in *Hunter-gatherer childhood: Evolutionary, developmental and cultural perspectives*. eds. B. Hewlett and M. Lamb (New Brunswick, NJ: Aldine/Transaction).

Kristjánsson, K. (2019). *Flourishing as the aim of education: A neo-Aristotelian view*. London, UK: Routledge.

Kristjánsson, K., and Fowers, B. (2023). *2023 Phronesis: Retrieving practical wisdom in psychology, philosophy, and education*. Oxford: Oxford University Press.

Leavitt, C. E., Wikle, J. S., Kramer Holmes, E., Pierce, H., Eyring, J., Gibby, A. L., et al. (2023). Mindfulness and individual, relational, and parental outcomes during the transition to parenthood. *J. Soc. Pers. Relat.* 40, 1422–1447. doi: 10.1177/02654075221137870

Lewis, M. D. (2005). Bridging emotions theory and neurobiology through dynamic systems modelling. *Behav. Brain Sci.* 28, 169–194. doi: 10.1017/S0140525X0500004X

Lewis, T., Amini, F., and Lannon, R. (2000). *A general theory of love*. New York: Vintage.

MacMurray, J. (1992). *Reason and emotion*. Amherst, NY: Humanity Books.

Mason, Z. S., Briggs, R. D., and Silver, E. J. (2011). Maternal attachment feelings mediate between maternal reports of depression, infant social-emotional development, and parenting stress. *J. Reprod. Infant Psychol.* 29, 382–394. doi: 10.1080/02646838.2011.629994

Matthews, S. G. (2002). Early programming of the hypothalamo-pituitary-adrenal axis. *Trends Endocrinol. Metab.* 13, 373–380. doi: 10.1016/s1043-2760(02)00690-2

McGowan, P. O., Sasaki, A., Huang, T. C., Unterberger, A., Suderman, M., Ernst, C., et al. (2008). Promoter-wide hypermethylation of the ribosomal RNA gene promoter in the suicide brain. *PLoS One* 3:e2085. doi: 10.1371/journal.pone.0002085

Montirosso, R., Mascheroni, E., and Mariani Wigley, I. L. C. (2022). "Maternal embodied sensitivity: could interoception support the mother's ability to understand her infant's signals?" in *Key topics in perinatal mental health*. eds. M. Percudani, A. Bramante, V. Brenna and C. Pariante (Switzerland AG: Springer Nature).

Narvaez, D. (2014). *Neurobiology and the development of human morality. Evolution, culture, and wisdom*. New York: Norton.

Panksepp, J. (1998). *Affective neuroscience: The foundations of human and animal emotions*. New York: Oxford University Press.

Papousek, H., and Papousek, M. (1992). Beyond emotional bonding: the role of preverbal communication in mental growth and health. *Infant Ment. Health J.* 13, 43–53. doi: 10.1002/1097-0355(199221)13:1<43::AID-IMHJ2280130108>3.0.CO;2-R

Pickard, J. A., Townsend, M. L., Caputi, P., and Grenyer, B. F. (2017). Top-down and bottom-up: the role of social information processing and mindfulness as predictors in maternal-infant interaction. *Infant Ment. Health J.* 39, 44–54. doi: 10.1002/imhj.21687

Porges, S. W. (2011). *The polyvagal theory. Neurophysiological foundations of emotions attachment, communication, self-regulation*. Norton: W. W. Norton & Co.

Porges, S. W., Doussard-Roosevelt, J. A., and Maiti, A. K. (1994). Vagal tone and the physiological regulation of emotion. *Monogr. Soc. Res. Child Dev.* 59, 167–186. doi: 10.1111/j.1540-5834.1994.tb01283.x

Porter, C. L. (2003). Coregulation in mother-infant dyads: links to infants' cardiac vagal tone. *Psychol. Rep.* 92, 307–319. doi: 10.2466/pr0.2003.92.1.307

Robins, C. J., Keng, S. L., Ekblad, A. G., and Brantley, J. G. (2012). Effects of mindfulness-based stress reduction on emotional experience and expression: a randomised controlled trial. *J. Clin. Psychol.* 68, 117–131. doi: 10.1002/jclp.20857

Sansone, A. (2021). *Cultivating mindfulness to raise children who thrive: Why human connection from before birth matters*. London, UK: Routledge.

Sansone, A. (2024). Participation in an online prenatal mindfulness-relationship-based (PMRB) program: outcomes for maternal mindfulness, mental health, interoception, and mother-infant relationship during pregnancy and post-partum. *OBM Integr. Complem. Med.* 9, 1–43. doi: 10.21926/obm.icm.2401001

Schore, A. N. (1994). *Affect regulation and the origin of the self: The neurobiology of emotional development*. Mahwah, NJ: Erlbaum.

Schore, A. N. (2005). Back to basics: attachment, affect regulation, and the developing right brain: linking developmental neuroscience to pediatrics. *Pediatr. Rev.* 26, 204–217. doi: 10.1542/pir.26.6.204

Schore, A. N. (2021). The interpersonal neurobiology of intersubjectivity. *Front. Psychol.* 12:648616. doi: 10.3389/fpsyg.2021.648616

Shaver, P. R., and Mikulincer, M. (2002). Attachment-related psychodynamics. *Attach Hum. Dev.* 4, 133–161. doi: 10.1080/14616730210154171

Siegel, D. J. (2007). *The mindful brain. Reflection and attunement in the cultivation of well-being*. New York: Norton.

Siegel, D. J. (2023). *IntraConnected. New (me+we). As the integration of self, identity, and belonging*. Norton: W. W. Norton & Co.

Sroufe, L. A., Egeland, B., Carlson, E. A., and Collins, W. A. (2005). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood*. New York: Guilford Press.

Stellar, J. E., Cohen, A., Oveis, C., and Keltner, D. (2015). Affective and physiological responses to the suffering of others: compassion and vagal activity. *J. Pers. Soc. Psychol.* 108, 572–585. doi: 10.1037/pspi0000010

Trevarthen, C., and Aitken, K. J. (2001). Infant intersubjectivity; research, theory, and clinical applications. *J. Child Psychol. Psychiatry Allied Discip.* 42, 3–48. doi: 10.1111/1469-7610.00701

van den Heuvel, M. I., Johannes, M. A., Henrichs, J., and Van den Bergh, B. R. H. (2015). Maternal mindfulness during pregnancy and infant socio-emotional development and temperament: the mediating role of maternal anxiety. *Early Hum. Dev.* 91, 103–108. doi: 10.1016/j.earlhumdev.2014.12.003

Verny, T. R. (2021). *The embodied mind: understanding the mysteries of cellular memory, consciousness, and our bodies*. New York: Pegasus Books.

Waters, L. (2016). The relationship between child stress, child mindfulness and parent mindfulness. *Psychology* 7, 40–51. doi: 10.4236/psych.2016.71006

Weller, A., and Feldman, R. (2003). Emotion regulation and touch in infants: the role of cholecystokinin and opioids. *Peptides* 24, 779–788. doi: 10.1016/S0196-9781(03)00118-9

Zimmer-Gembeck, M. J., Rudolph, J., Kerin, J., and Bohadana-Brown, G. (2022). Parent emotional regulation: a meta-analytic review of its association with parenting and child adjustment. *Int. J. Behav. Dev.* 46, 63–82. doi: 10.1177/01650254211051086

frontiers | Frontiers in Psychology

TYPE Systematic Review
PUBLISHED 19 July 2024
DOI 10.3389/fpsyg.2024.1402885

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Claudia Russo,
European University of Rome, Italy
Annalisa Theodorou,
Sapienza University of Rome, Italy

*CORRESPONDENCE
Christian Rosales
✉ crosales@ull.edu.es

RECEIVED 19 March 2024
ACCEPTED 05 July 2024
PUBLISHED 19 July 2024

CITATION
Ríos-Rodríguez ML, Rosales C, Hernández B and Lorenzo M (2024) Benefits for emotional regulation of contact with nature: a systematic review. *Front. Psychol.* 15:1402885. doi: 10.3389/fpsyg.2024.1402885

Benefits for emotional regulation of contact with nature: a systematic review

María Luisa Ríos-Rodríguez[1], Christian Rosales[2]*, Bernardo Hernández[2] and Maryurena Lorenzo[3]

[1]Department of Social Psychology, Social Work, Social Services and Social Anthropology, University of Málaga, Málaga, Spain, [2]Department of Cognitive, Social and Organizational Psychology, University of La Laguna, San Cristóbal de La Laguna, Spain, [3]Department of Communication Sciences and Social Work, Faculty of Social Sciences and Communication, Universidad of La Laguna, San Cristóbal de La Laguna, Spain

Introduction: Exposure to natural environments, such as parks, forests, and green areas, is often linked to a decrease in stress, anxiety and depression, while contributing to improved emotional wellbeing. These observations are supported by well-established theories, such as the Stress Reduction Theory and Attention Restoration Theory, which highlight the psychological benefits of interacting with nature. However, the relationship between exposure to nature and emotions, and in particular, with emotional regulation, is an evolving aspect of research with no clear conclusions. Emotional regulation can be deliberate in nature, where individuals voluntarily participate in modifying various aspects of their emotions, such as their type, intensity, quality or duration. Alternatively, it may be automatic, originating from sensory perception and acting without full awareness, but significantly influencing emotional experiences. In this context, the environmental self-regulation hypothesis, suggests that people consciously or unconsciously use their physical environment to regulate their emotions.

Method: To analyze the evidence of the relationship between contact with nature and emotional regulation, we conducted this review. Using the PRISMA statement as a reference, we conducted keyword searches in five databases in the period between 2013 and 2023. The databases selected were Scopus, Web of Science (WoS), PubMed, PsycINFO and ScienceDirect.

Results: In addition, a manual search was carried out of journals in the research field. Initially, from which gray literature, reviews and duplicates were removed in a first step. The resulting articles were then filtered using their titles and abstracts. Subsequently, the abstracts of the 25 selected articles were reviewed and discussed by researchers to reach a final decision based on consensus about the adequacy of each paper. Finally, nine articles were included in the systematic review.

Discussion: In general terms, this review suggests that research on the relationship between contact with nature and emotional regulation provides valuable insights into how natural environments can contribute to the emotional wellbeing and physical and mental health of the population.

KEYWORDS

connectedness to nature, nature contact, emotional regulation, systematic review, emotional self-regulation, emotional management

10.3389/fpsyg.2024.1402885

1 Introduction

Emotion regulation involves attempts to influence one's own or others' emotions. In recent decades, emotional regulation has gained notable prominence in various subdisciplines of psychology (McRae and Gross, 2020). The current relevance of emotional regulation lies in its significant impact on physical and mental health, as well as psychological wellbeing. This phenomenon also influences the quality of social relationships, the learning process and academic performance (Gross and John, 2003; Graziano et al., 2007; Twohig-Bennett and Jones, 2018).

There are significant mental health needs worldwide. However, existing responses to these needs are few and inadequate. According to recent data, one in eight people in the world suffers from a mental disorder, with mood and anxiety disorders being the most prevalent (WHO, 2022). The report on mental health in the world highlights that to achieve the goals proposed in the WHO's Comprehensive Mental Health Action Plan 2013–2030 and the Sustainable Development Goals, it is necessary to transform the environment, as it has the capacity to influence on our mental health (Tomasi et al., 2020; WHO, 2021).

Research on emotional regulation has mainly focused on two specific strategies. First, cognitive reappraisal, which involves cognitive changes that reinterpret emotion-generating situations, thus altering their emotional impact. Second, expressive suppression, which consists of inhibiting emotional expressions (Gross, 2015). Gross and Thompson's (2007) emotional regulation model is a theoretical framework that identifies five emotion regulation strategies that occur during different moments of an emotional experience: (1) situation selection involves choosing environments that are likely to generate positive emotions and avoiding those that may cause negative ones; (2) situation modification consists of altering the situation to change its emotional impact; (3) attention deployment refers to directing attention toward or away from certain stimuli to influence the emotions that are experienced; (4) cognitive change involves reinterpreting a situation to alter its emotional meaning; and (5) response modulation covers regulating the expression of emotions to conform to social demands. This model provides a framework to understand how people regulate their emotions to adapt to social demands, thereby influencing their emotional wellbeing and social adaptation.

Research relating to emotions and nature has been supported by two theories: Attention Restoration Theory (ART, Kaplan and Kaplan, 1989; Kaplan, 1995) and the psychophysiological Stress Reduction Theory (SRT, Ulrich, 1993). ART posits that exposure to natural environments can restore attentional capacity, reducing mental fatigue and improving concentration. The theory identifies four key components for this restoration: being away, extent, fascination, and compatibility. Additionally, it suggests that nature provides a type of "soft" fascination that allows cognitive recovery without conscious effort, which is crucial for mental restoration. Interaction with nature is considered essential for psychological wellbeing and mental health. In contrast, SRT posits that humans have a genetic predisposition to prefer certain natural environments, such as green and open landscapes, due to evolution. This innate preference translates into stress reduction when people are exposed to these natural settings. According to SRT, exposure to nature can decrease physiological and psychological arousal, including reductions in blood pressure, heart rate, and stress hormone levels. This theory suggests that natural environments act as an antidote to modern stress, providing a calming effect that enhances overall wellbeing and mental health. These theories provide useful conceptual frameworks to understand how nature can have a positive impact on our emotions and psychological processes. In line with the above, the biophilia hypothesis suggests that the innate connection between humans and nature could be encoded in human genes. This biological affinity developed over evolution, as our ancestors relied on natural environments for survival (Kellert and Wilson, 1993). Taken together, these theories provide a solid foundation for investigating how nature can be used as an effective tool to regulate human emotions and improve emotional wellbeing. And specifically, the biophilia hypothesis implies that this innate connection with nature remains present in modern humans, influencing our preferences and behaviors. This may explain why many people find peace and restoration in natural environments and why exposure to nature has positive effects on our mental and emotional health.

Since the 19th century, it has been recognized that green spaces have benefits for the health of the population by providing opportunities for physical activity and the construction or maintenance of social relationships, among other aspects (Twohig-Bennett and Jones, 2018). Despite this awareness, the importance of nature in emotional regulation has often been underestimated. Several studies have highlighted the emotional benefits of contact with nature, although doubts remain about the underlying mechanisms (Gu et al., 2023). Thus, according to Capaldi et al. (2014), there is a relationship between being connected with nature and feeling happy.

Recent research highlights that for individuals experiencing anxiety or depression, spending time in natural or outdoor environments ranks as one of the three most supportive strategies to improve their wellbeing, along with adopting healthy behaviors and communicating with friends or family members (WHO, 2021). Thus, facilitating people's access to nature can contribute to their wellbeing and psychological health (Johnsen and Rydstedt, 2013). In addition, there are studies that emphasize the human need for affiliation and connection to the natural world (Mayer and Frantz, 2004). These studies indicate that people have an implicit connection with nature and its cognitive, affective and conative components (Schultz, 2002), as well as the mediating role of emotional regulation between nature and wellbeing (Richardson and McEwan, 2018).

Historically, sensations and emotions have been closely related. However, there is still much to explore in terms of how sensory experiences can promote emotional regulation. The role that the senses can play in managing emotions is often overlooked, even though they allow us to quickly detect information about the environment. Along these lines, it is essential to recognize that sensations can be used as a tool to regulate emotions, not only passively but voluntarily, activating our senses to strategically regulate our emotions (Rodriguez and Kross, 2023). In other words, emotion regulation can be automatic, originating in sensory perception and acting without full consciousness, but significantly

influencing the emotional experience. It can also be deliberate in nature, in which individuals voluntarily participate to modify various aspects of their emotions, such as their type, intensity, quality or duration. In this sense, the environmental self-regulation hypothesis (Korpela, 1992; Korpela et al., 2020), suggests that individuals interact with their physical environment in ways that go beyond mere functionality or aesthetics. According to this theory, the physical environment can serve as an active tool to regulate emotions. This implies that individuals can consciously or unconsciously choose environments that help them improve their emotional state or manage their emotions more effectively. In other words, the environmental self-regulation hypothesis suggests that individuals are not only influenced by their environment, but also have the ability to influence their own emotional state through interaction with their physical surroundings. In addition, current research highlights the importance of distinguishing between environmental characteristics (such as the amount of vegetation, exposure to sunlight, etc.) and individual factors that promote a positive connection between people and their environment (Spano et al., 2023; Rosales et al., 2024).

Considering the above, the following research question arises: what is the relationship between contact with nature and emotional regulation? To address this issue, the following systematic review is presented to examine the evidence for the relationship between contact with nature and emotional regulation, understanding contact with nature as both direct and indirect interaction with natural environments and elements, in both urban and rural contexts. Regarding emotional regulation, it is important to understand its role as a dependent variable and comprehend how contact with nature can affect individuals' ability to regulate their emotions. In addition, there is the mediating role between contact with nature and other psychological or behavioral variables. In addressing this question, we seek to consolidate and critically evaluate available research and identify gaps in current knowledge. This work explores the implications of the findings for their repercussions on theories and research, promoting a deeper understanding of the connection between the natural environment and emotional regulation. Likewise, we aim to offer a comprehensive perspective that contributes to the development of nature-based therapeutic interventions.

2 Materials and methods

2.1 Databases and search strategy

A comprehensive search was conducted of several databases, including WOS, Scopus, PsycInfo, PubMed, and ScienceDirect, on 23 October, 2023. Search strategies were designed to include relevant terms related to nature and emotion regulation. Specifically, the following search string was employed in each database: "connectedness to nature" OR "nature contact" OR "exposure to nature" OR "urban nature" OR "proximity to nature" OR "nature connection" OR "nature connectedness" OR "park" OR "garden" OR "natural environment" OR "greenspace" OR "public space" AND "emotional regulation" OR "managing emotion" OR "emotional management" OR "emotional self-regulation" OR "emotion regulation".

2.2 Data extraction and assessment process

This systematic review adhered to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021). The initial search yielded 460 records, of which 115 duplicates were removed. In addition, another eight additional articles were identified through text references. Subsequently, researchers independently and simultaneously reviewed the titles and the abstracts of the 345 records. To facilitate collaboration and analysis, the results were compiled into an Excel file. Following this, a discussion among the four researchers was initiated to assess the relevance of the selected titles. Works in which there was either 100% or 75% agreement among the researchers were retained, while those with less consensus were subject to debate until a unanimous decision was reached. From this screening process, 323 records were discarded. Next, the 22 selected articles were reviewed. Once again, researchers discussed these articles and ones selected through other methods to arrive at a final decision based on consensus. Ultimately, nine articles have been included in this systematic review. Figure 1 presents the flow diagram, which has been designed using the app for PRISMA 2020-compliant flow diagrams (Haddaway et al., 2022).

2.3 Inclusion and exclusion criteria

The articles selected for review had to meet the following inclusion criteria:

- Articles had to be empirical works published in English that had undergone a peer-review process and had full-text access.
- Their publication date had to be after 2013. Limiting the review to the last 10 years can help focus on the most recent and relevant trends, which is particularly useful in rapidly evolving fields. In addition, this criterion was included because, from a practical standpoint, the authors decided to cover a more manageable and recent period to ensure a thorough review within the available limits.
- The selected articles must address "contact with nature" as the interaction, either directly or indirectly (e.g., images, photographs, videos, virtual reality, etc.) with natural environments and elements, both in urban and rural contexts. By diversifying the forms of contact with nature, our review aims to capture a broader spectrum of human-nature interactions and their potential effects on emotional regulation.
- This review includes studies that examine the role of emotional regulation as a mediating variable and outcome. Including studies that address both roles of emotional regulation enriches our review by providing a comprehensive view of how it is influenced and, in turn, influences other aspects of human behavior.
- The studies had to involve adult participants. We have opted for works with adult populations because emotional regulation, as the ability to modulate emotional experiences

TABLE 1 The percentage of agreement among the researchers in the analysis of bias risks.

References	1	2	3	4	5	6	7	8	Average degree of agreement
(1) Johnsen (2013)	50	100	100	75	50	50	100	100	78.13 (include)
(2) Johnsen and Rydstedt (2013)	50	75	75	75	50	50	100	100	71.89 (include)
(3) Bakir-Demir et al. (2021)	100	100	NA	100	100	100	100	100	100 (Include)
(4) Fido et al. (2020)	50	100	100	50	75	75	100	100	81.25 (include)
(5) Korpela et al. (2020)	75	75	75	50	100	100	100	100	84.38 (include)
(6) Richardson and McEwan (2018)	75	100	50	50	50	50	100	100	71.89 (include)
(7) Sallay et al. (2023)	100	50	NA	NA	NA	NA	100	100	87.5 (include)
(8) Theodorou et al. (2023)	100	100	100	100	100	100	100	100	100 (include)
(9) Zhang et al. (2022)	75	100	75	100	100	100	100	100	93.75 (include)

1: Were the criteria for inclusion in the sample clearly defined?; 2: Were the study subjects and the setting described in detail?; 3: Was the exposure measured in a valid and reliable way?; 4: Were objective, standard criteria used for measurement of the condition?; 5: Were confounding factors identified?; 6: Were strategies to deal with confounding factors stated?; 7: Were the outcomes measured in a valid and reliable way?; 8: Was appropriate statistical analysis used?
NA, Not Applicable.

in a way that promotes emotional and intellectual growth, follows a course of development that extends and consolidates in adulthood (Gross, 2015).

- The studies had to use correlational, cross-sectional, experimental, and quasi-experimental designs. This decision is because these design types cover a broad spectrum of robust methodologies for evaluating relationships between variables and effects in controlled and natural contexts.

The reasons for excluding an article were as follows:

- Full text was not available.
- Publication in a language other than English and/or before 2013.
- The study sample consisted of children or adolescents. Children and adolescents are in a phase of continuous development, which means that their capacities for emotional regulation, cognitive processing, and psychological maturity significantly differ from those of adults (Theurel and Gentaz, 2018; Sanchis-Sanchis et al., 2020). This difference can influence how they interpret and manage their emotions. Moreover, excluding children and adolescents allows the review to maintain greater homogeneity in the participant profile, which facilitates comparison and synthesis of data.
- Qualitative methods were used. Qualitative studies may not be appropriate because their results are not quantifiable in the same way as the results of quantitative studies. Furthermore, they tend to explore more subjective and contextual aspects, which could introduce variables that are difficult to compare directly with quantitative results.
- It was a theoretical or review paper.

2.4 Quality and risk bias of selected studies

To assess the methodological quality of the studies included in this systematic review, each researcher evaluated the risk of bias using an Excel spreadsheet. The research group used the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Analytical Cross-Sectional Studies (Moola et al., 2020). Overall, the results of the assessments for the nine studies included in this systematic review were positive. Table 1 presents the percentage of agreement among the four researchers for each of the studies across different items of the JBI Checklist for Analytical Cross-Sectional Studies (Moola et al., 2020). The average degree of agreement among researchers regarding the analysis of bias risks for the nine included studies is above 70%.

3 Results

3.1 Characteristics of the examined studies

The characteristics of the included studies, data analysis and main results are presented in the Supplementary material. To refer to the articles, the numbering assigned in Figure 1 to each of the selected articles was used. The studies had an average sample size of 339.27 participants, with variations ranging from 35 (2) to 977 (9). Nine of the works analyzed used a survey data collection design, either for descriptive purposes or to establish causal relationships among the evaluated variables. Additionally, two studies adopted an experimental design, using randomization in group formation. Johnsen and Rydstedt (2013) employed an experimental design that differentiated three groups (experimental, control, and experimental-softer version). This research lasted for 2 weeks and used printed images as the independent variable for different stimuli in each group. The stimuli included natural environments, balloons, and natural environments with looser instructions, respectively. Measurements were taken at three different time points. In the study by Theodorou et al. (2023), four conditions were established, where each participant was presented with a virtual reality experience in various environments (urban, park, lake, and arctic). Each participant was assigned to one of the experimental conditions, with measurements taken before

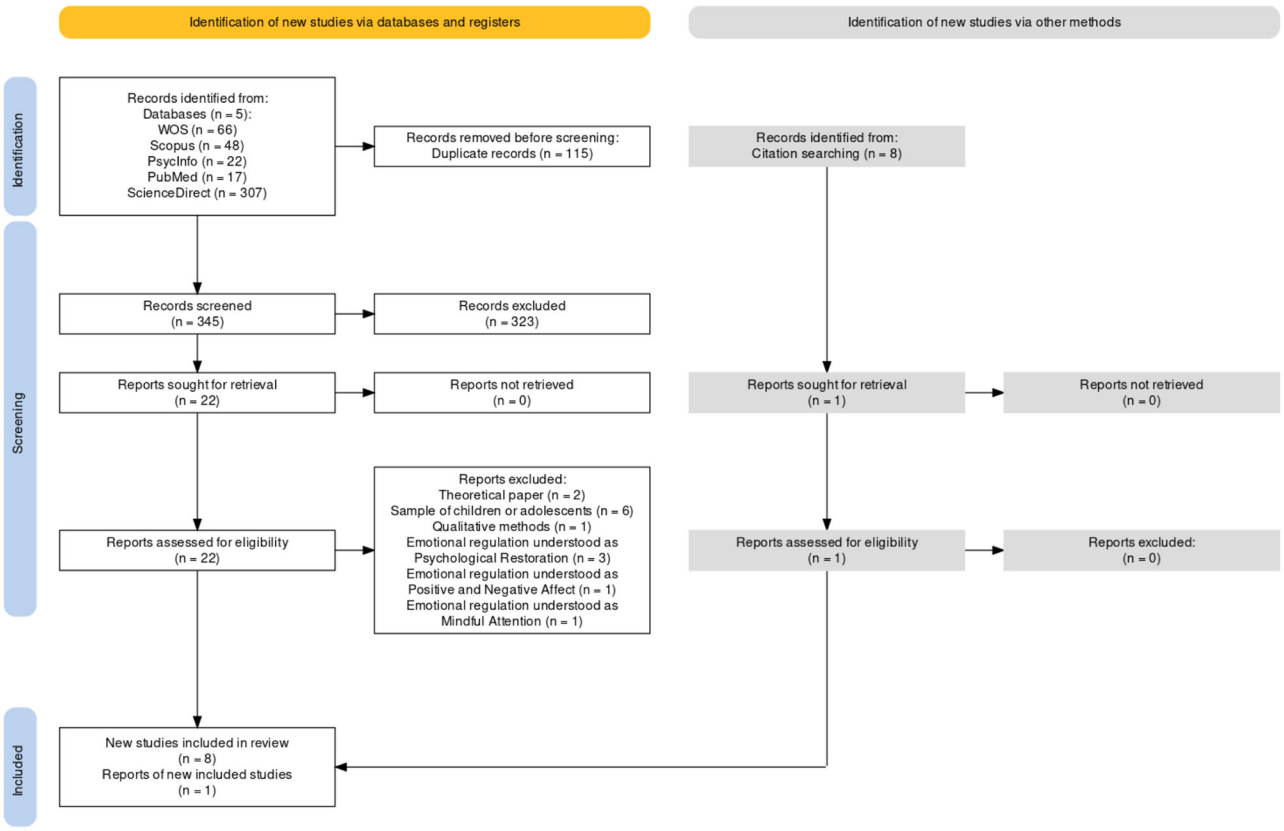


FIGURE 1
Flowchart.

and after exposure. This study also emphasized the control of confounding variables.

Regarding the countries of origin for the nine selected studies, two of them were carried out in Norway (1, 2), another two in the United Kingdom (4, 6), and in two studies, data were collected in both Finland and Hungary (5, 7). The remaining studies were conducted in Turkey (3), Italy (8), and Singapore (9). These nations exhibit notable disparities in cultural dimensions such as the degree of value assigned to individualism, long-term orientation, masculinity, and uncertainty avoidance, according to the dimensions proposed by Hofstede (2001).

In the statistical treatment of the data, it is observed that several studies included exploratory and confirmatory factor analysis to validate some of the measures employed (1, 5, 7). Additionally, three studies tested causal models using structural equation modeling (1, 5, 9) or assessing mediation or moderation relationships between variables (3, 4, 6, 8). Two studies used correlational tests, such as mean comparison, regression analysis, or latent profile analysis (2, 7).

Finally, the studies approaches to emotional regulation vary. Some studies propose that emotional regulation acts as a mediating variable, for example, between personality traits and nature contact in relation to attention restoration (Johnsen, 2013). It is also analyzed as a mediator between nature connection and stress (Bakir-Demir et al., 2021) or as a mediator between motives for visiting natural spaces and that natural contact, in relation to effects on physical and mental health (Korpela et al., 2020; Zhang et al., 2022; Sallay et al., 2023; Theodorou et al., 2023). Conversely, other studies position emotional regulation as a dependent variable that is influenced by the environment or the use of the environment (Johnsen and Rydstedt, 2013; Richardson and McEwan, 2018; Fido et al., 2020).

3.2 Descriptive characteristics of the participants

A total of 3,732 individuals participated in the nine studies selected for this review. The age range varied from 16 to 85 years old, with a mean age of 28.6. However, not all studies reported the same descriptive data for joint evaluation (Table 2).

Additionally, it is worth noting that the proportions of women were higher in most of the studies, except in three of them (1, 4, 9), where the sample was almost evenly distributed between men and women. In the study by Bakir-Demir et al. (2021), only the female sample was analyzed, despite initially having a larger sample, due to the low representation of men. This is likely because in most studies, the samples consisted of university students and in several cases (Table 2), psychology students (where the percentage of enrolled women is usually higher).

10.3389/fpsyg.2024.1402885

TABLE 2 Descriptive data of the examined samples.

	Sample size	Sex	Age		
	N	Women	Range	*M*	*SD*
(1) Johnsen (2013)	142	52.1%	16–79 years old	Median 40–49	They do not contribute
(2) Johnsen and Rydstedt (2013)	Study 1 = 35 Psychology students	69%	They do not contribute	They do not contribute	They do not contribute
	Study2 = 473 College students	66.2%	They do not contribute	22.6	They do not contribute
(3) Bakir-Demir et al. (2021)	123 Psychology students	100%	18–25 years old	21.02	1.38
(4) Fido et al. (2020)	309	49.2%	18–66 years old	30.34	10.6
(5) Korpela et al. (2020)	Finland 301	86.7%	18–58	25.3	They do not contribute
	483	68.1%	17–86	38.9	They do not contribute
(6) Richardson and McEwan (2018)	*N* = 153	63.9%	18–75	45.78	11.74
(7) Sallay et al. (2023)	Finland: 259	87.6%	18–39	Finland= 23.93	4.36
	Hungary: 290	75.5%	18–40	Hungary= 28.96	6.17
(8) Theodorou et al. (2023)	187 students	80.2%		21.17	2.55
(9) Zhang et al. (2022)	977 general population	54.8%	21- 85 years old	They do not contribute	They do not contribute

Secondly, only three studies used a sample from the general population. In the study by Fido et al. (2020), a power analysis was conducted beforehand to determine the appropriate sample size, and participants over the legal age were recruited through online surveys. In the study by Johnsen and Rydstedt (2013), visitors and hikers in rural areas were evaluated through on-site surveys. Richardson and McEwan (2018) conducted a complementary study using a larger sample from the general population to carry out a cross-sectional analysis of aspects related to the interest of the present review. It is also important to note that in the study samples by Korpela et al. (2020), the authors indicated that the Finnish sample consisted of students contacted via a mailing list, while in the Hungarian sample, participants were accessed through online platforms and personal networks of psychology students. The study by Sallay et al. (2023) was developed using a smaller selection from the same database.

3.3 Instruments and evaluated variables

As per the criterion for study selection, we collected the instruments used to measure nature contact and emotional regulation. Along these lines, we observed that only two studies used the same instrument to assess the construct of nature contact (3, 4), namely the Nature Relatedness Scale (NRS6; Nisbet et al., 2009). Additionally, Richardson and McEwan (2018) used an alternative measure to assess this same variable. The remaining studies used other indicators such as the provision of green spaces and exposure to these spaces (9), questionnaire to identify favorite places (5), physical characteristics of the place (7), or engagement with beauty (6).

Regarding the measurement of the emotional regulation variable, none of the studies coincide on the instruments used for evaluation. Some studies propose *ad hoc* measures, to assess emotional experience in specific places (1, 5, 7, 9). Among the validated questionnaires, we find the Difficulties in Emotion Regulation Scale (DERS-16; Bjureberg et al., 2016), the Emotion Regulation Questionnaire (ERQ; Gross and John, 2003), the Cognitive Emotion Regulation Questionnaire (CERQ, Garnefski and Kraaij, 2006), and positive and negative moods were measured using the Positive and Negative Affect Schedule (PANAS, Watson et al., 1988).

In addition to these fundamental variables, we have also considered other variables in research on nature contact and emotional regulation as summarized in Figure 2. Based on this synthesis, we conclude that personality variables such as neuroticism, conscientiousness, extraversion, Machiavellianism, narcissism, and psychopathy have aroused the greatest research interest. These are followed by stress, restoration capacity, health, and physical characteristics of environments. Some studies have also considered cognitive aspects such as mental clarity and attentional function, as well as motivational variables related to individuals' intentions to seek nature contact. Furthermore, variables related to psychological wellbeing, such as happiness, life satisfaction, and vitality, have also been studied.

3.4 Main findings

The main findings of the selected studies are presented in Table 3. Importantly, among the experimental studies, one of them used exposure to photographs of natural environments or other non-natural stimuli (Johnsen and Rydstedt, 2013), as well as virtual reality to explore different types of natural environments, such as parks, lakeside, arctic and urban environments (Theodorou et al., 2023). The other studies were cross-sectional, and only the study by Johnsen (2013) considered direct contact with nature. For more details, it is recommended to consult the Supplementary material.

Based on the findings of the studies, we can draw the following conclusions. First, Johnsen's (2013) shows that emotional regulation acts as a mediating factor between personality and restoration differently when it comes to positive or negative

10.3389/fpsyg.2024.1402885

FIGURE 2
Other variables present in research into contact with nature and emotional regulation.

regulation. In other words, selecting situations (spending time in nature to experience positive emotions) versus modifying situations (spending time in nature to regulate negative emotions) affect different aspects of psychological restoration in each case. We conclude that the pursuit of nature contact is influenced by personality factors and by the motives for seeking that contact (increasing positive emotions or regulating negative emotions). Likewise, Johnsen and Rydstedt (2013) found that the use of nature increases positive mood and decreases negative mood, but in the latter case, no differences were found between natural environments and the other environments used in the research. Furthermore, they emphasize the idea that motives influence the search for environments for emotional regulation, a trend that is accentuated in the case of natural environments. They also highlight that there are gender differences in motives for seeking nature and in their effect on emotions. Similarly, Korpela et al. (2020) report that motives related to positive or reflective mood carry more weight than those related to sadness or depressive mood. Sallay et al. (2023) affirm that spaces where moderate distress can be experienced are in demand, as well as there being different preferences for selecting a type of environment according to other needs, such as restoration.

Second, regarding the effects of nature contact on aspects related to physical or mental health, Korpela et al. (2020) finds that environmental self-regulation is not related to life satisfaction or perceived health in their study. Nevertheless, Zhang et al. (2022) suggest that emotional regulation may explain the benefits of Urban Green Spaces for mental health. Similarly, Theodorou et al. (2023) found that cognitive reappraisal plays a moderating role between natural environmental types and subjective vitality. Furthermore, Bakir-Demir et al. (2021) conclude that a stronger connection with nature is associated with better emotion regulation and lower perceived stress. They also indicate that there is an indirect effect of nature contact on stress when emotional regulation strategies are

adaptive. From the work of Fido et al. (2020), it can be inferred that connection with nature influences the use of cognitive reappraisal strategies, a type of emotional regulation that is more adaptive than others, such as expressive suppression. Additionally, Richardson and McEwan (2018) find that establishing a connection with nature is strongly associated with an adequate emotional regulation. In this study, the authors conclude that connection with nature is a key factor for wellbeing. This is the first evidence that establishes a relationship between affective regulation and the happiness benefits derived from such a connection.

3.5 Limitations identified by the authors in the examined articles

The authors note that in more than half of the studies, longitudinal research is considered necessary (Table 4). This is necessary to obtain information on how the relationship between nature contact and emotional regulation evolves over time. Likewise, it enables the detection of cause-and-effect relationships or patterns of stability or change in the variables.

Other limitations are related to the composition of the sample. The authors identified at least three aspects to consider (see Table 4). First, it is noted that samples from a specific culture may not be generalizable, as they can lead to cultural and/or linguistic biases, lack of representativeness, cultural understanding all of which ultimately limiting the practical applicability of the results. Second, as the samples are predominantly composed of university students, which entails associated disadvantages such as demographic or selection bias, they present similar profiles of psychological, attitudinal, and behavioral characteristics and underrepresent other groups (older age groups or those with different educational levels). Third, an imbalance in the higher percentage of women compared to men in the samples is also mentioned. This poses the additional risk of interpreting findings based on characteristics of the predominant sex, generating potential gender bias. Finally, Sallay et al. (2023) indicates that the sample size may be insufficient.

Regarding the assessment, the authors point out two issues. First, the lack of consistency in the choice of assessment tools for emotional regulation can reduce validity when comparing results, make interpretation difficult, and limit the possibilities of comparison between studies. Second, Theodorou et al. (2023) emphasize the use of only one type of emotional regulation strategy, which similarly affects the comparison of results and their generalizability. Furthermore, the use of self-report measures is highlighted as a limitation by two of the articles analyzed (Fido et al., 2020; Zhang et al., 2022), along with the associated limitations in ensuring the validity and reliability of research results.

3.6 Brief summary of results

Firstly, upon examining the research questions posed in the selected studies, it has been noted that a significant number of these studies examine how the physical characteristics and emotional experiences in favorite places, as well as their active use, influence people's emotional regulation and wellbeing (Johnsen, 2013; Johnsen and Rydstedt, 2013; Korpela et al., 2020; Sallay et al., 2023).

Secondly, regarding the types of emotional regulation strategies addressed in the analyzed studies, cognitive reappraisal is the most studied emotional regulation strategy (Fido et al., 2020; Bakir-Demir et al., 2021; Theodorou et al., 2023), followed by situation selection and situation modification (Johnsen, 2013; Johnsen and Rydstedt, 2013), and positive self-recovery (Korpela et al., 2020; Sallay et al., 2023).

Thirdly, concerning the participants, the studies by Johnsen and Rydstedt (2013), Richardson and McEwan (2018), and Fido et al. (2020) have used a general population sample, which allows for obtaining generalizable results applicable to a wide range of individuals. Additionally, the diversity of the sample improves the robustness of the data and the practical applicability of the findings.

Fourthly, regarding the instruments used in these studies, it is observed that, on one hand, there is no unanimous criterion for measuring emotional regulation, although the use of the Emotion Regulation Questionnaire (ERQ) stands out (Fido et al., 2020; Theodorou et al., 2023). On the other hand, there is also no consensus on how to measure the connection with nature; however, Richardson and McEwan (2018) and Theodorou et al. (2023) use the Inclusion of Nature in Self (INS) scale.

Fifthly, the authors of the selected articles highlight the need for longitudinal research to better understand the relationship between contact with nature and emotional regulation (Johnsen, 2013; Fido et al., 2020; Bakir-Demir et al., 2021; Sallay et al., 2023). Additionally, certain limitations are noted, such as cultural biases, the predominance of university students, and a gender imbalance (Johnsen, 2013; Richardson and McEwan, 2018; Bakir-Demir et al., 2021; Theodorou et al., 2023).

Finally, regarding the main findings, it is worth noting: (1) the connection with nature is positively linked to the use of emotional regulation strategies such as cognitive reappraisal, reducing stress and improving individuals' wellbeing (Richardson and McEwan, 2018; Fido et al., 2020; Bakir-Demir et al., 2021); (2) exposure to natural environments, both real and virtual, enhances subjective vitality and positive mood, especially when using cognitive reappraisal as an emotional regulation strategy (Johnsen, 2013; Johnsen and Rydstedt, 2013; Theodorou et al., 2023); (3) the connection with nature and exposure to natural environments have mediating effects on mental and general health through stress reduction and improved emotional regulation (Johnsen, 2013; Bakir-Demir et al., 2021; Zhang et al., 2022); and (4) the physical characteristics and emotional experiences in favorite places influence emotional regulation and subjective wellbeing (Korpela et al., 2020; Sallay et al., 2023).

4 Discussion

This systematic review examines the relationship between contact with nature and emotional regulation, highlighting the following findings and their implications for environmental psychology. Specifically, literature analyzing both the impact that exposure to nature has on emotional regulation, and the

TABLE 3 Characteristics and main findings of the nine studies included in the systematic review.

Num. References	Design and aim	Variable(s)	Main results
(1) Johnsen (2013)	Cross-sectional design. Analyzing how personality traits will influence the appraisal of nature, which in turn influences emotion regulation and affects restoration.	Personality [a] Perceived stress [a] Emotional regulation [b] Restoration [c]	Negative emotion regulation was positively related to the evaluated restorative variables. Positive emotion regulation was also related to restorative effects (except for clearing of thoughts).
(2) Johnsen and Rydstedt (2013)	*Study 1.* Experimental. To test whether the natural environment increases positive mood and decreases negative mood. *Study 2.* Cross-sectional survey. To investigate the perception of different environments regarding emotional regulation and emotion-dependent motivational tendency to visit different environments.	*Study1:* Exposure to nature [a] Mood [c] Attentional Function [c] *Study 2:* Intention to seek out nature (emotional regulation) [a] Emotional potential of nature [a] *Personality* (Extraversion, Emotional Stability and Conscientiousness) [e] Gender [e] Mood Positive and Negative [c]	*Study 1.* The use of nature to regulate emotions increases positive mood. *Study 2.* Classic nature scored significantly higher in emotional potential than the rest of the environments. Emotional potential correlated with the intention to seek nature when participants were happy.
(3) Bakir-Demir et al. (2021)	Cross-sectional design. Analyzing the mediating role of cognitive emotion regulation strategies in the relationship between connection with nature and stress.	Nature Connectedness [a] Cognitive emotion regulation (Adaptative and Non-adaptative) [b] Negative Reactivity [e] Hair cortisol [c] Stress Perceived [c]	No direct effects of connection with nature were observed on perceived stress or accumulated cortisol. There is an indirect effect of connection with nature on perceived stress mediated by adaptive emotional regulation. Participants who are more connected with nature have better emotional regulation and lower levels of perceived stress.
(4) Fido et al. (2020)	Cross-sectional design. Investigating the moderating role of psychopathic personality in the relationship between connection with nature and emotional regulation.	Nature Connectedness [a] Psychopathy [d] Cognitive reappraisal [c] Expressive suppression [c]	Connection with nature predicts the use of cognitive reappraisal strategies. Despite not being significant, there is an interaction between connection with nature and psychopathy.
(5) Korpela et al. (2020)	Cross-sectional design. Analyzing the links between motives/reasons for visiting favorite places, experiences in these places, and their connection with wellbeing, understood as the level of life satisfaction and perception of health.	Visit reasons favorite place [a] Positive recovery of Self [b,c] Low self-confidence and distress [b,c] Life Satisfaction [a,c] Perceived General Health [a,c] Place characteristics (natural vs. urban) [e]	Visiting a favorite place in cases of reflective states or positive mood were stronger motives compared to experiencing sadness and depressive mood. Successful environmental self-regulation is not related to life satisfaction and perceived health.
(6) Richardson and McEwan (2018)	*Complementary study*: Cross-sectional design. Explore the relationship between changes in connection with nature, happiness, engagement with the beauty of nature, and emotion regulation.	Nature Connectedness [a] Engagement with Nature's Beauty [b] Emotion Regulation [b] Happiness [c] Health [c]	Correlation analysis revealed that individuals experiencing difficulties in emotional regulation had a less pronounced connection with nature and experienced lower levels of happiness. Mediation analysis indicated that emotional regulation mediated the relationship between nature connectedness and happiness.

(Continued)

10.3389/fpsyg.2024.1402885

TABLE 3 (Continued)

Num. References	Design and aim	Variable(s)	Main results
(7) Sallay et al. (2023)	Cross-sectional design. Examining the perceived physical characteristics of favorite places and the emotional experiences of those places.	Perceived physical characteristics of the favorite place [a] Gender and age [e] Favorite Places [c] Emotional Experiences in the favorite place [c]	Preferences for favorite places involve perceptions and emotions of self-repair and distress. The results reveal that in both samples, individuals need favorite places to experience relatively high (non-clinical) distress. These are mixed places, including homes, nature, and urban destinations such as shops and communities.
(8) Theodorou et al. (2023)	Experimental design. Investigate the moderating role of the use of cognitive reappraisal strategy (as a mechanism of emotional regulation) in the relationship between exposure to virtual nature and subjective vitality.	Exposure to virtual natural environment [a] Sociodemographic [e] Personal conditions and individual differences (environmental identity, perceived stress) [e] Type of environment the participant lives [e] Variables impact the virtual reality experience [e] Pre-exposure subjective vitality [e] Cognitive reappraisal [d] Post-exposure subjective vitality [c]	Presented natural environments (park, lakeside, and arctic) were significantly more effective than the urban environment in increasing levels of subjective vitality. Cognitive reappraisal can facilitate increases in subjective vitality from at least some types of nature exposure (lacustrine and arctic environment).
(9) Zhang et al. (2022)	Cross-sectional design. To determine whether exposure to UGS (Urban Green Spaces) is an independent variable or a mediator in the relationship between UGS and health	UGS provision [a] Perceived UGS [a] UGS Exposure [a,b] Green Physical Activities [b] Emotional regulation [b] Social interaction in UGS [b] General health [c] Mental health [c] Individual data [e]	Three conceptual models addressing the relationships between Urban Green Spaces (UGS) availability or exposure and self-reported health were evaluated. Emotional regulation emerges as a mechanism to explain the mental health benefits of UGS

[a]independent variable(s); [b]mediator variable(s); [c]outcome variable(s); [d]moderator variable(s); [e]control/confounders variable(s).

10.3389/fpsyg.2024.1402885

TABLE 4 Limitations reported by the authors in the examined original articles.

This is a cross-sectional study, so causal relationships should be interpreted with caution. Need for longitudinal studies.	(Johnsen, 2013; Fido et al., 2020; Bakir-Demir et al., 2021; Sallay et al., 2023)
Results from a specific culture may not be generalizable.	(Johnsen, 2013; Korpela et al., 2020)
The sample consists of university students.	(Korpela et al., 2020; Bakir-Demir et al., 2021; Theodorou et al., 2023)
The sample is imbalanced in terms of gender (higher percentage of women).	(Richardson and McEwan, 2018; Korpela et al., 2020; Bakir-Demir et al., 2021; Theodorou et al., 2023)
Measurement of emotional regulation varied compared to recent literature.	(Fido et al., 2020)
Assessments are based on self-reported data.	(Fido et al., 2020; Zhang et al., 2022)
The sample size may be insufficient.	(Sallay et al., 2023)
Using only one type of emotional regulation strategy.	(Theodorou et al., 2023)

role that emotional regulation plays in the relationship between psychological variables and contact with nature was reviewed.

The reviewed studies show some inconsistencies, which make it difficult to clarify the relationship between contact with nature and emotional regulation. Nevertheless, the significance of emotional regulation as a mediator between contact with nature and the resulting physical and mental health benefits is reinforced (Johnsen and Rydstedt, 2013). In this direction, Zhang et al. (2022) showed that emotional regulation is a key mediating mechanism between exposure to urban green spaces and mental health, although this result cannot be generalized to overall health. On the other hand, Theodorou et al. (2023) found that the strategy of cognitive reappraisal could act as a mediating variable between natural environments and subjective vitality. However, not all natural environments produce this effect to the same extent. Further exploration of the impact of environmental variables on wellbeing and mental health is needed.

The Stress Restoration Theory (Ulrich, 1993) proposes that exposure to nature decreases stress levels and promotes faster physiological and emotional recovery. Some of the analyzed studies (Johnsen, 2013; Bakir-Demir et al., 2021; Theodorou et al., 2023) include the stress variable. Specifically, the work of Bakir-Demir et al. (2021) did not show direct effects of connection to nature on perceived stress or accumulated cortisol. However, an indirect effect of connection to nature on perceived stress mediated by adaptive emotional regulation was found. In other words, those who are more connected to nature have better emotional regulation and lower levels of perceived stress.

The environmental self-regulation hypothesis by Korpela (1992) was addressed in three of the selected works. Specifically, the studies by Korpela et al. (2020) and Sallay et al. (2023) demonstrate that individuals are not only influenced by their environment but also choose environments that help them regulate their emotions. Similarly, Johnsen and Rydstedt (2013) indicate that the intention to seek nature is a strategy used by participants to modify their mood. These findings suggest that interaction with the environment not only influences emotions but also that the conscious choice of favorite places with specific characteristics (natural or urban) seems to be aimed at achieving emotional balance and subjective wellbeing. In other studies, included in this review, no evidence was found that individuals use the physical environment as an active tool to regulate their emotions by modifying their emotional state through interaction with the physical environment (Johnsen, 2013; Zhang et al., 2022).

Several studies suggest a correlation between contact with nature and improved emotional regulation (Richardson and McEwan, 2018; Fido et al., 2020). Specifically, Richardson and McEwan (2018) work, highlights the relevance of emotional regulation in connection with nature. The effect of nature could be influenced by the emotional strategy adopted and its effectiveness. This suggests that natural contact can yield varied results depending on the strategy used. However, not all natural environments have the same impact (Johnsen and Rydstedt, 2013). Effectiveness may vary depending on the type of natural environment and according to the underlying motives for seeking contact with nature. Exploring these differences allows us to identify which specific characteristics of natural environments are more beneficial for emotional regulation.

Similarly, in this direction, and based on the findings of Theodorou et al. (2023), it would be interesting to investigate to what extent exposure to a "real" vs. "virtual" natural environment generates changes in the way people emotionally self-regulate. In this sense, it is worth delving into the key components (being away, extent, fascination, and compatibility) for restoration, as postulated by the Attention Restoration Theory (ART) by Kaplan and Kaplan (1989) and Kaplan (1995), to identify which characteristics of natural environments provide the most benefits in terms of emotional regulation. Thus, Johnsen's (2013) work emphasizes that the regulation of self-reported positive and negative emotions in natural environments is related to the restorative benefits of such exposure.

In addition, this systematic review highlights the impact of certain personality traits in the way people experience and benefit from contact with nature (Johnsen, 2013; Johnsen and Rydstedt, 2013; Fido et al., 2020; Bakir-Demir et al., 2021). For example, individuals with dark personality traits, also known as the "dark triad," which include Machiavellianism, psychopathy, and narcissism, may exhibit a different relationship between nature connection and any emotional regulation strategy that aims to emotionally reinterpret the meaning of an event or situation (Fido et al., 2020). These results suggest an in-depth analysis of the biophilia hypothesis (Kellert and Wilson, 1993), which suggests that the innate connection between humans and nature could be encoded in human genes. Therefore, it would be worth exploring

the differences in connection with nature based on personality, as the existence of such differences could question or reformulate the hypothesis.

Most of the analyzed studies are based on the emotional regulation model by Gross and Thompson (2007). These authors proposed a theoretical model of emotional regulation that identifies five strategies deployed at different stages of an emotional experience: situation selection, situation modification, attentional deployment, cognitive change, and response modulation. Based on this proposal, it is possible to affirm that cognitive change, as indicated in the model, aligns with cognitive reappraisal, the most used emotional regulation strategy in the analyzed works (Fido et al., 2020; Bakir-Demir et al., 2021; Theodorou et al., 2023). Additionally, situation selection and situation modification are highlighted (Johnsen, 2013; Johnsen and Rydstedt, 2013), as well as positive self-recovery (Korpela et al., 2020; Sallay et al., 2023), which can be seen as a form of attentional deployment. Thus, the mentioned works emphasize the importance and practical application of the emotional regulation strategies described by Gross and Thompson (2007).

Furthermore, from this model (Gross and Thompson, 2007) it is considered emotional regulation as a dynamic process that involves the mutual influence of culture, context and individual strategies. In other words, this model attempts to provide an answer to how people regulate their emotions in intercultural contexts. In this way, it is necessary to highlight the cultural diversity present in the articles reviewed, as they cover a variety of countries with different socio-cultural contexts. This cultural diversity, in line with the theory of cultural dimensions (Hofstede, 2001), emphasizes the importance of considering cultural influences on individual perceptions and experiences with nature. Such diversity suggests that preferences and perceived benefits may vary considerably across cultures, underscoring the need for caution in generalizing results and designing nature-based interventions.

4.1 Limitations

This review also presents some limitations that must be considered when generalizing the conclusions. First, we must point out that the number of scientific publications directly addressing the relationship between contact with nature and emotional regulation is still limited. This lack of publications in turn limits the scope of the conclusions that can be drawn regarding whether contact with nature is beneficial for regulation processes and whether these processes mediate the impact of nature on people's wellbeing.

Second, although the criteria for reviewing only quantitative research have already been explained, the exclusion of qualitative research may have limited the evidence on the objectives of the review. Nevertheless, we consider that qualitative research would probably not yield conclusions different from those obtained here.

Finally, this review restricted eligibility to documents published in English and available in open access. This criterion may have excluded some relevant studies published in other languages and in other cultural contexts.

4.2 Future research

To enhance research on the relationship between contact with nature and emotional regulation, a primary need, almost an imperative, is to clarify the concept of emotional regulation. This requires a deeper exploration into the theoretical components of the concept. Likewise, a future line of work that would contribute to clarifying the relationship between emotional regulation and contact with nature would be to identify which specific characteristics of natural environments, such as size, quality, or accessibility, are most beneficial for emotional regulation. Similarly, the differential effects of population groups according to age, gender, and other social and cultural categories should be analyzed. In this same vein, it is necessary to increase the evidence on the benefits that contact with nature has for emotional regulation, using studies with a broader geographic, cultural, and socioeconomic representation of the populations and natural environments evaluated.

From the limitations identified in the studies reviewed, the lack of consistency in the choice of assessment tools, as well as the bias of the samples toward university populations and the high proportion of women pose important methodological challenges that should be addressed in future research. In addition, some areas for future research are suggested. The motives that drive people to seek out nature need to be explored, especially the emotions present when selecting a particular place. It seems that this factor is crucial both for assessing environment types and for determining the emotional regulation strategies adopted. For experimental study designs, we suggest considering measures or criteria related to the environmental quality of the environments, to investigate what objective characteristics might be influential. It would also be interesting for researchers to choose a longitudinal methodology, employ more representative samples and use appropriate assessment measures.

4.3 Conclusions

In conclusion, urban life can lead to a disconnection with nature due to its fast pace, high population density that reduces green spaces, lack of access to nature in some areas, prevalence of indoor entertainment, and decreased environmental awareness. This disconnection can negatively affect the health and wellbeing of both people and the environment. However, research on the relationship between contact with nature and emotional regulation provides valuable insights into understanding how natural environments can contribute to the emotional wellbeing and physical and mental health of the population. Thus, by addressing the identified limitations and exploring new research directions, it is possible to develop urban planning initiatives and mental health policies that promote the integration of green spaces in urban environments and the preservation of natural areas.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

MR-R: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. CR: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. BH: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. ML: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

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.

Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1402885/full#supplementary-material

References

*Bakir-Demir, T., Berument, S. K., and Akkaya, S. (2021). Nature connectedness boosts the bright side of emotion regulation, which in turn reduces stress. *J. Environ. Psychol.* 76:101642. doi: 10.1016/j.jenvp.2021.101642

Bjureberg, J., Ljótsson, B., Tull, M. T., Hedman, E., Sahlin, H., Lundh, L. G., et al. (2016). Development and validation of a brief version of the difficulties in emotion regulation scale: the DERS-16. *J. Psychopathol. Behav. Assess.* 38, 284–296. doi: 10.1007/s10862-015-9514-x

Capaldi, C. A., Dopko, R. L., and Zelenski, J. M. (2014). The relationship between nature connectedness and happiness: a meta-analysis. *Front. Psychol.* 5:976. doi: 10.3389/fpsyg.2014.00976

*Fido, D., Rees, A., Wallace, L., and Mantzorou, L. (2020). Psychopathy moderates the relationship between nature connectedness and cognitive reappraisal. *Ecopsychology* 12, 301–308. doi: 10.1089/eco.2019.007

Garnefski, N., and Kraaij, V. (2006). Cognitive emotion regulation questionnaire–development of a short 18-item version (CERQ-short). *Pers. Individ. Dif.* 41, 1045–1053. doi: 10.1016/j.paid.2006.04.010

Graziano, P. A., Reavis, R. D., Keane, S. P., and Calkins, S. D. (2007). The role of emotion regulation in children's early academic success. *J. Sch. Psychol.* 45, 3–19. doi: 10.1016/j.jsp.2006.09.002

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J., and John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J. Pers. Soc. Psychol.* 85, 348–362. doi: 10.1037/0022-3514.85.2.348

Gross, J. J., and Thompson, R. A. (2007). "Emotion regulation: conceptual foundations," in *Handbook of Emotion Regulation,* ed. J. J. Gross (New York: The Guilford Press), 3–24.

Gu, X., Zheng, H., and Tse, C.-S. (2023). Contact with nature for emotion regulation: the roles of nature connectedness and beauty engagement in urban young adults. *Sci. Rep.* 13:21377. doi: 10.1038/s41598-023-48756-4

Haddaway, N. R., Page, M. J., Pritchard, C. C., and McGuinness, L. A. (2022). PRISMA2020: An R package and Shiny app for producing PRISMA 2020-compliant flow diagrams, with interactivity for optimised digital transparency and Open Synthesis Campbell. *Syst. Rev.* 18:E1230. doi: 10.1002/cl2.1230

Hofstede, G. (2001). *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations Across Nations, 2nd ed*. Thousand Oaks, CA: Sage.

*Johnsen, S. (2013). Exploring the use of nature for emotion regulation: associations with personality, perceived stress, and restorative outcomes. *Nordic Psychol.* 65, 306–321. doi: 10.1080/19012276.2013.851445

*Johnsen, S., and Rydstedt, L. W. (2013). Active use of the natural environment for emotion regulation. *Eur. J. Psychol.* 9, 798–819. doi: 10.5964/ejop.v9i4.633

Kaplan, R., and Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective*. Cambridge: Cambridge University Press.

Kaplan, S. (1995). The restorative benefits of nature: toward an integrative framework. *J. Environ. Psychol.* 15, 169–182. doi: 10.1016/0272-4944(95)90001-2

Kellert, S. R., and Wilson, E. O. (1993). *The Biophilia Hypothesis*. Washington, DC: Island Press.

Korpela, K. (1992). Adolescents' favourite places and environmental self-regulation. *Journal of Environmental Psychology* 12, 249–258. doi: 10.1016/S0272-4944(05)80139-2

*Korpela, K., Korhonen, M., Nummi, T., Martos, T., and Sallay, V. (2020). Environmental self-regulation in favourite places of Finnish and Hungarian adults. *J. Environ. Psychol.* 67:101384. doi: 10.1016/j.jenvp.2019.101384

Mayer, F. S., and Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *J. Environ. Psychol.* 24, 503–515. doi: 10.1016/j.jenvp.2004.10.001

McRae, K., and Gross, J. J. (2020). Emotion regulation. *Emotion* 20, 1–9. doi: 10.1037/emo0000703

Moola, S., Munn, Z., Tufanaru, C., Aromataris, E., Sears, K., Sfetcu, R., et al. (2020). "Chapter 7: Systematic reviews of etiology and risk," in *JBI Manual for Evidence Synthesis,* eds. E. Aromataris and Z. Munn. Available online at: https://synthesismanual.jbi.global (accessed Decembre 19).

Nisbet, E. K., Zelenski, J. M., and Murphy, S. A. (2009). The nature relatedness scale: Linking individuals' connection with nature to environmental concern and behavior. *Environ. Behav.* 41, 715–740. doi: 10.1177/0013916508318748

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., et al. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 372:n71. doi: 10.1136/bmj.n71

*Richardson, M., and McEwan, K. (2018). 30 days wild and the relationships between engagement with nature's beauty, nature connectedness and well-being. *Front. Psychol.* 9:359973. doi: 10.3389/fpsyg.2018.01500

Rodriguez, M., and Kross, E. (2023). Sensory emotion regulation. *Trends Cogn. Sci.* 27, 379–390. doi: 10.1016/j.tics.2023.01.008

Rosales, C., Lorenzo, M., Ríos-Rodríguez, M. L., and Hernández, B. (2024). Envejecimiento saludable: Determinantes de la capacidad restauradora en los espacios públicos urbanos. *Aposta Revista de Ciencias Sociales*. 101, 111–123. Available online at: http://apostadigital.com/revistav3/hemeroteca/crosales.pdf

*Sallay, V., Martos, T., Rosta-Filep, O., Horváth, Z., and Korpela, K. (2023). Profiles of perceived physical features and emotional experiences in favorite places: discovering ambivalent place preferences. *J. Environ. Psychol.* 90:102084. doi: 10.1016/j.jenvp.2023.102084

Sanchis-Sanchis, A., Grau, M. D., Moliner, A. R., and Morales-Murillo, C. P. (2020). Effects of age and gender in emotion regulation of children and adolescents. *Front. Psycho.* 11:497592. doi: 10.3389/fpsyg.2020.00946

Schultz, P. W. (2002). "Inclusion with nature: the psychology of human-nature relations," in *Psychology of Sustainable Development,* eds. E. P. Schmuck and W. P. Schultz (Cham: Springer US), 61–78.

Spano, G., Ricciardi, E., Theodorou, A., Giannico, V., Caff,ò A. O., Bosco, A., et al. (2023). Objective greenness, connectedness to nature and sunlight levels towards perceived restorativeness in urban nature. *Sci. Rep*. 13:18192. doi: 10.1038/s41598-023-45604-3

*Theodorou, A., Spano, G., Bratman, G. N., Monneron, K., Sanesi, G., Carrus, G., et al. (2023). Emotion regulation and virtual nature: cognitive reappraisal as an individual-level moderator for impacts on subjective vitality. *Sci. Rep.* 13:5028. doi: 10.1038/s41598-023-30287-7

Theurel, A., and Gentaz, E. (2018). The regulation of emotions in adolescents: age differences and emotion-specific patterns. *PloS ONE.* 13:e0195501. doi: 10.1371/journal.pone.0195501

Tomasi, S., Di Nuovo, S., and Hidalgo, M. C. (2020). Environment and mental health: empirical study on the relationship between contact with nature and symptoms of anxiety and depression. *PsyEcology* 11, 319–341. doi: 10.1080/21711976.2020.1778388

Twohig-Bennett, C., and Jones, A. (2018). The health benefits of the great outdoors: a systematic review and meta-analysis of greenspace exposure and health outcomes. *Environ. Res.* 166, 628–637. doi: 10.1016/j.envres.2018.06.030

Ulrich, R. S. (1993). "Biophilia, biophobia, and natural landscapes," in *The Biophilia Hypothesis,* S. R. Kellert, and E. O. Wilson (Washington, DC: Island Press), 73–137.

Watson, D., Clark, L. A., and Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *J. Pers. Soc. Psychol.* 54:1063. doi: 10.1037/0022-3514.54.6.1063

WHO (2021). *Comprehensive Mental Health Action Plan 2013–2030*. Geneva: Recuperado 25 de enero de 2024. Available online at: https://www.who.int/publications/i/item/9789240031029 (accessed February 22).

WHO (2022). "World mental health report: transforming mental health for all. (s. f.)," in *Recuperado 25 de enero de 2024.* Available online at: https://www.who.int/publications-detail-redirect/9789240049338 (accessed May 20).

*Zhang, L., Tan, P. Y., Gan, D. R. Y., and Samsudin, R. (2022). Assessment of mediators in the associations between urban green spaces and self-reported health. *Landsc. Urban Plan.* 226:104503. doi: 10.1016/j.landurbplan.2022.104503

*Selected articles for this review are marked with an asterisk.

frontiers | Frontiers in Psychology

TYPE Original Research
PUBLISHED 23 July 2024
DOI 10.3389/fpsyg.2024.1320520

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Carlo Garofalo,
University of Perugia, Italy
Federica Genova,
European University of Rome, Italy

*CORRESPONDENCE
Stefania Cristofanelli
✉ s.cristofanelli@univda.it

RECEIVED 16 October 2023
ACCEPTED 20 May 2024
PUBLISHED 23 July 2024

CITATION
Cristofanelli S, Testa S, Centonze E, Baccini G, Toniolo F, Vavalle V and Ferro L (2024) Exploring emotion dysregulation in adolescence and its association with social immaturity, self-representation, and thought process problems.
Front. Psychol. 15:1320520.
doi: 10.3389/fpsyg.2024.1320520

Exploring emotion dysregulation in adolescence and its association with social immaturity, self-representation, and thought process problems

Stefania Cristofanelli[1]*, Silvia Testa[1], Eleonora Centonze[2], Giorgia Baccini[3], Federico Toniolo[3], Vincenza Vavalle[3] and Laura Ferro[1]

[1]Department of Human and Social Sciences, University of Aosta Valley, Aosta, Italy, [2]Studio Associato RiPsi, Milan, Italy, [3]TIARÉ, Association for Mental Health, Turin, Italy

Background and aims: This study aimed to explore the complex phenomenon of emotional dysregulation, particularly in adolescence, which is associated with many mental health disorders and problems. Increasing the knowledge of clinicians and researchers in this area can be helpful in guiding future treatment plans. The aim of the study was to investigate, from an exploratory perspective, which structural aspects of adolescent functioning (assessed using the Rorschach test and administered and scored according to the Comprehensive System, CS, by Exner) were associated with different dimensions of emotional dysregulation (evaluated using the Difficulties in Emotion Dysregulation Scale, DERS).

Method: Secondary data were used for the study, which included 100 adolescents, with 50 in the clinical group (patients with complex trauma histories residing in therapeutic and socio-rehabilitative communities) and 50 in the nonclinical group (recruited from a scout group and middle and high schools). The two groups were compared on terms of the mean scores obtained in the DERS scales (one-tailed t-test) and the proportions of cases that obtained pathological values for selected Rorschach CS indicators (z-test). Partial correlations were calculated between the DERS scales and the Rorschach CS variables to explore which structural dimensions of functioning were associated with different characteristics of emotional dysregulation.

Results: The results indicated that the two groups differed in their outcomes on all DERS scales, except for Awareness and Goals, and on four Rorschach CS variables (EgoIndex, a:p, Wsum6, and MOR). Some significant positive and negative correlations between the Rorschach CS variables and the DERS scales also emerged.

Conclusion: These results suggest that the dimensions of functioning associated with emotional dysregulation are related to self-representation, relational immaturity, and thought processes character and characterize membership in a therapeutic community. The correlations described in the article warrants further consideration. Finally, the study's limitations and future research prospects are presented.

KEYWORDS

emotion dysregulation, personality, adolescence, Rorschach CS, Difficulties in Emotion Regulation Scale (DERS)

1 Introduction

Defining emotional dysregulation unequivocally is a challenging task. The literature contains multiple definitions (D'Agostino et al., 2017) and the starting point for conceptualizing it is understanding the complementary construct of emotional regulation. For instance, Gross (1998) defines emotional regulation as an attempt to change the type of emotion, the timing of its experience, and the way it is expressed. According to Gross and Jazaieri (2014), emotional dysregulation occurs when there is a failure or an improper use of strategies to modulate affect. In our study, we adopted the model proposed by Gratz and Roemer (2004), which identifies six dimensions of emotional dysregulation:

1. Non-acceptance of Negative Emotions (Nonacceptance): inability to accept negative emotions, leading to discomfort or secondary negative emotions in response to emotional reactions triggered by a situation.
2. Difficulty in Achieving Goals (Goals): difficulties in concentration and in task completion when experiencing negative emotions.
3. Impulse Control Difficulties in the Presence of Negative Emotions (Impulse): difficulties in controlling impulses when negative emotions are present.
4. Difficulty in Attending to and Recognizing One's Emotions (Awareness): inability to pay attention to one's emotions and to recognize them.
5. Limited Access to Emotional Regulation Strategies and the Belief That Emotion Response is Unmodifiable Once It Occurs (Strategies): limited available strategies for emotional regulation and the belief that once an emotion has manifested, its response cannot be altered.
6. Emotional Clarity and the Inability to Identify Emotions (Clarity): lack of emotional clarity and incapacity to identify emotions.

The uniqueness of this approach lies in describing emotional dysregulation as a broad and multifaceted construct. This implies the possibility that different dimensions of emotional dysregulation are associated differently with various mental disorders. For example, Garofalo et al. (2018)—referring to Gratz and Roemer's theoretical model—observed that different dimensions of the construct were associated with different personality disorders. Beyond these specificities, it is known that emotional dysregulation increases the risk of psychopathology (Dimaggio et al., 2017; Garofalo and Wright, 2017; Garofalo and Neumann, 2018). For example, in adolescence emotion dysregulation increases the risk of developing various mental disorders (Turpyn et al., 2015), including personality disorders and in particular borderline disorder (Fossati et al., 2014a), while in adulthood it contributes to the onset of personality disorders (Dimaggio et al., 2017), alcohol abuse (Garofalo and Velotti, 2015), self-harm (Garofalo and Wright, 2017) and interpersonal violence (Velotti et al., 2014; Garofalo et al., 2018).

Furthermore, it must be considered that emotional regulation is not a predetermined and immutable skill but a competence that develops throughout the lifespan. During the developmental period, emotion regulation is learned in different contexts such as family, school, work, as well as in different ways, via modeling, imitation and co-regulation with attachment figures or peers (Turpyn et al., 2015; Silvers, 2022). Furthermore, the development of specific regulation skills is influenced by individual factors related to temperament and the level of physiological and psychological maturity attained at each developmental stage (Siegel, 2014).

Adolescence is a stage characterized by significant neurobiological changes that also have repercussions on the emotional sphere. For example, compared to other life stages, adolescence is marked by a lower availability of dopamine, which may be responsible for the typical boredom experienced by the adolescents. Simultaneously, teens' experience a greater release of dopamine when they are engaged in rewarding actions, such as risky, impulsive, or addictive behaviors (Gazzillo, 2021). Furthermore, some of the brain regions underlying emotional regulation, such as the prefrontal cortex, are still maturing, making emotional regulation less efficient in adolescence (Ahmed et al., 2015). Collectively, these data suggest that the adolescent brains is "more emotional" than adults' and children's brain but less capable of modulation (Gazzillo, 2021). At the same time, it would be wrong to view adolescence as a pathological period. In fact, according to Offer et al. (1998), epidemiological data on the mental health and pathology observed in this population are comparable to those observed in adulthood. This means that most adolescents manage to fulfill the developmental tasks of this phase (e.g., separating from parents, dealing with typical psychophysical changes; Silvers, 2022). These data suggest that it is possible to distinguish between psychopathology and physiological adolescent transition (Biberdzic et al., 2018).

It may be hypothesized that when difficulties in emotional regulation are substantial and associated with other disharmonious characteristics of the adolescent's emergent personality, this implies a degree of psychopathology that requires an inpatient treatment.

Personal functioning is multidimensional and has to do with the set of peculiar ways in which the individual interprets and reacts to life events. In addition to affect, personological functioning includes cognitive, relational and identity processes (Self). Among these, some act at an implicit level and are best captured by so-called performance-based tests, such as the Rorschach method, while others operate at a manifest level and are best captured by self-report tools (Abbate and Andraos, 2019). The Rorschach test remains one of the most used tools for evaluating personological functioning in the clinical field, due to the unique information, of which the individual is often unaware (Gritti, 2020), that the test is able to offer about the peculiar way in which the subject perceives life events, expresses and processes emotions, manages stress and shapes the image of him-or her-self, others and relationships (Abbate and Porcelli, 2017). This definition is also valid for adolescents; in fact, although the main classification manuals of mental disorders such as the DSM and the ICD recommend a

certain caution in the diagnosis of personality disorders during adolescence, in most cases adolescents show an emerging personality style which is relatively organized and which characterizes the structure of their thoughts, feelings, behaviors, and tendencies (Malone and Malberg, 2017). Moreover, both pathological and physiological personality traits tend to stabilize during adolescence (Hamlat et al., 2020); indeed, the 20% or so of adolescents who display early signs of personality disorders are at higher risk of negative outcomes in adulthood (including suicide attempts, violent and criminal behavior, and interpersonal conflict), which confirms the importance of assessing personality at this life stage also (Cohen et al., 2005).

The Rorschach is an appropriate tool for the assessment of personological functioning in adolescents also. In fact, the task offers an opportunity to observe in a structured and standardized way the behavior of the adolescent who, faced with a predefined sequence of stimuli, must answer the question "What could it be?." In this way, the adolescent displays *in vivo* a sample of his or her own problem-solving strategies. Based on the information collected during the administration and interpretation of the test, the clinician can make inferences about the ways in which the adolescent understands, represents and attributes meaning to complex environmental experiences (Meyer and Erdberg, 2018).

The present research, albeit from an exploratory perspective, had the ambitious objective of contributing to the understanding of how emotional dysregulation in adolescence is associated with personological functioning. In fact, a deeper understanding of how emotional dysregulation manifests in adolescence and how it is associated with personal functioning can enhance clinical intervention. On the one hand, it can help to identify dimensions of emotional dysregulation that may suggest the presence of concurrent mental disorders and/or a high risk of developing them. On the other hand, it can guide prevention efforts (when emotional dysregulation is not associated with clear psychopathology) and treatment interventions (when emotional dysregulation is one of the many manifestations of a psychopathology). In other words, attending to personality characteristics and emotional regulation skills can be useful in distinguishing between age-appropriate physiological challenges (Siegel, 2014) and an early warning sign of emerging psychopathology (McLaughlin et al., 2011) and this is relevant for planning both prevention and treatment interventions. In fact, recognizing the early signs of emotional dysregulation can guide prevention efforts, for example by showing caregivers what signs of distress they need to pay attention to in their teenagers to prevent the onset of a full-blown disorder. On the other hand, when emotional dysregulation reaches pathological levels, it is advisable to plan a clinical intervention that takes these characteristics into account.

Specifically, we set out to investigate which structural aspects of adolescent functioning, assessed using the Rorschach test administered and scored according to Exner's Comprehensive System (CS; Lis et al., 2007), were associated with various dimensions of emotional dysregulation, assessed using the Italian version of the Difficulties in Emotion Dysregulation Scale (DERS; Sighinolfi et al., 2010). In particular, we aimed to:

1. Verify whether the clinical and the nonclinical groups differed in terms of the scores obtained on the DERS and the Rorschach CS variables. In particular, we expected that the participants in the clinical group would obtain higher scores on DERS than the nonclinical group and that they would reach a pathological threshold on a greater number of Rorschach CS variables than the individuals in the control group;
2. Understand which aspects of personality structure, as assessed with the Rorschach CS, were associated with difficulties in emotion regulation as assessed by the DERS.

2 Materials and methods

2.1 Sample and procedure

This study drew on secondary data provided anonymously. They were originally collected by the Tiaré Association, Mental Health Services, an association offering mental health services intended for treating adolescent psychopathology.

The sample consisted of 100 Italian adolescents (Mean Age = 14.66; Standard Deviation (SD) = 1.635) divided into two groups:

- Nonclinical: 50 participants, including 32% females and 66% males, recruited from a scout group and middle and high schools (Mean Age = 14.32; min = 12 years old; max = 17 years old; SD = 1.60. Average Level of Education = 8.76; SD = 1.79). There were no exclusion criteria precluding participation in the study.
- Clinical: 50 participants, including 36% females and 64% males (Mean Age = 15.00; min = 11 years old; max = 18 years old; SD = 1.69. Average Level of Education = 7.79; SD = 1.70), residing in therapeutic or socio-rehabilitative communities affiliated to the Tiaré Association, which is made up of a group of psychologists, psychotherapists, psychiatrists and child neuropsychiatrists specializing in the treatment of mental health disorders in adolescence and young adulthood. The adolescents who participated in the study had been in the communities for at least 3 months and they had a history of complex trauma caused by physical and psychological violence, sexual abuse and other early adverse childhood experiences, as reported in their medical history. Furthermore, they displayed a heterogeneous psychopathological profile and they shared a difficulty in regulating their emotions, as shown by their behaviors and clinical observations.

The Rorschach CS and DERS scale were administered in one sitting both for the clinical and the nonclinical group; Rorschach CS was administered first because it is the more demanding task. Moreover, the administration of a self-report might have been emotionally alarming for some adolescents, generating a mental state that could have affected the administration of the Rorschach test (Meyer et al., 2015).

In the clinical group, the administration of both the Rorschach CS and DERS Scale took place as part of the psychological assessment process to which all minors who enter the community are subjected. The psychological testing took place on site at the residential center. The aim of the testing was to provide the clinical team with useful information about the adolescents' functioning and symptoms with a view to devising "tailored" treatment plans for them. The assessment procedure for the adolescents of the nonclinical group, instead, took place at the offices of the Tiaré Association—Services for Mental Health.

The clinical group was also assessed using SWAP-200, a clinician-report to be completed by practitioners who are already familiar with the adolescents. Notably, the protocol for using SWAP-200 requires that the clinician must have previously held at least five interviews with the adolescent (Shedler et al., 2014).

To gain a better understanding of the diagnostic heterogeneity characterizing the clinical group, the results obtained from the Shedler and Westen Assessment of Personality—200—Adolescents (SWAP-200-A; Westen et al., 2005; Shedler et al., 2014) are reported below. The SWAP-200-A is a tool consisting of 200 items completed by the clinician, allowing for the assessment of an adolescent's personality profile.

Based on the results obtained from the SWAP-200-A, we may describe the clinical group as follows:

1. Eighteen adolescents in the clinical group could be characterized as having a non-specific personality disorder. They were not diagnosed with any specific personality disorder (PD scores $\leq$ 60 T), but they did not fit the high-functioning prototype either (PD scores $\leq$ 60 T).
2. Sixteen adolescents obtained a PD scores of over 60 T. Specifically:

   A Twelve of them received two diagnoses and a high-functioning personality score of under 60 T. The most common comorbidity being borderline personality disorder and histrionic personality disorder (4 cases), followed by histrionic and antisocial (3 cases), and antisocial and narcissistic (3 cases). All of these comorbidities involved two personality disorders from cluster B. Finally, two adolescents had comorbidities between schizoid and schizotypal personality disorder, both of which belong to cluster A.

   B Two adolescents reached the cut-off for diagnoses in each of the four personality disorders composing cluster B (narcissistic, histrionic, borderline, antisocial).

   C Two adolescents received three diagnoses from cluster B (antisocial, histrionic, narcissistic personality disorder; antisocial, borderline, histrionic personality disorder).

3. One adolescent reached the clinical cut-off for histrionic personality disorder (T score $\geq$ 60) but also fit the prototype of a healthy personality (T score $\geq$ 60). According to the clinical guidelines presented in the Manual, this profile cannot be classified as a personality disorder.
4. Thirteen adolescents received a single diagnosis (PD scores $\geq$ 60 T and high-functioning score $\leq$ 60 T): five received histrionic personality disorder diagnosis, four antisocial personality disorder, and four narcissistic personality disorder.
5. The majority of diagnoses were from cluster B personality disorders (14 antisocial, 17 histrionic, 7 borderline, and 6 narcissistic); only a few diagnoses were from cluster A (6 schizotypal and 2 schizoid).
6. Two adolescents fit the high-functioning personality style (T scores $\geq$ 60).

The psychological testing was conducted by a team of psychologists and/or neuropsychiatrists who work in the host community and have over 15 years of experience.

2.2 Instruments

2.2.1 Difficulties in emotion regulation scale

Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004): the DERS is a self-report questionnaire comprising 36 items rated on a 5-point Likert scale (ranging from 1 = almost never to 5 = almost always), designed to assess patterns of emotional dysregulation. The scale includes a global score and six scales: non-acceptance (Cronbach's $\alpha = 0.84$), which evaluates difficulty in accepting one's negative emotions; goals (Cronbach's $\alpha = 0.73$) captures difficulty in achieving goals; impulse (Cronbach's $\alpha = 0.87$), which measures difficulties in controlling impulses; awareness (Cronbach's $\alpha = 0.62$), which refers to the difficulties in paying attention and recognizing emotions; strategies (Cronbach's $\alpha = 0.84$), which assesses the lack of emotion regulation strategies; and clarity (Cronbach's $\alpha = 0.74$), which captures the degree to which the individual can correctly distinguish among their emotions.

In our study, we used the validated Italian version of the DERS, as validated by Sighinolfi et al. (2010) in an adult sample. In that study, the scale scores displayed sufficient convergent, discriminant and criterion validity when compared with other self-report instruments used to measure anxiety, depression and positive and negative affect (Sighinolfi et al., 2010). Regarding the adolescent age group, Neumann et al. (2010) explored the utility of using the DERS in a sample of 870 young people aged from 11 to 17 years old. Their results displayed internal consistency and validity (Neumann et al., 2010). Such validation studies for the DERS do not exist in Italy, however many Italian researchers employ this scale to evaluate emotional dysregulation in adolescents (Fossati et al., 2014a,b; Pace et al., 2016).

2.2.2 Rorschach comprehensive system

The Rorschach Comprehensive System (CS) is a performance-based test composed by a set of 10 standardized inkblots for assessing an individual's personality, emotional functioning, and thought processes. The Rorschach CS method, which was developed by John Exner in the 1970s, has since become one of the most widely used and researched projective tests in clinical and forensic psychology. During the administration of the Rorschach CS test, the clinician presents the inkblots one at a time and asks the participant: "What could it be?." The participant's responses are recorded and later analyzed using a set of scoring procedures to identify specific characteristics of the participant's personality and emotional functioning (Parolin and di Lorenzo, 2009). We utilized the computerized ROR-SCAN program (copyright 1988–2014 by Philip F. Caracena) to obtain a structural overview and an interpretative report for each protocol. We selected specific CS variables based on their clinical significance and empirical evidence. In particular, we started from the list of variables selected by Mihura et al. (2013) in their meta-analytic work aimed at identifying Rorschach CS variables with stronger empirical support. From that list, two expert clinicians (15 years of experience) in the administration and interpretation of the Rorschach Comprehensive System selected the variables that best represented the emotion dysregulation construct based on the clinical meaning of the variables (Exner, 2003; Lis et al., 2007; Abbate and Porcelli, 2017) and based on their clinical experience. In total, we retained the 23 variables selected by both the clinicians. These are described in Appendix.

2.3 Data analysis

Before proceeding with the statistical analyses, the Rorschach CS variables were transformed into dummy variables (0 = non-pathological score and 1 = pathological score), according to the clinical cut-off defined in Appendix. For each of the Adj.es, EgoIndex, Blends, and FM variables, two sets of dummy variables (suffix A and B) were constructed given that very high or very low scores on these variables serve as markers of emotional dysregulation.

To test whether the clinical group exhibited higher levels of emotional dysregulation compared to the nonclinical group, the means of the DERS scores between the two groups were compared using a one-tailed t-test, with Cohen's d used to estimate effect size. To test whether the proportion of pathological identified for each Rorschach variable differed between the two groups, the proportions test (z-test) was conducted, with Cohen's h used to estimate effect size.

Finally, partial correlations were computed, while controlling for group membership, between the DERS scales and the Rorschach CS variables. All analyses were conducted using SPSS software (version 29).

3 Results

3.1 Comparison of mean scores of DERS scales across the two groups

Table 1 presents the comparison of the mean scores on the DERS subscales obtained by the clinical and nonclinical groups, respectively.

The clinical group obtained higher scores compared to the nonclinical group on the Nonacceptance, Impulse, Strategies, Clarity, and total score of the DERS scales. In terms of effect size, the difference between the two groups was of moderate magnitude (Cohen's d around 0.5). No statistically significant differences were observed in relation to the Goals and Awareness scales.

3.2 Comparison of Rorschach CS variables across the two groups

Table 2 presents the differences between the proportion of adolescents obtaining a pathological score in the selected Rorschach CS variables of the clinical and nonclinical groups.

Statistically significant differences in the expected direction (higher proportions in the clinical group) were observed in relation to the variables Wsum6, a:p, and MOR. Regarding the EgoIndex variable, there was a statistically significant difference in the opposite direction to the expected one, with higher values in the nonclinical group compared to the clinical group.

3.3 Partial correlations while controlling for group

Table 3 presents the partial correlations between the DERS scale scores (in columns) and the selected Rorschach CS dummy score (1 = pathological), while controlling for group membership (clinical vs. nonclinical group).

Notably, independently of group membership, there were both positive and negative correlations between the DERS scales and some of the Rorschach CS variables. In particular, the Strategies scale was positively correlated with the Rorschach variable CS MOR; Impulse with SumY; Awareness with high values on the EgoIndex (EgoIndexA) and with X-%; Clarity with SumY and with WSum6 and Nonacceptance with Food and with X-%. The DERS global scale was positively correlated with X-%, the only Rorschach variable that was positively associated with more than one DERS scale.

After controlling for differences as a function of group, the Clarity scale was negatively correlated with the CDI, with low values of EgoIndex (EgoIndexB) and with Lambda. Furthermore, the CDI was also negatively correlated with the Nonacceptance, Impulse, Strategies scales and with global DERS scale.

4 Discussion

4.1 Comparison of DERS means between the clinical and nonclinical groups

Consistently with our expectations, the adolescents in the clinical group exhibited greater emotional dysregulation than their nonclinical peers, as indicated by the DERS total score. Specifically, it was evident that individuals in the clinical group struggled more with understanding their emotions (Clarity), accepting negative emotions (Nonacceptance), regulating them (Strategies), and controlling their behavior (Impulse). These results reflect the tendency of patients, as readily observed in clinical practice and documented in the literature (Livesley, 2017), to experience an undifferentiated and chaotic mix of emotions, which is a source of

TABLE 1 Student's t outcomes for the differences in mean DERS scores across the clinical and nonclinical groups.

	Clinical group		Nonclinical group		Student's t	df	*p*-value one tail	Cohen's d
	M	SD	M	SD				
Nonacceptance	15.2	6.5	12.1	4.6	2.770	88.1	0.003	0.554
Goals	16.3	5.1	15.6	4.4	0.740	98.0	0.231	0.148
Impulse	17.3	6.9	13.8	4.7	2.941	86.2	0.002	0.588
Awareness	15.5	5.6	15.2	4.0	0.390	89.1	0.349	0.078
Strategies	21.3	8.6	17.2	6.6	2.686	91.3	0.004	0.537
Clarity	12.5	4.8	10.8	3.6	1.985	91.7	0.025	0.397
Total scale	98.1	28.1	84.6	18.9	2.812	86.0	0.003	0.562

df, degrees of freedom; M, Mean; SD, Standard Deviation.

TABLE 2 Rorschach CS variables: proportions of pathological scores for the clinical and nonclinical groups.

	Proportions		Z	*P*-value one tail	Effect size h
	Clinical group	Nonclinical group			
a:p	*0.70*	*0.40*	*3.02*	*0.001*	*0.61*
Adj.D	0.24	0.22	0.24	0.406	0.05
Adj.esA	0.14	0.18	−0.55	0.293	−0.11
Adj.esB	0.44	0.48	−0.40	0.344	−0.08
Afr	0.46	0.52	−0.60	0.274	−0.12
An + XY	0.22	0.20	0.25	0.403	0.05
BlendsA	0.02	0.02	0.00	0.500	0.00
BlendsB	0.16	0.22	−0.76	0.222	−0.15
CDI	0.50	0.62	−1.21	0.113	−0.24
CritCont	0.82	0.68	1.62	0.053	0.33
CShBlend	0.14	0.12	0.30	0.383	0.06
DEPI	0.34	0.32	0.21	0.416	0.04
EA	0.34	0.44	−1.03	0.153	−0.21
EgoIndexA	0.32	0.22	1.13	0.130	0.23
EgoIndexB	*0.38*	0.56	*−1.80*	*0.036*	*−0.36*
FC:CF + C	0.80	0.68	1.37	0.086	0.28
FMA	0.08	0.12	−0.67	0.252	−0.13
FMB	0.42	0.40	0.20	0.419	0.04
Food	0.16	0.10	0.89	0.186	0.18
Lambda	0.52	0.54	−0.20	0.421	−0.04
MOR	*0.22*	0.04	*2.68*	*0.004*	*0.57*
S-%	0.58	0.46	1.20	0.115	0.24
ShShBlnd	0.10	0.10	0.00	0.500	0.00
SumV	0.22	0.24	−0.24	0.406	−0.05
Sumy	0.22	0.34	−1.34	0.091	−0.27
Wsum6	*0.34*	0.14	*2.34*	*0.010*	*0.48*
X-%	0.54	0.52	0.20	0.421	0.04

Statistically significant comparisons are highlighted in italics.

suffering and is challenging to describe. Indeed, one of the goals of therapy is to help them to discern their emotional experiences and subsequently "label" them correctly. However, difficulty in accurately naming feelings was not exclusive to adolescents treated in communities, given that the Awareness scale of the DERS, which assesses the ability to recognize and identify emotions, did not yield significant differences between the clinical and nonclinical groups.[1] It is possible that this competence requires self-reflective skills that adolescents have not yet fully developed, hence the lack of significant differences between the two groups.

Intense and dysregulated emotions are often associated with distorted beliefs about emotions themselves, exacerbating the distress experienced. In these cases, it is not uncommon for patients to self-invalidate their emotional states, repeatedly telling themselves that they should not be feeling these emotions (Livesley, 2017). This internal dialog may evoke secondary feelings of shame, anger, or guilt, which adolescents in therapeutic communities reported more frequently than their un-treated peers. Another characteristic of these patients was their tendency to "fuse" with their emotions (Hayes et al., 1999), viewing emotions as non-transitory, enduring, and identity-defining. It seems that they did not experience an emotion but became the emotion, which could not be modulated. This might explain why adolescents in the clinical group were more convinced than their peers that once emotional reactions were triggered, they could not be modified.

Furthermore, the adolescents in the clinical group reported greater difficulty controlling their behavior when upset, possibly due to a higher degree of emotional lability. This trait is characterized by the tendency to experience intense emotions, even in response to minor events (emotional intensity), leading individuals to react rapidly and in an uncontrolled manner (emotional reactivity; Livesley, 2017). Lastly, there were no significant differences between groups with respect to the Goals scale of the DERS, which assesses difficulty in completing a task when experiencing negative emotions. Specifically, neither adolescents in the clinical group nor those in the nonclinical group reported difficulties in completing goal-directed actions when experiencing negative emotions.[2]

4.2 Comparison of Rorschach CS variables across the clinical and nonclinical groups

Among all the Rorschach CS variables examined in our study, only four discriminated between the two groups: MOR, WSum6, displaying a higher number of passive movements than ones (p > a), and low EgoIndex values. For the first three variables mentioned, the clinical group exhibited a significantly higher percentage of cases with pathological scores compared to the nonclinical group. Regarding low EgoIndex values, the percentage of individuals with pathological scores was higher in the nonclinical group.

Based on the results obtained, it is reasonable to assert that the clinical group had more participants with a negative self-representation (MOR), disturbed thinking processes (WSum6), and relationships characterized by dependence on others (p > a). All three of these dimensions are related to emotional dysregulation (Abbate and Porcelli, 2017). Specifically, the functioning of these adolescents appears to be characterized by:

1 We compared the scores of our sample to those obtained in the study conducted by Giromini et al. (2017), adjusted for age by using the equations reported in their contribution. From this comparison, it seems plausible to hypothesize that both our groups (clinical and nonclinical) exhibited unusually high levels of emotional unawareness, even when accounting for difficulties that could be physiologically expected for their age.

2 We compared the scores of our sample to those obtained in the study conducted by Giromini et al. (2017), adjusted for age by using the equations reported in Contribution. From this comparison, it appears that the adolescents in both the clinical and nonclinical groups displayed levels of emotional dysregulation in terms of difficulty in achieving goals, that may be viewed as developmentally appropriate for their age.

TABLE 3 Partial correlations between the DERS scale scores (in columns) and Rorschach CS dummy scores (1 = Pathological), while controlling for group membership (clinical vs. nonclinical group).

	Nonacceptance	Goals	Impulse	Awareness	Strategies	Clarity	Total
a:p	−0.10	−0.02	−0.07	−0.15	0.06	−0.14	−0.08
Adj.D	−0.09	−0.03	−0.07	−0.03	−0.01	−0.04	−0.06
Adj.esA	−0.02	−0.02	0.04	−0.06	0.01	0.10	0.01
Adj.esB	−0.12	−0.09	−0.11	0.09	−0.17	−0.13	−0.13
Afr	0.05	−0.08	−0.11	−0.10	0.03	0.02	−0.04
An + XY	0.14	−0.05	0.11	0.07	0.12	0.18	0.14
BlendsA	−0.03	−0.04	−0.01	−0.07	−0.07	−0.06	−0.07
BlendsB	0.12	−0.10	−0.10	0.10	−0.05	−0.06	−0.02
CDI	*−0.21**	*−0.09*	*−0.30***	*−0.01*	*−0.22**	*−0.21**	*−0.25**
CritCont	0.07	−0.10	−0.01	0.09	−0.08	0.11	0.01
CShBlend	−0.08	−0.04	0.05	−0.09	0.08	0.06	0.01
DEPI	−0.07	−0.03	−0.05	−0.10	0.06	0.02	−0.03
EA	−0.10	−0.02	−0.13	0.13	−0.08	0.00	−0.06
EgoIndexA	0.02	0.13	0.13	*0.20**	0.04	0.17	0.15
EgoIndexB	0.05	−0.07	−0.11	−0.09	−0.17	*−0.23**	−0.14
FC:CF + C	0.03	0.04	−0.03	−0.02	−0.03	−0.07	−0.02
FMA	−0.03	0.12	0.16	0.01	−0.04	0.08	0.06
FMB	−0.01	−0.02	−0.08	0.00	0.07	−0.09	−0.02
Food	*0.22**	0.15	0.15	0.06	0.07	0.07	0.16
Lambda	−0.03	−0.04	−0.15	0.02	−0.11	*−0.21**	−0.12
MOR	0.01	0.05	0.06	−0.10	*0.22**	0.14	0.10
S-%	0.07	−0.06	0.04	0.06	0.02	0.09	0.05
ShShBlnd	0.00	−0.14	−0.07	0.10	−0.02	0.05	−0.02
SumV	−0.14	−0.09	−0.10	0.09	−0.12	0.11	−0.08
Sumy	0.02	0.14	*0.22**	0.07	0.10	*0.22**	0.17
Wsum6	0.07	0.00	0.10	0.11	0.06	*0.20**	0.11
X-%	*0.21**	0.06	0.18	*0.25**	0.16	0.19	*0.24**

*$p < 0.05$; **$p < 0.001$; statistically significant comparisons are highlighted in italics.

10.3389/fpsyg.2024.1320520

1. A self-representation marked by pessimistic thoughts about the outcomes of their actions, triggering a series of poorly regulated negative emotions (MOR).
2. Relational immaturity, likely stemming from adverse childhood experiences that hindered the development of functional self-regulatory skills, characterized by dependency on others as emotional regulators (p > a).
3. Disturbed thinking processes interfering, among other things, with emotional regulation (WSum6).

In a clinical setting, professionals can use this information as a "warning bell": if these indicators (especially WSum6 and MOR, which were significantly correlated with Strategies and Clarity scores respectively) are present during the assessment, the clinician may need to assess the presence of some form of emotional dysregulation. Nevertheless, it might be hypothesized that given the nature of the clinical sample and the information available in the literature (Cook et al., 2005), these difficulties may result from early relational trauma, which is often associated with alterations in self-image (Williams, 2009; Van der Kolk, 2015), dysregulated emotions and behaviors (Ricciutello et al., 2012; Livesley et al., 2017), and cognitive difficulties (Cook et al., 2005).

4.3 Partial correlations between the DERS scales and Rorschach CS variables, while controlling for group membership

Some of the results obtained were in line with what is found in the literature and thus warrant fresh consideration, while others are counterintuitive and, in some cases, difficult to explain.

First, in our sample, we observed that participants who displayed ideational and emotional pessimism, which is characterized by a sense of helplessness (MOR), perceived their emotions as overwhelming and unchangeable (Strategies). These individuals tended to always see "the glass half empty," to evaluate relational context with distrust and discouragement, and to apply ineffective and unsystematic logic to their problems (Abbate and Porcelli, 2017). This thinking process increases individuals' sense of despair, which, in turn, compromises their motivation and increases their feelings of passivity (Livesley, 2017). It seems like these adolescents dwelt in their emotional pain because their all-pervasive pessimism did not help them to explore the situation and alternative strategies for overcoming it. Pessimism made them feel "stuck" in a condition (or emotion) from which they could not see any way out.

Second, those who experienced anxiety due to feeling incapable of dealing with a problematic situation (SumY) tended to lose control over their behavior more easily (Impulse). In stressful situations, these individuals tend to experience decreased attention and ability to make judgments, becoming subordinate to the emotional tension they are experiencing. Such inhibition of appropriate evaluative processes and higher-order cognitive skills (attention, concentration, evaluation, etc.) can lead these individuals (Abbate and Porcelli, 2017) to poorly regulate their behaviors, which is perceived as reduced control over their impulses.

Third, it is observed that participants who were overly self-focused (high Ego Index) or interpreted reality in a distorted manner (X-%) reported not considering their emotions valid, paying no attention to them, and not deeming them worthy of interest (Awareness). Such individuals tend to focus their attention on the negative aspects of their self-image (Abbate and Porcelli, 2017), which will likely be characterized by low self-worth and a lack of legitimacy in expressing their emotions, which are considered wrong and therefore intolerable (Livesley, 2017). Furthermore, these individuals are generally less reflective and may feel trapped in a state of turmoil that they struggle to understand and make sense of. The distorted reading of reality (X-%), on the other hand, may be due to the presence of distorted beliefs that compel individuals to view emotions as harmful and thus to be avoided at all costs.

Fourth, individuals with disturbed thinking processes (WSum6) or pathological levels of anxiety characterized by a sense of helplessness and inability to cope with situations (SumY) are less capable of clearly decoding their emotions (Clarity). It is possible that when pathological levels of fear of failure are reached, it becomes so debilitating that it generates confusion in individuals who can no longer make sense of what they are experiencing (Miers et al., 2011). Additionally, distorted thinking processes may lead to an interpretation of the world (both internal and external) as incoherent, unpredictable, and threatening (Abbate and Porcelli, 2017). The absence of predictability, in turn, increases suffering, because the individual feels overwhelmed by an anguish that cannot be comprehended or processed (Zvolensky et al., 2000).

Finally, those who demonstrated a strong need for dependence on others (Food) had more difficulty accepting their emotions, especially negative ones, which triggered anger, shame, guilt, embarrassment, or weakness (Nonacceptance). Given that the need for dependence is associated with a need to receive care and support, with a difficulty in assertiveness and with a marked sensitivity to loss and rejection (Meyer et al., 2015), we hypothesized that this need for closeness is in conflict with the fear of being rejected by others (Livesley, 2017), generating intense negative emotions that these individuals find unacceptable and from which secondary emotions of embarrassment, guilt, shame, or anger arise. Those who tend to interpret reality in a distorted manner (X-%) also have more difficulties accepting negative emotions (Nonacceptance). In this case, it might be hypothesized that the distorted reading of reality is due to the presence of a dysfunctional belief system that influences the individual's emotional and relational life. For example, there may be a belief that expressing negative emotions leads to rejection; this belief exposes individuals to secondary feelings of embarrassment, shame, guilt, or anger whenever they experience negative emotions (Gazzillo, 2021).

The study also yielded results contrary to our expectations, which are more difficult to interpret. Specifically, it emerged that, after controlling for differences due to group membership, those with a pathological score for the CDI reported few difficulties in regulating their emotions in responding to the DERS (total scale, Nonacceptance, Impulse, Strategies, and Clarity). The CDI likely reflects chronically limited coping skills, probably stemming from inadequate relational skills that did not develop appropriately during emotional development (Abbate and Porcelli, 2017). Our results seem to suggest that adolescents who are less mature in terms of coping skills also do not report experiencing shame, embarrassment, or guilt in relation to their emotional experiences (Nonacceptance), maintaining control over their behavior (Impulse), and being able to regulate their emotional state (Strategies). Furthermore, they believe that they are not confused about what they feel and can make sense of their

emotions (Clarity). A positive CDI is associated with feelings of helplessness and loneliness, a tendency to experience distress that cannot be effectively managed except, for example, by deploying strategies of emotional impoverishment and avoidance (Abbate and Porcelli, 2017). It is possible that adolescents with these characteristics, in order to avoid augmenting their distress or sense of helplessness, avoid confronting their emotions and defensively deny any difficulty in regulating affects.

Additionally, those with low self-esteem who depend entirely on others' opinions to value themselves (low Ego Index) tend to report less confusion about their feelings and less difficulty in making sense of what they feel (Clarity). The same is true of for those who have an avoidant thinking style and tend to oversimplify stimuli (High Lambda). These individuals defend themselves from emotions by avoiding them and/or avoiding unclear and uncertain situations that trigger them. For example, in the face of an ambiguous stimulus like the Rorschach inkblots, they may enter a state of cognitive dissonance, against which they defend themselves by simplifying the object and not engaging with its complexity. As a result, when faced with the task of saying "what [the blot] might be," these individuals respond without saying what they actually see (Abbate and Porcelli, 2017). We hypothesized a similar response style for the DERS: indeed, the Clarity scale investigates internal confusion (Gratz and Roemer, 2004; Sighinolfi et al., 2010), and, to protect themselves from the discomfort arising from ambiguity, our adolescents may have activated a "defensive" response style. It is as if, for them, the discomfort resulting from uncertainty can only be resolved by minimizing (or denying) the degree of this uncertainty. Generalizing this way of behaving to daily life situations, these data seem to suggest a mode of functioning that is characterized by low tolerance for ambiguity and uncertain situations.

5 Conclusion and future research

The aim of our study was to explore the construct of emotional dysregulation in adolescence using two different diagnostic instruments: a self-report tool specifically designed to assess emotional dysregulation and a performance-based test that implicitly and broadly investigates the personal functioning. Below, we describe some limitations of our work and outline some avenues for future research.

First, it is important to consider the composition of the sample. The adolescents in the clinical group were recruited from therapeutic communities whose patients do not share a specific psychopathological profile, but rather have all been affected by early relational traumas. Hence, the adolescents in the clinical group exhibited a variety of disorders, as also confirmed by the SWAP-200-A, which justified their inclusion in the study, which was not focused on a specific form of psychopathology but on emotional dysregulation. However, this diagnostic heterogeneity may have introduced intervening variables that could be further examined in future studies. Additionally, future research could aim to screen adolescents in the nonclinical group to exclude individuals with psychopathological problems and/or clinically significant levels of emotional dysregulation in the absence of diagnosis and/or treatment.

Second, no information was available regarding the presence of trauma or clearly psychopathological conditions in the nonclinical group. Indeed, there were no exclusion criteria precluding participation in the study; it is therefore possible that some of these adolescents had had traumatic experiences, suffered from psychological symptoms or were receiving treatment in an outpatient setting. Future research could overcome these limitations by including a screening phase for the nonclinical group, aimed at excluding participants who have suffered traumatic experiences and/or who are undergoing psychological treatment and/or who present psychopathological symptoms.

Third, the use of the Rorschach CS in research raises some considerations. This is a diagnostic tool that facilitates comprehensive and in-depth evaluation of personality structure. This result is achieved via a complex interpretation process in which the meaning of each variable is influenced by the values assumed by all the others. It is clear, then, that the interpretation of the test is a complex procedure, making it particularly useful for clinical practice and, at the same time, challenging for research. The interdependence displayed by most of the Rorschach CS indicators enriches the interpretation of individual protocols but is lost when data are collected from numerous individuals. For example, for a finer interpretation of the CS EgoIndex variable, its scores are compared to those obtained on the Fr + rF variable. However, when considering all the data together in a matrix, this comparison is no longer possible, which has repercussions on the interpretation of the results. Indeed, if the nuances of meaning attributed to each variable are lost, this can compromise the interpretation of the relationships observed between the Rorschach variables and the other research data.

Another difficulty concerns the selection of the Rorschach CS variables. Within the Comprehensive System, there are no "official" variables that measure emotional dysregulation or are associated with it. Therefore, although the present selection was guided by the reasoning of expert clinicians and an analysis of the literature, it may be subject to errors.

Despite the limitations described above, our study still provides some food for thought that can be useful for clinical practice and, in particular, for formulating an appropriate therapeutic plan. For example, considering that adolescents with traumatic histories residing in therapeutic communities tend to perceive reality in a distorted manner and have difficulty accepting their negative emotions, a possible goal of community intervention could be to offer young people new relational models that help them to change the underlying belief system that informs their interpretation of events. For example, in their relationships with staff, patients could experience a Significant Other who recognizes their emotions as valid, encourages them to express them, and helps them modulate them. This way, the patient learns not to feel guilty when experiencing negative emotions and modifies the belief that once triggered, an emotion cannot be changed.

Finally, future studies could delve into the counterintuitive data we obtained and could not fully explain.

Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: restrictions apply to the availability of these data. Data was obtained from TIARÉ Association for Mental Health and are available on request from the corresponding author with the permission of

TIARÉ Association for Mental Health. Requests to access these datasets should be directed to SC, s.cristofanelli@univda.it.

Ethics statement

The current study was approved by the Ethics Committee of Valle d'Aosta University. The study was conducted in accordance with the local legislation and institutional requirements. The research utilized archive data provided by the Tiarè Association, Mental Health Services. From the data available to us, it is evident that informed consent was requested in written form, in accordance with the Codice Etico AIP (ethical code for research in psychology, Italian Psychological Association) and the provisions of the Italian laws on privacy and data protection (L. 196/2003).

Author contributions

SC: Conceptualization, Methodology, Writing – original draft, Project administration, Supervision, Writing – review & editing. ST: Methodology, Supervision, Writing – original draft, Writing – review & editing, Data curation, Formal analysis, Software. EC: Methodology, Writing – original draft, Conceptualization. GB: Conceptualization, Methodology, Writing – original draft. FT: Conceptualization, Methodology, Writing – original draft. VV: Conceptualization, Methodology, Writing – original draft. LF: Conceptualization, Methodology, Project administration, Supervision, Writing – original draft, Writing – review & editing.

Funding

The authors declare that no financial support was received for the research, authorship, and/or publication of this article.

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.

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1320520/full#supplementary-material

References

Abbate, L., and Andraos, M. P. (2019). Scrivere la relazione psicodiagnostica. Dal test alla stesura della relazione in psicologia clinica e forense. Milano: Raffaello Cortina.

Abbate, L., and Porcelli, P. (2017). Rorschach Comprehensive System. Manuale di siglatura e interpretazione. Milano: Raffaello Cortina.

Ahmed, S. P., Bittencourt-Hewitt, A., and Sebastian, C. L. (2015). Neurocognitive bases of emotion regulation development in adolescence. *Dev. Cogn. Neurosci.* 15, 11–25. doi: 10.1016/j.dcn.2015.07.006

Biberdzic, M., Ensink, K., Normandin, L., and Clarkin, J. F. (2018). Empirical typology of adolescent personality organization. *J. Adolesc.* 66, 31–48. doi: 10.1016/j.adolescence.2018.04.004

Cohen, P., Crawford, T. N., Johnson, J. G., and Kasen, S. (2005). The children in the community study of developmental course of personality disorder. *J. Pers. Disord.* 19, 466–486. doi: 10.1521/pedi.2005.19.5.466

Cook, A., Spinazzola, J., Ford, J., Lanktree, C., Blaustein, M., Cloitre, M., et al. (2005). Complex trauma in children and adolescents. *Psychiatr. Ann.* 35, 390–398. doi: 10.3928/00485713-20050501-05

D'Agostino, A., Covanti, S., Monti, M. R., and Starcevic, V. (2017). Reconsidering emotion dysregulation. *Psychiatry Q.* 88, 807–825. doi: 10.1007/s11126-017-9499-6

Dimaggio, G., Popolo, R., Montano, A., Velotti, P., Perrini, F., Buonocore, L., et al. (2017). Emotion dysregulation, symptoms, and interpersonal problems as independent predictors of a broad range of personality disorders in an outpatient sample. *Psychol. Psychother. Theory Res. Pract.* 90, 586–599. doi: 10.1111/papt.12126

Exner, J. E. (2003). The Rorschach: A comprehensive system. Volume 1: Basic foundations and principles for interpretation (4th ed.). New York: John Wiley.

Fossati, A., Feeney, J., Maffei, C., and Borroni, S. (2014a). Thinking about feelings: affective state mentalization, attachment styles, and borderline personality disorder features among Italian nonclinical adolescents. *Psychoanal. Psychol.* 31:41. doi: 10.1037/a0033960

Fossati, A., Gratz, K. L., Maffei, C., and Borroni, S. (2014b). Impulsivity dimensions, emotion dysregulation, and borderline personality disorder features among Italian nonclinical adolescents. *Borderline Personal Disord Emot Dysregul* 1:5. doi: 10.1186/2051-6673-1-5

Garofalo, C., and Neumann, C. S. (2018). "Psychopathy and emotion regulation: taking stock and moving forward" in Routledge international handbook of psychopathy and crime. ed. M. DeLisi (London: Routledge), 76–97.

Garofalo, C., and Velotti, P. (2015). Alcohol misuse in psychiatric patients and nonclinical individuals: the role of emotion dysregulation and impulsivity. *Addict. Res. Theory* 23, 294–300. doi: 10.3109/16066359.2014.987758

Garofalo, C., Velotti, P., Callea, A., Popolo, R., Salvatore, G., Cavallo, F., et al. (2018). Emotion dysregulation, impulsivity and personality disorder traits: a community sample study. *Psychiatry Res.* 266, 186–192. doi: 10.1016/j.psychres.2018.05.067

Garofalo, C., Velotti, P., and Zavattini, G. C. (2018). Emotion regulation and aggression: the incremental contribution of alexithymia, impulsivity, and emotion dysregulation facets. *Psychol. Violence* 8, 470–483. doi: 10.1037/vio0000141

Garofalo, C., and Wright, A. G. C. (2017). Alcohol abuse, personality disorders, and aggression: the quest for a common underlying mechanism. *Aggress. Violent Behav.* 34, 1–8. doi: 10.1016/j.avb.2017.03.002

Gazzillo, F. (2021). Fidarsi dei pazienti. Introduzione alla Control-Mastery Theory. Nuova edizione. Milano: Raffaello Cortina.

Giromini, L., Ales, F., de Campora, G., Zennaro, A., and Pignolo, C. (2017). Developing age and gender adjusted normative reference values for the difficulties in emotion regulation scale (DERS). *J. Psychopathol. Behav. Assess.* 39, 705–714. doi: 10.1007/s10862-017-9611-0

Gratz, K. L., and Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: development, factor structure, and initial validation of the difficulties in emotion regulation scale. *J. Psychopathol. Behav. Assess.* 26, 41–54. doi: 10.1023/B:JOBA.0000007455.08539.94

Gritti, E. (2020). Introduzione al Capitolo Stimulus-attribution test in Lang, M. (a cura di), I test psicologici che lo psicologo deve conoscere. Milano: Raffaello Cortina.

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Rev. Gen. Psychol.* 2, 271–299. doi: 10.1037/1089-2680.2.3.271

Gross, J. J., and Jazaieri, H. (2014). Emotion, emotion regulation, and psychopathology: an affective science perspective. *Clin. Psychol. Sci.* 2, 387–401. doi: 10.1177/2167702614536164

Hamlat, E. J., McCormick, K. C., Young, J. F., and Hankin, B. L. (2020). Early pubertal timing predicts onset and recurrence of depressive episodes in boys and girls. *J. Child Psychol. Psychiatry* 61, 1266–1274. doi: 10.1111/jcpp.13198

Hayes, S. C., Strosahl, K. D., and Wilson, K. G. (1999). Acceptance and commitment therapy, vol. *6*. New York: Guilford press.

Lis, A., Zennaro, A., Salcuni, S., Parolin, L., and Mazzeschi, C. (2007). Il Rorschach secondo il Sistema Comprensivo di Exner. Manuale per l'utilizzo dello strumento. Milano: Raffaello Cortina Editore.

Livesley, W. J. (2017). "Una strategia modulare per il trattamento della disregolazione emotiva" in Trattamento integrato per i disturbi di personalità. Un approccio modulare. eds. J. W. Livesley, G. Dimaggio and J. F. Clarkin (Milano: Raffaello Cortina Editore).

Livesley, W. J., Dimaggio, G., and Clarkin, J. F. (2017). Trattamento integrato per i disturbi di personalità. Un approccio modulare. Milano: Raffaello Cortina Editore.

Malone, J. C., and Malberg, N. (2017). "Stili e sindromi emergenti di personalità in adolescenza" in PDM-2: 0/18. Infanzia e adolescenza 2020. eds. V. Lingiardi, N. McWilliams and A. M. Speranza (Milano: Raffaello Cortina).

McLaughlin, K. A., Hatzenbuehler, M. L., Mennin, D. S., and Nolen-Hoeksema, S. (2011). Emotion dysregulation and adolescent psychopathology: a prospective study. *Behav. Res. Ther.* 49, 544–554. doi: 10.1016/j.brat.2011.06.003

Meyer, G. J., and Erdberg, P. (2018). "Usare i dati di riferimento normativi R-PAS, con particolare attenzione al caso di bambini e adolescenti" in R-PAS: Casi clinici. Guida all'utilizzo del Rorschach performance assessment system, 2022. eds. L. Giromini and E. Zennaro (Milano: Hogrefe).

Meyer, G. J., Viglione, D. J., Mihura, J. L., Erard, R. E., and Erdberg, P. (2015). Rorschach Personamce Assessment System. Somministrazione, siglatura, interpretazione e manuale tecnico. Milano: Raffello Cortina.

Miers, A. C., Blöte, A. W., and Westenberg, P. M. (2011). Negative social cognitions in socially anxious youth: distorted reality or a kernel of truth? *J. Child Fam. Stud.* 20, 214–223. doi: 10.1007/s10826-010-9423-2

Mihura, J. L., Meyer, G. J., Dumitrascu, N., and Bombel, G. (2013). The validity of individual Rorschach variables: systematic reviews and meta-analyses of the comprehensive system. *Psychol. Bull.* 139:548. doi: 10.1037/a0029406

Neumann, A., van Lier, P. A., Gratz, K. L., and Koot, H. M. (2010). Multidimensional assessment of emotion regulation difficulties in adolescents using the difficulties in emotion regulation scale. *Assessment* 17, 138–149. doi: 10.1177/1073191109349579

Offer, D., Kaiz, M., Howard, K. I., and Bennet, E. S. (1998). Emotional variables in adolescence, ant their stability and contribution to the mental health of adult men: implications for early intervention strategies. *J. Youth Adolesc.* 27, 675–690. doi: 10.1023/A:1022808314659

Pace, C. S., Guiducci, V., and Cavanna, D. (2016). A controlled study of attachment representations and emotion regulation in female adolescents with anorexia nervosa. *Mediterr J Clin Psychol* 4, 1–29.

Parolin, L., and di Lorenzo, M. (2009). "Il test di Rorschach: il sistema comprensivo" in La diagnosi testologica. Test neuropsicologici, test di intelligenza, test di personalità e testing computerizzato. eds. J. E. Exner, F. Corno and M. Lang (Milano: Franco Angeli).

Ricciutello, C., Cheli, M., Montenegro, M. E., Campieri, M., Fini, A., and Pincanelli, F. (2012). Violenza intrafamiliare e salute mentale in adolescenza: il trauma complesso come disturbo dello sviluppo. *Riv. Psichiatr.* 47, 413–423. doi: 10.1708/1175.13032

Shedler, J., Westen, D., and Lingiardi, V. (2014). La valutazione della personalità con la SWAP-200. Nuova edizione. Milano: Raffaello Cortina Editore.

Siegel, D. J. (2014). La mente adolescente. Milano: Raffaello Cortina Editore.

Sighinolfi, C., Pala, A. N., Chiri, L. R., Marchetti, I., and Sica, C. (2010). Difficulties in Emotion Regulation Scale (DERS): Traduzione e adattamento Italiano. *Psicoterapia Cognitiva e Comportamentale*. 16:141.

Silvers, J. A. (2022). Adolescence ad a pivotal period for emotion regulation development. *Curr. Opin. Psychol.* 44, 258–263. doi: 10.1016/j.copsyc.2021.09.023

Turpyn, C. C., Chaplin, T. M., Cook, E. C., and Martelli, A. M. (2015). A person-centered approach to adolescent emotion regulation: associations with psychopathology and parenting. *J. Exp. Child Psychol.* 136, 1–16. doi: 10.1016/j.jecp.2015.02.009

Van der Kolk, B. A. (2015). Il corpo accusa il colpo. Mente, corpo e cervello nell'elaborazione delle memorie traumatiche. Milano: Raffaello Cortina.

Velotti, P., Elison, J., and Garofalo, C. (2014). Shame and aggression: different trajectories and implications. *Aggress. Violent Behav.* 19, 454–461. doi: 10.1016/j.avb.2014.04.011

Westen, D., Dutra, L., and Shedler, J. (2005). Assessing adolescent personality pathology. *Br. J. Psychiatry* 186, 227–238. doi: 10.1192/bjp.186.3.227

Williams, R. (2009). Trauma e relazioni: Le prospettive scientifiche e cliniche contemporanee. Milano: Raffaello Cortina.

Zvolensky, M. J., Eifert, G. H., Lejuez, C. W., Hopko, D. R., and Forsyth, J. P. (2000). Assessing the perceived predictability of anxiety-related events: a report on the perceived predictability index. *J. Behav. Ther. Exp. Psychiatry* 31, 201–218. doi: 10.1016/S0005-7916(01)00006-4

frontiers | Frontiers in Psychology

TYPE Hypothesis and Theory
PUBLISHED 25 July 2024
DOI 10.3389/fpsyg.2024.1409373

OPEN ACCESS

EDITED BY
Angelo Panno,
European University of Rome, Italy

REVIEWED BY
Isabella Poggi,
Roma Tre University, Italy
Omid Khatin-Zadeh,
University of Electronic Science and Technology of China, China
Giulia Ballarotto,
Sapienza University of Rome, Italy
Jennifer Marie Binzak Fugate,
Kansas City University, United States

*CORRESPONDENCE
Gernot Hauke
✉ g.hauke@era-europa.com

RECEIVED 29 March 2024
ACCEPTED 11 July 2024
PUBLISHED 25 July 2024

CITATION
Hauke G, Lohr-Berger C and Shafir T (2024) Emotional activation in a cognitive behavioral setting: extending the tradition with embodiment.
Front. Psychol. 15:1409373.
doi: 10.3389/fpsyg.2024.1409373

Emotional activation in a cognitive behavioral setting: extending the tradition with embodiment

Gernot Hauke[1]*, Christina Lohr-Berger[1] and Tal Shafir[2]

[1]Embodiment Resources Academy, Munich, Germany, [2]The Graduate School of Creative Arts Therapies, Faculty of Social Welfare and Health Sciences, University of Haifa, Haifa, Israel

The neuroscience-based concept of "embodied cognition" or "embodiment" highlights that body and psyche are closely intertwined, i.e., effects of body and psyche are bidirectional and reciprocal. This represents the view that cognitive processes are not possible without the direct participation of the body. Traditional Cognitive Behavioral Therapy (CBT) addresses emotional processes on a conceptual level (dysfunctional thoughts, beliefs, attributions, etc.). However recent findings suggest that these processes already start at the level of bodily sensations. This opens up a way of working in therapy that includes the level of bodily sensations, where the development of emotional meaning is supported by bottom-up processes. Bidirectionality of embodiment can be effectively exploited by using body postures and movements associated with certain emotions, which we refer to as embodiment techniques, to deepen the physical experience of poorly felt emotions and support the valid construction of emotional meaning. This embodied approach offers several advantages: Prelinguistic or hard-to-grasp aspects can be identified more easily before being processed verbally. It is also easier to work with clients who have limited access to their emotions. Thus, in this paper we describe a new embodied CBT approach to working on the dysfunctional schema, which is based on three modules: body focus, emotional field, and interaction focus. In addition, using specific zones in the space of the therapy-room allows the embodiment of problematic interactions, as well as of power and powerlessness, closeness and distance, etc. Directly experiencing these processes on one's own body in the protected space of therapy allows faster and deeper insights than would be possible with conversations alone. Finally, the vitalizing power of emotions is used to create coherent action plans and successful interactions. This working method is illustrated by means of a case from practice.

KEYWORDS

embodiment, emotional activation, emotion regulation, CBT, bodily expressions of emotions, levels of emotional awareness, interoception

1 Introduction

In a review article "Embodiment in Clinical Disorders and Treatment" Riskind et al. recognize Cognitive Behavioral Therapy (CBT) as a successful treatment method, which is considered the preferred "gold standard" treatment for many mental disorders (Riskind et al., 2021). However, these authors also cite findings showing that a significant percentage of patients do not respond to this treatment or relapse later. They suggest that among several

factors that might explain this phenomenon, insufficient attention to the embodiment of mental states may play an important role.

Classical CBT is concerned with the cognitive concepts of self and world-view and the resulting expectations, beliefs, attributions, etc. (Beck, 2008; Beck and Haigh, 2014). Consistent with this approach, it refers also to emotional processes at a conceptual level (Beck and Haigh, 2014). However, in more recent approaches to understanding cognition, it is increasingly recognized that body and mind interact in a bidirectional way. Movements, postures and inner bodily states are not only seen as resulting from mental processes and states, but they also have an effect on them, and physical sensations are recognized as an important source of information for arriving through a bottom-up process to the conceptual labeling of experienced emotion (Smith and Lane, 2015). This bidirectional interaction between body and mind is referred to as embodiment.

In the following paper, we describe an experience-oriented embodiment-based procedure that can be used to trigger, intensify and differentiate patients' typical emotional processes within the framework of CBT. This approach makes it possible to initiate changes in emotional processes in a targeted manner, ensuring a higher level of commitment from the patient. We have developed and are using in our clinics this working format in which patients gain direct access to specific emotions through their bodies. This work includes, in addition to the more "classic" emotions dealt with in CBT, of fear and anger, other distinguishable emotions such as disgust, sadness, shame, guilt, etc. (Hauke, 2018b). These emotions can be explored, expressed and regulated using embodiment techniques so that ultimately goal realization can happen. The therapeutic dialogue between the patient and therapist, is then much more than verbal exchange: from the very first hour, we involve the entire body: movement, facial expressions, gestures, posture, voice and breath.

1.1 The embodiment perspective

According to current embodiment research, body and psyche are closely intertwined, i.e., the effects of body and psyche are reciprocal and mutual (Fuchs and Schlimme, 2009; Körner et al., 2015; Tschacher, 2018; Riskind et al., 2021). This bidirectionality has been demonstrated experimentally (Michalak et al., 2009; Adolph et al., 2021). For example, people who feel sad or depressed show typical physical non-verbal characteristics of sadness: their upper body is slumped and bent forward, and they move in patterns that are characteristically different from those of healthy controls. Conversely, if such posture, facial expression and movement patterns are unobtrusively induced in healthy controls, psychological characteristics of sadness appear (Flack, 2006; Michalak et al., 2009; Shafir et al., 2013). Furthermore, there are findings showing that certain breathing techniques also induce and intensify specific emotions (Bloch et al., 1991; Boiten et al., 1994; Philippot et al., 2002). For a review of the effects of movement and breathing patterns on emotions see (Shafir, 2015).

Tschacher also associates bidirectionality with the long-known "ideomotor effect," according to which cognitive activities simultaneously activate corresponding muscular and visceral systems in the body (Tschacher, 2018). Bidirectional processes are conceptualised by him as circular interactions that are constantly active without us having to be aware of them. Embodiment theory thus states that pure abstract cognition alone does not exist; we are always unconsciously in an ideomotor simulation mode (Tschacher and Dauwalder, 1999).

A similar view is held by authors who advocate the "embodied simulation" approach. According to this approach, every form of cognition is linked to a simulation process in which the brain re-uses previous experiences of situations or internal or external stimuli similar to the current one, and simulates the interoceptive (i.e., input from the body to the brain representing the physiological state of the body, such as thermal, metabolic, hormonal etc.) and proprioceptive (i.e., input to the brain from the muscles and joints, which gives the brain information about posture and movement) information that entered the brain during that previous experience (Gallese, 2011; Hesslow, 2012; Barsalou, 2015; Barrett, 2017; Ross and Atkinson, 2020). According to Barret, the expected sensory feedback based on this simulation is then compared to the actual one, and this leads to the recognition, classification and naming of the current experience. As a result, emotions are embodied and facilitated by language (Barrett, 2017).

The embodied simulation of an emotionally charged situation can therefore also be seen as emotional activation. Imagining, remembering or visualizing during the therapy session, things one has seen, heard or felt before, activate the same processes in the brain as if one actually sees, hears or feels those things (Smith and Semin, 2004; Kosslyn et al., 2006; Niedenthal, 2007; Barsalou, 2009; Halberstadt et al., 2009). As will be described later, we are exploiting these effects of imagination and visualization, as well as the effects of movement and postures, in our suggested embodied approach to CBT.

For the purpose of emotional activation, i.e., the deliberate and artificial evocation of an emotion through imagination in therapy, classical CBT relies on various *in-vivo* exposure procedures (Craske et al., 2014) and on in-*sensu* exposure in particular. These exposure procedures are based on the approach of Lang, who postulated that the mental representation of an emotionally charged stimulus (e.g., a reference person experienced as difficult) activates an associative network of stored information that overlaps with the information that is activated when the stimulus is actually experienced in reality (e.g., when encountering the real person) (Lang, 1979). This formulation, reminds of the current embodiment simulation hypothesis.

1.2 Embodied emotion and emotion in CBT

The idea that the body affects emotions and feelings has been suggested already by James at the end of the 19th century. According to the James-Lange theory of emotion, bodily responses to external or internal stimuli are necessary for emotional experience, and therefore feelings are not the cause of autonomic nervous system activation and emotional behavior, but rather are the consequences of them. In the late 20th century this view, that emotions originate from the body, has been re-formulated in neurophysiological terms by the neuroscientist Antonio Damasio in his neurobiological hypothesis (Damasio, 1995), which is part of his famous somatic markers' hypothesis (Damasio, 1996). According to Damasio, the current state of the body is conveyed to the brain through proprioception and interoception. These inputs from the body create in the brain unique neural activation patterns, whose purpose is to help us survive by causing us to behave in a way that will maintain our homeostasis. These neural activation patterns are our emotions.

In a recent review, the models that follow the path of James and Lange were referred to as "embodied theories of emotions" and they were contrasted with the so-called "cognitive theories of emotions" that form the theoretical framework of classical CBT (Smith and Lane, 2015). According to these authors, these two types of theories differ in what they regard as necessary and sufficient conditions for emotions. While according to the embodied theories, some kind of representation of bodily changes is required, for the cognitive theories the mandatory component is cognition, and physical changes such as arousal, visceral or musculoskeletal changes, will at best be seen as secondary by-products of cognitive appraisal. The body is neither necessary nor causally involved in constituting the appraisal. From this perspective, the cognitive theories of emotion show a quality of "disembodiment," which is accordingly also predominantly evident in the way CBT works (Gjelsvik et al., 2018; Pietrzak et al., 2018).

Embodied theories of emotion, on the other hand, do not deny that emotions can be triggered by thoughts or judgments, or that appraisal is an important component of emotions, but they do not consider any of these processes to be mandatory for emotions to emerge (Smith and Lane, 2015). The authors suggest a new theory for emotions which combines both types of theories. Consciously perceiving and recognizing one's own emotional state is understood in this suggested model as the result of complex, iterative bottom-up and top-down network interactions (Smith and Lane, 2015). Top-down based on previous experiences, expectations are created regarding the state of individual body parts, whole body patterns and the conceptual emotional meaning of these body patterns. These expectations are compared with the sensory input provided bottom-up by the body. Matching the expected with the real sensory input leads to the selection of appropriate actions. This idea echoes the embodied simulation theory described above.

1.3 Emotion regulation

The importance of emotion regulation in therapy stems from the fact that problems with emotion regulation (ER) are included in at least 75% of the diagnostic categories of mental disorders (Werner and Gross, 2010). In fact, it is well established that chronic deficits in emotion regulation occur in all major psychopathological categories.

An emotion regulation model that is close to cognitive emotion theories and CBT is that of Gross (1998). According to Gross, emotion regulation encompasses all processes that are aimed at controlling the spontaneous flow of emotions. It aims at the initiation of new or the modification of existing emotions, the accentuation, reduction, suppression or maintenance of emotional reactions (Gross and John, 2003). Emotion regulation serves to secure central needs, and supports the pursuit of specific goals and the global system of personality. Functioning emotion regulation is therefore essential for a person's progress in developmental processes. Gross's ER model (Gross, 1998) comprises five processes of regulation. Since emotions unfold over time, these emotion regulation strategies are often differentiated along the time axis of the emotion-generating process (although they can also run in parallel) (Gross, 2002): the first process is situation selection—we decide whether we want to approach or avoid a situation. The second: situation modification—changing the situation. The third: attention deployment, i.e., changing the focus of attention (e.g., distraction). The fourth: cognitive change (e.g., reappraisal), in which the meaning of the situation changes. The final process is response modulation—control over the emotional response (i.e., behavior, physiology, and experience).

The embodiment perspective encourages extensions of this classical model of ER. In this regard, we point out that the Smith & Lane's emotion generation model described above also implies a model of embodied emotion regulation with several hierarchical neural and functional levels (Smith and Lane, 2015). Pollatos and Ferentzi (2018) contrast this model with Gross's (1998) model and conclude that Gross's cognitive approach corresponds to the explicit and goal-directed cognitive activities which only occur at the highest conceptual level of Smith & Lane's model. This means that visceral and somatic mechanisms are essentially neglected in Gross's model.

However, several studies showed that higher interoceptive accuracy (defined as the ability to accurately recognize signals from within the body) was associated with more intense feelings and higher activation of underlying brain structures or peripheral responses during emotional stimulation (Critchley and Garfinkel, 2017). Thus, interoception may particularly influence the experience of emotions when individuals are better attuned to their body signals. This means that the success of emotion regulation is influenced by the awareness of corresponding body signals, which demonstrates the integrative value of the embodied emotion regulation model by Smith and Lane (2015).

1.4 Emotional awareness

Perception and interpretation of bodily signals in the emotion generation process can be put within the framework of a cognitive-developmental theory of emotional awareness, which is inspired by Piaget's theory of cognitive development (Lane and Schwartz, 1987). According to this theory, a person's ability to perceive and recognize emotions in themselves and others is a cognitive ability that undergoes a development similar to that described by Piaget for cognition in general, whereby here we speak of "levels of emotional awareness." When cognition is mentioned here, this also includes emotion, because emotion and cognition are seen as an inseparable unit, as is also the case by other authors of embodied cognition (e.g., Winkielman et al., 2015). These levels of emotional awareness are characterized by an increasingly higher degree of differentiation with regard to the processing of information from the body and the outside world (Table 1).

A higher level of emotional awareness goes hand in hand with a greater ability to perceive the complexity in the experience of oneself and others. People with lower emotional awareness fail to interpret their body signals as feelings and instead only experience stress in a rather undifferentiated way on a physical level (Subic-Wrana et al., 2005, 2010), while the ability to precisely name and granulate the emotion associated with the increasing arousal is essential if an adequate response is to be developed (Erbas et al., 2022; Fugate and Wilson-Mendenhall, 2022). Thus, the high relevance of the concept shown in Table 1 for psychotherapy. In this context, the distinction between primary and secondary emotions is also of particular importance in therapeutic practice (Greenberg and Safran, 1987; Sulz, 1994; Fruzzetti et al., 2008). Primary emotions are normative, adaptive and also prototypical ways of

reacting within a given context, for example, anger in the face of a barrier to satisfy a need. They show up quickly and seem almost reflexive. In the case of anger, for example, the body wants to go forward and attack. Primary emotions are primarily related to the person and their needs to be satisfied in the present moment. Secondary emotions represent a response to these primary emotions (Greenberg and Safran, 1987; Sulz, 2006; Fruzzetti et al., 2008). Particularly common secondary emotions are fear, shame, and guilt and they act as "stopper" of the primary emotions. They were learned in the past in order to spare the relationship with an important caregiver, because in childhood, when the fulfillment of needs was mainly dependent on caring adults, this was a skill essential for emotional survival. As will be described in the next section and illustrated through a case study, in our approach to CBT we use embodied techniques to help patients regulate their emotions by helping them to increase their emotional awareness and to differentiate between their primary and secondary emotions through increasing their interoceptive and proprioceptive awareness.

TABLE 1 Levels of emotional awareness according to Lane and Schwartz (1987).

• Level 1: undifferentiated bodily sensations, e.g., sick, dizzy, sleepy
• Level 2: perception of action tendencies or undifferentiated global affect (wants to hit a wall, wants to cry). Negative or positive valence (undifferentiated good or bad, stressful)
• Level 3: specific concrete emotion (happy, sad, anxious, etc.)
• Level 4: can name several emotions according to level 3 as well as emotional ambivalence
• Level 5: perceive mixtures of emotions that differ for the self and other persons

2 Using embodiment for emotion activation and regulation in CBT

Our method of working presented below describes how to use in CBT the important insights of the concept "embodiment". According to this concept, cognition and body sensations are inextricably linked, we take these dynamics into account by working in a circular manner on our three modules shown in Figure 1 body focus, Emotional field and Interaction focus.

These three modules will first be presented, with their central question in relation to the patient (Hauke and Lohr, 2019), and then be described in more depth. To clarify and demonstrate the proceedings and potential of our way of working in every step, we provide also a prototypical example case "Anne," which was created based on clinical experience with several different patients. For a better understanding of the case, some of key biographical data and the results from a former CBT treatment are given below.

Anne comes to therapy – again

The 39-year-old patient Anne suffers from chronic depression. She is married, has a 16-year-old son and works as a preschool teacher. Anne was free of symptoms until six months ago. Anne describes herself as rather shy and less assertive. Her son Tom has started to rebel intensively. Lately he was brought home by the police after he had been fighting with peers. Anne is very concerned that her son is going down the wrong path. She tried to talk to her husband Marc about her concerns, but he only says that education is her responsibility. Complaining about the situation with Tom at her parent's place, her father just accused Anne for not being tough enough. But her attempts to be more assertive with her son remained unsuccessful. During her arguments with him she starts crying early and loses. She sleeps

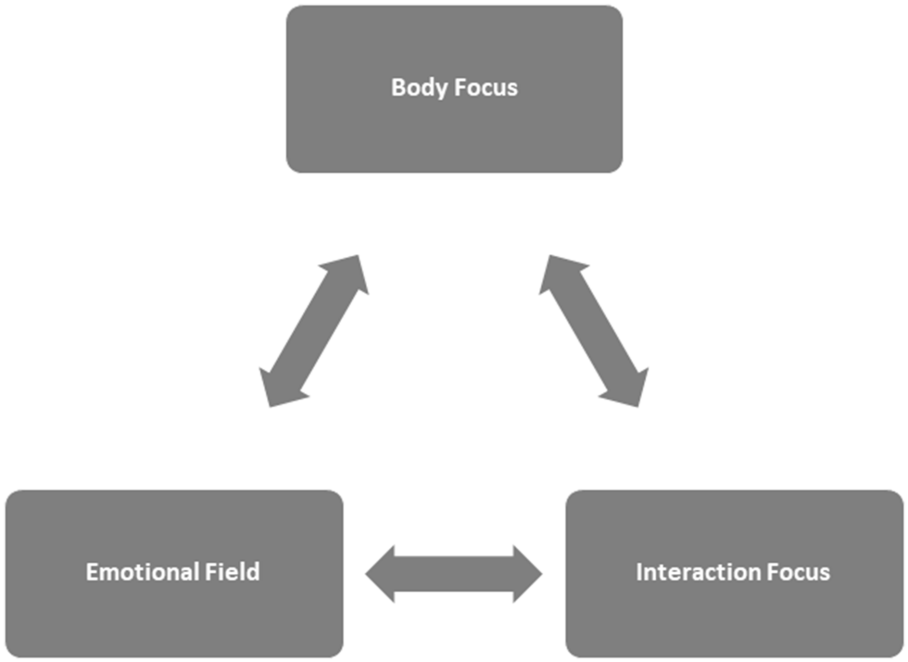


FIGURE 1
The three modules of the suggested embodied approach to CBT.

very little and ruminates in bed, while waiting for Tom to come home from his parties. She feels more and more helpless and alone. Physically, she now suffers from severe stomach pain nearly every day. It's hard for her to keep her upper body upright with this pain. Therefore, she stopped her hobby horse riding.

Anne's biographical background
She grew up in a strict home as the eldest sister to two younger brothers. She describes her father as a loud and dominant person, and her mother as a caring and calm individual, who mostly obeyed her father's commands. She met her husband Marc in high school. He does not like to talk about feelings, but is very reliable and hardworking. Anne feels therefore often alone with all of her worries and needs.

Anne behaves in daily life the way she learned it in the strict environment of her childhood, even though she knows from her previous therapy that she should take another path. Anne tries in vain to satisfy her need for affection and harmony with the same attempts of being easy to handle for others and with dutiful behavior. But with her teenage son she fails and exhaustion progresses.

Anne's former CBT treatment experience
She experienced her first depressive episode, when her son went to first grade and she started working again. Anne often felt overwhelmed and worried that she would not be able to fulfill her duties in all parts of her life. Thus, she started her first CBT treatment which helped her a lot. As a result of the CBT she learned to be more organized and to do more self-care, and she started riding horses again. She also learned how to adapt her high household demands to her new role as a working mother and how to stop her automatic thoughts of self-criticism.

2.1 Module 1—body focus and safety

This module deals with the question:

"How can a patient feel calm and secure in his/her body, and turn to it calmly so that it can effectively support them in achieving their goals?"

Emotion regulation begins with the body. Stressful developmental conditions in the family of origin, verbal and physical experiences of abuse and violence, experiences of massive devaluation in peer groups, etc. prevent the body from being experienced as a safe shelter. The establishment of the body focus and safety are essential for addressing patients' problems in a truly effective manner, because only those patients who feel safe can attend to their bodies (Podolan and Gelo, 2023), and only those who can observe themselves, will become aware of their emotions and needs (Beitman and Soth, 2006).

2.1.1 The body as a safe shelter

The usually so self-evident feeling of having one's own body—the so-called bodily self-awareness—presupposes that one feels that his body belongs to oneself and is anchored in a certain place in space (Iachini et al., 2014). This basic feeling arises from the processing of information within the so-called "**peripersonal space**," a zone that extends around the body roughly within arm's reach (Bogdanova et al., 2021).

To ensure appropriate and safe interaction with our physical and social environment, our brain makes a clear distinction with respect to spatial conditions: Objects present in, or moving into, the peripersonal space, receive special attention because it is in this zone that most interactions with the environment take place. The peripersonal space is also considered a safety zone that is important not only for the regulation of ordinary interactions, but also for rapid responses when dealing with stress in social situations (Iacoboni and Dapretto, 2006). Thus, objects that enter this zone might activate motor programs for goal-directed actions such as avoidance or defensive movements. Information processing regarding the peripersonal space also enables predictions of negative consequences during physical contact, e.g., when one must protect oneself from unwanted intrusion. This intrusion can act like an invasion that immediately spikes physiological measures of stress (Evans and Wener, 2007). An example of this would be an assault, causing trauma.

Therefore, it is important to give patients the opportunity to, not only experience security within the therapeutic alliance, but also to physically experience security in their body and to perceive it sensually. As we will see in the example case, the simplest and clearer way to do so, is first to determine a safety zone and physically defining it in the space of the room (e.g., with the help of a rope). As a second step, practicing defensive body reactions and verbal signals to protect this zone is another very helpful way to support patients to establish and strengthen their body focus. For more detailed information on the methods just mentioned, please read (Hauke and Lohr, 2020).

2.1.2 The body as a source of information

People interact with their environment through their bodies. They touch and are being touched, and they see, hear or smell objects, people and events in their environment. The sensory perception of these stimuli immediately triggers an emotional neurobiochemical response in the body. This response indicates the extent to which the situation is relevant to the person and it makes itself felt through bodily sensations such as abdominal pressure, pain, blushing, changes in breathing pattern, nausea, and more. This neurophysiological barometer informs whether an object or situation is supportive or harmful, rewarding or threatening, and motivates approach or avoidance behavior. The ability to consciously perceive such bodily sensations not only influences the experience of a particular emotion but is crucial for a successful use of emotion regulation strategies (Füstös et al., 2013; Pollatos and Ferentzi, 2018). Thus, it is important to take the body seriously as a source of information and specific body signals as essential information for behavioral control in a wide variety of situations. Noticing and recognizing rising body sensations and impulses to act, require body focus and attention to what one feels or senses, which necessitates some practice.

Body scanning, mindfulness and mirror exercises have proven themselves as effective methods for achieving such bodily awareness (Weineck, 2018). Helping the patient to find simple verbal descriptions for the body events, in elementary, straightforward "feeling language," instead of creating hypotheses and concepts, is also very useful. Examples of such simple bodily descriptions are:

- Feeling heavy hearted
- Feeling butterflies in the stomach
- Having a lump in one's throat

Becoming aware of one's emotions based on bodily sensations is a bottom-up process. These "messages" of the body are then put into simple words by the patient together with the therapist, and, if necessary, put into further contexts in a top-down oriented way of working. Both working principles are illustrated by Weineck (2018).

> **Anne's body focus work**
> When Anne started to tell her new therapist about her current situation at home, she said: "I know I should feel more anger and act more tough with my grown-up son! My last therapist told me so already. But it is hard to describe. Anger for me is just a logical thought, but I have never really felt it in my body. In childhood I saw my brothers fighting furiously and afterwards laughing together. That was a very strange world for me, which I still cannot understand. Being physically angry just doesn't feel like me."
>
> The therapist explains to Anne that, in fact, she may not yet have found physical access to her anger. In order to find this access, it is important that Anne knows her body and its reactions very well. However, the current stress in Anne's life makes this very difficult, because she is often way too distracted, for example, when waiting for her son to come home at night. In order for Anne to be able to devote herself to observing her body reactions in peace and quiet, while doing mindfulness exercises for example, she first needs to feel a sense of security again. During the therapy session, Anne is given the task of defining a space around herself with a rope, in a size which she finds comfortable. At first, Anne finds the task unusual, but soon rejoices in having space all to herself. Standing inside this space she feels her breathing becoming easier, a smile forming on her face and her stomach loosening. Anne is surprised by the rapid changes in her body sensations, when she makes her space smaller: her chest gets tight and her stomach tense. She knows this feeling too well from her everyday life. Anne gets" homework" from her therapist: to look for a place at home where she can claim her space and mark it on the floor. She should visit this space every day and practice her mindfulness exercises there for 15min.
>
> Anne opts for the guest room on the top floor of her house. There are only a few pieces of furniture there and she is undisturbed even when her husband and son Tom are at home.

2.2 Module 2—the emotional field: getting out of the diffuse experience of stress!

The problem-solving process begins with emotion-activation work because emotions provide navigation and vitality in a quick and accurate manner. The emotional activation and processing take place in the so-called **Emotional Field** (Hauke and Dall'Occhio, 2013). This work deals with the question:

> "What is the network of experiences and emotions that repeatedly steers the patient in problematic directions?"

Patients come to therapy to solve problematic situations. Such situations offer possibilities for exploring very valid, favorable, or unfavorable strategies of emotion regulation. For a deeper understanding of the patient's problems, it is crucial for both the therapist and patient that the explored emotion regulation strategies are not only talked about, but that they are directly experienced and demonstrated. Experiencing emotion regulation strategies increases both quality and speed of emotional processing. The Emotional Field does justice to the fact that in an interaction situation (e.g., in a marital conflict) patients experience usually more than one emotion. Several emotions are usually unfolded in parallel or one after the other. Experiencing the emotions in the Emotional Field helps to lead the patient from the initially diffuse experience of stress to distinguishable emotions.

2.2.1 Structure and composition

The patient's experience in daily life is brought into the therapy room using the "Emotional Field"—a circumscribed empty space, separated from the seating area and the rest of the room (represented as the gray colored areas in Figure 2), which is marked on the floor as an area to move in Figure 2 shows a possible arrangement.

This space provides room for several different spatial positions, which are marked by lines, using removable tape or ropes, and later on, with labeled cards. The lines separate the experiencing zone from the two lateral areas, where the exact location of the expert position-dedicated for reflection, and of the neutral position-dedicated for emotion regulation, can be chosen by the patient. By dedicating different places in the room to different parts of the therapeutic process, the bottom-up emotional work which is mostly about perception and sensing, is clearly separated for the patient from the top-down work of reflection and regulation. Changing position in space helps the patient to make the distinction between feeling his body and talking about insights.

Thus, the patient is supported in distinguishing between experiencing, analyzing, and regulating emotions, which are all different kind of useful practices that take place in the successful process of emotion regulation. These practices are benefitted by using the body and its changes of positions in space.

Figure 3 gives a more detailed insight into the composition and therapeutic process which takes place in the Emotional Field and its various spatial positions as described in details below.

The patient can concentrate on working in one spatial position, but also has all other positions in view, so that s/he can move to work in them when necessary. In the beginning of the therapeutic process, cards labeled with different emotions (shown as grey rectangles in the figure) are placed on the floor by the patient to spatially mark the different positions, and s/he can move their location within the experiencing zone as the therapeutic process unfolds. Throughout the therapeutic process, the patient moves freely, and switches between the different positions in the room. The main embodied emotional work takes place in the experiencing zone, starting from the confrontation with the interaction partner and alternating with the need to analyze and regulate. The therapist follows the patient as s/he moves from one position to the next, stands to their side or behind them, and makes suggestions for position changes among the following positions:

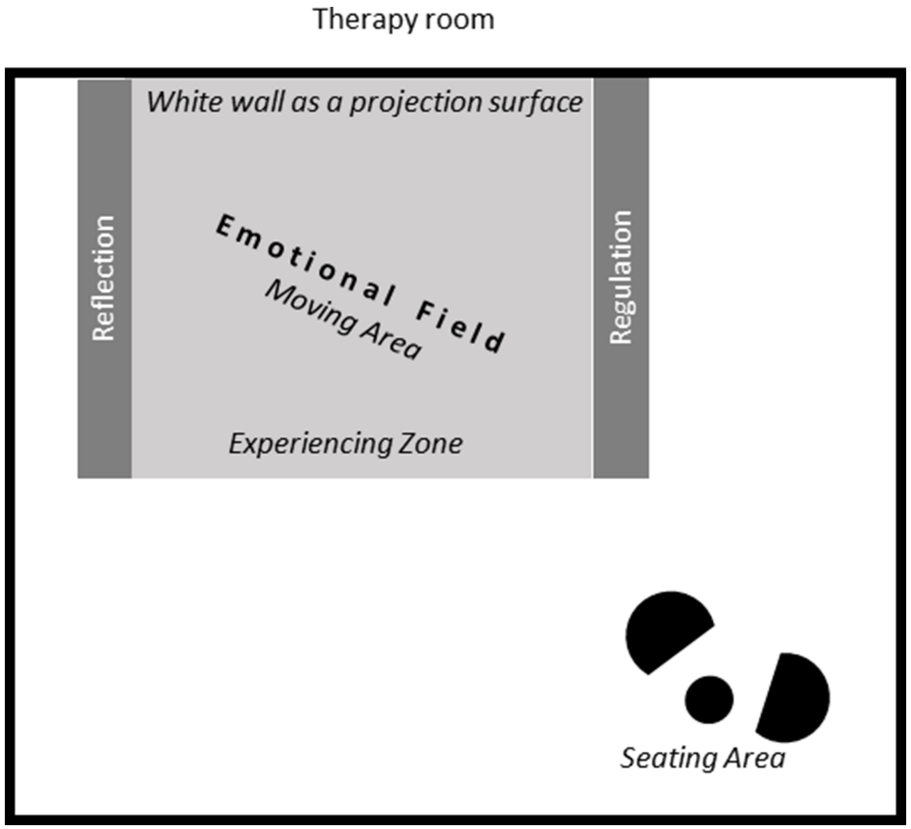


FIGURE 2
A potential arrangement of the therapy room for applying the suggested embodied approach to CBT.

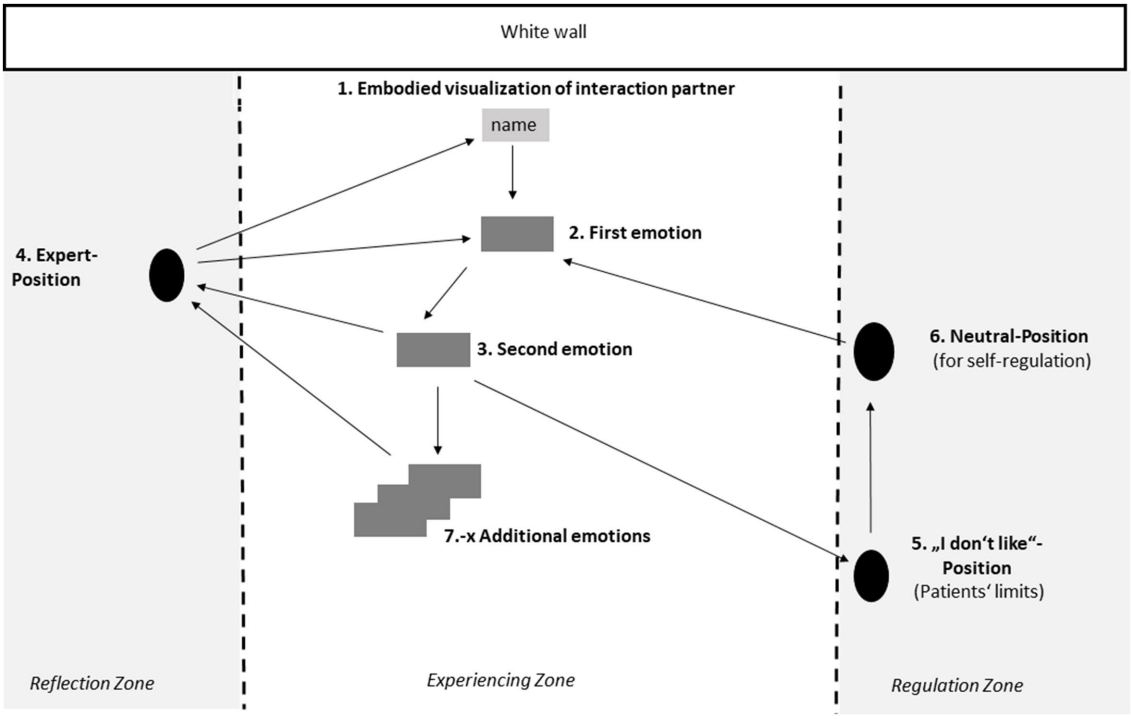


FIGURE 3
The therapeutic process which takes place in the emotional field and its various spatial positions.

2.2.1.1 Position 1 – starting with a vivid visualization and embodiment (through mimicry) of the problematic person

The emotional work at the Emotional Field starts with an embodied visualization and enactment of a problematic situation with a relevant interaction partner (e.g., family member or a colleague). Designation or name of the relevant person is written down on a card. This card is placed in front of the white wall, and the patient visualizes the person in the problematic situation standing at that point and interact with him/her as vividly as possible—including all possible senses. The patient then puts him/herself in the shoes of his/her interaction partner and imitates their typical posture, gesture, tone of voice and facial expressions. By doing so, the interaction partner's emotional impact on the patient becomes more perceptible for the patient and therapist.

2.2.1.2 Position 2 – experience the emerging of the first emotion

Back in his/her own shoes the confrontation with the relevant interaction partner usually leads to a rapid emotional reaction, expressed through physical sensations and impulses. Patients often use expressions such as "Now my chest is getting tight!," "I feel heat in my head!" or "I would like to sink into the floor!." The patient uses these bodily sensations as clues to the emerged emotion.

2.2.1.3 Position 3 – experience the emerging of the second emotion

If patients are guided to deepen the experience of the first emotion with the help of embodiment techniques (see section 2.2.2), another emotion usually appears after about 1–2 min. It announces itself by a change in the body sensations. This "tipping point" between the emotions is usually accompanied by spontaneous expressions, such as "Now I want to straighten up!," "I feel the energy returning to my body!," or the patient suddenly starts to cry.

2.2.1.4 Position 4 – talking at the expert position

The expert position is placed by the patient at the edge of the Emotional Field and serves for both patient and therapist as a place for reflection. Both are experts: the patient for his/her life, and the therapist for psychological contexts. Here, what has been experienced in positions 2 and 3 in a bottom-up process, is now discussed and classified in a top-down process. At this position the cognitive therapeutic work is done, including the referencing of the experienced bodily and emotional responses to the patient's biography and the formulation of the patient's reaction chain based on the concept of primary and secondary emotions (see section 2.2.3).

2.2.1.5 Position 5 – exit option at the "I do not like"-position

In such an intense therapy process, security and control must be guaranteed for the patient. This includes that resistances are taken seriously and are given their own position, the so called "I-do not-like"-Position. The patient can switch to this position, whenever the feeling arises that s/he wants to end the exercise—for whatever reason. Sometimes, after talking about the reason with the therapist, a continuation of the therapeutic process is possible.

2.2.1.6 Position 6 – self-regulation on the neutral-position

The patient can choose this position, whenever s/he feels overwhelmed from the intensity of an emotional episode. In this position, the therapist leads – a previously practiced and therefore well-known – emotional neutralization exercise, which involves the whole body, e.g., a simple physical exercise like the one Bloch (2006) recommended.

2.2.1.7 Position 7-x—experiencing the emerging of additional emotions

Problematic situations are usually linked to a network of emotions. Usually, several other emotions emerge beside primary and secondary emotions. These new emerging emotions are then also deepened, named, and experienced with the help of our embodiment techniques (see 2.2.2) and are used in the further therapeutic process.

The process of experiencing the emotions and reflecting is done at different positions in the Emotional Field (see Figure 3). At first, the work concentrates on the immediate perception, feeling and simple description of bodily reactions that arise in response to the experience. This approach to physical sensations corresponds to the bottom-up method described earlier (see section 2.1.2). It is necessary to provide access to pre-linguistic content. Once the emerging emotion is clear, the work in the expert position switches to top-down analysis of the situation and the emotional response to it in relation to one's biographical history. The top-down oriented work by both patient and therapist together, takes place at the "Expert-Position." Work at this position supports mentalizing: What was previously experienced in the present moment is not only visited, but also classified, analyzed, differentiated, and questioned. This stimulates a more precise understanding of the emotional messages and the patient's own behavior. Through this process, the patient becomes the "expert" for his or her experience.

> **Anne is entering her first Emotional Field**
> Anne decided to work on a problematic situation with her little supportive husband. The argument arose when Anne wanted to explain to him that she needs his help with Tom and that she wants him to back her up. In order to ensure an intensive emotional activation for Anne, she is first asked by the therapist to portray her husband as vividly as possible. Therefore, Anne first places the card with her husband's first name in front of the wall and stands on the card with her back to the wall as a sign that she is now slipping into his shoes. Guided by her therapist, Anne chooses a typical body posture of her husband, a phrase that he frequently says, and his corresponding facial expressions, so that Anne's husband becomes tangible as the central reference person in the room. Anne then positions herself in front of the wall that shows her "visualized" husband. Anne chooses a shorter distance from the wall and a crouched position, because she has always felt a bit inferior to him, because of his high self-esteem. Supported by the therapist, Anne now begins to describe what she feels in her body. Anne reports a tightness in her chest that makes her breathing shallow. In addition, she feels an impulse to make herself even smaller. Anne should now give in to this impulse. She crouches down and condense her body very tightly, until she can hardly breathe and her stomach starts to hurt. Anne should now wait for the next body impulse and give in to it. After a short time,

she reports a heat rising in her head. Anne feels an urgent desire to get up. However, when Anne stands up in front of her husband again, the heat immediately disappears. Anne wants to make herself small again. At this point, the therapist asks Anne to move to the so-called expert position a reflection point in the room located away from the experiential zone in front of the wall. Here Anne and her therapist try to give a name to the different emotional states she has just experienced. The first emotion that emerges is very familiar to Anne. It is fear, which takes away her breath and helps her to hide. Anne is familiar with the strange heat, but she cannot think of a more concrete name for it. The therapist writes down the two terms 'fear' and 'heat' each on a different card. Anne places both cards in front of her visualized husband. After this short conversation, the therapist asks Anne if she feels ready to go into the experiential zone again and find out more about this heat. Anne agrees. Both Anne and the therapist start again with the confrontation of Anne with her husband in front of the wall. As in the first run, Anne's fear shows up first, which—if intensified—again creates an impulse to stand up and heat in the head. The therapist asks Anne to reinforce these body signals as well. Anne now also feels a strong desire to move closer to her husband and reports an impulse to yell at him. She yells, "This is your son, too! Do something!" Now Anne feels significantly taller. To reinforce this feeling, her therapist gives her a wooden stool to stand on. From here she can now look down on her husband, but at that moment all courage leaves Anne and she immediately wants to make herself small again and to back away. The therapist lets Anne follow her body impulses and then discusses her experience again at the expert position.

2.2.2 Embodiment techniques using movements characteristics

Information processing by embodied cognition allows the body to become an ally in the Emotional Field (Hauke et al., 2016; Hauke and Lohr, 2020). Embodiment techniques can include the use of specific breathing patterns, facial expressions, direction of gaze, postures, gestures and movements that include specific movement characteristics. Starting with the work of Bloch (1989), Bloch et al. (1991), and Bloch (2006), who developed specific patterns to evoke emotion through posture, facial expressions, gestures, and breathing patterns, further studies used specific movements and postures (e.g., Duclos and Laird, 2001; Carney et al., 2010; Shafir et al., 2013). The question of whether any of these patterns are hardwired in the brain (e.g., Cowen and Keltner, 2017, Saarimäki et al., 2018, Nummenmaa, 2022) or can be learned in context and facilitated by language (Barrett et al., 2007; Cristaldi et al., 2024) is an ongoing debate.

A particularly promising innovative approach in evoking emotions is the use of movement characteristics defined by Laban Movement Analysis (Shafir et al., 2016), since, like hardly any other approach, it enables each individual to evoke the emotion using their own personal motor repertoire, rather than using very specific movements, which might be physically difficult or unnatural for them to execute. Laban Movement Analysis, originally conceived by Rudolf Laban, is a comprehensive, well-established and widely accepted movement-analysis method, which provides systematic language for describing, documenting and interpreting qualitative and quantitative aspects of movement, by defining various types of motor components (Bartenieff and Lewis, 2002; Studd and Cox, 2013; Fernandez, 2015).

Table 2 shows examples of movement characteristics which when moved can induce or enhance specific emotion. These movement characteristics which are based on motor components from Laban Movement Analysis (written below with capital letters), are described in the table in language that can be understood and applied by everybody.

The advantage of using movement characteristics as opposed to specific movements is the ability to personalize the required movements for evoking specific emotion, adjusting them to each patient based on their personal movement vocabulary, their motor coordination and their range of motion, as well as their natural whole-body emotional expressions. This way, the patient does not have to move a specific movement which s/he might not feel comfortable with, or simply cannot physically perform, but can move any

TABLE 2 Examples of movement characteristics which when moved, induce specific emotions.

Emotion	Movement characteristics to evoke and deepen this emotion
Happiness	Jumping, Rhythmic movements such as tapping, skipping, or dancing, moving (the arms and head) Upward, Rising (the chest area), Light movements, Spreading [opening to the side the arms, legs and torso (e.g., widening the chest and shoulders)], Rotating (either the entire body as a whole, i.e., turning around one self like in a Sufi dance, or the upper body, i.e., twisting)
Sadness	Head drops down, Sinking of the chest area, Passive Weight, i.e., feeling very heavy, moving Downward towards the floor (e.g., dropping from a standing position to the knees), Stillness (i.e., not moving at all), Enclosing the body, Near Reach Kinesphere (i.e., moving small movements within a small peripersonal space), touching the face or upper body (neck, chest, shoulders), slow movements.
Anger	Expand the body and make it big, Advance the chest area forward, Strong, Direct (i.e., towards a specific target), and Sudden movements with Bound flow (i.e., in a very held and controlled way)
Anxiety	Condensing and Enclosing the body, Retreating backwards in the chest area, Moving Backward and Downward in the general space, Bound Flow (i.e., moving in a very held and controlled way), Near Reach Kinesphere (i.e., moving within a small peripersonal space)
Disgust	Condensing the body (i.e., making it small and narrow), Gestures of bringing the hand to the stomach/center of the body, Twist the upper body away from the disgusting object, move Backward in space, move as if one is throwing up (enact vomiting).
Pride	Direct and Strong Upward movements of the arms, Spreading the body (e.g., wide stance, arms to the sides, wide and open chest), Rising the chest area
Shame	Sinking down and Retreating backward the chest area while the head is rotating sideways and tilted down, looking down, or when moving forward—Head Rotate to look sideways, covering the face with both hands, moving with Bound Flow

movement as long as it includes one or some of the movement characteristics associated with that emotion. For example: to evoke anger, the patient might use the combined movement characteristics: Strong, Direct and Sudden by kicking or stomping with the leg, or by punching, hitting the table strongly with the palm, or slamming a door, with the arm(s). All the above-described movements are done with the movement characteristics (Laban motor components) of Strong, Direct and Sudden. People who have physical or emotional difficulty to move strongly and directly (e.g., people who prefer avoiding confrontations), can advance in the room pushing their chest forward while expanding their body and raising their arms to the sides, or just make strong fists and push their chest forward slowly and in a very controlled way (Bound flow) while standing in place, if they have difficulty with and are usually trying to hide or avoid anger expression.

The induction of emotions through movement, though, has to be done gradually, if we want it to feel natural and to really affect the emotional state. A depressed person cannot just start dancing and feel happy, because such abrupt change in his movement will feel awkward and artificial, if at all possible. The movement characteristics which evoke the desired emotion should be added to the patient's movement gradually, one by one. The theory of Laban Movement Analysis suggests principles that can be used to support such gradual change in one's movement pattern. These principles and how to work with them are described in details in Tsachor and Shafir (2017).

Lastly, it should also be noted that getting rid of, and stop using a motor component that is associated with a specific emotion, can weaken the feeling of that emotion. For example, if a sad patient always sinks in his chest and constantly looks at the floor with his head dropping downward, standing erect and looking forward may already reduce some of his sad feelings.

> **Anne learns to explore and deepen her anger**
> When the therapist realizes how difficult it is for Anne to vent her anger, he suggests another exercise based on the movement characteristics. Anne is given the task of going completely into her fear and making herself as small as possible. Step by step, she is now being guided by her therapist to first give up the movement characteristics of fear, starting with the condensed and crouched posture. Anne is asked to lift her head, slowly sit up and look around. Then she is asked to stand up and carefully take her first steps. Now the therapist guides her to gradually incorporate into her movement the movement characteristics of anger. She begins by moving forward more purposefully and speeding up a little. Later on, Anne expands her body. Anne is repeatedly asked about her feelings and how they change during the movement. The aim of this exercise is to let Anne consciously feel the tipping point between her fear and her anger, but above all, to physically feel her anger very consciously and carefully. Anne reports after the exercise: "It was amazing. I felt my fear so well in the condensed posture and after a few seconds my stomach started hurting like hell. It only went away when I got up and began to breathe freely again. I wouldn't have associated my purposeful movement with anger at all, but it helped me a lot to focus and feel kind of more confident. But it wasn't until I pushed my chest forward and expanded my arms, that I really felt angry. I immediately started feeling hot and powerful and many swearing words that I would like to yell at my husband, came into my mind."
>
> These two emotions – fear and shame—being dominant in Anne's body and mind, led her to patterns of submissive behavior. Anne has already understood mentally that her submissive behavior would not help to set boundaries to her son or win arguments with her husband, but she was unable to act otherwise, because the physical and emotional basis of anger were missing in her body. Being guided step by step to experience the tipping points between primary and secondary emotions with the help of the movement characteristics, helped Anne to develop a strong physical connection to her anger before using it in interaction.
>
> After deepening the connection to her anger, Anne is now able to feel the power that is connected with the anger and this awoke her interest. Now she is ready to learn, how to dose her anger appropriately.

In the way we work in the Emotional Field, we use the movement characteristics in particular, when it comes to emotions that the patient is hardly aware of, or has not yet fully developed to use them appropriately in his/her life. In addition, the gradual development of emotional expression also allows the patient's body awareness to be improved. S/he is thus able to consciously try out every physical component of his/her emotional expression and trace changes in his/her emotional experience. This enables a very targeted and individual work with emotions.

2.2.3 Evaluating experience in the emotional field – understanding the reaction-chain

Once emotions are activated by imagination via embodied simulation, they can entail different reactions within the person. These reactions have different causes and therefore also different intentions. The unresolved dilemma of different impulses to act, triggered by different emotions at the same time, creates the overwhelming moments of stress that the patient experiences (Renna et al., 2020). Therefore, as explained in section 1.4, it is very helpful in the therapeutic work, to distinguish between primary and secondary emotions (Greenberg and Safran, 1987; Sulz, 1994; Fruzzetti et al., 2008).

For most patients, secondary emotions have turned into automatic responses and they now hide the primary emotion beyond recognition and consciousness. Hence, in the Emotional Field the well-known secondary emotion emerges first and the primary emotion usually shows up afterwards. If the impulse of the primary emotions had to be suppressed strongly in the family of origin, a bouquet of secondary emotions often arises to cover it "watertight." The spontaneous, primary emotion is thwarted, and another emotion is displayed instead—a simple and effective form of emotion regulation. These additional emotions can also be discovered in the Emotional Field and can be used in the further therapeutic process.

Since the emotional processes happens so quickly, most patients cannot differentiate between the primary and secondary emotions anymore without therapeutic support. Methods such as the so-called reaction chain (Sulz, 2006; Hauke, 2018a) were developed to make the connection between primary and secondary emotions cognitively clear to patients. Figure 4 shows the general structure of a reaction chain, as it can be used for work with patients.

Even if this reaction-chain pattern is logical for the patient and cognitively easy to understand, while analyzing it with the therapist,

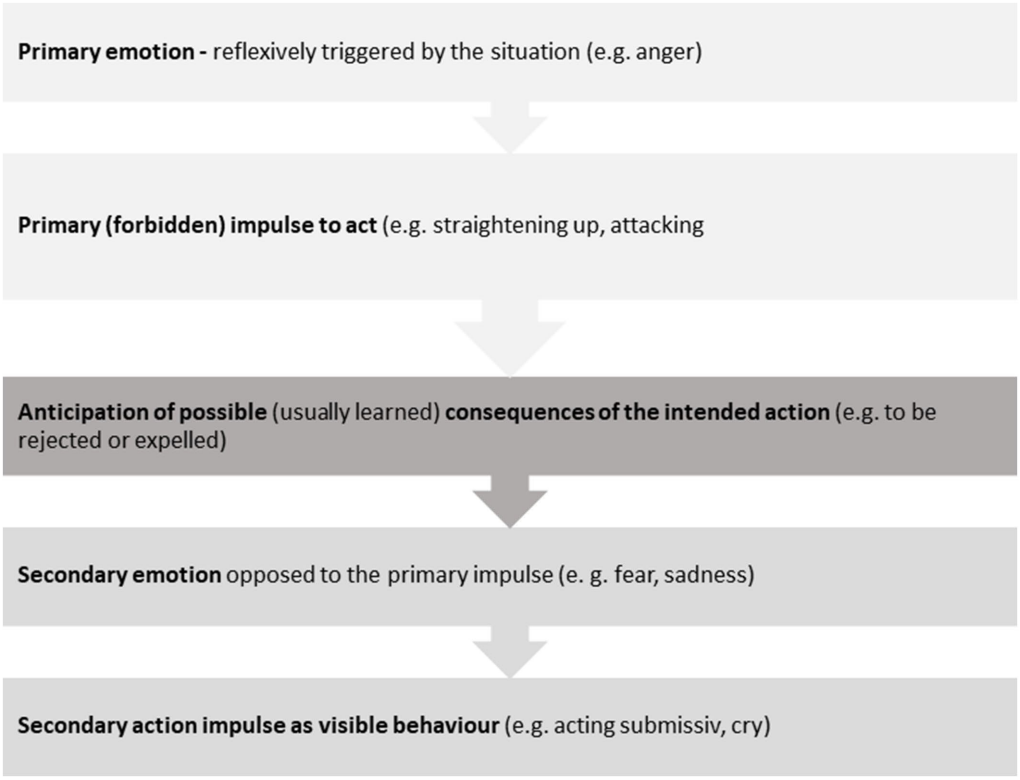


FIGURE 4
General structure of a reaction chain.

acceptance and the motivation to change behavior in daily life is often much more difficult. However, the situation is different once the patient has physically experienced the tipping point between primary and secondary emotions, as described below in the case "Anne."

> **Anne's reaction chain**
> Working with the Emotional Field allows Anne to consciously and slowly experience the emotional processes that otherwise take place at high speed in real conflict situations. Anne is now able again to physically perceive the signals of her primary emotion: anger. This is an experience that wasn't possible for Anne for a long time, because she had learned very early in life to block her anger with her secondary emotions fear and shame. The body impulses are more physically noticeable for Anne and make it easier for her to understand what happens to her during conflicts. The so-called reaction chain becomes apparent.
>
> Several times, Anne goes back to her experience, and thus shame gradually becomes apparent as an additional emotion associated with this situation. By working in the Emotional Field, Anne understands better why it is so difficult for her to stand up for her needs in everyday life: because not only her fear but also shame slows down her feeling and expression of anger. She has a strong duo of stopper feelings (secondary emotions), which ensure that she doesn't risk any relevant relationship.
>
> After repeatedly experiencing these tipping points, which can be deepened and tailored to the patient's possibilities with the help of the previously described movement characteristics, the cognitive classification is immediately accompanied by commitment and long-lasting insights. This creates a solid basis for further work on acceptance and behavior change, from which all well-known methods of CBT, such as symptom therapy, benefit.
>
> Experiential understanding is important, but usually not enough to achieve sufficient problem solving and robust behavioral changes. Therefore, new behavior is encouraged to be planned and tried out during the third module.

2.3 Module 3-interaction focus: satisfying needs around others!

In the **interaction focus**, the insights gained while establishing the Emotional Field are applied to various problematic situations and adapted to different framework conditions. For example, goal-directed behavior can depend on the extent to which one succeeds in matching the meaning and power of one's own emotions to personal characteristics of the counterpart. This work is guided by the question:

> "How can patients achieve goals while feeling ("agentic") self-efficacy?"

For many patients, the quality of their life depends on successful goal achievement (Kuhl et al., 2015). Developing and achieving one's

own goals is only possible if energy is permanently available. However, this energy is only available, if survival is ensured and one's own needs are reliably met over the long term. Needs can only be satisfied if sufficient physical resources are available to react to the conceptualised emotion and carry out the associated action impulse (Shaffer et al., 2022). No matter what the type of need is, meeting it almost always involves interacting with others. The body plays a central role here, because it helps us to regulate the proximity to other people and to exert our influence on others.

A successful interaction with others requires one to be able to control his/her emotion in such a way that it reaches the other person in a favorable way.

To do this, s/he must consider what type of person is the individual with whom s/he interacts. Is it a very dominant person, a good sparring partner or rather a person who avoids conflict? Only if the self-regulation in emotional self-focus is already working to some extent, s/he can face the demands that come from the situation and from his/her counterpart person. Mastery of emotion regulation is ultimately demonstrated by the fact that competent handling of emotions leads to the improvement of relationships and, ideally, to the deepening and broadening of intimacy and closeness.

Successfully regulated interaction also requires clarity about what one wants to trigger in an interaction partner. Does one want to trigger care, provide care, form an equal alliance, assume a certain position of power, or perhaps enter a sexual relationship? Such questions can be quickly brought to the point by representation in space. For example, if a person is perceived as strong and attractive, he or she is automatically positioned "up," immediately implying an interaction between "up" and "down": the protective giver (up, tall) provides security for the receiver positioned further down (short). Such a relationship can be easily represented spatially and this representation helps to make abstract concepts such as dependency and subordination tangible. A chair can help create vertical distance in each situation. When a patient stands in front of the chair or on the chair, s/he grasps and experiences the status differences with impressive intensity. This approach takes up the concept of power (above/below), physically creates the psychological meaning and thus supports the simulation of the abstract concept of power (Carney et al., 2010; Cuddy et al., 2018). It is not only the positioning of the body that promotes the understanding of a conceptual metaphor. Likewise, the experience of emotional proximity or distance can be quickly realized in space. Experimenting with the horizontal spatial dimension sheds light on certain aspects of the psychological proximity. By varying these spatial parameters, emotionally charged issues can be quickly made perceptible and visible (Frank, 1997). Such effective embodiment techniques are guided by empirical findings (Schubert et al., 2009; Davis et al., 2011), but will not be elaborated further here.

> **Working in the interaction focus with Anne**
> Now, that Anne has solid experience with her own anger and she feels comfortable feeling it in her body, she is well prepared to start working with the interaction focus. For Anne her goal is clear: She wants to use her anger to interact differently with her husband Marc. She says: "I don't want to yell at Marc out of anger. I know him, he would just leave the room. I want to make it clear to him that I don't understand his attitude and that I really need his help with our son."

The therapist invites Anne to imagine her husband again in front of the white wall. He asks her to show him how (psychologically) big or small she feels towards her husband while expressing her needs as clearly as just now. She marks the psychological size she has chosen with a post-it on the wall and says: "Back in the Emotional Field, I felt much smaller than Marc. Today I feel much taller than Marc. That is a strange and unfamiliar feeling for me. It is confusing."

The therapist asks Anne to get up on a chair, to intensify her feeling of being taller. Feeling her own body reactions while looking at the much smaller height of her husband at the wall, Anne said: "Being above him makes me feel very safe. I'm not afraid of any of his reactions anymore. But somehow it doesn't fit my need to ask him for support." The therapist asks Anne to find a position that better suits her need. Anne is a bit confused at first and says: "On the one hand asking for support is something that makes me feel smaller, because I feel, I can't do it on my own. On the other hand, I can clearly feel anger in my chest, because I know I deserve Marc's support here." Her therapist encourages Anne to choose a size ratio, which she has not tried before. Anne chooses the same size ratio and says: "I feel so well, being on eye level with Marc. But it is more difficult than expected to keep the feeling over time in my body. After a couple of seconds, I feel a well-known impulse in my shoulders to make myself smaller and condense. If I do so, my anger immediately counteracts and I want to expand my arms and make myself much taller. I have never been able to feel all of my body impulses so precisely." Anne realizes for the first time how much her body awareness has increased in the last months. Her therapist uses her new body awareness to find the fitting intensity of emotion for her conversation with Marc. To do so, he works again with the movement characteristics of anger. For Anne pushing her chest forward, was one of the best working movements to increase her anger feeling. She starts to produce a low-intensity anger by pushing her chest slightly forward and at the same time she resists bringing her shoulders down. She is practicing all of these little movements by looking at her husband on the wall at eye level. After Anne feels secure with her body posture and feels her own assertiveness in her chest, the next step comes.

Anne and her therapist now discuss which arguments she would like to use in the conversation with Marc. Once these are found, Anne combines her assertive body posture with her arguments and tries to find the fitting tone and volume of her voice. Anne says after she finished the exercise: "In my last therapy, I practiced a lot what I wanted to say to Marc. It often worked quite well during the therapy session, but when I got home, I lost courage or my attempts failed miserably. I felt like a bad actress who didn't play convincingly. But now it's different. I have my body as an ally and have learned to develop the fitting body posture first. My words than easily follow my body." After her first attempt to talk to Marc at home, Anne says in her next therapy session: "I managed to get all my points on the table. I remained so calm that Marc stayed in the room and listened. He said he needs to think about my arguments. And what is most important for me: I feel confident to bring up the topic again, if Marc is not getting back to me in the next week." With the help of embodiment techniques, Anne was able to recognize her body's signals and use them according to the situation. Her knowledge of how her body expresses emotions and

> how to use this knowledge to get her needs successfully fulfilled by others, allowed Anne to feel self-effective again: an important factor for her relapse prevention and her successful therapy.

3 Discussion and conclusion

As described in the introduction the neuroscience-based concept of "embodied cognition or embodiment" represents the view that cognitive processes are not possible without the direct participation of the body. Acting in any situation, the body has direct influence on cognitive, motivational and emotional processes, through its posture, movement, facial expressions, etc. Thus, embodied techniques can be used in CBT practice both as a tool and as an important source of information: one can consciously and willfully activate and/or regulate his/her emotions by using specific movement patterns. In addition, attending to one's body and sensory experience, can help patients to identify their emotions more accurately, to perceive their cognitive core issues more directly and to work on them in an experiential way.

We have described above the theoretical framework for our new embodied cognitive behavioral therapy approach to work on the dysfunctional schema, and how to incorporate embodied techniques in this approach's three modules: body focus, emotional field, and interaction focus. For each of these three modules we portrayed examples of empirically proven embodiment techniques which can be used as bottom-up strategies to enable the efficient treatment of concrete problematic situations through the conscious use of the body. Module 1, the "body focus" is used for helping the patient to learn to accurately perceive, identify and give meaning to bodily signals and interoception. The second module, "the emotional field" is used to address problematic situations. This module starts with imaginative exposure, which is a standard CBT practice. As the emotional event unfolds, attention is paid to the first two stages of emotional awareness (Table 1), such as body signals, action and movement impulses. A second aspect of embodiment is being utilized at this module: the bidirectional relationship between body and psyche. Empirically validated posture, movement and breathing patterns—we call them embodiment techniques—help to intensify certain emotions such as fear, anger, disgust, sadness, etc. and in particular to clarify the sequence of primary and secondary emotions (Hauke and Dall'Occhio, 2013; Hauke and Lohr, 2020). If the patient can already offer a conceptualization, it can be checked to see whether it is valid and can help to clarify the extent to which secondary emotions prevent the primary emotion. The third module, the interaction focus, relates to the organization of the relationship with others and the achievement of the patient's goals. The emotions developed in the emotional field and their messages are once again made directly accessible using embodiment techniques and provide the basis for the development of action plans.

Incorporating these embodied techniques offers several advantages over using traditional CBT: Prelinguistic or hard-to-grasp aspects can be identified more easily before being processed verbally. It is also easier to work with clients who have limited access to their emotions. With the help of specific movement characteristics as embodiment techniques, distinguishable emotions such as anger, sadness, disgust, shame, guilt, etc., can be triggered as well as intensified, and their problematic regulation can be examined *in vivo*. In addition, using specific zones in the space of the therapy-room allows the embodiment of problematic interactions, as well as of examining power and submissiveness, closeness and distance within interactions, etc. Directly experiencing these processes on one's own body in the protected space of therapy enables patients to feel and process primary and secondary emotions which arise in problematic situations, and allows faster and deeper insights than would be possible with conversations alone. Finally, the vitalizing power of emotions is used to create coherent action plans and successful interactions.

Our approach has also some limitations: The application of our method requires that a well-established, supportive therapeutic relationship can be established. Acute psychiatric illnesses such as psychotic illnesses, bipolar disorders, etc. are therefore excluded. As our embodiment techniques require a bidirectional connection between mind and body, there may be limitations here if patients suffer from corresponding physical problems, such as chronic muscle tension with accompanying pain and restricted movement. We find chronic postural problems, for example, when patients can no longer fully straighten up, as we sometimes encounter in the case of long-term depressive illnesses. In many cases, suitable accompanying measures support the mode of operation of bidirectionality.

In sum: our embodied CBT method as described in details above, provides a well-structured experience that patients can reapply in difficult day-to-day situations to regulate emotions.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

GH: Writing – review & editing, Writing – original draft, Methodology, Conceptualization. CL-B: Writing – review & editing, Writing – original draft, Methodology, Conceptualization. TS: Writing – review & editing, Writing – original draft, Methodology, Conceptualization.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Acknowledgments

The authors would like to thank all reviewers for inspiring discussions and valuable suggestions.

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

References

Adolph, D., Tschacher, W., Niemeyer, H., and Michalak, J. (2021). Gait patterns and mood in everyday life: a comparison between depressed patients and non-depressed controls. *Cogn. Ther. Res.* 45, 1–13.doi: 10.1007/s10608-021-10215-7

Barrett, L. F. (2017). The theory of constructed emotion: an active inference account of interoception and categorization. *Soc. Cogn. Affect. Neurosci.* 12, 1–23. doi: 10.1093/scan/nsw154

Barrett, L. F., Mesquita, B., Ochsner, K. N., and Gross, J. J. (2007). The experience of emotion. *Annu. Rev. Psychol.* 58, 373–403. doi: 10.1146/annurev.psych.58.110405.085709

Barsalou, L. W. (2009). Simulation, situated conceptualization, and prediction. *Philos. Trans. R Soc. Lond. B Biol. Sci.* 364, 1281–1289. doi: 10.1098/rstb.2008.0319

Barsalou, L. W. (2015). "Situated conceptualization: theory and application" in Perceptual and emotional embodiment: Foundations of embodied cognition. eds. Y. Coello and M. H. Fischer (East Sussex: Psychology Press).

Bartenieff, I., and Lewis, D. (2002). Body movement: coping with the environment. New York and London: Oxon and Nyc Routledge.

Beck, A. T. (2008). The evolution of the cognitive model of depression and its neurobiological correlates. *Am. J. Psychiatry* 165, 969–977. doi: 10.1176/appi.ajp.2008.08050721

Beck, A. T., and Haigh, E. A. (2014). Advances in cognitive theory and therapy: the generic cognitive model. *Annu. Rev. Clin. Psychol.* 10, 1–24. doi: 10.1146/annurev-clinpsy-032813-153734

Beitman, B. D., and Soth, A. M. (2006). Activation of self-observation: a core process among the psychotherapies. *J. Psychother. Integr.* 16, 383–397. doi: 10.1037/1053-0479.16.4.383

Bloch, S. (1989). Effector patterns of basic human emotions: an experimental model for emotional induction. *Behav. Brain Res.* 33:317.

Bloch, S. (2006). The alba of emotions: Managing emotions through breathing. Santiago: Ediciones Ultramarinos.

Bloch, S., Lemeignan, M., and Aguilera-T, N. (1991). Specific respiratory patterns distinguish among human basic emotions. *Int. J. Psychophysiol.* 11, 141–154. doi: 10.1016/0167-8760(91)90006-J

Bogdanova, O. V., Bogdanov, V. B., Dureux, A., Farnè, A., and Hadj-Bouziane, F. (2021). The Peripersonal space in a social world. *Cortex* 142, 28–46. doi: 10.1016/j.cortex.2021.05.005

Boiten, F. A., Frijda, N. H., and Wientjes, C. J. E. (1994). Emotions and respiratory patterns: review and critical analysis. *Int. J. Psychophysiol.* 17, 103–128. doi: 10.1016/0167-8760(94)90027-2

Carney, D. R., Cuddy, A. J. C., and Yap, A. J. (2010). Power posing brief nonverbal displays affect neuroendocrine levels and risk tolerance. *Psychol. Sci.* 21, 1363–1368. doi: 10.1177/0956797610383437

Cowen, A. S., and Keltner, D. (2017). Self-report captures 27 distinct categories of emotion bridged by continuous gradients. *Proc. Natl. Acad. Sci.* 114, E7900–E7909.doi: 10.1073/pnas.1702247114

Craske, M. G., Treanor, M., Conway, C. C., Zbozinek, T., and Vervliet, B. (2014). Maximizing exposure therapy: an inhibitory learning approach. *Behav. Res. Ther.* 58, 10–23. doi: 10.1016/j.brat.2014.04.006

Cristaldi, F. D. P., Oosterwijk, S., and Barrett, L. F. (2024). "Predictive processing and embodiment in emotion" in *The Routledge Handbook of Embodied Cognition*. eds. L. Shapiro and S. Spaulding (London: Routledge).

Critchley, H. D., and Garfinkel, S. N. (2017). Interoception and emotion. *Curr. Opin. Psychol.* 17, 7–14. doi: 10.1016/j.copsyc.2017.04.020

Cuddy, A. J. C., Schultz, J. S., and Fosse, N. E. (2018). P-curving a more comprehensive body of research on postural feedback reveals clear evidential value for power-posing effects: reply to Simmons and Simonsohn (2017). *Psychol. Sci.* 956797617746749, 656–666. doi: 10.1177/0956797617746749

Damasio, A. R. (1995). Review[redacted]: toward a neurobiology of emotion and feeling: operational concepts and hypotheses. *Neuroscientist* 1, 19–25. doi: 10.1177/107385849500100104

Damasio, A. R. (1996). The somatic marker hypothesis and the possible functions of the prefrontal cortex. philosophical transactions of the Royal Society of London. *Series B Biol. Sci.* 351, 1413–1420.doi: 10.1098/rstb.1996.0125

Davis, J. I., Gross, J. J., and Ochsner, K. N. (2011). Psychological distance and emotional experience: what you see is what you get. *Emotion* 11, 438–444. doi: 10.1037/a0021783

Duclos, S. E., and Laird, J. D. (2001). The deliberate control of emotional experience through control of expressions. *Cognit. Emot.* 15, 27–56. doi: 10.1080/02699930126057

Erbas, Y., Gendron, M., and Fugate, J. M. (2022). The role of emotional granularity in emotional regulation, mental disorders, and well-being. *Front. Psychol.* 13:713. doi: 10.3389/fpsyg.2022.1080713

Evans, G. W., and Wener, R. E. (2007). Crowding and personal space invasion on the train: please don't make me sit in the middle. *J. Environ. Psychol.* 27, 90–94. doi: 10.1016/j.jenvp.2006.10.002

Fernandez, C. (2015). The moving researcher: Laban/Bartnieff movement analysis in performing arts education and creative arts therapies. London and Philadelphia: Jessica Kingsley.

Flack, W. F. (2006). Peripheral feedback effects of facial expressions, bodily postures, and vocal expressions on emotional feelings. *Cognit. Emot.* 20, 177–195. doi: 10.1080/02699930500359617

Frank, Z. (1997). Dance and expressive movement therapy: an effective treatment for a sexually abused man. *Am. J. Dance Ther.* 19, 45–61. doi: 10.1023/A:1022323401222

Fruzzetti, A., Crook, W., Erikson, K., Lee, J., and Worrall, J. (2008). "Emotion regulation" in Cognitive behavior therapy: Applying empirically supported techniques in your practice. eds. W. T. O'donohue and J. E. Fisher (New York, Ny: Wiley).

Fuchs, T., and Schlimme, J. E. (2009). Embodiment and psychopathology: a phenomenological perspective. *Curr. Opin. Psychiatry* 22, 570–575. doi: 10.1097/YCO.0b013e3283318e5c

Fugate, J., and Wilson-Mendenhall, C. D. (2022). "Embodied emotion, emotional granularity, and mindfulness: improved learning in the classroom" in Movement matters: How embodied cognition informs teaching and learning. eds. S. Macrine and J. M. B. Fugate (Cambridge, Ma: Mit Press).

Füstös, J., Gramann, K., Herbert, B. M., and Pollatos, O. (2013). On the embodiment of emotion regulation: interoceptive awareness facilitates reappraisal. *Soc. Cogn. Affect. Neurosci.* 8, 911–917. doi: 10.1093/scan/nss089

Gallese, V. (2011). Embodied simulation theory: imagination and narrative. *Neuropsychoanalysis* 13, 196–200. doi: 10.1080/15294145.2011.10773675

Gjelsvik, B., Lovric, D., and Williams, J. M. G. (2018). Embodied cognition and emotional disorders: embodiment and abstraction in understanding depression. Journal of experimental. *Psychopathology* 9:pr.035714. doi: 10.5127/pr.035714

Greenberg, L. S., and Safran, J. D. (1987). Emotion in psychotherapy: affect, cognition and the process of change. New York: Guilford Press.

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Rev. Gen. Psychol.* 2, 271–299. doi: 10.1037/1089-2680.2.3.271

Gross, J. J. (2002). Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology* 39, 281–291. doi: 10.1017/S0048577201393198

Gross, J. J., and John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J. Pers. Soc. Psychol.* 85, 348–362. doi: 10.1037/0022-3514.85.2.348

Halberstadt, J., Winkielman, P., Niedenthal, P. M., and Dalle, N. (2009). Emotional conception. *Psychol. Sci.* 20, 1254–1261. doi: 10.1111/j.1467-9280.2009.02432.x

Hauke, G., Lohr, C., and Pietrzak, T. (2016). Moving the mind: Embodied Cognition in Cognitive Behavioral Therapy (CBT). *Eur. Psychol.* 13, 154–178.

Hauke, G. (2018a). "Getting the embodied emotional survival strategy" in Embodiment in psychotherapy—a practitioners guide. eds. G. Hauke and A. Kritikos (New York, Ny: Springer).

Hauke, G. (2018b). "Mapping the embodied emotional mind: the emotional field" in Embodiment in psychotherapy—a Oractitioner's guide. eds. G. Hauke and A. Kritikos (New York, Ny: Springer).

Hauke, G., and Dall'occhio, M. (2013). Emotional activation therapy (eat): intense work with different emotions in a cognitive behavioral setting. *Europ. Psychother.* 11, 5–29.

Hauke, G., and Lohr, C. (2019). "Embodiment in drei Akten: Geschmeidig und kraftvoll Handeln" in Psychologie der Selbststeuerung. eds. S. Rietmann and P. Deing (Wiesbaden: Springer).

Hauke, G., and Lohr, C. (2020). Emotionale Aktivierungstherapie (Eat). (Leben Lernen, Bd. 312): Embodiment in Aktion. Stuttgart: Klett-Cotta.

Hesslow, G. (2012). The current status of the simulation theory of cognition. *Brain Res.* 1428, 71–79. doi: 10.1016/j.brainres.2011.06.026

Iachini, T., Coello, Y., Frassinetti, F., and Ruggiero, G. (2014). Body space in social interactions: a comparison of reaching and comfort distance in immersive virtual reality. *PLoS One* 9:e111511. doi: 10.1371/journal.pone.0111511

Iacoboni, M., and Dapretto, M. (2006). The mirror neuron system and the consequences of its dysfunction. *Nat. Rev. Neurosci.* 7, 942–951. doi: 10.1038/nrn2024

Körner, A., Topolinski, S., and Strack, F. (2015). Routes to embodiment. *Front. Psychol.* 6:145185.doi: 10.3389/fpsyg.2015.00940

Kosslyn, S. M., Thompson, W. L., and Ganis, G. (2006). The case for mental imagery. New York: Oxford University Press.

Kuhl, J., Quirin, M., and Koole, S. L. (2015). Being someone: the integrated self as a neuropsychological system. *Soc. Pers. Psychol. Compass* 9, 115–132. doi: 10.1111/spc3.12162

Lane, R. D., and Schwartz, G. E. (1987). Levels of emotional awareness: a cognitive-developmental theory and its application to psychopathology. *Am. J. Psychiatry* 144, 133–143

Lang, P. J. (1979). A bio-informational theory of emotional imagery. *Psychophysiology* 16, 495–512. doi: 10.1111/j.1469-8986.1979.tb01511.x

Michalak, J., Troje, N. F., Fischer, J., Vollmar, P., Heidenreich, T., and Schulte, D. (2009). Embodiment of sadness and depression—gait patterns associated with dysphoric mood. *Psychosom. Med.* 71, 580–587. doi: 10.1097/PSY.0b013e3181a2515c

Niedenthal, P. M. (2007). Embodying emotion. *Science* 316, 1002–1005. doi: 10.1126/science.1136930

Nummenmaa, L. (2022). Mapping emotions on the body. *Scand J Pain* 22, 667–669. doi: 10.1515/sjpain-2022-0087

Philippot, P., Chapelle, G. T., and Blairy, S. (2002). Respiratory feedback in the generation of emotion. *Cognit. Emot.* 16, 605–627. doi: 10.1080/02699930143000392

Pietrzak, T., Lohr, C., Jahn, B., and Hauke, G. (2018). Embodied cognition and the direct induction of affect as a compliment to cognitive behavioural therapy. *Behav. Sci.* 8:29. doi: 10.3390/bs8030029

Podolan, M., and Gelo, O. C. G. (2023). The functions of safety in psychotherapy: an integrative theoretical perspective across therapeutic schools. *Clin. Neuropsychiatry* 20, 193–204. doi: 10.36131/cnfioritieditore20230304

Pollatos, O., and Ferentzi, E. (2018). "Embodiment of emotion regulation" in Embodiment in psychotherapy: a Practitioner's guide. eds. G. Hauke and A. Kritikos (New York, Ny: Springer).

Renna, M. E., Fresco, D. M., and Mennin, D. S. (2020). Emotion regulation therapy and its potential role in the treatment of chronic stress-related pathology across disorders. *Chronic Stress* 4:247054702090578. doi: 10.1177/2470547020905787

Riskind, J. H., Schrader, S. W., and Loya, J. M. (2021). "Embodiment in clinical disorders and treatment" in Handbook of embodied psychology: thinking, feeling, and acting. eds. M. D. Robinson and T. L. E (Switzerland Ag: Springer Nature).

Ross, P., and Atkinson, A. P. (2020). Expanding simulation models of emotional understanding: the case for different modalities, body-state simulation prominence, and developmental trajectories. *Front. Psychol.* 11:309. doi: 10.3389/fpsyg.2020.00309

Saarimäki, H., Ejtehadian, L. F., Glerean, E., Jääskeläinen, I. P., Vuilleumier, P., Sams, M., et al. (2018). Distributed affective space represents multiple emotion categories across the human brain. *Soc. Cogn. Affect. Neurosci.* 13, 471–482. doi: 10.1093/scan/nsy018

Schubert, T. W., Waldzus, S., and Giessner, S. R. (2009). Control over the association of power and size. *Soc. Cogn.* 27, 1–19. doi: 10.1521/soco.2009.27.1.1

Shaffer, C., Westlin, C., Quigley, K. S., Whitfield-Gabrieli, S., and Barrett, L. F. (2022). Allostasis, action, and affect in depression: insights from the theory of constructed emotion. *Annu. Rev. Clin. Psychol.* 18, 553–580. doi: 10.1146/annurev-clinpsy-081219-115627

Shafir, T. (2015). "Movement-based strategies for emotion regulation" in Handbook on emotion regulation: Processes, cognitive effects and social consequences. ed. M. L. Bryant (New York: Nova Science Publishers, Inc.).

Shafir, T., Taylor, S. F., Atkinson, A. P., Langenecker, S. A., and Zubieta, J.-K. (2013). Emotion regulation through execution, observation, and imagery of emotional movements. *Brain Cogn.* 82, 219–227. doi: 10.1016/j.bandc.2013.03.001

Shafir, T., Tsachor, R. P., and Welch, K. B. (2016). Emotion regulation through movement: unique sets of movement characteristics are associated with and enhance basic emotions. *Front. Psychol.* 6:30. doi: 10.3389/fpsyg.2015.02030

Smith, R., and Lane, R. D. (2015). The neural basis of one's own conscious and unconscious emotional states. *Neurosci. Biobehav. Rev.* 57, 1–29. doi: 10.1016/j.neubiorev.2015.08.003

Smith, E. R., and Semin, G. R. (2004). "Socially situated cognition: cognition in its social context" in Advances in experimental social psychology. ed. M. P. Zanna (Cambridge Mass, USA: Elsevier Academic Press).

Studd, K., and Cox, L. (2013). Evrybody is a body. Indianapolis USA: Dogear publishing.

Subic-Wrana, C., Beutel, M. E., Knebel, A., and Lane, R. D. (2010). Theory of mind and emotional awareness deficits in patients with somatoform disorders. *Psychosom. Med.* 72, 404–411. doi: 10.1097/PSY.0b013e3181d35e83

Subic-Wrana, C., Bruder, S., Thomas, W., and Lane, R. D. (2005). Emotional awareness deficits in inpatients of a psychosomatic ward: a comparison of two different measures of alexithymia. *Psychosom. Med.* 67, 483–489. doi: 10.1097/01.psy.0000160461.19239.13

Sulz, S. K. (1994). Strategische Kurzzeittherapie: Wege zur effizienten Psychotherapie. München: Cip-Medien.

Sulz, S. (2006). From the symptom as strategy to strategic brief therapy: self-regulation and self-organization as fundamental therapeutic principles. *Europ. Psychother.* 6, 55–95.

Tsachor, R. P., and Shafir, T. (2017). A somatic movement approach to fostering emotional resiliency through Laban movement analysis. *Front. Hum. Neurosci.* 11:410. doi: 10.3389/fnhum.2017.00410

Tschacher, W. (2018). "Embodiment of social interaction: our place in the world around us" in Embodiment in psychotherapy – A practitioner's guide. eds. G. Hauke and A. Kritikos (New York, Ny: Springer).

Tschacher, W., and Dauwalder, J.-P. (1999). "Situated cognition, ecological perception, and synergetics: a novel perspective for cognitive psychology?" in Dynamics, Synergetics, autonomous agents. eds. W. Tschacher and J.-P. Dauwalder (Singapore: World Scientific).

Weineck, F. (2018). "Generating body focus: a stepping stone to emotional awareness" in Embodiment in psychotherapy. eds. G. Hauke and A. Kritikos (New York, Ny: Springer).

Werner, K., and Gross, J. J. (2010). "Emotion Regulation and Psychopathology: A Conceptual Framework," in *Emotion Regulation and Psychopathology: A Transdiagnostic Approach to Etiology and Treatment*. eds. A. M. Kring and D. M. Sloan (New York: Guilford Press), 13–37.

Winkielman, P., Niedenthal, P., Wielgosz, J., Eelen, J., and Kavanagh, L. C. (2015). "Embodiment of cognition and emotion" in Apa handbook of personality and social psychology. eds. M. E. Mikulincer, P. R. Shaver, E. E. Borgida and J. A. Bargh (Washington DC: American Psychological Association).

frontiers | Frontiers in Psychology

TYPE Conceptual Analysis
PUBLISHED 07 August 2024
DOI 10.3389/fpsyg.2024.1425415

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Shane McLoughlin,
University of Birmingham, United Kingdom
Laura Candiotto,
University of Pardubice, Czechia

*CORRESPONDENCE
Lukas Novak
✉ lfn20@miami.edu

†These authors have contributed equally to this work

RECEIVED 29 April 2024
ACCEPTED 26 July 2024
PUBLISHED 07 August 2024

CITATION
Novak L and Kiknadze N (2024) Does the good life feel good? The role of positive emotion in competing conceptions of the good life.
Front. Psychol. 15:1425415.
doi: 10.3389/fpsyg.2024.1425415

Does the good life feel good? The role of positive emotion in competing conceptions of the good life

Lukas Novak*† and Nona Kiknadze†

Flourishing Lab, Department of Counseling Psychology, School of Education and Human Development, University of Miami, Miami, FL, United States

Flourishing refers to one kind of generalized wellbeing. Contemporary flourishing research often privileges positive emotion in the theorization and measurement of the construct, such that flourishing is frequently conceptualized as involving a predominance of positive over negative emotions. Positive emotions are thus, on some views of flourishing, seen as an essential component of "the good life." This paper explores the nuanced variations in conceptions of the good life, focusing on the interplay between positive emotion and flourishing. Through an analysis of contemporary perspectives on flourishing, we underscore the diversity in conceptualizations of flourishing and the implications of this diversity for flourishing theorists. Our review reveals significant disparities in perspectives regarding the significance of positive emotion in the pursuit of a good life. Furthermore, we delineate the theoretical distinctions between objective-list approaches and functional approaches to flourishing, highlighting their respective advantages and limitations. Theoretical dissensus persists regarding whether positive emotion is a necessary constituent of the good life, thus prompting a critical examination of the justification for its inclusion in flourishing models. Finally, we emphasize the need for greater theoretical clarity in defining wellbeing to inform both research endeavors and societal discourse. We suggest that an adequate appreciation of variation in the development and maintenance of flourishing requires admitting for more complex relationships between the construct and both positive and negative emotionality, while embracing the cultural and individual variety that are unavoidable in accurate models of human life.

KEYWORDS

flourishing, positive emotion, wellbeing, theory, functioning

1 Introduction

There are several goods in human life that are almost universally pursued: among these are pleasure, health, and meaning. A life which involves many or all of these goods might be labeled a good life, and the individual living that life might be described as *being well*, *living well*, or experiencing *wellbeing*. However, as might be expected, there exist various approaches to clarifying what exactly makes a life good. For example, each of the three preceding formulations suggests its own demarcation of what is important to the good life. *Experiencing wellbeing*, by emphasizing experience, orients one toward subjective states, and implicitly establishes a standard for evaluating a life on the basis of those states. *Living well*, on the other

hand, through the use of the active verb *living,* emphasizes those components of the good life which involve psychological participation – this phrasing suggests that the good life is a question of one's actions, and perhaps their relationship to a changing situation. Finally, *being well*, through the passive verb "be," suggests a global appraisal, which might involve both internal and external factors (e.g., one can "be" lucky, where this luck is a feature of one's circumstance, and that luck may be an important feature of being well).

Clarifying these differences is more than a linguistic exercise—it demonstrates that subtle variations in phrasing can lead to dramatic differences in the analysis of the good life and the determination of which lives are good. Such differences exist in practice: psychologists studying superlative positive states, such as wellbeing, thriving, and flourishing, show marked diversity in their conceptualizations of the relevant constructs, with varying emphasis on positive experience, positive functioning, and overall felicity (Fowers et al., 2023; Novak et al., 2024). Variation in conceptual approach is often an indication of successful scientific practice, and some diversity in conceptualization reflects an active field engaged in ongoing refinement. However, the extant variation in views of what it means to live well, be well, or have a good life are sufficiently dramatic as to suggest the existence of genuinely different conceptions of the human good.

It is not our goal to resolve those differences here. Instead, we aim to clarify how various notions of the good life are expressed in contemporary views of flourishing, with a focus on the role of positive emotion. While contemporary flourishing research generally privileges the role of positive emotion in the conceptualization of the good life, we will argue that flourishing theorists do not, in fact, agree on the role of positive emotion for flourishing, nor do they agree about the implicit role of external factors, or felicity, in doing well.

Our secondary aim is to explore the implications of various commitments regarding the good life. As will be seen through the example of positive emotion, the meaning and desirability of even a seemingly innocuous indicator of flourishing can be radically changed on the basis of one's conceptualization of wellbeing, which has both intellectual and practical consequences for the field.

We deliberately refrain from addressing moral foundations in this discussion due to the complex and contentious relationship between moral and developmental notions of flourishing. The debate over whether "good" encompasses moral goodness or solely developmental benefits is nuanced, and is arguably more pertinent to modern perspectives; for example, Aristotle might have deemed this distinction insignificant. Although some theorists maintain that the "Good Life" is inseparable from the "Morally Good Life," contemporary flourishing research frequently excludes moral considerations. This paper mirrors this contemporary approach by concentrating on flourishing without engaging in moral discourse. An examination of that literature is beyond the scope of this article. For a review of virtue ethics and morality in psychology, see Fowers (2012b).

2 Emotions and valence

Before exploring the role of emotion in flourishing theory, we here provide some introductory remarks on emotion and its role in living. Emotions typically refer to complex psychological and physiological states that involve a combination of subjective experiences, physiological arousal, expressive behaviors, and cognitive processes (James, 1884; Schachter and Singer, 1962). These multifaceted phenomena are integral to human experience and play a fundamental role in shaping cognition and behavior (Gross, 2015). Emotions encompass a wide range of affective states, including but not limited to happiness, sadness, anger, fear, and disgust (Ekman, 1999). Emotions are often conceptualized as adaptive responses to internal or external stimuli, serving various functions such as facilitating communication, guiding decision-making, and promoting social bonding (Keltner and Haidt, 2001; Tyng et al., 2017; Šimić et al., 2021). Additionally, emotions can be characterized by their valence (positive or negative) and arousal level (intensity), which contribute to their subjective experience and behavioral outcomes (Russell, 1980).

The scientific literature on emotions delves into two main perspectives: essentialist and constructionist (Boiger and Mesquita, 2012). Essentialist models view emotions as relatively universal affective responses, with Russell's circumplex model and Ekman's paradigm of basic emotions being prominent examples. Russell's model categorizes affective states based on valence (pleasant-unpleasant) and arousal (active-passive), while Ekman's paradigm identifies six basic emotions: anger, surprise, disgust, enjoyment, fear, and sadness, each associated with distinct neurophysiological systems (Ekman et al., 1987; Posner et al., 2005). However, these models have faced theoretical and empirical critiques, leading to the emergence of constructionist theories, which view emotions as products of social interaction and cultural context (Kövecses, 2003; Gendron et al., 2018). Between essentialist and constructionist perspectives lies a middle ground, integrating elements of both viewpoints. These theories acknowledge the possibility of universal emotional experiences while recognizing cultural influences on emotional expression and interpretation (Feldman Barrett, 2006; Fong, 2006; Matsumoto and Hwang, 2012).

Valence, a key component of emotion theories, involves the classification of emotions as positive, negative, or both positive and negative, based on evaluative responses to one's environment (Cacioppo et al., 2012). Positively-valenced emotions are associated with pleasure and reward, while negatively-valenced emotions are associated with fear, discomfort, and withdrawal (Cacioppo and Berntson, 1994). Traditionally, theories of wellbeing depict positively-valenced emotions as conducive to wellbeing, while negatively-valenced emotions detract from it (Diener, 2000). However, recent scholarship has complicated this dichotomy by highlighting the nuance of ambivalent emotions, emotional states with encompass both positive and negative valence (Rees et al., 2013). Unlike univalent emotions, which are characterized by a clear valence of either positivity or negativity, ambivalent emotions can involve a combination of contradictory feelings, such as experiencing "nostalgia" or feeling "bittersweet." Ambivalent emotions challenge traditional conceptualizations of emotions as operating along a unidimensional continuum of valence and highlight the nuanced and complex nature of human emotional experiences. Research indicates that emotional ambivalence can have many positive psychological benefits, such as facilitating creativity, aiding in coping with distressing events, improving decision-making, fostering resilience, and promoting compassion (Hershfield et al., 2012; Rees et al., 2013; Moss and Wilson, 2014; Candiotto, 2023).

This polarity of human emotions is also challenged by enactivist theories which posit that emotions and their valence emerge from one's embodied engagement with the world rather than being solely

products of internal mental processes or external stimuli (Depraz et al., 2003; Colombetti, 2014). The enactive approach recognizes that emotional experiences are multifaceted and context-dependent. In line with the literature on ambivalent emotion, emotions are not simply positive or negative; they vary in intensity, nuance, and meaning based on situational context and personal interpretation. This perspective can provide a more comprehensive framework for studying emotional experiences and their implications for human flourishing.

While we recognize the breadth of cultural, historical, and philosophical perspectives on emotions exceeds the scope of this paper, it is essential to underscore several key examples that contribute to a nuanced understanding of the intricate relationship between emotions and wellbeing. It is also critical to note that most flourishing research conducted thus far has predominantly relied on samples from Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies and has been led by scholars from similar backgrounds (Henrich et al., 2010). This trend raises concerns regarding the extent to which these findings can be generalized to a broader and more diverse global population (Fernández-Ríos and Novo, 2012; Hendriks et al., 2019). Although our focus within this paper lies in reviewing how current flourishing measures in the psychological literature approach emotion, we also acknowledge that these approaches may inadvertently incorporate WEIRD assumptions about emotions, potentially constraining their relevance and applicability beyond WEIRD contexts.

Diverse theoretical traditions support the perspective that there is also value found in negative emotions. In addition to the recognized benefits of emotional ambivalence, various theoretical traditions advocate for the importance of negative emotions, challenging the prevailing notion that positive emotions alone contribute to wellbeing. Philosophical perspectives, particularly within existentialism, emphasize the significance of negative emotions in shaping human existence. Existentialist thinkers like Sartre and Nietzsche argue that embracing the full spectrum of human emotions, including those deemed negative, are necessary steps towards embracing self-realization and finding meaning in existence (Nietzsche, 1886; Sartre, 1956). According to these philosophies, negative emotions such as despair, anxiety, and anguish are integral to the human condition, prompting individuals to confront fundamental questions about existence and meaning.

Moreover, within certain religious traditions like Buddhism, negative emotions are viewed not as hindrances but as opportunities for spiritual growth and enlightenment. The Buddhist concept of "dukkha," often translated as suffering or unsatisfactoriness, underscores the inevitability of experiencing negative emotions in life (Lama and Cutler, 2009). Rather than seeking to eliminate negative emotions, Buddhist teachings emphasize understanding their root causes and cultivating equanimity in the face of adversity. Through practices such as mindfulness and compassion, individuals develop awareness of the transient nature of both positive and negative emotions.

The acknowledgment of the possible advantages associated with ambivalent and negative emotions disrupts the conventional division within positive psychology, highlighting the intertwined nature of positive and negative facets of human existence (Ryff and Singer, 2003). This newer perspective, often referred to as the "second wave" of positive psychology, recognizes that wellbeing encompasses a multifaceted interaction among positive, negative, and ambivalent emotional states (Lomas and Ivtzan, 2016; Lomas, 2017). Consequently, gaining insight into the subtleties of emotional valence is a crucial step toward comprehensively examining the impact of emotions on wellbeing and psychological flourishing.

Cultural differences challenge the universality of happiness as a marker of flourishing, with Eastern cultures historically prioritizing equilibrium and harmony over high-arousal positive states such as joy and happiness (Uchida and Kitayama, 2009; Lim, 2016; Lu and Xie, 2021). Cultural disparities also extend to the impact of positive and negative emotions on health outcomes. Miyamoto and Ryff (2011) illuminate the concept of East Asian dialectical thinking, which involves embracing contradictions, such as maintaining a balance between positive and negative emotions, in contrast to the Western inclination to prioritize positive emotions while diminishing the significance of negative ones (Miyamoto and Ryff, 2011; Kitayama and Park, 2017). Furthermore, a comparative study involving Japanese and American samples revealed that Japanese individuals were more inclined to endorse a dialectical perspective on emotions compared to their American counterparts. This inclination was associated with fewer negative health symptoms among Japanese participants (Miyamoto and Ryff, 2011). In Japan, positive affect often fails to predict health outcomes as observed in Western contexts (Kitayama and Park, 2017; Yoo and Ryff, 2019). Similarly, negative affect, commonly associated with poorer health outcomes in the United States, does not exhibit the same predictive pattern in Japan (Miyamoto and Ryff, 2011; Park et al., 2020). These findings underscore the importance of considering cultural norms when examining the experience and health implications of emotions.

Several emerging initiatives recognize the limitations of Western-centric paradigms and aim to incorporate diverse cultural perspectives into flourishing research. Efforts like the Global Wellbeing Initiative seek to broaden the conceptualization of flourishing by introducing items assessing balance and harmony that reflect diverse perspectives of emotional wellbeing into global surveys (Lambert et al., 2020). These endeavors represent crucial steps towards embracing cultural diversity in understanding and measuring flourishing. We urge researchers to continue integrating relevant cultural paradigms into their work for a more comprehensive grasp of human wellbeing. Recognizing the significance of negative or ambivalent emotions, as endorsed by various psychological, philosophical, and religious traditions, provides valuable insights into the intricate realm of human emotional experiences and wellbeing. Rather than exclusively pursuing perpetual positivity, embracing the complexities of mixed valence emotions offers an alternative viewpoint on wellbeing that is often ignored in the current psychological discourse on flourishing measurement. While there is evidence supporting an association between positive emotions and psychological flourishing in some cultural contexts, a comprehensive understanding of wellbeing demands acknowledgment of the intrinsic value in both positive and negative emotional states and necessitates exploring the diverse ways in which culture shapes emotional experiences (Tsai and Clobert, 2019).

3 Contemporary wellbeing research

Social scientists employ various terms, such as wellbeing, flourishing, thriving, and happiness, to articulate the concept of

leading a fulfilling life (Haybron, 2013). Despite their distinct nuances and historical antecedents, these terms collectively seek to address the fundamental question of what constitutes a life well lived. Haybron's (2013) foundational taxonomy categorizes wellbeing into three primary domains: positive emotions, life satisfaction, and flourishing. The majority of this manuscript will explore approaches to flourishing, or wellbeing when considered in a superlative sense. That is, for the purposes of this paper, flourishing will be considered as a form of wellbeing which is general, pervasive, and summative—in short, a form of wellbeing that points to a life well-lived. However, we note that wellbeing and flourishing are terms frequently used interchangeably in the literature, with very blurred conceptual boundaries. The purpose of this manuscript is, in part, to explore the precise meaning of various iterations of generalized wellbeing.

Contemporary conceptualizations of living well vary. Some theorists take a hedonic approach, in which wellbeing is understood as the preponderance of positive emotion over negative emotion (Campbell, 1976; Diener et al., 2010). Others take an evaluative approach, in which wellbeing is understood in terms of a participant's overall assessment of their life (see Diener, 2000). These two approaches can be roughly grouped under the heading of Subjective Wellbeing (SWB)—SWB refers to when an individual has positive thoughts or feelings about his or her life. These approaches have an intuitive appeal, in that positive emotions and appraisals are labeled as integral parts of wellbeing because they are experienced as pleasant and desirable.

In contrast to SWB approaches, other theorists of wellbeing take an objective list approach, in which living well is understood as involving the presence of a variety of goods, which may include life-satisfaction or pleasure, but which may also include things like high-quality relationships, financial security, or a sense of personal engagement (Psychological Wellbeing Scale: Ryff, 1989, Mental Health Continuum: Keyes, 2002, Flourishing Scale: Diener et al., 2010; Flourishing Index: VanderWeele, 2017). These researchers emphasize features like psychological functioning and the content of life, as well as an individual's experiences, to offer a more expansive vision of wellbeing. Contemporary approaches to flourishing, or generalized wellbeing, tend toward this latter approach, measuring the degree to which an individual is living well using high-level questionnaires that tap into multiple dimensions of living.

Objective list approaches to flourishing suffer from an epistemological weakness, in that they are difficult to refute but easy to replace. Existing objective list approaches to flourishing are more notable for their differences than their similarities, with each offering a vision of what constitutes wellbeing for people in general (Novak et al., 2024). Critiques of these approaches on cultural and idiographic grounds have been made (Mathews and Izquierdo, 2008; Fowers et al., 2023; Kiknadze and Fowers, 2023). One noteworthy feature of these objective list accounts is the frequent central role of positive emotion—despite multiple, significant differences across various conceptualizations of flourishing, positive emotion often emerges as a feature deemed to be essential to the best life.

This emphasis on positive emotion as a central component to the good life has not always been popular, nor is it universally accepted now—earlier attempts to characterize good living emphasized features like psychological health and functioning, which sprang from a different perspective on the role of human beings in their environment. From this alternative perspective, living well was less about attaining very positive feelings, and more about adapting to an environment that posed various developmental challenges (Jahoda, 1958).

The role of positive emotions in a given conceptualization of flourishing offers a useful foil for analyzing the sort of flourishing that is being studied. In many objective-list approaches, positive emotions are an ultimate good, and possess a simple and constitutive relationship to flourishing; in short, it is good to feel good. On others, flourishing conceptually depends on functioning well, and emotions are part of the good life when they are *adaptive,* i.e., inasmuch as they are *appropriate,* or *functional* (e.g., Ryff, 1989 or Vittersø, 2016).

The two preceding perspectives are frequently conflated without proper examination in contemporary models of flourishing. This is unfortunate because there are situations in which these approaches provide contradictory intuitions for which situations constitute living well. For example, it is possible that maximizing positive emotion can interfere with functioning; in these situations, we as researchers are presented with a dilemma on what, precisely, should be deemed a desirable state of being. These situations recall Mill's famous quip: "It is better to be a human being dissatisfied than a pig satisfied," which we might rephrase as "It is better to function well without positive experience than to function poorly with positive experience" (Mill, 2008).

To clarify the role of positive emotion in contemporary flourishing models, we briefly introduce and analyze the role of positive emotion in seven prominent models of flourishing, or generalized wellbeing, identified in a recent review (Novak et al., 2024). To add depth to the perspective afforded by the analysis, we include two highly influential historical models of generalized wellbeing After this brief review, we summarize dimensions along which various theories of generalized wellbeing differ and consider the implications of these differences for research and practice.

4 Objective-list approaches to flourishing: positive emotion as a primitive good

Some contemporary models of flourishing take an additive, multi-dimensional approach to the construct. Per these perspectives, flourishing denotes an optimal positive condition characterized by a life that actively engages with and maximizes attainable goods. This perspective can be described in terms of a bucket, or a list—life is like a bucket, and the more goods that are in the bucket, the better the life is, with relatively little consideration for how those goods might interact. These goods can be both internal and external. An internal good might be positive emotion, and external good might be financial security. Importantly, the status of these goods as goods is rarely questioned in these models—they are deemed as contributing to flourishing across all circumstances. Thus, inasmuch as positive emotion is deemed one of the constituent goods of flourishing, one flourishes more to the extent that one experiences more positive emotion. Furthermore, the relationship of positive emotion to flourishing is primitive—it is simply posited as a universal good, and one of the core components of the good life. This view can be seen in the following measures of flourishing, which will be examined in partial detail.

4.1 Huppert and So's flourishing measure

When introducing their measure of flourishing, Huppert and So (2013, p. 838) define the construct as: "the experience of life going well," and "a combination of feeling good and functioning effectively." They clarify that flourishing is "synonymous with a high level of mental wellbeing," and that it "epitomizes mental health" (2011, p. 838). Thus, from the outset Huppert and So take an explicit commitment which binds flourishing with positive emotion, or "feeling good"—positive emotion is seen as the *expression* of flourishing.

In order to develop their measure, Huppert and So (2013) select 10 items from the European Social Survey. Their 10-item measure has 10 subscales, each measuring a feature which they believe to be important to flourishing. These features are: positive emotion, competence, emotional stability, engagement, meaning, optimism, positive relationships, resilience, self-esteem, and vitality. These features were developed through an investigation of which emotional and psychological features were the opposites of psychological features experienced by individuals with depression and anxiety.

In establishing a diagnostic cut-off for flourishing, the authors cluster their 10 subscales into three broad categories: positive characteristics (emotional stability, vitality, optimism, resilience, and self-esteem), positive functioning (engagement, competence, meaning, and positive relationships), and positive emotion. Interestingly, the authors argue that the positive emotion item correlates strongly with an index of life-satisfaction, and that this item alone reflects an individual's appraisal of their life; this is taken to be a rough index of their hedonic wellbeing. The authors create a variety of rules by which an individual can score as flourishing, but most importantly for our argument, they assert that an individual *must* report more positive emotion than the median survey respondent in order to flourish.

Huppert and So thus articulate a vision of flourishing with positive emotion at its center. The goodness of good feelings is unquestioned—good feelings are in themselves constituent of flourishing—and an individual who does not feel more positive emotion than the median participant cannot be said to flourishing, regardless of functional considerations. For example, an individual could be functioning extremely well, with superb scores on all 9 sub-scales of positive functioning and positive characteristics, but, due to some unfortunate life event, feel quite sad for some time. Per Huppert and So, this individual is not flourishing. This is a clear example of the objective-list approach to flourishing which posits positive emotion as a primitive and necessary good in the good life.

4.2 The mental health continuum

Keyes (2002), like Huppert and So, identifies flourishing as a combination of both positive functioning and positive feeling. He labels flourishing as the presence of generalized mental health, where mental health involves three distinct forms of wellbeing: emotional wellbeing, or the presence of positive attributions and affect; psychological wellbeing, or generally positive psychological functioning; and social wellbeing, or generally positive social functioning. In his expression of the importance of functioning for flourishing, Keyes shares a significant conceptual vocabulary with the authors who will be introduced later in this article. However, he makes a strong commitment to positive emotion when clarifying the diagnostic criteria for his conception of flourishing. In his sub-scale of emotional wellbeing, Keyes includes two measures, one for positive affect, and one for general life satisfaction. In order to qualify as flourishing, Keyes requires that an individual score in the upper-tertile on at least one of these two measures of emotional wellbeing. Thus, Keyes (2002, p. 210) binds flourishing up with experiencing more than average amounts of either positive emotion or life-satisfaction. In this view, positive emotion is regarded as a fundamental and indispensable element of "complete mental health". Our previous example, of a sad but highly functioning individual, again does not meet the criteria for flourishing due to the absence of positive emotion. This illustration underscores the similarity between Keyes' framework and the approach advocated by Huppert and So.

4.3 The comprehensive inventory of thriving and the flourishing index

Su et al. (2014) develop a model and measure of generalized psychological wellbeing and holistic positive functioning which has seven dimensions: subjective wellbeing, which includes life satisfaction and positive feelings, positive relationships, engagement, meaning and purpose, mastery, autonomy, and optimism. To justify their dimensions, they cite a handful of recent flourishing theorists, but assert that subjective wellbeing, in the form of positive feelings and life satisfaction, is a key component of positive functioning. This position is relatively unquestioned. Consequently, they adopt a stance positing that positive emotion is intrinsic to living well, regardless of an individual's level of functioning, and can be considered as offering an alternative objective list approach to flourishing, alongside Keyes and Huppert & So.

VanderWeele (2017, p. 8149), when describing a new model and measure of flourishing, states: "I would argue that, regardless of the particulars of different understandings, most would concur that flourishing, however conceived, would, at the very least, require doing or being well in the following five broad domains of human life: (i) happiness and life satisfaction; (ii) health, both mental and physical; (iii) meaning and purpose; (iv) character and virtue; and (v) close social relationships". VanderWeele goes on to include financial stability as a sixth component (Secure Flourishing Index: Węziak-Białowolska et al., 2017). Like the previous scholars, VanderWeele emphasizes the pivotal role of positive emotion in relation to flourishing. According to his perspective, an individual who is mentally healthy but experiences negative emotion is considered to fare worse compared to someone who experiences greater levels of positive emotion, irrespective of other aspects of his or her life situation.

Each of the preceding four models of flourishing establishes positive emotion as a core component of the construct (Mental Health Continuum: Keyes, 2002, Flourishing: Huppert and So, 2013, Comprehensive Index of Thriving: Su et al., 2014, and Flourishing Index: VanderWeele, 2017). The relationship between positive emotion and flourishing is, across the four models, relatively unquestioned. Instead, positive emotion becomes an unconditional good, alongside the likes of positive functioning, and in the case in which an individual feels negative emotion, they are accordingly flourishing less.

As an important counterpoint to these approaches, we can introduce a model and measure of flourishing which retains the objective-list approach to the primitive goods which make up the good life, but does not include positive emotion among those goods.

4.4 The flourishing scale

Diener et al. (2010, p. 144) developed their scale of flourishing to "complement existing measures of subjective wellbeing." They note the need for brief and effective flourishing measurement, and link their scale to the work of Ryff, Singer, and Ryan and Deci (Flourishing Scale: Diener et al., 2010). Their approach is explicitly functional, and they claim that the sense in which they are measuring flourishing transcends the psychological, which is to say, that they seek to understand living well not only in terms of psychological states, but also in terms of positive external goods. Their scale has eight inter-related categories, each deemed to be essential for flourishing: a sense of meaning, supportive social relationships, engagement, contributing to the happiness of others, competence, a sense of being a good person, optimism, and being respected by others. What is fascinating about this conceptualization of flourishing is the inclusion of items which are entirely outside of the scope of psychological functioning—say, *being respected.* In this case, Diener et al. have effectively taken an objective-list approach, in which flourishing consists of a set of goods which are primitively related to living a good life; their approach is distinct from the other objective-list approaches reviewed here, though, in their exclusion of positive emotion from that list of primitive goods.

What we can conclude from the previous models, taken together, is that one dominant lens through which to understand the 'good life' is the objective list approach, in which the good life consists of primitive goods, both internal and external. This good life can involve psychological functioning, but might also involve positive emotions, external luck, or other features. Importantly, there are disagreements among theorists as to the role of positive emotion in the life which participates in primitive goods—some, like Huppert and So, take a strong position, in which a life without more than the median amount of positive emotion cannot be said to be a flourishing life, while others, like Diener et al., do not even include positive emotion among those primitive goods which make a life good.

5 Functional approaches to flourishing

Theorists of flourishing which emphasize psychological functioning focus more on *living well* than *being well altogether*; they rely on a critical, meta-psychological position which can be labeled the 'function argument." The function argument holds that living well involves fulfilling characteristic functions; this position was maintained by Aristotle and continues its life among multiple contemporary flourishing theorists and philosophers (Fowers, 2012a; Vittersø, 2016). On this view, emotions are experienced and expressed as part of human functioning. To function well, then, is to experience the appropriate emotions, and no emotions take an exclusive and privileged position when it comes to flourishing. These views often allow for a more dynamic inter-relationship between an individual and their environment in determinations of flourishing. For examples of the functional approach, we examine two contemporary perspectives.

5.1 Ryff's psychological wellbeing

Ryff introduced her seminal model of psychological wellbeing to address what she perceived as a deficiency in comprehensive theorization regarding the construct (Ryff, 1989). She observes that happiness has received disproportionate attention as an indicator of positive psychological functioning, while alternative viewpoints have been neglected. Drawing on the works of theorists such as Rogers, Maslow, Jung, Allport, Buhler, Erikson, Neugarten, and Jahoda, Ryff articulates an alternative conception of psychological wellbeing that places greater emphasis on human capacities and less on positive emotion (for all citations see Ryff, 1989). Her model comprises six components: self-acceptance, positive relationships, autonomy, environmental mastery, purpose in life, and personal growth. Notably absent from this list is emotion—Ryff's perspective suggests that individuals can achieve psychological wellbeing if they fulfill certain characteristic functions, irrespective of their emotional state. This perspective contrasts with those of Keyes, Huppert and So, and VanderWeele. Unlike these theorists, Ryff posits that a highly functioning but sad individual can still be psychologically well, where that sadness does not detract from their wellbeing. Of significance for our analysis is Ryff's linking of positive psychological functioning with wellbeing. In doing so, she highlights a distinct form of wellbeing, more akin to *living well in one's situation* than *experiencing all possible goods in a superlative sense*. This raises intriguing questions about the nature of wellbeing, particularly regarding the possibility of experiencing wellbeing in the presence of difficult emotions such a unhappiness and sorrow—questions that will be further explored in our discussion.

5.2 Waterman's questionnaire of eudaimonic wellbeing

Waterman et al. (2010) developed their model of Eudaimonic Wellbeing (EWB) in response to criticisms that the construct of EWB was becoming vague and ungrounded in any theoretical perspective; to correct for this, they ground their model of EWB, and the instrument measuring EWB, in a close reading of Aristotelean philosophy paired with certain modern interpretations of that philosophy (Norton, 1976; Bartlett and Collins, 2011). The model they develop has six inter-related categories which are thought to comprise EWB—self-discovery, perceived development of one's best potentials, a sense of meaning, investment of effort in pursuit of excellence, intense engagement, and a sense of activities as personally expressive (paired with enjoyment of those activities). Positive emotion is almost entirely absent from their functional model, with the exception of the final category, in which positive functioning is understood to include a sense of pleasure from what is personally expressive. This caveat creates a distinction from thinkers like Keyes who value positive emotion in an unqualified way—for Waterman, it is only positive emotion as experienced in connection to a particular function that counts for overall wellbeing.

To complement the provided review of contemporary perspectives, we here briefly touch on two highly influential accounts of wellbeing which both adopt a functional perspective.

5.3 Aristotle and eudaimonia

Over 2000 years ago, Aristotle put forward a model of human functioning and flourishing which continues to exert influence to this day; it is from this work that we derive the term *eudaimonia*, and an active group of researchers aim to characterize flourishing while remaining loyal to Aristotelean thought (Fowers, 2012a, 2016, 2017; Kristjánsson, 2019). In his Nicomachean Ethics, Aristotle conceived of humans as having characteristic functions, the fulfillment of which constituted the best life (Bartlett and Collins, 2011). Fulfilling one's functions well across a variety of life's situations requires use of virtues, which are stable, cognitive and emotional dispositions to act in pursuit of some good. To flourish, per Aristotle, is to be virtuous, or to live well (to live *eudaimonically*); this can be termed in the eudaimonist position, which has both theoretical and empirical facets (see Snow, 2008, for an in-depth, modern defense of the eudaimonist position). Notably, Aristotle did not put much stock into the significance of positive experience, and he certainly believed in the importance of luck, or favorable environmental circumstances, in the best life. Because Aristotle did not emphasize positive emotions, there is the possibility of misunderstanding flourishing due to modern bias. To Aristotle, flourishing simply *is* the enaction of virtues, which constitute, across various domains, the appropriate or best ways to be—thus flourishing is not a subjective state but an objective concordance with an external order, prescribed by development and nature.

5.4 Jahoda and complete mental health

In her groundbreaking *Current Concepts of Positive Mental Health*, Jahoda (1958) put forth a model of positive functioning which has since been heavily cited by theorists of flourishing. Jahoda articulates six functions, or capacities, which were, on her view, present in most theoretical work seeking to understand positive psychological functioning: attitudes toward the self, self-actualization, personality integration, autonomy from social influences, an adequate perception of reality, and reasonable mastery over the environment. In creating this list, she cites thinkers from a largely psychoanalytic background, including Allport, Erikson, and Maslow (for full list of citations, see Jahoda, 1958) Jahoda does not, in her model, consider positive emotion to be essential to mental health, and her theory relies more extensively on the concepts of adequate psychological functioning and reality-orientation.

6 Overview of approaches to flourishing

We have briefly touched on 9 approaches to wellbeing, flourishing, or "complete mental health," two of which are influential historical accounts and seven of which are (roughly) contemporary. A survey of these perspectives leads to an appreciation of certain key commitments that each theorist makes when developing a model of the good life. The first, and most salient, dimension involves the grounding of the good life in human functioning (function-approaches) or the grounding of the good life in primitive goods (objective-list approaches). The second dimension, and one which is important for our discussion, is the relative importance of positive emotion for the good life. Objective-list approaches can include positive emotion as a primitive and necessary good for the good life (Keyes), or exclude positive emotion altogether (Diener). Functional approaches can entirely ignore the role of positive emotion (Jahoda), or integrate positive emotion with respect to a specific psychological function (see Waterman's integration of enjoyment due to personal expressiveness). Finally, both objective-list and functioning approaches can differ in the extent to which they emphasize internal versus external goods. Waterman's model of eudaimonic wellbeing mentions the external world relatively less when compared to Diener's model of flourishing, which would require being *respected* by others, or VanderWeele's model of flourishing, which requires financial security.

These three dimensions of variation allow for an efficient categorization of the nine models of wellbeing (see Table 1). What can be seen from this categorization is a relatively higher emphasis on the importance of positive emotion from objective-list approaches to living well, as opposed to functional approaches. We now briefly turn to the field of emotion regulation to consider current perspectives on the role of positive and negative emotions in human life.

7 Positive emotion and emotional regulation

The field of emotion regulation is expansive, dynamic, and contentious. Decades of research have yielded a wealth of insights, but considerable disagreement persists regarding the central constructs under consideration (For in-depth reviews of the field of emotion regulation, see Gross and Thompson, 2007 and Gross, 2015). Two influential theorists summarize the situation pithily when they say: "It is widely agreed that *emotion* refers to a collection of psychological states that include subjective experience, expressive behavior (e.g., facial, bodily, verbal), and peripheral physiological responses (e.g., heart rate, respiration). It is also widely agreed that emotions are a central feature in any psychological model of the human mind. Beyond these two points of agreement, however, almost everything else seems to be subject to debate" (Gross and Feldman Barrett, 2011, p. 9).

Despite such controversy, in recent years, many theorists of emotional regulation have taken a turn toward the concept of functional emotion—emotions are relatively appropriate, or adaptive, depending on a given situation (e.g., Izard et al., 2008). It is not always clear what adaptive, or appropriate, means, but reference is often given to generalized functioning, and sometimes to wellbeing; frequently, emphasis is placed on the concept that negative and positive emotions both have a role in the functional life (e.g., Kobylińska and Kusev, 2019). Consider the following statements, all made by influential theorists of emotional regulation (emphasis added):

- "Emotional preferences should hinge on the goals people are inclined to pursue. We have not given due consideration to the task of *identifying which emotions are functional and at what*

TABLE 1 A brief taxonomy of 9 models of generalized wellbeing, per theoretical commitments.

Model	Functional or objective-list	Positive emotion as essential	Relative focus on internal goods, external goods, or both
Aristotle's *eudaimonia*	Functional	Not essential	Both
Jahoda's Complete Mental Health (1958)	Functional	Not essential	Internal goods
Ryff's Psychological Wellbeing (1989)	Functional	Not essential	Internal goods
Waterman's Eudaimonic Wellbeing (2010)	Functional	Essential as part of a limited function (expressiveness)	Internal goods
Diener's Flourishing Scale (2010)	Objective-list	Not Essential	Both
VanderWeele's Secure Flourishing Index (2017)	Objective-list	Essential	Both
Huppert & So's Measure (2013)	Objective-list	Essential	Internal goods
Su et al.'s Comprehensive Inventory of Thriving (2014)	Objective-list	Essential	Internal goods
Keyes' Mental Health Continuum (2002)	Objective-list, with added emphasis on positive functioning	Essential	Both

levels of intensity and type of expressiveness. Sometimes negative, unpleasant emotions can be more useful than positive emotions." (Kashdan and Rottenberg, 2010, p. 866)

- "The goal of the regulatory process is to reach optimal levels of emotion dynamics, so that *emotions can facilitate appropriate responding to the ever-changing demands of the environment*." (Aldao, 2013, p. 155)
- "The value of the concept of emotion regulation is as a tool to understand how emotions organize attention and activity and facilitate strategic, persistent, or powerful actions *to overcome obstacles, solve problems, and maintain wellbeing* at the same time as they may impair reasoning and planning, complicate and compromise interpersonal interactions and relationships, and endanger health. *It is not the valence of an emotion but the complex processes by which emotions relate to cognition and behavior and ultimately developmental outcomes* that must be conceptualized and studied." (Cole et al., 2004, p. 318)

These claims highlight the complexity of determining whether an emotion should be deemed as desirable, or, in other words, whether emotional regulation can be deemed "successful." Importantly, reference is consistently made to an alternate good, whether it be usefulness, responsiveness to the environment, or "developmental outcomes," which can be used to determine the successfulness of emotional regulation and the desirability of an emotion; notably absent from these comments is an impression of positive emotion as a primitive good, desirable in itself. However, while emotional regulation theorists articulate a relatively common understanding of the importance of both positive and negative emotions for the good life, the alternative good by which they justify that importance is often unspecified, and that "reference good" often differs between accounts and theorists. For example, some theorists cite wellbeing, others functioning, and still others usefulness as indexes of which emotions are desirable and when.

One provocative consequence of theorists who cite wellbeing as an index by which we can assess the appropriateness of an emotion can be seen when we link such a claim with a theory of wellbeing which posits positive emotion as a primitive good (i.e., Keyes' Mental Health Continuum). In this case, we encounter a sort of chicken-and-egg explanatory circularity—positive emotions, presumably, are suitable because they contribute to wellbeing, but an individual is well precisely because they have positive emotions. This circularity reveals that, when a theory of wellbeing posits positive emotion as a primitive good, it is not explanatory to argue that positive emotions are functional because they contribute to wellbeing, but instead tautological.

What can certainly be seen among emotional regulation theories is a demand for explanation—explanations as to how emotional regulation succeeds, and to why individuals regulate their emotions, especially in the context of supra-hedonic goals. This demand for explanation is not compatible with objective-list approaches to wellbeing which posit positive emotion as a primitive good, because on these models, positive emotion is desirable in itself, without reference to another good. Instead, a demand for an explanation of which emotions are adaptive or appropriate quite naturally blends with functional approaches of wellbeing which ground what is considered good in considerations of characteristic human capacities.

8 Discussion and conclusion

In conclusion, our review of seven contemporary and two historical models of flourishing aimed to evaluate their perspectives regarding the significance of positive emotion in the pursuit of a good life. We have identified several theoretical questions that yield substantial variations in conceptions of wellbeing, including the grounding of claims about what constitutes the 'good life'. Some theorists adopt objective-list approaches, positing a collection of primitive goods, while others advocate functional approaches that ground wellbeing in the fulfillment of characteristic human functions. Furthermore, theories of flourishing may differ in their emphasis on internal versus external goods. Theories of flourishing that emphasize external goods naturally orient our attention toward external factors, and encourage the appreciation of the role of the situation in allowing or not allowing flourishing—theories of flourishing that emphasize internal goods orient our attention toward an individual's

psychological resources, and encourage the appreciation of the role of the individual in adequately *responding* to their situation.

Ethically, the emphasis on external goods raises concerns about equity and justice, as it suggests that individuals' flourishing is contingent upon factors beyond their control, such as social structures and external circumstances through limitations of birth, or through significant life events like experiencing illness or injury. This perspective implies that individuals facing systemic barriers may struggle to achieve flourishing despite possessing internal resources, leading to potential disparities in wellbeing based on socioeconomic status, race, able-bodiedness, or other factors. In contrast, theories emphasizing internal goods can be used to suggest that everyone has the potential to achieve flourishing despite external circumstances. However, this perspective may overlook systemic injustices and fail to address the structural barriers that prevent certain individuals from accessing the resources needed to flourish.

Finally, we have noted that theories of flourishing can vary in the extent to which they privilege positive emotion as a necessary constituent of wellbeing. In general, objective-list approaches were seen as more likely to argue for positive emotion as a primitive good, while functional approaches are less likely to consider the valence of emotion and more likely to consider the role of emotion in general functioning. This last point can be complicated through an examination of the emotional regulation literature, in which multiple theorists call for conceptual explanations of when and why emotions are appropriate or not appropriate for a given situation (consider a funeral, or the death of a friend, for salient examples). These calls for conceptual explanation are incompatible with objective-list approaches which posit positive emotion as an unexplained good.

These distinctions are important in part because of the public salience of the construct of wellbeing. Wellbeing is almost universally hailed as a desired good, and many public policy initiatives assess success at least partially in terms of wellbeing, or flourishing. However, our review has revealed that what counts as wellbeing can differ dramatically depending on one's theoretical perspective. For instance, consider the case of a physician dedicated to providing healthcare to marginalized communities. Despite experiencing short-term negative emotions due to long hours and a hectic schedule, this doctor may be actively pursuing valuable long-term goals and providing important services to society. This scenario poses a philosophical inquiry into whether such an individual would be considered "flourishing" according to different theoretical frameworks. In some models, individuals who are highly functional, externally successful, and yet who experience many negative emotions may be deemed as flourishing or living well (e.g., Aristotle, Ryff), whereas in others, these individuals would not be deemed as flourishing (e.g., Keyes, Huppert & So).

There are, of course, certain practical advantages and disadvantages to various commitments about flourishing. Consider the distinction between objective-list and functional approaches—objective-list approaches have the privilege of not needing to ground what is desirable in other desirable things, and thus avoid the difficult question of *why* their list has certain contents and not others. This advantage comes with the simultaneous disadvantage of being unable to refute alternative lists, which is perhaps one of the reasons why multiple objective list accounts, with different lists, exist in the flourishing space today; each lacks the conceptual resources to critique the others. Functional approaches, on the other hand, must complete the arduous task of defending the function argument, and most of the accounts reviewed here simply renege on that responsibility. However, after that task has been satisfactorily (or not satisfactorily) completed, functionalists have a conceptual vocabulary with which to develop rich and comparable theories of wellbeing.

As another arena of practical advantages and disadvantages for the theorist of wellbeing, consider the role of external events in wellbeing. The fact that luck may play a large role in determining whether an individual flourishes is distasteful to some—such a fact can be diminished, or eliminated, through a theory of flourishing that focuses on internal goods. Such a theory would suffer, however, in the inability to address the salient and commonplace intuition that what happens outside of an individual's mind can bear on the quality of that individual's life.

Finally, we can assess the practical consequences of the role (or non-role) of positive emotion in overall wellbeing. Theories like Ryff's, which omit mention of positive emotion and instead reference function, effortlessly address situations in which individuals can live well despite experiencing negative emotion; such views concord with contemporary philosophical work highlighting the epistemic value of negative emotion (Brady, 2018). However, such theories must contend with an alternate objection, which is that many people feel that the good life should involve feeling good; if a theory of the good life omits positive emotion, how is that intuition to be justified? Theories like Keyes' avoid such a challenge by offering positive emotion a central role, but then must justify the central role of emotion in their theories.

We further observe that it is likely that, on many different conceptualizations of the good-life, varying cultural and individual situations create conditions for variations in the manifestation of flourishing, where that flourishing does not always include a simple preponderance of positive emotion over negative emotion. This observation suggests that extant cultural variation in conceptualization of the flourishing life (e.g., variation in the role of community life in determining wellbeing) demands increased theoretical complexity and flexibility when modeling the relationship between flourishing and emotion, at least for some objective-list approaches (Mathews and Izquierdo, 2008).

Our review reveals that there are no simple and easy answers to the difficult questions facing a theorist of wellbeing. However, we have made it clear that there exists substantial theoretical dissensus about the role of positive emotions in the good life, and in general about which qualities of an individual's life should be used to ground the claim that their life is good, or that they are living well. We further argue that objective-list approaches to flourishing, which posit positive emotion as an unexplained good, are relatively incompatible with demands for explanation about the appropriateness of emotion found in the emotion regulation literature. A possible resolution to the tension encountered between objective-list and functional approaches to the role of emotion in the good life could involve a reconceptualization of positive emotion as more of an indicator than an outcome; a sketch of this view would involve positing that, in typical cases, positive emotion serves to *indicate* that some good is being accomplished, and that it is not the emotion, but the indicated good, which confers upon positive emotion its desirable quality. This view recognizes the importance of positive emotion without affording it undue and indefensible centrality in a theory of the human good. This view can be critiqued on the grounds that it posits that in certain

situations, such as when a good is not being accomplished, it is appropriate to feel negative or neutral rather than positive emotions. Contained in this critique is a conception that the best human life feels the best, while contained in the alternative view is a conception that the best human life is one which most participates in human goods. Resolving these competing conceptions requires further investigation, yet it is evident that any theory of flourishing must, implicitly or explicitly, adopt a position on this issue. Consequently, theories of flourishing that adopt different positions will be relatively incomparable measures.

We conclude by noting that there is a need for greater theoretical clarity with respect to flourishing in order to ensure that the public, and fellow researchers, are informed and prepared for the implications of adapting these models to their research and lives.

Author contributions

LN: Writing – original draft, Writing – review & editing. NK: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

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

References

Aldao, A. (2013). The future of emotion regulation research: capturing context. *Perspect. Psychol. Sci.* 8, 155–172. doi: 10.1177/1745691612459518

Bartlett, R. C., and Collins, S. D. (2011). Aristotle's Nicomachean ethics. Chicago, IL: University of Chicago Press.

Boiger, M., and Mesquita, B. (2012). The construction of emotion in interactions, relationships, and cultures. *Emot. Rev.* 4, 221–229. doi: 10.1177/1754073912439765

Brady, M. S. (2018). Suffering and virtue. Oxford: Oxford University Press.

Cacioppo, J. T., and Berntson, G. G. (1994). Relationship between attitudes and evaluative space: a critical review, with emphasis on the separability of positive and negative substrates. *Psychol. Bull.* 115, 401–423. doi: 10.1037/0033-2909.115.3.401

Cacioppo, J. T., Berntson, G. G., Norris, C. J., and Gollan, J. K. (2012). The evaluative space model. In LangeP. A. M. Van, A. W. Kruglanski and E. T. Higgins (Eds.), Handbook of theories of social psychology (pp. 50–72). Sage Publications Ltd: Thousand Oaks, CA.

Campbell, A. (1976). Subjective measures of well-being. *Am. Psychol.* 31, 117–124. doi: 10.1037/0003-066X.31.2.117

Candiotto, L. (2023). A strange state of mournful contentment: the role of compassion in moral betterment. *Passion: J. Eur. Phil. Soc. Study Emot.* 1, 139–153. doi: 10.59123/passion.v1i2.13769

Cole, P. M., Martin, S. E., and Dennis, T. A. (2004). Emotion regulation as a scientific construct: methodological challenges and directions for child development research. *Child Dev.* 75, 317–333. doi: 10.1111/j.1467-8624.2004.00673.x

Colombetti, G. (2014). The feeling body: Affective science meets the enactive mind. Cambridge, MA: MIT Press.

Depraz, N., Varela, F. J., and Vermersch, P. (Eds.) (2003). On becoming aware: A pragmatics of experiencing. Amsterdam: John Benjamins Publishing Company.

Diener, E. (2000). Subjective well-being: the science of happiness and a proposal for a national index. *Am. Psychol.* 55, 34–43. doi: 10.1037/0003-066X.55.1.34

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., et al. (2010). New well-being measures: short scales to assess flourishing and positive and negative feelings. *Soc. Indic. Res.* 97, 143–156. doi: 10.1007/s11205-009-9493-y

Ekman, P. (1999). "Basic emotions" in Handbook of cognition and emotion. eds. T. Dalgleish and M. J. Power (Hoboken, NY: John Wiley & Sons), 45–60.

Ekman, P., Friesen, W. V., O'Sullivan, M., Chan, A., Diacoyanni-Tarlatzis, I., Heider, K., et al. (1987). Universals and cultural differences in the judgments of facial expressions of emotion. *J. Pers. Soc. Psychol.* 53, 712–717. doi: 10.1037//0022-3514.53.4.712

Feldman Barrett, L. (2006). Solving the emotion paradox: categorization and the experience of emotion. *Personal. Soc. Psychol. Rev.* 10, 20–46. doi: 10.1207/s15327957pspr1001_2

Fernández-Ríos, L., and Novo, M. (2012). Positive Pychology: Zeigeist (or spirit of the times) or ignorance (or disinformation) of history? *Int. J. Clin. Health Psychol.* 12, 333–344.

Fong, C. T. (2006). The effects of emotional ambivalence on creativity. *Acad. Manag. J.* 49, 1016–1030. doi: 10.5465/amj.2006.22798182

Fowers, B. J. (2012a). An Aristotelian framework for the human good. *J. Theor. Philos. Psychol.* 32, 10–23. doi: 10.1037/a0025820

Fowers, B. J. (2012b). Placing virtue and the human good in psychology. *J. Theor. Philos. Psychol.* 32, 1–9. doi: 10.1037/a0025819

Fowers, B. J. (2016). "Aristotle on eudaimonia: on the virtue of returning to the source" in Handbook of Eudaimonic well-being. ed. J. Vittersø (New York, NY: Springer International Publishing), 67–83.

Fowers, B. J. (2017). "The deep psychology of eudaimonia and virtue: belonging, loyalty and the anterior cingulate cortex" in Varieties of virtue ethics. eds. D. Carr, J. Arthur and K. Kristjánsson (London: Palgrave Macmillan UK), 199–216.

Fowers, B. J., Novak, L. F., Kiknadze, N. C., and Calder, A. J. (2023). Questioning contemporary universalist approaches to human flourishing. *Rev. Gen. Psychol.* 27, 121–134. doi: 10.1177/10892680221138230

Gendron, M., Crivelli, C., and Barrett, L. F. (2018). Universality reconsidered: diversity in making meaning of facial expressions. *Curr. Dir. Psychol. Sci.* 27, 211–219. doi: 10.1177/0963721417746794

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J., and Feldman Barrett, L. (2011). Emotion generation and emotion regulation: one or two depends on your point of view. *Emot. Rev.* 3, 8–16. doi: 10.1177/1754073910380974

Gross, J. J., and Thompson, R. A. (2007). "Emotion regulation: conceptual foundations" in Handbook of emotion regulation. ed. J. J. Gross (New York, NY: Guilford Press).

Haybron, D. M. (2013). *Happiness: A very short introduction*. Oxford University Press.

Hendriks, T., Warren, M. A., Schotanus-Dijkstra, M., Hassankhan, A., Graafsma, T., Bohlmeijer, E., et al. (2019). How WEIRD are positive psychology interventions? A bibliometric analysis of randomized controlled trials on the science of well-being. *J. Posit. Psychol.* 14, 489–501. doi: 10.1080/17439760.2018.1484941

Henrich, J., Heine, S. J., and Norenzayan, A. (2010). The weirdest people in the world? *Behav. Brain Sci.* 33, 61–83. doi: 10.1017/S0140525X0999152X

Hershfield, H. E., Scheibe, S., Sims, T. L., and Carstensen, L. L. (2012). When feeling bad can be good: mixed emotions benefit physical health across adulthood. *Soc. Psychol. Personal. Sci.* 3, 54–61. doi: 10.1177/1948550612444616

Huppert, F. A., and So, T. T. C. (2013). Flourishing across Europe: application of a new conceptual framework for defining well-being. *Soc. Indic. Res.* 110, 837–861. doi: 10.1007/s11205-011-9966-7

Izard, C., Stark, K., Trentacosta, C., and Schultz, D. (2008). Beyond emotion regulation: emotion utilization and adaptive functioning. *Child Dev. Perspect.* 2, 156–163. doi: 10.1111/j.1750-8606.2008.00058.x

Jahoda, M. (1958). Current concepts of positive mental health. New York, NY: Basic Books.

James, W. (1884). What is an emotion? *Mind* os-IX, 188–205. doi: 10.1093/mind/os-IX.34.188

Kashdan, T. B., and Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clin. Psychol. Rev.* 30, 865–878. doi: 10.1016/j.cpr.2010.03.001

Keltner, D., and Haidt, J. (2001). "Social functions of emotions at four levels of analysis" in Emotions in social psychology: Essential readings. ed. W. G. Parrott (London: Psychology Press), 175–184.

Keyes, C. L. M. (2002). The mental health continuum: from languishing to flourishing in life. *J. Health Soc. Behav.* 43, 207–222. doi: 10.2307/3090197

Kiknadze, N. C., and Fowers, B. J. (2023). Cultural variation in flourishing. *J. Happiness Stud.* 24, 2223–2244. doi: 10.1007/s10902-023-00677-9

Kitayama, S., and Park, J. (2017). Emotion and biological health: the socio-cultural moderation. *Curr. Opin. Psychol.* 17, 99–105. doi: 10.1016/j.copsyc.2017.06.016

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

Kövecses, Z. (2003). Metaphor and emotion: Language, culture, and body in human feeling. Cambridge: Cambridge University Press.

Kristjánsson, K. (2019). Flourishing as the aim of education: a neo-Aristotelian view. London: Routledge.

Lama, D., and Cutler, H. C. (2009). The art of happiness: A handbook for living. London: Penguin.

Lambert, L., Lomas, T., van de Weijer, M. P., Passmore, H. A., Joshanloo, M., Harter, J., et al. (2020). Towards a greater global understanding of wellbeing: a proposal for a more inclusive measure. *Int. J. Wellbeing* 10, 1–18. doi: 10.5502/ijw.v10i2.1037

Lim, N. (2016). Cultural differences in emotion: differences in emotional arousal level between the east and the west. *Integr. Med. Res.* 5, 105–109. doi: 10.1016/j.imr.2016.03.004

Lomas, T. (2017). The value of ambivalent emotions: a cross-cultural lexical analysis. *Qual. Res. Psychol.* 20, 1–25. doi: 10.1080/14780887.2017.1400143

Lomas, T., and Ivtzan, I. (2016). Second wave positive psychology: exploring the positive–negative dialectics of wellbeing. *J. Happiness Stud.* 17, 1753–1768. doi: 10.1007/s10902-015-9668-y

Lu, L., and Xie, D. (2021). Measuring virtues in chinese culture: Development of a chinese moral character questionnaire. *Appl. Res. Qual. Life.* 16, 51–69.

Mathews, G., and Izquierdo, C. (2008). Pursuits of happiness: Well-being in anthropological perspective. Oxford: Berghahn Books.

Matsumoto, D., and Hwang, H. S. (2012). Culture and emotion: the integration of biological and cultural contributions. *J. Cross-Cult. Psychol.* 43, 91–118. doi: 10.1177/0022022111420147

Mill, J. S. (2008). Utilitarianism. In seven masterpieces of philosophy. Oxford: Routledge.

Miyamoto, Y., and Ryff, C. D. (2011). Cultural differences in the dialectical and non-dialectical emotional styles and their implications for health. *Cognit. Emot.* 25, 22–39. doi: 10.1080/02699931003612114

Moss, S. A., and Wilson, S. J. (2014). Ambivalent emotional states: The underlying source of all creativity? *The International Journal of Creativity and Problem Solving,* 24, 75–100.

Nietzsche, F. (1886). Beyond good and evil: Prelude to a philosophy of the future (W. Kaufmann, trans.). New York, NY: Vintage.

Norton, D. L. (1976). Personal destinies: A philosophy of ethical individualism. Princeton, NJ: Princeton University Press.

Novak, L. F., Fowers, B. J., Kiknadze, N. C., and Calder, A. J. (2024). A close analysis of eight flourishing measures. *J. Posit. Psychol.* 1, 1–11. doi: 10.1080/17439760.2024.2322468

Park, J., Kitayama, S., Miyamoto, Y., and Coe, C. L. (2020). Feeling bad is not always unhealthy: culture moderates the link between negative affect and diurnal cortisol profiles. *Emotion* 20, 721–733. doi: 10.1037/emo0000605

Posner, J., Russell, J. A., and Peterson, B. S. (2005). The circumplex model of affect: an integrative approach to affective neuroscience, cognitive development, and psychopathology. *Dev. Psychopathol.* 17, 715–734. doi: 10.1017/S0954579405050340

Rees, L., Rothman, N. B., Lehavy, R., and Sanchez-Burks, J. (2013). The ambivalent mind can be a wise mind: emotional ambivalence increases judgment accuracy. *J. Exp. Soc. Psychol.* 49, 360–367. doi: 10.1016/j.jesp.2012.12.017

Russell, J. (1980). A circumplex model of affect. *J. Pers. Soc. Psychol.* 39, 1161–1178. doi: 10.1037/h0077714

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J. Pers. Soc. Psychol.* 57, 1069–1081. doi: 10.1037/0022-3514.57.6.1069

Ryff, C. D., and Singer, B. H. (2003). "Flourishing under fire: resilience as a prototype of challenged thriving" in Flourishing: Positive psychology and the life well-lived. eds. C. L. M. Keyes and J. Haidt (Washington, DC: American Psychological Association), 15–36.

Sartre, J. P. (1956). Being and nothingness: An essay on phenomenological ontology. New York, NY: Philosophical Library.

Schachter, S., and Singer, J. E. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychol. Rev.* 69, 379–399. doi: 10.1037/h0046234

Šimić, G., Tkalčić, M., Vukić, V., Mulc, D., Španić, E., Šagud, M., et al. (2021). Understanding emotions: origins and roles of the amygdala. *Biomol. Ther.* 11:823. doi: 10.3390/biom11060823

Snow, N. E. (2008). Virtue and flourishing. *J. Soc. Philos.* 39, 225–245. doi: 10.1111/j.1467-9833.2008.00425.x

Su, R., Tay, L., and Diener, E. (2014). The development and validation of the comprehensive inventory of thriving (CIT) and the brief inventory of thriving (BIT). *Appl. Psychol. Health Well Being* 6, 251–279. doi: 10.1111/aphw.12027

Tsai, J. L., and Clobert, M. (2019). "Cultural influences on emotion: established patterns and emerging trends" in Handbook of cultural psychology. eds. D. Cohen and S. Kitayama. *2nd* ed (New York: The Guilford Press), 292–318.

Tyng, C. M., Amin, H. U., Saad, M. N., and Malik, A. S. (2017). The influences of emotion on learning and memory. *Front. Psychol.* 8:235933. doi: 10.3389/fpsyg.2017.01454

Uchida, Y., and Kitayama, S. (2009). Happiness and unhappiness in east and west: themes and variations. *Emotion* 9, 441–456. doi: 10.1037/a0015634

VanderWeele, T. J. (2017). On the promotion of human flourishing. *Proc. Natl. Acad. Sci.* 114, 8148–8156. doi: 10.1073/pnas.1702996114

Vittersø, J. (2016). *The handbook of eudaimonic well-being.* Springer.

Waterman, A. S., Schwartz, S. J., Zamboanga, B. L., Ravert, R. D., Williams, M. K., Agocha, V. B., et al. (2010). The questionnaire for eudaimonic well-being: psychometric properties, demographic comparisons, and evidence of validity. *J. Posit. Psychol.* 5, 41–61. doi: 10.1080/17439760903435208

Węziak-Białowolska, D., McNeely, E., and VanderWeele, T. (2017). Flourish index and secure flourish index–Development and validation. 3145336.

Yoo, J., and Ryff, C. D. (2019). Longitudinal profiles of psychological well-being and health: findings from Japan. *Front. Psychol.* 10:478366. doi: 10.3389/fpsyg.2019.02746

frontiers | Frontiers in Psychology

TYPE Review
PUBLISHED 14 August 2024
DOI 10.3389/fpsyg.2024.1425850

OPEN ACCESS

EDITED BY
Juan Andrés Mercado,
Pontifical University of the Holy Cross, Italy

REVIEWED BY
Manuel Martí-Vilar,
University of Valencia, Spain
Miguel Landa-Blanco,
National Autonomous University of Honduras, Honduras

*CORRESPONDENCE
Fátima Ruiz-Fuster
✉ fatima.ruiz@unir.net

RECEIVED 30 April 2024
ACCEPTED 29 July 2024
PUBLISHED 14 August 2024

CITATION
Ruiz-Fuster F, Bernal-Martínez de Soria A and Echavarría MF (2024) Emotional regulation and Arnold's self-ideal: a way to flourishment. *Front. Psychol.* 15:1425850. doi: 10.3389/fpsyg.2024.1425850

Emotional regulation and Arnold's self-ideal: a way to flourishment

Fátima Ruiz-Fuster[1]*, Aurora Bernal-Martínez de Soria[2] and Martín F. Echavarría[3]

[1]Universidad Internacional de la Rioja, Logroño, Spain, [2]Department of Theory and Methods in Educational and Psychological Research, Universidad de Navarra, Pamplona, Spain, [3]Department of Psychology, Universitat Abat Oliba CEU, CEU Universities, Barcelona, Spain

The convergence of researchers in the fields of flourishing, moral psychology, and social–emotional studies has reached a stage where developing a theory that connects emotional regulation and flourishing is meaningful. This theoretical investigation aims to uncover insights from the research of Magda B. Arnold, renowned for her theory of emotions, and lesser-known for her notion of the self-ideal, regarding the relationship between emotional regulation and flourishing. Our initial hypothesis posits that Arnold's concept of self-ideal provides a framework for understanding how to foster emotional regulation in individuals by directing it toward constructive life objectives. To achieve this, we explore the current state of emotional regulation and flourishing and the relationship between these concepts; we consider the interconnectedness of emotion and self-ideal within Arnold's theory and analyze its potential to serve as a foundation for building a theory relating flourishing and emotional regulation. We find in Arnold's theory substantial ideas about the relationship between emotional regulation, flourishing, and self-ideal, as well as emerging empirical research relating to these themes. We conclude that Arnold's research can serve as a catalyst for developing psychological intervention models that enhance emotional regulation and promote a flourishing life.

KEYWORDS

emotional regulation, flourishing, self-ideal, Arnold, appraisal, theory of emotions, motivation

1 Introduction

Emotional regulation and flourishing are two growing fields in the realms of psychology and education. However, the interplay between emotional regulation and flourishing is a less explored topic, albeit no less relevant. The aim of this research is to study this subject. The procedure involved reviewing the research conducted by Magda B. Arnold, known for her theory of emotions, to find clues about the relationship between emotional regulation and flourishing. Our starting hypothesis is that Arnold's notion of self-ideal allows us to understand how promoting emotional regulation in individuals serves as a means for them to achieve constructive life goals. As we will see later, such goals are an important element of flourishing as it is currently conceived (Vittersø, 2016a). This proposal is particularly innovative due to the limited research linking emotional regulation with flourishing, and because existing studies focus on showing the correlation between specific emotional regulation strategies and flourishing (Barber et al., 2010; Richard-Sephton et al., 2024). However, the proposed approach is novel in its aim to theoretically link emotional regulation and flourishing as a preliminary step before examining the connection between specific emotional regulation strategies and flourishing.

Most of the research on Arnold has focused on her contribution to the psychology of emotion (Gasper and Bramesfeld, 2006; Kappas, 2006; Reisenzein, 2006; Shields, 2006). However, recently, the literature has focused on investigating other aspects of her theory: her inspiration from Thomistic psychology (Echavarría, 2020; Pugen, 2020), the anthropological foundations of her personality theory (García-Alandete, 2024), as well as the value of her theory of emotions in the current framework of flourishing (Valenzuela, 2024).

Of particular value to this work is considering how Hulsey and Hampson (2014) link Arnold's concept of self-ideal to moral identity. These authors assert, drawing on Arnold's theory, that acting in accordance with this self-ideal leads to harmony and integration of the personality, optimizing emotional response. This assertion is reiterated by Cornelius (2006): the goal in the organization and integration of the personality, in Arnold's theory, is the coherence between emotional responses and the person's highest ideals, citing Arnold and Gasson (1954), p. 306:

> If… emotion is to be instrumental in self-actualization, the objects of emotion must be harmonized with the person's larger goal as a human being. If these objects are seen in their real value, if they are seen in the proper perspective of man's final end, then the judgment that they are suitable will be objective and well ordered.

This last statement is directly related to the topics of flourishing and personal purpose, subjects of study that have grown in interest in current psychology. It also shows the link between these concepts and emotional regulation: emotions need to be regulated to achieve constructive life goals, which will allow the integration of the personality, as mentioned by Arnold (1969a,b, 1970).

Valenzuela (2024), on the other hand, directly links Arnold's theory of emotions with the current concept of flourishing. According to this author, the relationship between emotions and Arnold's self-ideal is related to flourishing understood as eudaimonia. Specifically, she shows that Arnold's concept of happiness goes beyond a hedonistic conception of pleasure, relating it to the meaning of life and to a fundamentally eudaemonic content. Likewise, she suggests that the self-ideal not only leads to maturity, but also to the flourishing of the personality. Thus, the positive emotions that, according to Arnold, allow us to pursue the self-ideal and, especially, the desire for happiness, more than other emotions, would help us to pursue goals that are valuable and meaningful for our lives.

Building on this recent publication on Arnold (Valenzuela, 2024), we will propose the interrelation between the concepts of emotional regulation and flourishing based on Arnold's model and her concept of self-ideal. Before that, we will present the state of the art on the theory of emotional regulation and flourishing, focusing on the possible relationship between both processes and conceptions. The study we present aims to respond primarily to the following question: How can Arnold's psychological theory contribute to a better understanding of emotional regulation, flourishing, and the relationship between them? To accomplish this, we must first investigate the following issues: Does flourishing manifest in emotional regulation? Do current theories on flourishing include any reference to emotions and their regulation? Is flourishing an objective or could it be an objective of emotional regulation?

2 Emotional regulation

Emotional regulation is a concept that has been widely studied in recent decades and is a field characterized by definitional chaos (Gross, 1999). In Table 1, we include a summary of the theories discussed in this section and their main focus. According to Petrova and Gross (2023), in the year 2022, more than 30,000 articles were published on this topic. In their article, these authors reflect on the future of research on emotional regulation, focusing on interpersonal emotional regulation, on the tactics for carrying out emotional regulation strategies, and on the temporal plane of this process. These three keys set the roadmap for the next generation of emotional regulation researchers. However, in order to understand the current state of the question, it is necessary to refer to the most relevant theories that have dominated during the last decades. In this regard, Gross (1999, 2015), a renowned author in this field, stands out, formulating one of the most relevant theories in this field at the end

TABLE 1 Emotional regulation (ER).

The **process** of emotional regulation	Thompson (1991)	ER refers to the extrinsic processes that **monitor, evaluate and modify emotional reaction**s to accomplish one's goals.	
	Gross (1999)	ER refers to the processes that **exert an influence on the emotions** we have, when we have them, and on how we experience and express them. *Situation-attention-appraisal-response*	The set of responses can be modulated with different strategies-adapative (reappraisal) or non adaptative (suppresion)
	Gross et al. (2011)	The defining feature of ER is the activation of a goal to **influence the emotion trajectory**.	
	Hervás (2011)	To modulate the emotions we need to be openned to, attend, label, accept, analyze the origin and message of the emotions. We need to determine if the message is valid or a false alarm.	Strategies of ER need some indicator that allows us to classify strategies in functional or non-funciontal.
The **content** of emotional regulation (why people regulate their emotions)	Tamir (2016)	ER is a motivated process; **the establishment and pursuit of goals** shape emotional regulation. **Taxonomy of goals of ER** [hedonic (prohedonic, counterhedonic) or instrumental (performance to do, epistemic to know, social to relate, eudaimonic to be)]	

The bold text aims to emphasize and highlight the central concepts proposed by each author from their perspective on emotional regulation.

of the 20th century. He distinguishes between the process of emotional generation and the process of emotional regulation (Gross et al., 2011) and presents a process model of emotion generation, based on different researchers among which we find Arnold, Lazarus, Frijda and others. This model acknowledges the concept of valuation or appraisal initiated by Arnold (1969a, 1970), understanding cognition not only as strictly intellectual or rational, but also as sensory knowledge (Echavarría, 2020), reflected in this author's intuitive appraisal (Kappas, 2006).

Gross's (1999) model follows the sequence situation-attention-appraisal-response:

> Emotion begins with an evaluation of emotion cues. When attended to and evaluated in certain ways, emotion cues trigger a coordinated set of response tendencies that facilitate adaptive responding. These responding tendencies involve experiential, behavioral, and physiological systems. Response tendencies from each system may be modulated, and it is this modulation that gives final shape to the manifest emotion (p. 528).

Emotion begins with an appraisal, followed by a set of responses that can be modulated. This latter concept refers to emotional regulation, a process that can be defined in various ways. According to Thompson (1991), the concept of emotional regulation refers to "the extrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (pp. 27–28). According to Gross (1999), emotional regulation refers to "those processes by which people exert an influence on the emotions we have, on when we have them, and on how we experience and express them" (p. 275). Both authors elaborate a joint definition of emotional regulation, referring to the individual's efforts, conscious or unconscious, to influence at some point in the process of emotion generation (Gross and Thompson, 2007). Subsequently, Gross et al. (2011) emphasize that the defining feature of emotion regulation is the activation of a goal to influence the emotion trajectory. Therefore, a goal is necessary to carry out such emotional regulation, an issue that will be further explored later and more directly in the research by Tamir (2016) and which is especially relevant when considering the relationship between emotional regulation and flourishing, as we will see below.

To carry out such emotional regulation, there is a wide variety of strategies, which can focus on different aspects of the emotional process. Despite the variety of instruments and categorizations of these strategies, some authors conclude that in practice they comprise the same type of emotional regulation strategies (González et al., 2006). These strategies are focused on modifying what we feel (Pascual Jimeno and Conejero López, 2019).

Gross recognizes reappraisal as the deliberate strategy par excellence to regulate emotion, since it allows modifying the valuation given to the stimulus that generates the emotion (Etkin et al., 2015) and allows changing the way of thinking about a situation to reduce the emotional impact it produced (Gross, 2002). Nonetheless, there are other strategies available. The core feature for this author is the adaptiveness or functionality of these strategies. This notion of adaptive or maladaptive is based on evolutionary psychology and does not fully fit into our proposal as we will explain afterwards.

Hervás and Vázquez (2006) refer to Gross and Thompson definitions of emotion regulation and focus on some limitations of the Gross model: the lack of emphasis on emotional acceptance which is crucial to develop acceptance toward emotions and serves as a mechanism of emotional regulation; the risk of using emotional regulation as a way of evitation, which has been criticized by subsequent research; the difficulty of reevaluating or changing significance in some situations. They conclude enlightening that this model does not distinguish with detail which options of emotional regulation are adaptive and functional or dysfunctional and disadaptative.

For this reason, Hervás (2011) proposes a model of emotional processing consisting of six stages: emotional openness, emotional attention, emotional labeling, acceptance, emotional analysis and emotional regulation. We will focus on the last stages (emotional analysis and emotional regulation) because of the link between these stages and Arnold's proposal. Hervás proposes four element keys for analyzing emotion: origin, message, validity and learning. He proposes to recognize the origin of the emotion and to understand the message, the meaning of such emotion, as well as he points out that it prepares us to respond. Subsequently, he indicates that the signal offered by emotions can be "right or wrong" and that this analysis corresponds to the person: to contrast the situation as objectively as possible and decide whether the emotion is a valid message or a false alarm. For this analysis, he proposes cognitive strategies such as the evidence search technique, the double parameter technique or the pie technique. If the emotions are valid, it will be necessary to draw the relevant conclusions, learn for the future and develop an action plan. After this learning, Hervás proposes the function of emotional modulation, which is the capacity to modulate the emotional response through emotional, cognitive or behavioral strategies.

This analysis elaborated by Hervás offers valuable insight into the concept of emotional regulation: there is no indicator that allows us to classify when and why some strategies are adaptive and functional and when they are not. To carry out this emotional processing we need additional information that allows us to know when our action is functional and when it is not. According to what we propose in this article, this information would come from the concept of flourishing.

Subsequently, Tamir (2016) highlights that research in emotional regulation has primarily focused on the *process* of emotional regulation and has only recently raised questions about the *content*, such as why people regulate their emotions and what they want to feel. This author confirms the relationship between the motives and goals of emotional regulation and offers a taxonomy of motives in the field of emotional regulation: hedonic (prohedonic, counterhedonic) or instrumental (performance *to do*, epistemic *to know*, social *to relate*, eudaimonic *to be*).

In the same vein, Tamir et al. (2020) state that emotional regulation is a motivated process and that the establishment and pursuit of goals shape emotional regulation; it is necessary, among other aspects, to promote adaptive emotion regulation. They also assert that the relationship between emotional regulation and well-being is complex, as emotions serve as goals to achieve but also as signals of progress toward the set goal. Therefore, they suggest that future research should focus on revealing how goal setting and goal striving jointly contribute to adaptive functioning. This point is of particular relevance for understanding the intimate connection between emotional regulation and motivation, which will also be addressed by Arnold, and to explain how flourishing is reflected in emotional regulation. Next, we will delve into what flourishing is in current psychology and present the research that links emotional regulation and flourishing.

3 Flourishment

The topic of flourishing has been of interest in psychology over the past few decades and the number of research studies in this area has been increasing over time (David et al., 2013; Vittersø, 2016c; Cherkowski and Walker, 2018; Diener et al., 2018; Galvin, 2018). This surge can be attributed, among other factors, to the widespread concern in some prosperous societies about being happy, an issue addressed by health sciences and social sciences, and the emergence and promotion of Positive Psychology, which aims to promote human flourishing and thereby happiness (Lopez and Snyder, 2009; Brown et al., 2018). The study of this extensive psychological research on flourishing leads to three related findings: there are multiple conceptions of flourishing, it is designated by different terms, and there are different instruments and constructs for measuring flourishing. Measuring human flourishing is essential to drive research and guide psychological intervention related to both mental health and personal development. Some researchers have recently emphasized the need for a coherent theoretical foundation and a comprehensive approach to flourishing that serves to improve and complete current measurement instruments (Fowers et al., 2023). Given this state of the art, we pose these questions: What conception of flourishing does current psychology research tend toward? What aspects of these theories could be illuminated by Arnold's theory on emotional regulation and the self-ideal?

3.1 Other ways to define flourishing

The first step is to provide an explanation of the different names for flourishing. Although it is frequent in the literature to resort to different nouns to designate the same reality, it also happens that the introduction of a different name than usual marks the meaning of the reality. Both situations occur in the science of flourishing. The literature expresses the reality of flourishing with different names, which from the oldest to the most recent nomination are: eudaimonia, good life, happiness, well-being or wellbeingor flourishing. Eudaimonia is good life, fulfilling life, self fulfillment, and it has its origin in Aristotelian philosophy (Dabdoub et al., 2020). Eudaimonia is translated as happiness, "a complete life that goes well for the person leading it" (Vittersø, 2016a, p.1) although over time it has come to mean feeling good with a full or good life, to later reduce the meaning of being happy to only feeling good-positive emotions, life satisfaction and pleasure-. Wellbeing is the term that refers to that sense of happiness that reflects a state of mind, a being well because of feeling good (Diener et al., 2018). With the word flourishing, the meaning of eudaimonia is recovered, which includes feeling good, being and doing well. In these conceptualizations, emotions and actions to achieve happiness or have a happy life play an important role (Intelisano et al., 2020).

3.2 Theories on flourishing

The second step is to delve into psychological theories on flourishing, which in most cases are made and remade, based on the results of empirical research. Exploring the content of instruments measuring flourishing, we discover the ideas researchers hold about what human flourishing entails. Fowers et al. (2023) highlight eight measures of flourishing. The authors analyze the consistency of the psychological theories upon which the constructs are built and conclude that there is a lack of a coherent theoretical foundation on flourishing. The instruments they refer to are:

> Psychological Well-Being Scale (Ryff, 1989), Mental Health Continuum (Keyes, 2002), Flourishing Scale (Diener et al., 2010), the Questionnaire for EudaimonicWell-Being (Waterman et al., 2010), Positive Emotion, Engagement, Positive Relationships, Meaning and Purpose, and Accomplishment (Seligman, 2011), Flourishing (Huppert and So, 2013), Comprehensive Index of Thriving (Su et al., 2014), and the Flourishing Index (Vander Weele, 2017) (Fowers et al., 2023, p.123).

The constructs that serve as the basis for establishing the structure and domains of measurement instruments ultimately form the content of diverse conceptualizations of flourishing in psychology. If instruments measuring happiness capture the degree of satisfaction, life satisfaction or well-being based on feeling good (pleasure, emotions and positive affects), they are conceiving the construct of psychological wellbeing (PWB) as a subjective well being (SWB) or hedonic well being (HWB). But if in the instruments introduce other domains related to having other goods that make up a complete life, then PWB is identified with eudaimonic well being (EWB), an objective well being: that which makes one well and makes all people well. There are two main conceptualization paths of EWB: one focuses on objective elements of psychological functioning, while the other adds to it, including the pursuit and achievement of the true self, the self-realization, the pursuit of excellence. In all cases, flourishing has been operationally defined by the degree and frequency of well-being indicators, how individuals feel and their level of satisfaction, both in themselves and in relation to the goods, experiences, activities and qualities reflected in their lives. Fowers et al. (2023) criticize the difficulties presented by measurement instruments precisely because they follow this assessment path, in addition to presenting other fragile aspects such as the underlying notion of flourishing, as we have highlighted in previous lines, or whether they are valid instruments for populations from different cultures.

The tendency to conceptualize flourishing as EWB in psychological research, with an integrative view of the elements contributing to well-being-both in terms of feeling and condition (Ryff et al., 2021) shows an approach to the Aristotelian notion of Eudaimonia (Waterman et al., 2010). The concept of flourishing, which has been developed especially in the last 20 years in the context of Positive Psychology, is often denied as the optimal state of well-being (Richard-Sephton et al., 2024). It comprises three dimensions: SWB or HWB, PWB or EWB and social well-being. SWB results from the predominance of positive emotional experiences (experiences and judgments of satisfaction) over negative ones. PWB stems from the ability to lead a meaningful and purposeful life, with autonomy. Social well-being depends on relationships with other people and with the community. The concept of well-being and, consequently, of flourishing, is distinct from that of mental health, which denotes the absence of negative features in functioning, emotions and behavior, which prevent the individual from realizing their potential and connecting with their environment (work, family and community) (Richard-Sephton et al., 2024). This psychological concept of

well-being as optimal functional psychological development aligns with part of the content of eudaimonia or flourishing in its Aristotelian sense and is also embraced in educational theory: "the actualization of human potential so that each person leads a good life" (Martínez et al., 2023, p. 23). In the words of Kristjánsson (2020), p. 23:

> Progressive development of subjectively determined and objectively valuable meaningful life, which satisfactorily mobilizes the individual's natural capacities in areas linked to specific and existential tasks of their species, in which humans as rational, social, moral, and emotional beings can achieve excellence.

Vittersø (2016a), p. 8 states that the most representative theories of the literature on psychological eudaimonics are: "(..) Waterman's Eudaimonic identity theory (Waterman, 1984; 1992), Ryff's version of Psychological well-being (Ryff, 1989) and Deci and Ryan's Self determination theory (SDT; Ryan and Deci, 2001)". These theories focus on an aspect of human flourishing while considering Aristotle's theory of eudaimonia: the fulfillment of life as the ultimate purpose of being human, an optimally functioning life. In addition to these theories, Fowers et al. (2024) have proposed a systematic theory of flourishing from a neo-Aristotelian approach that inspires and provides a foundation for psychological research on the topic. They suggest taking into account eudaimonia with a broader perspective, a vision of what contributes to the process of living well and the outcome of having a good life. To do this, they include more elements than those promoting the development of all necessary capacities to achieve optimal psychological functioning and assert that harmony among them is important.

We believe that Arnold does indeed have in mind this comprehensive framework of what flourishing is because she is knowledgeable about and grounded in Thomistic philosophy, which has an Aristotelian basis:

> We must organize our personality according to a valid self-ideal if we are to escape the consequences of emotional indulgence. Contradicting the demands of our nature by giving free rein to our emotions instead of allowing them to support our human purposes inflicts us with a penetrating discontent and an unspeakable anguish. Aspiring to a self-ideal that does not perfect human nature is not worth the effort. To suppose that human nature can withstand the permanent frustration of its deepest desires is to seek fundamental anguish (Arnold, 1970, p. 313-314).

It is precisely this vision that underlies her theoretical proposals on emotional regulation and the self-ideal, which we believe can inspire intervention models to promote people's flourishing, as seen in the final section of this article. The construct of flourishing has its roots in a classical concept, impossible to operationalize in all its breadth and depth, which is the concept of happiness. The concept of happiness is based on conceiving fulfillment in the unfolding of a person's potentialities and is recognized in various ways in different cultures, philosophies, and religions.

The most frequently referenced concept is the Aristotelian notion of *eudaimonia* (εὐδαιμονία). Aristotelian eudaimonia is a state of full deployment of human operational capacities, whose core is the knowledge of truth but also requires the presence of other goods, its indispensable conditions, such as possessions, health, ethical virtue, and, above all, friends, and would result in a subjective state of joy. From this point of view, eudaimonia is not only PWB, but also the other forms of well-being (subjective and social) that would be either its conditions, or its consequences. Thus, the Aristotelian concept of eudaimonia coincides with the construct of flourishing. This coincidence is significant because when Arnold speaks of happiness, she has in mind the Thomistic concept of *beatitudo*, which is Aquinas' designation for what Aristotle calls *eudaimonia*, another author whose contribution to the concept of flourishing has been highlighted (Titus, 2016).

3.3 Contents of flourishing

The third step is to examine the elements that constitute flourishing or a fulfillment life according to the scales highlighted by Fowers et al. (2023), from which we discard two closely related to mental health. The selected scales draw on many cases from the three major theories of psychological eudaimonics (Vittersø, 2016a). These instruments coincide in some domains, as seen in Table 2, and those that are not common are related. Although all of them aim to assess psychological functioning, they include domains that are closer to a eudaimonic conception of flourishing, with the content attributed to eudaimonia by Aristotle.

The inclusion of domains characteristic of SWB is present in all instruments except Ryff's (1989): SWB experiences of eudaimonia/feelings of personal expressiveness; positive feelings, negative feelings, balanced feelings, positive emotion, happiness, and life satisfaction, enjoyment of activities as personally expressive.

The construct present in all instruments is purpose (in life) and meaning (in life), highlighted in Table 2 in bold. Meaning is the significance and coherence of one's life, or sense of one's life, "having a deep, coherent, organizing conceptual framework for one's life, one that helps define who we are as individuals and what is most important to each of us (Danvers et al., 2016) or "the fulfillment of the intrinsic values of our human nature" (Vittersø, 2016a, p. 5). Meaning gives sense to purpose, which is the end that people seek when directing their lives, which is reflected in the goals they pursue to achieve that end. A person who reasonably defines his or her own framework of meaning, chooses values and/or goals. Making meaning of one's life is a basic human need, satisfying it is an indicator of flourishing, as is also directing one's behavior according to purpose, values and goals. Flourishing is supported by a meaning that exists along a continuum in life. Researchers explaining the relationship of this construct with flourishing or PWB mention the role of feelings, emotions, and affects, not only to assess if people feel good but also as essential elements for having meaning and purpose.

Relationships with others: positive relations with others, supportive relations (supporting oneself and supporting others), contribute to others, relationships (in two instruments), close social relationships, are the constructs mentioned in all the instruments (Table 2, highlighted in bold) except in Waterman et al.'s (2010). Relatability with others is a basic psychological need. Affectivity also plays a relevant role in achieving relationships with others, while also reflecting whether they contribute to WB. Building positive and supportive relationships can be a goal that is part of life purpose and meaning.

TABLE 2 Measures of flourishing.

Psychological well-being (Ryff, 1989)	Social-psychological prosperity or psychological flourishing (Diener et al., 2010)	Comprehensive inventory of thriving (Su et al., 2014)	PERMA profile scale (Seligman, 2011)	The flourishing index (Vander Weele, 2017)	Questionnaire for Eudaimonic well-being (Waterman et al., 2010)
Self-Acceptance Positive relations with others, Autonomy, Environmental mastery **Purpose** in life Personal growth	**Relationships supportive** Engaged Contribute to others **Purpose** and **meaning** Competence Good person Optimistic Respected Positive feelings Negative feelings Balance feelings	**Relationships** Engagement Mastery, Autonomy, **Meaning**, Optimism, Subjective WB	Positive Emotion, Engagement **Positive relationships** **Meaning/ purpose** Accomplishment	Happiness and life satisfaction Health, both mental and physical **Meaning and purpose** Character and virtue **Close social relationships**	Self-discovery Perceived development of one's best potentials, **Purpose/ Meaning in life** Investment of significant effort in pursuit of excellence Intense involvement in activities Enjoyment of activities as personally expressive
Psychological functioning and health mental (PWB)	Social–Psychological functioning and WB (PWB + SocialWB+SWB)	Psychological functioning and health mental (PWB + SWB)	Flourish and WB (SWB + PWB)	Flourishing (SWB + PWB + EWB)	Eudamonic WB (SWB + PWB)

The data were obtained from different sources (Ryff, 1989; Diener et al., 2010; Waterman et al., 2010; Su et al., 2014; Vander Weele, 2017; Carvalho et al., 2021; Fowers et al., 2023).

The instruments contain various constructs that are related to the capabilities and qualities of people, which demonstrate that the person has achieved or is achieving human flourishing understood as an optimal psychological functioning. We refer to: self-acceptance (self and past life); autonomy (in two instruments); environmental mastery (adapting to an environment), mastery (dominance), accomplishment; competence (ability to act), optimistic (in two instruments), engaged and engagement (in two instruments), respected, health, both mental and physical.

Other domains such as character and virtue, good person, personal grow, the pursuit of excellence and self-realization, self-discovery, perceived development of one's best potentials, Intense involvement in activities, indicate the process of flourishing and the outcome achieved in that process: being virtuous, being a good person, being oneself.

The domains demonstrate a SWB (feelings and satisfaction life), a PWB (psychological functioning) and a Social WB (relationships with others), all of which added together is what is contained in an EWB. However, as pointed out more clearly by Waterman et al. (2010) and Vander Weele (2017) when arguing about the theoretical foundations of the instruments they have developed to measure flourishing and the most prominent psychological theories of flourishing, Waterman's Eudaimonic identity theory (Waterman, 1992), Ryff's version of Psychological well-being (Ryff, 1989) and Deci and Ryan's Self determination theory (Ryan and Deci, 2001), functioning well, in the sense of efficacy, is not in itself the end that is identified with having a complete, fulfilling, or good life. This is explained by Waterman et al. (2010, p. 6):

> The theory links eudaimonist philosophy with the study of psychological functioning, and it emerged from consideration of two questions. (1) In the task of identity formation, do some potential identity elements represent 'better' resolutions to an identity crisis than others? (2) If so, how are the 'better' choices to be recognized? Eudaimonic identity theory draws upon eudaimonist philosophical constructs, including the daimon or 'true self', self-realization, the pursuit of excellence, and eudaimonia (..).

The process of identity formation, process of self-determination includes the consideration of values, self or personality (Bauer, 2016; Schlegel et al., 2016) and life (Dahla et al., 2020) concretized as goals to be achieved, thus intrinsically motivating action. Feelings, emotions and experiences of satisfaction are indicators of success in the choice and execution of values and goals in life, but they also play an active role, aligned or not with motivation (Waterman et al., 2010; Danvers et al., 2016; Vallerand, 2016; Vittersø, 2016b; Chaves, 2021).

4 Relationship between emotion, emotional regulation and flourishing

In the previous sections, we have discussed flourishing and emotional regulation. The complexity of the construct of flourishing has been highlighted. In an initial stage of research, flourishing is understood as the optimal state of well-being and has been operationally defined by the degree and frequency of well-being indicators (Richard-Sephton et al., 2024). In a later stage, the meaning of flourishing is expanded, drawing inspiration from Aristotle's conception of eudaimonia. Emotional regulation, in turn, designates a psychological and behavioral process of identification, monitoring, evaluation, and adjustment of one's emotional response to events and circumstances internal and external to the individual. If SWB or EWB is considered an integral part of the flourishing construct, understanding SWB as the predominance of positive emotional experiences (experiences and judgments of satisfaction) over negative ones (Richard-Sephton et al., 2024), it becomes evident not only that there is a connection between emotion and flourishing, but also that

there seems to follow from this a connection between emotional regulation and flourishing. Indeed, emotional regulation appears to be a process that enables directing the emotional experience toward that experience of high well-being that would be flourishing.

If adequate emotional regulation promotes greater well-being and a more fulfilling life, research should be able to establish a positive correlation between both constructs. Although the results may sometimes be more ambiguous than expected, in general, such a positive correlation is observed. Research has focused on determining the most effective strategies to promote flourishing (Barber et al., 2010) and on the correlation between the use of the emotional regulation strategies most known by the scientific literature and flourishing (Richard-Sephton et al., 2024). As we have pointed out earlier, these researchers establish that emotional regulation strategies can be adaptive and functional or maladaptive and dysfunctional. Adaptive and functional strategies are useful strategies, as they help the person successfully achieve the desired emotional state. Adaptive strategies promote positive emotions; functional strategies aim to decrease negative emotions. On the other hand, maladaptive and dysfunctional strategies would be useless strategies, as they are ineffective in achieving the desired emotional state or because they are associated with emotional or psychological difficulties. Maladaptive strategies decrease positive emotions. Dysfunctional strategies increase negative emotions.

Rumination, avoidance, and suppression are three common types of emotional regulation strategies that are associated with poor mental health outcomes. We attempt to link emotional regulation strategies with flourishing. *Flourishing* is associated with increased use of cognitive reappraisal, which is the fundamental adaptive strategy, and with decreased use of experiential suppression or avoidance (Barber et al., 2010; Richard-Sephton et al., 2024). Overall, it is observed that *flourishers* report lower use of maladaptive strategies than significant use of adaptive strategies, compared to non-pathological individuals who are not flourishing, highlighting the positive use of reappraisal. Similarly, rather than showing a significant difference in the use of functional strategies to minimize negative emotions, there is a lower use of dysfunctional strategies that exacerbate negative emotion (Richard-Sephton et al., 2024). The results, therefore, demonstrate a correlation between emotional regulation and well-being or flourishing, but more clearly due to the lack of resorting to maladaptive and dysfunctional strategies than due to a significant difference in the use of adaptive and functional strategies, fundamentally highlighting the use of reappraisal.

These results require a theoretical elaboration that allows accounting for the different aspects and adequately addressing the theoretical questions they raise. We may ask what makes an emotional experience positive or negative, and whether it is appropriate to call adaptive and maladaptive, functional and dysfunctional strategies. If we speak of a connection between emotional regulation and flourishing, perhaps the word adaptation, so closely related to the purpose of survival, may not be the appropriate word. Even more so, this inadequacy can be considered from the perspective of flourishing understood as eudaimonia, which does not only consist of surviving but of living well. Therefore, the concept of eudaimonia needs to teleologically influence the concepts by which an emotion is valued.

On the other hand, a theoretical answer is needed to the question of how flourishing relates to emotional regulation that, beyond correlation, points to causes. The presence of a cognitive cause is evident, since mechanisms such as reappraisal are cognitive strategies of emotional regulation. This is where Magda Arnold's concept of self-ideal and its role in emotion regulation can play a key role. On the one hand, if the emotion is caused by an intuitive evaluation, it is about seeing how that intuitive assessment relates to intellectual and reflexive cognition (Echavarría, 2020), a topic on which Arnold explicitly focuses. In turn, the self-ideal allows for a pivot between these levels of cognition and promotes a synthetic grasp of the state of fulfillment designated in current research and theory with the name of flourishing.

5 An integrated conceptualization of emotional regulation and flourishment

After defining the concepts of emotional regulation and flourishing and reviewing the state of the art in the relationship between both concepts, we proceed to present a theorization that integrates both concepts, taking as a starting point the notions outlined in Arnold's theory. It is relevant to highlight that the terms used by this psychologist differ slightly from those used today; nevertheless, we believe that what matters are not the terms used but the concepts to which they refer. Understanding these concepts is precisely what will allow us to offer an integrative conceptualization that combines subsequent research on emotional regulation and its relationship with flourishing. Figure 1 includes a diagram that synthesizes this integrated conceptualization.

To focus our analysis, we will address the following issues: (a) the link between appraisal, emotion and self-ideal; (b) the concept of self-ideal; (c) the importance of the self-ideal in emotional regulation; (d) emotional regulation strategies; (e) the relationship between emotion and motivation.

5.1 The link between appraisal, emotion and self-ideal

Arnold is known for being a pioneer in the theories of appraisal in emotion psychology. Her concept of appraisal inspired Lazarus, a renowned psychologist in this field. In an article published in 1968, Lazarus acknowledged Arnold's influence: "the [present] view of emotions which emphasizes cognitive processes as antecedents and the arousal of coping impulses to deal with appraised danger is an elaboration of that presented by Arnold" (Lazarus, 1968, p. 190 cited in Reisenzein, 2006, p. 940). Likewise, Lazarus (2001) pointed out the differences between Arnold's concept of appraisal and his own and described how this concept, first used by Grinker and Spiegel in 1945 but without a specific meaning, is conceived by Arnold fundamentally as an instantaneous, intuitive, and automatic process. Like Arnold, Lazarus distinguished between primary and secondary appraisal, non-conscious and conscious, but while Arnold focuses on the former, with an intuitive and immediate character, Lazarus focuses on the latter, on the reflective process and its dependence on complex meanings.

Arnold proposes the following sequence: perception - appraisal - emotion. Emotion is defined by Arnold (1969a,b) as a felt tendency toward an intuitively valued object as beneficial or away from an object appraised as harmful. This way of understanding emotion is very similar to that later developed by Gross (1999, 2015), a reference

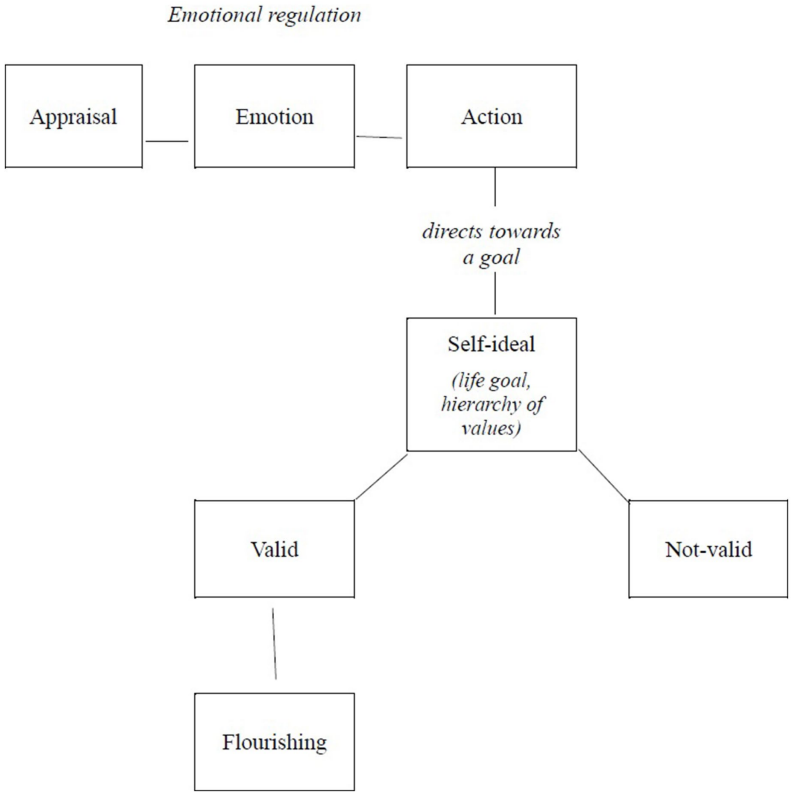


FIGURE 1
Relationship between emotional regulation, self-ideal, and flourishing. Table created by the authors based on Arnold's theory (Arnold and Gasson, 1954; Arnold, 1970, 1984).

psychologist in the field of emotional regulation. Therefore, emotion stems from an evaluation of reality, from an appraisal. The evaluation preceding the emotion provides information about what is important to the individual, about what they value, according to the meaning that a situation or object has for them. Arnold (1969b) distinguishes between intuitive and reflective evaluation, explaining the difference through the example of a man suffering from obsessive-compulsive disorder due to the fear of contamination, which leads him to wash his hands incessantly every time he touches something. This fear of contamination and germs causes him to wash his hands even though his conceptual and reflective knowledge tells him that his fear is exaggerated and that his skin can tear with frequent washing. In this case, intuitive evaluation produces fear and reflective evaluation makes him aware that he is powerless against that fear. This deliberate judgment is conscious, and intuitive evaluation, on the contrary, is not experienced consciously, although it can be inferred through reflection. Both appraisals are value judgments that do not necessarily lead to action, but they can do so. In this sense, Arnold asserts that each person establishes a hierarchy of values for themselves that guides their actions, which she calls the self-ideal. This guidance can lead to their development and perfection as a human being or move away from them.

According to Arnold, when we appraise something we also value the extent to which it contributes to or detracts from the ideal we aspire to, which she calls the self-ideal: "Whenever anything seems attractive or pleasant, it is also appraised as it contributes to or detracts from the ideal toward which he aims" (Arnold, 1970, p. 302). In this way, Arnold introduces a novel aspect into her concept of emotion, not considered by other authors, which is its relationship with the self-ideal. She defines it as the ideal that guides the person's action and organizes his or her personality. Therefore, personality is shaped around the attainment of this ideal, which constitutes the direction or goal around which their actions and abilities are organized. Arnold describes emotions as "guardians of the self-ideal" since they can help the person on their path toward the self-ideal: negative emotions lead the person to change their way of acting, and positive emotions facilitate following the valid self-ideal.

According to Cornelius (2006), in Arnold's view, emotion is a reflection of the significance that the situation or object holds for the person, and not knowing what a person values, their self-ideal, can hinder understanding why they value objects and situations the way they usually do and, therefore, why they feel what they feel in a particular situation.

In this sense, Arnold asserts that the self-ideal a person has developed assigns value to what they encounter. At this point, it is interesting to note the difficulty we encounter in distinguishing in Arnold's proposal whether that value refers to intuitive or reflective appraisal, especially in cases where they differ. According to the analysis of her complete theory, we could conclude that there is a relationship between reflective value judgment and the person's self-ideal, but we cannot forget the emotional residue (or affective memory) left by various emotional experiences, which affects intuitive appraisal, leading to reactions that do not align with rational judgment and can hinder the path toward the self-ideal.

5.2 The concept of self-ideal

Arnold does not offer a single definition of the self-ideal, but throughout her writings, she refers to this notion in various ways: as a "life goal," "what we (..) are striving for," "what, in striving, we finally achieve" (1959, p. 34), "the best that is possible for this individual to achieve," "the perfection both of his individuality and his humanity." Therefore, the self-ideal is a life goal, an ideal that consists of achieving perfection. Furthermore, according to Arnold, the self-ideal guides the organization of personality: "These rational tendencies to action organize human personality under the guidance of the self-ideal" (Arnold, 1970, p. 295); "We must organize our personality according to a valid self-ideal" (p. 313), she also includes it in her definition of personality: "the human being can and does organize his powers, actions, and habits in the active pursuit of his self-ideal" (1959, p. 33). Therefore, the self-ideal is not only a goal but also a guide and organizing principle.

Arnold assumes that the self-ideal is formed and that not any self-ideal will suffice; Arnold distinguishes the valid self-ideal because it reflects such perfection: "a valid self-ideal is the perfection of a man's humanity," "a self-ideal that is objectively valid and that represents ideal humanity as it can be achieved by this particular individual" (Arnold, 1970, p. 306). Therefore, the self-ideal is not purely subjective but has an objective dimension.

The human ideal, therefore, relates to that of perfection: "self-ideal is the perfection of a man's humanity" (Arnold, 1969b); "human perfection must be found in a self-ideal that is formed according to the best that a man knows and understands and in actions that will actualize this ideal" (Arnold, 1970, p. 302), and therefore, an indication of maturity is that a self-ideal has been elaborated: "A man's self-ideal is the index of his maturity" (1959, p. 34); "maturity means forming a valid self-ideal and living it."

On the other hand, Arnold relates the self-ideal to happiness, which she understands as "happiness is the state of a person who has chosen a self-ideal appropriate to his human personality and has steadfastly followed it" (Arnold, 1969b); "The desire for happiness, even more than other positive human emotions, urges us to maintain a straight path toward our self-ideal" (Arnold, 1970, p. 344). Therefore, happiness allows one to approach perfection or the self-ideal, just as happiness is a sign that one has chosen the appropriate self-ideal.

Additionally, the self-ideal in Arnold's theory is closely related to values: "Thus, a man's self-ideal is an index of his maturity, for it reveals his scale of values" (1970, p. 297), "as soon as the child's self-ideal begins to form, it becomes a touchstone for everything else to which he attaches value" (p. 300). That is, it manifests the person's hierarchy of values.

Moreover, the self-ideal triggers a hierarchy of motivations: "Motives are ordered into a hierarchy according to what is, by and large, the most important goal. (..) the master goal becomes our master motive, the self-ideal that shapes us as we strive toward it" (Arnold, 1970), "Therefore, a man's motivational system is established and organized around his self-ideal" (Arnold, 1970, p. 302), "a hierarchy of motives gradually develops as the child begins to understand what is more and what less important" (Arnold, 1959, p. 34).

In summary, Arnold explains the relationship between values, motivation, and the self-ideal with these words: "Such rational choice of action eventually establishes a hierarchy of values: What is valued most is what we want so intensely that we are willing to forego every other pleasure or satisfaction rather than lose it. This most wanted thing is our life goal" (1959, p. 34). Thus, she considers that what is valuable becomes a motive when it moves us to act, and this shapes the hierarchy of values reflected in the self-ideal.

5.3 The importance of the self-ideal in emotional regulation

Arnold argues that although emotion is necessary to prompt action, it does not determine human behavior. In other words, humans always have a range of options in decision-making, the capacity for self-determination, and the ability to exert executive control over psychological functions (Arnold, 1984). Therefore, emotion does not necessarily propel a person toward self-improvement: it can either lead them toward the self-ideal or not, so it cannot be relied upon as a guide:

> Human beings are motivated by an appraisal that is both a sensory judgment and an intellectual or reflective judgment. The final decision for action is a choice that either implements the original emotion or opposes it. In man, the choice of goal-directed action is essentially a rational wanting, an inclination toward what is reflexively appraised as good (pleasant, useful, or of value). These rational tendencies to action organize human personality under the guidance of the self-ideal (Arnold, 1970, p. 295).

This goal is achieved when emotional responses are guided by higher ideals, harmonizing emotional reaction with our intellectual apprehension of the world (Cornelius, 2006). Therefore, the appropriate self-ideal sets the direction for action, which in more contemporary terms, we could call flourishing or eudaimonic well-being.

In this regard, we highlight the contribution of Valenzuela (2024), who relates positive and negative emotions, as conceived by Arnold, to the concept of flourishing:

> Various 'positive' emotions (interest, union with others, love, joy, (…) can make it easy to seek the 'self-ideal', that is, the flourishing or maturity of one's personality. (…) negative emotions (fear, shyness, embarrassment) which hinder reasonable action-and keeps us from flourishing). (p. 304-5).

What role do emotions play on the way to this flourishing? According to Arnold (1970) all emotions can help a person to move toward his or her self-ideal: negative emotions arise when something has been done that is valued as wrong and urge the person to repair his or her action and change his or her way of living and positive emotions sustain this progress toward the self-ideal, attracting toward the beneficial or moving away from the negative and, on the other hand, they urge to strive to achieve it, overcoming the possible difficulties in this process, or moving to escape from dangers. Therefore, Arnold uses the term negative and positive when talking about emotions, referring to the extent to which these emotions bring us closer to or prevent us from moving away from the self-ideal. However, sometimes emotions can drive us to changes that are not constructive or it can happen that the self-ideal is not the right one, so

that emotions move the person to act, but are not necessarily directed toward the flourishing of the person.

The appraisal preceding the emotion provides information about what is considered good or bad at a given moment. However, as mentioned earlier, this appraisal may be conditioned by our affective memory and may not accurately reflect the present reality or object (Arnold, 1969a). Therefore, following Arnold's reasoning, emotion cannot be relied upon as a guide to achieve maximum integration and perfection.

Moreover, when this ideal is mistaken or adapted more to one's own utility, conflict, dissatisfaction, and discomfort will arise. Arnold distinguishes between acting against an objectively valid self-ideal, which generates remorse and leads to wanting to regain the correct direction, and possessing a distorted ideal that does not fulfill all of a person's potentialities. In the latter case, there would be no remorse for acting inappropriately. However, in this situation, an unconscious conflict would arise between the path chosen by the individual and the inherent tendency toward self-perfection in their nature (Arnold, 1959, p. 35). It may also happen that an emotion goes against the person's reflective tendencies and deliberate purposes, thereby hindering action in that direction, especially if an emotional attitude or habit has developed. Excessive or chronic emotion can alter psychological functioning (Arnold, 1970).

Therefore, Arnold suggests the need for some control over emotion: "Such control does not mean that emotions should be reduced or restricted, nor that the actions they prompt should be omitted. Rather, emotions should be controlled in such a way that they aid rather than hinder personality organization. (..) Obviously, such control of emotion also implies a worthwhile self-ideal to provide a focus for a man's struggle" (Arnold, 1970, p. 292–3). In this sense, according to Arnold, the existence of a self-ideal is necessary to guide emotional control. In addition to this control, she also proposes different ways to correct affective memory or, in other words, the reappraisal of past experiences so that it aligns with the reality in front of us: corrective experiences and reflexive reappraisal.

Both strategies are proposed by Arnold for regulating emotions. However, she never mentions the terms emotional regulation or management, concepts used today, but rather focuses on understanding that emotion can help achieve one's own self-ideal but can also hinder it. In this sense, she does not advocate for suppressing or repressing emotions, which is colloquially understood as emotional control. Her proposal actually resembles what Gross and Thompson (2007) refer to as emotional regulation, as the process by which the intensity, duration, magnitude, and responses related to emotion are modulated. The difference lies in Arnold's reference to the self-ideal. Therefore, Arnold's approach goes beyond the notion of adaptation employed by today's theorists, expanding the goals of emotional regulation.

5.4 Emotional regulation strategies

Throughout her work, Arnold explains different ways of regulating emotions. Firstly, she points out the need to recognize the origin of the emotion and to address and confront the situation it presents rather than evade it. In other words, she suggests delving into the information provided by emotions to make constructive use of the acquired knowledge: "For better or worse, emotions influence man's actions but cannot force them. To derive positive benefits from one's emotions, a man must recognize their origin and decide to resolve his problem rather than evade it" (Arnold, 1970, p. 323).

Recognizing the origin and meaning of emotions provides necessary information for individuals to make deliberate decisions and persist in the pursuit of the appropriate self-ideal. Understanding the meaning of emotions helps determine what to do. This analysis resembles the emotional analysis phase proposed by Hervás (2011) in his emotional processing model, which suggests analyzing emotions to understand whether the message they convey is valid regarding the reality being reacted to.

Other strategies for regulating emotions employed by Arnold involve increasing the attraction of the goal we want to achieve through imagination or thought: focusing on the positive aspects of something that is feared or disliked, considering ways and means to overcome a bothersome obstacle, exploring alternative courses of action, among other aspects. Thus, according to the goals set by reason and the appropriate self-ideal, individuals can use imagination and thought to impact both reflexive and intuitive appraisal, and ultimately, emotions. Arnold also warns that sometimes, the use of imagination may not be helpful, such as when it increases attraction and therefore the strength of the emotion, as in cases where love or desire for an object becomes excessive. In these circumstances, she suggests finding an occupation that requires the person's full attention and captivates their entire focus (Arnold, 1969b). Finally, she suggests that at times it may be necessary to deprive oneself of some things that may have great emotional appeal until their influence diminishes.

In any case, a valid self-ideal is necessary to direct a person's attention toward spiritual values, toward what is more human, and away from objects that exert an excessively strong attraction on the individual without being as necessary or valuable. Therefore, at times, it will be necessary to rework the hierarchy of values and reorganize the goals that drive people.

The difficulty of regulating emotion is heightened when an emotional habit has developed, which requires a strong enough motive to make the decision to act against the emotion. Arnold points out that making the reasonable decision at the beginning of the situation helps reduce the attraction to the opposite course and reduces the pressure that uncontrolled emotion can generate, although emotional inclinations do not disappear during the course of action. The habit of acting for rational reasons, that is, the habit of deliberate choice and rational thought, can serve as substitutes for this emotional habit and provide the necessary strength in the long term to distance oneself from a reality or object that attracts intensely or excessively but is not beneficial or reasonable. In this sense, it is necessary to refer to the Thomistic influence in Arnold's theory (Echavarría, 2020), which likely understands habit in an Aristotelian sense as a disposition (Hulsey and Hampson, 2014).

Finally, Arnold proposes reflective reappraisal and corrective experiences as tools that allow for the modulation of affective memory. Reflective reappraisal enables a rational reevaluation of the situation experienced. This term is similar to what is known today as cognitive reappraisal. It has been shown that reappraisal is the fundamental strategy employed by flourishers, as mentioned earlier.

On the other hand, corrective experiences are new experiences that, when confronted, allow for the correction of the previous appraisal. Thus, they influence affective memory. This need to influence the emotional impact of memory is also emphasized by

Engen and Anderson (2018) as core component processes of cognitive emotion regulation.

Arnold provides a clinical example of a 25-year-old who was still affected by a traumatic experience at 17. It was not a repressed experience, but rather the subject could remember it perfectly well and yet continued to experience excessive anxiety when having to speak with the department head. Arnold points out that he had experienced the same sensation while working for a family friend, upon detecting some irregularities in the business and trying to warn him, but without success. Since then, every time he had to speak with a boss, the severe reaction of fear recurred along with all the physiological symptoms. Arnold describes what happened with this patient and explains how both tools (reflective reappraisal and corrective experience) allow for appropriate emotional regulation:

> He had a fixed expectation that every employer would act like his friend and eventually disappoint him. (..) The young man knew he was afraid and recognized upon reflection that this fear (and the accompanying physical symptoms) was unfounded in the current situation; he did not realize that his previous traumatic experience had shaped his current appraisal and intensified his current emotion. (..) Hence, a corrective experience was impossible unless he could realize the connection between his old shock and his current exaggerated fear reaction. In this case, such insight was acquired in a very short time. Above his understanding, there had to be a deliberate decision, supported by his trust in the therapist, to endure the discomfort of these experiences of fear and to act, despite his fear, until he was able to emotionally realize (what he had always known reflectively) that his current employer was not a replica of his former friend. Reflective reappraisal offered him the opportunity to approach the situation with a new attitude until eventually his intuitive assessment was also changed (Arnold, 1969a, pp. 199-200).

5.5 The relationship between emotion and motivation

In third place, we will discuss the relationship between emotion and motivation as a basis for understanding the interplay between emotional regulation and flourishing. According to Arnold (1969a), emotion plays a significant role in motivating people to act. A motive, according to the author, is "a want that leads to action" (Arnold, 1971, p. 188). It is, therefore, a desire or a want that drives action and derives from something valued as good or bad, its attractiveness or repulsion to the person here and now (Arnold, 1970). That desire becomes the motive for my actions. The self-ideal developed by the individual organizes their motivational system, which in turn articulates their daily activity (Arnold, 1970). Sometimes, emotion leads to action and becomes the motive for acting. Other times, the person acts for reasons that are not emotional. In both cases, Arnold emphasizes the importance of the person's motivational hierarchy being in line with a valid self-ideal.

Therefore, we can affirm that not just any goal serves as the objective of regulating our emotions. According to Arnold et al. (1962), there are some motives that are closer to predicting future achievements, performance, or success for the individual, both in school and in life. For this reason, she dedicates her work "Story Sequence Analysis" (1962) to examining people's motivation:

> Would it not be preferable to try for a sample of a man's motives? These, we know, move him to act in distinctive ways. We may then find they reveal creativity, intelligence, aggression, conformity, and any number of other qualities. But, in tapping his motives, we have found the way in which they are combined for action. No longer do we have to be content with disjointed bones in personality analysis. Knowing a man's motives and their hierarchy, we can work with the fleshed skeleton. Thus we will be able, at last, to determine what a person's chances are for achieving excellence. (Arnold, 1962, p. 30).

This motivation is key to achieving what Arnold et al. (1962) calls achievement or excellence. Both concepts are related, although Arnold does not explicitly explain it this way, to the notion of perfection mentioned earlier and, therefore, to the self-ideal. Arnold identifies a type of motivation that correlates with greater achievement. In this sense, we deduce the correspondence between a type of motivation identified by Arnold and an objectively valid self-ideal.

After analyzing the psychological test she developed, Arnold concludes that the type of motivation that leads to better performance includes the following characteristics: it has as its goal immaterial values (ethical, religious, spiritual, and altruistic); it is willing to invest whatever effort is necessary and personal initiative to achieve what is worthwhile; relationships with others are characterized by generosity, cooperation, lasting relationships, and the presence of a common purpose (effort, suffering, or a shared life); adversity is considered to be overcome with one's own action and a positive attitude, and finally, it includes a specific way of living the relationship with a Supreme Being. In summary, constructive motivation includes taking responsibility for one's actions, the importance and prevalence of ethical, religious, and altruistic values, and the importance of transcendence (Arnold, 1962). The focus is not only on what a person feels but on the motives that drive them to act.

> It seems rather more reasonable to acknowledge that man is responsible for his motives, his intentions, and actions; but he's not responsible for his emotions. He may be so frightened by an early traumatic experience that it would require superhuman fortitude to act courageously in a similar situation. If his motives are positive and constructive, he may nevertheless find ways of controlling his emotion or overcoming it by a corrective experience (see Arnold and Gasson, 1954, p. 92 f.) (Arnold, 1962, p. 221).

Thus, the importance of constructive and positive motives as a means to control or overcome emotion through corrective experiences is highlighted: therefore, the self-ideal is related to emotional regulation. With all this, we can conclude that the relationship between emotion and motivation is key to understanding the relationship between emotional regulation and flourishing. Emotion can be a motive that drives action, but it can also not be. The important thing is that the motivation we have, which helps us regulate emotions, leads us to a valid self-ideal, and therefore, to flourishing.

6 Discussion

The study presented in the preceding sections aims to address the primary question posed in the introduction: I How can Arnold's psychological theory contribute to a better understanding of emotional regulation, flourishing, and the relationship between them?

The path to beginning to answer this question involves considering the relationship between the conception of the self-ideal in Arnold's psychological theory and current theoretical trends in psychology regarding flourishing. Arnold's theory represents a fruitful attempt to achieve a comprehensive understanding of human personality. Therefore, it is considered a reference source in the field of psychology, particularly in the realm of emotional regulation. As highlighted earlier, Arnold lays the groundwork for relating personality, emotions, and the self-ideal. The continuity between these aspects is also a characteristic of current theories on flourishing. In our opinion, Arnold forwards, from a more theoretical and general perspective, some inspiring ideas about human development to attain happiness and well-being, ultimately, flourishing.

The reference to the self and its ideal is addressed in research of the last two decades with various terms and meanings. Specifically, the topic of the self-ideal in Arnold's theory is related to the themes of identity and self; the constructs most frequently used in the literature include: identity (social or moral self), true self (real or perceived), authentic self, true self (Schlegel et al., 2016). The topic of the self is connected to flourishing understood as psychological well-being (PWB) and emotional well-being (EWB) by authors who draw inspiration from the Aristotelian concept of eudaimonia, by researchers who investigate an objective sense of well-being and attempt to develop instruments that measure aspects of well-being beyond just positive emotions and pleasure (Waterman et al., 2010). In broad terms, Arnold's notion of the self-ideal, a valid self-ideal, emphasizes a type of objective self-ideal. The valid self-ideal consists of humanity fully realized by each individual, their perfection, stemming from their capacity (personality) and circumstances (life history). Arnold refers to a self-ideal that is rationalized as an idea but also manifested in personality and throughout one's life. The self-ideal is objectively delineated or framed by human nature, "actualized" in each individual by their personal characteristics, actions, and life experiences. The self-ideal is the horizon of good human actions, those that make one fully human and achieve the goods that constitute a good human life.

We believe that some recent research asserts a mode of understanding flourishing that aligns with the conception of the self-ideal. This is evident in the work of Fowers et al. (2024, p. 15), which introduces additional components of flourishing: "We envision a profile approach that will include some currently prominent concepts (e.g., meaning and belonging) and others that have been left out (e.g., harmony with others, harmony with the environment, and collective flourishing)." Up to this point, the objective of flourishing, in the theory that many researchers have worked on, is individual development manifested in good or optimal psychological functioning, necessary for a good life. Arnold situates the self-ideal as something more than individual development; therefore, he conceptualizes it as the organizer of personality. For Arnold:

> With Gasson (1954) I would consider personality as the patterned totality of human potentialities, activities, and habits, uniquely organized by the person in the active pursuit of his self-ideal, and revealed in his behavior". Together with deliberate action tendencies, emotions urge the human being to pursue his ideal. The same combination urges him to aim for particular goals (Arnold, 1969b, p. 196).

For the science of flourishing, the objective of PWB (psychological well-being) and EWB (eudaimonic well-being) is the effective realization of self-actualization by fulfilling basic psychological needs. In this sense, indicators of flourishing are constructed to seek evidence of the development of human potential, of psychological functioning. As Waterman et al. (2010), p. 5 stated: "The objective elements include those behaviors involved in the pursuit of eudaimonic goals such as self-realization entailing the identification and development of personal potentials and their utilization in ways that give purpose and meaning to life." Indicators of flourishing aim to demonstrate the development of human potential regarding being (character and virtue, being a good person, personal growth), having (a purpose in life, meaning in life, values, goals, positive relations with others, supportive relationships, close social relationships, self-acceptance, autonomy, environmental mastery, mastery accomplishment, optimism, engagement, health), and doing (the pursuit of excellence and self-realization, self-discovery, perceived development of one's best potentials). This more comprehensive view of the human being, objective and generalizable enough to encompass people of different conditions and cultures, could serve as a reference framework for research on assessment and therapeutic intervention. The shift from the general to the specific, including individuals and cultural contexts, constitutes a research and intervention pathway. This approach has been partially initiated through proposals such as those by Bauer and Weatherbie (2023) and Fowers et al. (2024), which aim to enhance flourishing assessment tools by incorporating diverse cultural perspectives. Additionally, it is reflected in the emerging new directions in clinical therapy (Freetly Porter et al., 2023) and educational counseling (Weziak-Bialowolska et al., 2021).

Arnold, through Thomas Aquinas, is in contact with the notion of Aristotelian happiness-eudaimonia. Eudaimonia, as an idea, has been closely related since its origins to emotional regulation. For Aristotle, ethical virtue is a *sine qua non* condition of authentic happiness. As is known, in Aristotle, ethical virtues are strengths of character (ethos in Greek means character), among which are some (such as temperance and fortitude) whose function is to regulate emotions. Thus, emotional regulation is conceived by the eudaimonistic ethical tradition as a condition of eudaimonia-happiness. If we approach the concepts of flourishing and eudaimonia, therefore, we have here the historical origins of the connection between emotional regulation and flourishing. With Arnold's conception of emotions strongly rooted in that same tradition, it is natural that he has concerned himself with studying the relationship between happiness and emotional regulation, in which the concept of self-ideal also plays a fundamental role.

After demonstrating the connection between Arnold's self-ideal and the current conception of flourishing, we conclude that flourishing should be a primary goal in emotional regulation and that it should be reflected in the strategies employed to regulate emotion. In addition, we have also verified that theories on flourishing include references to emotions and their regulation.

Vittersø (2016b), in his study of the role of emotions in relation to flourishing, acknowledges Arnold's theory regarding the role of feelings and explains the importance of emotions in consolidating psychological functioning and being able to achieve the goals that individuals set in life. However, what we propose is that Arnold theorizes about emotions and the self-ideal not only to establish that emotional regulation is a means to reach the self-ideal, but also to suggest that the presence of a self-ideal serves emotional regulation, understanding by self-ideal not only a realization of one's own potentialities but also achieving a good life. This idea relates to ongoing research. For example, some studies propose models of strategies that integrate the process of self-control with emotional regulation (Werner and Ford, 2023). Self-control focuses on regulating behaviors, while emotional regulation aims to regulate emotions. All cases of self-control include emotional regulation, but not all emotional regulation processes can be considered self-control. The goals for which behaviors are chosen could be oriented toward flourishing, and valuing them could be a strategy for emotional regulation.

Based on the debate raised by Hervás and Jódar (2008) questioning what marks the difference between a functional strategy and one that is not, we suggest that precisely the concept of self-ideal should be the direction in which emotion is regulated. In this sense, it is crucial to reflect on Arnold's considerations about the motivating role of emotion, as well as the presence of motivation that can be constructive or not. Tamir et al. (2020) also highlight that emotional regulation is a motivated process, a matter that has often been relegated to the background in research. In this line, Tamir and Ford (2009) indicate that research in emotional regulation has assumed that individuals seek to feel good and avoid feeling bad, but often this is not the case, and individuals "may be motivated to experience even unpleasant emotions when they might be useful for goal attainment" (p. 488). This research corroborates what Arnold et al. (1962) pointed out: not only emotions matter but also the motives that drive my actions.

For emotional regulation to reflect flourishing, it is necessary to include eudaimonic motives, as referred to by Tamir (2016), that is, a sense when carrying out emotional regulation that goes beyond adaptation. Following Arnold et al. (1962), it is very relevant to know whether the individual is driven by constructive motivation toward an appropriate self-ideal or, in more current terms, flourishing. In this line, Roth et al. (2019) propose an approach to emotional regulation linked to aspects related to the self-ideal and flourishing (self-regulated action, short-and long-term goals, values, and preferences).

On the other hand, we can also conclude that emotions can be helpful in achieving flourishing if they are in harmony with the self-ideal; otherwise, it will require the use of different emotional regulation strategies to modulate their intensity and continue moving toward flourishing. Arnold suggests various strategies for modulating the intensity of emotions: the use of imagination, reflective reappraisal, corrective experiences, among others. This coincides with and expands current research showing that flourishers prioritize cognitive reappraisal as an emotional regulation strategy. Some authors (Hervás, 2011; Roth et al., 2019) suggest the need to include acceptance and non-judgmental embrace of emotional experience. At this point, it would be necessary to continue investigating appropriate emotional regulation strategies to achieve flourishing, based on Hervás (2011) emotional processing model, which, in turn, coincides in various aspects with Arnold's proposal. Specifically, when considering conducting an emotional analysis to decide whether the information provided by the emotion is a "false alarm" or not, which in Arnold's words would coincide with the affective memory that generates a disproportionate reaction to the situation.

Emotional regulation and flourishing are, therefore, two concepts that need each other, with a need to focus research on the interdependence between them. There is no flourishing without the regulation of our emotions; emotional regulation does not reach its deepest meaning if it is not directed toward flourishing. This holistic approach offers a comprehensive framework by integrating both realities, introducing an innovative perspective to the most recent research, which has been primarily focused on a more analytical view of each field separately.

We highlight two limitations of this study. The first limitation is the inability to use Magda Arnold's unpublished writings, to which we had access, and which illustrate the developed argument in greater depth. The second limitation is the need to exclude other concepts and topics related to the central subject of this study, as well as the difficulty in delving deeper into the comparative analysis between different terms that share conceptual aspects. This last limitation also presents an opportunity for future research, such as examining the processes of emotional dysregulation. For instance, the third volume of Arnold's unpublished masterpiece, Emotion and Personality, which addresses emotional disorders, could be used for this purpose. It could be studied the relationship between emotional dysregulation and flourishing, answering the question of why and how emotional dysregulation constitutes a difficulty or problem for flourishing. In addition, research could be conducted to examine the relationships between the following variables that highlight a problem of great relevance today: emotional dysregulation, personality traits, internet addiction and flourishing.

The conclusions reached in this article call for a review of intervention programs related to emotional regulation. Given the close relationship between emotional regulation and flourishing, such programs should address not only the identification and regulation of emotions but also elements such as purpose, meaning, and close, positive relationships–key aspects typically assessed by flourishing instruments. Therefore, future research could focus on identifying indicators that jointly evaluate emotional regulation and flourishing. Moreover, Hervás's emotional processing model could be further explored and integrated with the concept of flourishing in his proposal; studies could also focus on emotional regulation strategies and use flourishing as a guide to determine whether the employed strategies are appropriate or not.

Finally, future research lines could propose the integrated framework outlined in this article as a basis for models of emotional and character education, and even for establishing new psychotherapy protocols.

Author contributions

FR-F: Writing – original draft, Writing – review & editing. AB-M: Writing – original draft, Writing – review & editing. ME: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research, authorship, and/or publication of this article. This research article benefited from the financial support of the Faculty of Education and Psychology from the University of Navarra and the Faculty of Psychology from Universidad Abat Oliba CEU.

Acknowledgments

We acknowledge Open AI Chat GPT - 3.5 its assistance with the translation.

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.

References

Arnold, M. B. (1959). Psychology and the image of man. *Relig. Educ.* 54, 30–36. doi: 10.1080/0034408590540105

Arnold, M. B. (1969a). Emoción y Personalidad. Primera parte: Aspectos psicológicos, vol. *1*. Buenos Aires: Editorial Losada.

Arnold, M. B. (1969b). "Human emotion and action" in Human action: Conceptual and empirical issues. ed. T. Mischel (New York: Academic Press), 167–196.

Arnold, M. B. (1970). Emoción y Personalidad II. Aspectos neurológicos y fisiológicos. Buenos Aires: Editorial Losada.

Arnold, M. B. (1971). Motives as causes. *J. Phenomenol. Psychol.* 1, 185–192. doi: 10.1163/156916271X00110

Arnold, M. B. (1984). Memory and the brain. Hillsdale, New Jersey: Lawrence Erlbaum.

Arnold, M. B., and Gasson, J. A. (1954). The human person: An approach to an integral theory of personality. New York: The Ronald Press Company.

Arnold, M. B., Hispanicus, P., Weisgerber, C. A., and D'Aecy, P. F. (1962). Screening candidates for the priesthood and religious life (literary L). Whitefish: Literary Licensing.

Barber, L. K., Bagsby, P. G., and Munz, D. C. (2010). Affect regulation strategies for promoting (or preventing) flourishing emotional health. *Personal. Individ. Differ.* 49, 663–666. doi: 10.1016/j.paid.2010.06.002

Bauer, J. J. (2016). "Eudaimonic growth: the development of the Goodin personhood (or: cultivating a good life story)" in Handbook of Eudaimonic well-being. ed. J. Vittersø (New York: Springer International Publishing), 147–174.

Bauer, J. J., and Weatherbie, K. J. (2023). The quiet Ego and human flourishing. *J. Happiness Stud.* 24, 2499–2530. doi: 10.1007/s10902-023-00689-5

Brown, N. J. L., Lomas, T., and Eiroa-Orosa, F. J. (2018). The Routledge international handbook of critical positive psychology. Oxford: Routledge/Taylor and Francis Group.

Carvalho, T. F., De Aquino, S. D., and Natividade, J. C. (2021). Flourishing in the Brazilian context: evidence of the validity of the PERMA-profiler scale. *Curr. Psychol.* 42, 1828–1840. doi: 10.1007/s12144-021-01587-w

Chaves, C. (2021). "Well being and flourishing" in The Palgrave handbook of positive education. eds. M. L. Kein and M. L. Wehmeyer (London: Palgrave MacMillan), 273–295.

Cherkowski, S., and Walker, K. (2018). Perspectives on flourishing in schools. Lanham, MD: Lexington Books.

Cornelius, R. R. (2006). Magda Arnold's Thomistic theory of emotion, the self-ideal, and the moral dimension of appraisal. *Cognit. Emot.* 20, 976–1000. doi: 10.1080/02699930600616411

Dabdoub, J. P., Bernal, A., and Naval, C. (2020). Conflictos en la inspiración aristotélica de la Psicología Positiva. *Acta Philos.* 29, 73–90. doi: 10.19272/202000701005

Dahla, C. J., Wilson-Mendenhalla, C. D., and Davidson, R. J. (2020). The plasticity of well-being: a training-based framework for the cultivation of human flourishing. *Proc. Natl. Acad. Sci.* 117, 32197–32206. doi: 10.1073/pnas.2014859117

Danvers, A. F., O'Neil, M. J., and Shiota, M. N. (2016). "The mind of the "happy warrior": Eudaimonia, awe, and the search for meaning in life" in Handbook of Eudaimonic well-being. ed. J. Vittersø (New York: Springer International Publishing), 323–335.

David, S., Boniwell, I., and Conley Ayers, A. (2013). Oxford handbook of happiness. Oxford, UK: Oxford University Press.

Diener, E., Oishi, S., and Tay, L. (2018). Handbook of well-being. Salt Lake City, UT: DEF Publishers.

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D., Oishi, S., et al. (2010). New well-being measures: short scales to assess flourishing and positive and negative feelings. *Soc. Indic. Res.* 97, 143–156. doi: 10.1007/s11205-009-9493-y

Echavarría, M. F. (2020). "Desire and freedom: are we responsible for our emotions?" in Desire and human flourishing. Perspectives from positive psychology, moral education and virtue ethics. ed. M. Bosch (Cham: Springer Nature Switzerland AG), 59–72.

Engen, H. G., and Anderson, M. C. (2018). Memory control: a fundamental mechanism of emotion regulation. *Trends Cogn. Sci.* 22, 982–995. doi: 10.1016/j.tics.2018.07.015

Etkin, A., Büchel, C., and Gross, J. J. (2015). The neural bases of emotion regulation. *Neuroscience* 16, 693–700. doi: 10.1038/nrn4044

Fowers, B. J., Novak, L. F., Calder, A. J., and Kiknadze, N. C. (2024). Can a theory of human flourishing be formulated? Toward a science of flourishing. *Rev. Gen. Psychol.* 28, 123–142. doi: 10.1177/10892680231225223

Fowers, B. J., Novak, L. F., Kiknadze, N. C., and Calder, A. J. (2023). Questioning contemporary universalist approaches to human flourishing. *Rev. Gen. Psychol.* 27, 121–134. doi: 10.1177/10892680221138230

Freetly Porter, E., Jessen, M., Coleman, J. J., Sinha, S., Devor, N., Sauer-Zavala, S., et al. (2023). Therapist experiences and perspectives on moving beyond symptoms and into flourishing: a grounded theory analysis. *Couns. Psychol. Q.* 2023:5033. doi: 10.1080/09515070.2023.2225033

Galvin, K. T. (2018). Routledge handbook of well-being. London: Routledge.

García-Alandete, J. (2024). Magda Arnold's understanding of the human person: Thomistic personalism, psychophysical unity of the person, integration of personality, and transcendence. *Hist. Psychol.* 27, 159–177. doi: 10.1037/hop0000247.Epub

Gasper, K., and Bramesfeld, K. D. (2006). Imparting wisdom: Magda Arnold's contribution to research on emotion and motivation. *Cognit. Emot.* 20, 1001–1026. doi: 10.1080/02699930600616122

Gasson, J. A. (1954). Personality theory: A formulation of general principles. In *The human person: An approach to an integral theory of personality*. (eds.) M. B. Arnold and J. A. Gasson (pp. 165–221). The Ronald Press Company.

González, R. C., Fernández-Berrocal, P., Ruiz-Aranda, D., and Extremera, N. (2006). Una aproximación a la integración de diferentes medidas de regulación emocional. *Ansiedad Estrés* 12, 155–166.

Gross, J. J. (1999). "Emotion and emotion regulation" in Handbook of personality: Theory and research. eds. L. A. Pervin and O. P. John. *2nd* ed (New York: Guildford Press), 525–552.

Gross, J. J. (2002). Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology* 39, 281–291. doi: 10.1017/s0048577201393198

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J., Sheppes, G., and Urry, H. L. (2011). Taking one's lumps while doing the splits: a big tent perspective on emotion generation and emotion regulation. *Cognit. Emot.* 25, 789–793. doi: 10.1080/02699931.2011.586590

Gross, J. J., and Thompson, R. (2007). "Emotion regulation: conceptual foundations" in Handbook of emotion regulation. ed. J. J. Gross (New York: The Guilford Press), 3–27.

Hervás, G. (2011). Psicopatología de la regulación emocional: el papel de los déficits emocionales en los trastornos clínicos. *Behav. Psychol.* 19, 347–372.

Hervás, G., and Jódar, R. (2008). Adaptación al castellano de la Escala de Dificultades en la Regulación Emocional. *Clín. Salud* 19, 139–156.

Hervás, G., and Vázquez, C. (2006). La regulación afectiva: Modelos, investigación e implicaciones para la salud mental y física. *Rev. Psicol. Gen. Apl.* 59, 9–36.

Hulsey, T. L., and Hampson, P. J. (2014). Moral Expertise. *New Ideas Psychol.* 34, 1–11. doi: 10.1016/j.newideapsych.2014.02.001

Huppert, F. A., and So, T. T. C. (2013). Flourishing acrossEurope: Application of a new conceptual framework for defining wellbeing. *Soc. Indic. Res.* 110, 837–861. doi: 10.1007%2Fs11205-011-9966-7

Intelisano, S., Krasko, J., and Luhmann, M. (2020). Integrating philosophical and psychological accounts of happiness and well-being. *J. Happiness Stud.* 21, 161–200. doi: 10.1007/s10902-019-00078-x

Kappas, A. (2006). Appraisals are direct, immediate, intuitive, and unwitting.. And some are reflective. *Cognit. Emot.* 20, 952–975. doi: 10.1080/02699930600616080

Keyes, C. L. M. (2002). The mental health continuum: from languishing to flourishing in life. *J. Health Soc. Behav.* 43, 207–222. doi: 10.2307/3090197

Kristjánsson, K. (2020). Flourishing as the aim of education: A neo-Aristotelian view. Abingdon, Oxfordshire: Routledge.

Lazarus, R. S. (1968). Emotions and adaptation: Conceptual and empirical relations. In *Nebraska symposium on motivation*. Vol. 16, (ed.) W. J. Arnold, (Lincoln, NE: University of Nebraska Press), pp. 175266.

Lazarus, R. S. (2001). "Relational meaning and discrete emotions" in Appraisal processes in emotion theory, methods, research. eds. K. R. Scherer, A. Schorr and T. Johnstone (Oxford; New York: Oxford University Press), 38–67.

Lopez, S. J., and Snyder, C. R. (2009). Oxford handbook of positive psychology. *2nd* Edn. Oxford: Oxford University Press.

Martínez, B., de Soria, A., and Naval, C. (2023). El florecimiento Como fin de la educación del carácter | flourishing as the aim of character education. *Rev. Española Pedag.* 81, 17–32. doi: 10.22550/REP81-1-2023-01

Pascual Jimeno, A., and Conejero López, S. (2019). Regulación emocional y afrontamiento: Aproximación conceptual y estrategias. *Rev. Mex. Psicol.* 36, 74–83.

Petrova, K., and Gross, J. J. (2023). The future of emotion regulation research: broadening our field of view. *Affect. Sci.* 4, 609–616. doi: 10.1007/s42761-023-00222-0

Pugen, A. (2020). Psychology beyond technocracy: Marshall McLuhan, Magda Arnold, and the "meaning crisis". *Dianoetikon* 1, 27–48.

Reisenzein, R. (2006). Arnold's theory of emotion in historical perspective. *Cognit. Emot.* 20, 920–951. doi: 10.1080/02699930600616445

Richard-Sephton, P. B., Crisp, D. A., and Burns, R. A. (2024). The emotion regulation strategies of flourishing adults. *Curr. Psychol.* 43, 12816–12827. doi: 10.1007/s12144-023-05332-3

Roth, G., Vansteenkiste, M., and Ryan, R. M. (2019). Integrative emotion regulation: process and development from a self-determination theory perspective. *Dev. Psychopathol.* 31, 945–956. doi: 10.1017/S0954579419000403

Ryan, R. M., and Deci, E. L. (2001). On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. *Annu. Rev. Psychol.* 52, 141–166. doi: 10.1146/annurev.psych.52.1.141

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *J. Pers. Soc. Psychol.* 57, 1069–1081. doi: 10.1037/0022-3514.57.6.1069

Ryff, C. D., Boylan, J. M., and Kirsch, J. A. (2021). "Eudaimonic and hedonic well-being: an integrative perspective with linkages to sociodemographic factors and health" in Measuring well-being: Interdisciplinary perspectives from the social sciences and the humanities. eds. M. T. Lee, L. D. Kubzansky and T. J. V. Weele (New York: Oxford University Press), 92–135.

Schlegel, R. J., Hicks, J. A., and Christy, A. G. (2016). "The Eudaimonics of the true self" in Handbook of Eudaimonic well-being. ed. J. Vittersø (New York: Springer International Publishing), 205–213.

Seligman, M. E. P. (2011). Flourish. Avisionary new understanding of happiness and well being. North Sydney, NSW: William Heinemann Australia.

Shields, S. A. (2006). "Magda B. Arnold: Pioneer in research on emotion" in Portraits of pioneers in psychology. eds. D. A. Dewsbury, L. T. Benjamin and M. Wertheimer, vol. *6* (Washington DC: American Psychological Association, Lawrence Erlbaum Associates), 223–237.

Su, R., Tay, L., and Diener, E. (2014). The development and validation of the comprehensive inventory of thriving (CIT) and the brief inventory of thriving (BIT). *Appl. Psychol. Health Well Being* 6, 251–279. doi: 10.1111/aphw.12027

Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Personal. Soc. Psychol. Rev.* 20, 199–222. doi: 10.1177/1088868315586325

Tamir, M., and Ford, B. Q. (2009). Choosing to be afraid: preferences for fear as a function of goal pursuit. *Emotion* 9, 488–497. doi: 10.1037/a0015882

Tamir, M., Vishkin, A., and Gutentag, T. (2020). Emotion regulation is motivated. *Emotion* 20, 115–119. doi: 10.1037/emo0000635

Thompson, R. A. (1991). Emotional regulation and emotional development. *Educ. Psychol. Rev.* 3, 269–307. doi: 10.1007/BF01319934

Titus, C. S. (2016). Aquinas, Seligman, and positive psychology: a Christian approach to the use of the virtues in psychology. *J. Posit. Psychol.* 12, 447–458. doi: 10.1080/17439760.2016.1228005

Valenzuela (2024). The value of emotions based on Magda B. Arnold and Barbara L. Fredrickson theories (human flourishing). Roma: Edusc.

Vallerand, R. J. (2016). "On the synergy between Hedonia and Eudaimonia: the role of passion" in Handbook of Eudaimonic well-being. ed. J. Vittersø (New York: Springer International Publishing), 191–204.

Vander Weele, T. J. (2017). On the promotion of human flourishing. *Proc. Natl. Acad. Sci.* 114, 8148–8156. doi: 10.1073/pnas.1702996114

Vittersø, J. (2016c). Handbook of Eudaimonic well-being. New York: Springer International Publishing.

Vittersø, J. (2016a). "The most important idea in the world: an introduction" in Handbook of Eudaimonic well-being. ed. J. Vittersø (New York: Springer International Publishing), 1–24.

Vittersø, J. (2016b). "The feeling of excellent functioning: hedonic and Eudaimonic emotions" in Handbook of Eudaimonic well-being. ed. J. Vittersø (New York: Springer International Publishing), 253–277.

Waterman, A. S. (1984). Identity formation: Discovery or creation? *J. Early Adolesc.* 4, 329–341. doi: 10.1177/0272431684044004

Waterman, A. S. (1992). "Identity as an aspect of optimal psychological functioning" in Identity formation during adolescence. Advances in adolescent development. eds. G. R. Adams, T. Gullota and R. Montemayor, vol. *4* (Newbury Park, CA: Sage), 50–72.

Waterman, A. S., Schwartz, S. J., Zamboanga, B. L., Ravert, R. D., Williams, M. K., Agocha, B., et al. (2010). The questionnaire for Eudaimonic well-being: psychometric properties, demographic comparisons, and evidence of validity. *J. Posit. Psychol.* 5, 41–61. doi: 10.1080/17439760903435208

Werner, K. M., and Ford, B. Q. (2023). Self-control: an integrative framework. Social and personality. Psychology. *Compass* 17:e12738. doi: 10.1111/spc3.12738

Weziak-Bialowolska, D., Bialowolski, P., Vander Weele, T. J., and McNeely, E. (2021). Character strengths involving an orientation to promote good can help your health and well-being: evidence from two longitudinal studies. *Am. J. Health Promot.* 35, 388–398. doi: 10.1177/0890117120964083

frontiers | Frontiers in Psychology

TYPE Systematic Review
PUBLISHED 02 October 2024
DOI 10.3389/fpsyg.2024.1425465

OPEN ACCESS

EDITED BY
Juan Andrés Mercado,
Pontifical University of the Holy Cross, Italy

REVIEWED BY
Cathleen Kappes,
University of Hildesheim, Germany
Elena Ricci,
University of Bari Aldo Moro, Italy

*CORRESPONDENCE
Pablo Roca
✉ pablo.roca@villanueva.edu

RECEIVED 29 April 2024
ACCEPTED 18 September 2024
PUBLISHED 02 October 2024

CITATION
Martínez-Priego C, García-Noblejas BP and Roca P (2024) Strategies and goals in Emotion Regulation models: a systematic review.
Front. Psychol. 15:1425465.
doi: 10.3389/fpsyg.2024.1425465

Strategies and goals in Emotion Regulation models: a systematic review

Consuelo Martínez-Priego, Belén Poveda García-Noblejas and Pablo Roca*

Department of Psychology, Faculty of Health Sciences, Universidad Villanueva, Madrid, Spain

Introduction: Studies examining the role of Emotion Regulation (ER) do not consistently explain the underlying model or theory they are employing, resulting in a conflation of different strategies and goals within the ER scientific literature. This study aims to conduct a systematic review and conceptual analysis of the primary strategies and goals advocated in the ER models, theories, and frameworks. Furthermore, we explored the distinctions between the prevailing contemporary ER models and classical conceptions of emotional dynamics, such as those proposed by Aristotle, Descartes, and Darwin.

Methods: An electronic search was conducted in the Web of Science, Medline, and Scopus databases in November 2023. The key search terms used were grouped into two different topics: Emotion Regulation and Models/Theories/Frameworks. Articles were included if they reported one or more ER model in healthy individuals or emotionally disordered individuals and if they were published in a peer-reviewed journal in English in the last 5 years (from 2019 to 2023). A total of two reviewers independently assessed the titles, abstracts, and full texts. Models identified were summarized and classified based on the different ER strategies and goals.

Results: Of the 1,012 titles for initial consideration, 139 articles met the full eligibility criteria and were included for data extraction and synthesis. The review identified 10 ER models, and the most commonly used were the Process Model of Emotion Regulation and the Difficulties in Emotion Regulation. There was a great deal of homogeneity among the proposed ER strategies and goals: the cognitive dimension is the core of ER strategy, and the ER goals are primarily hedonic or instrumental in nature.

Discussion: Both Descartes and Darwin views were present in the ER models; however, some of the most significant contributions in Aristotelian proposal seem to be forgotten, such as the integration of the physical, operational, and growth dimensions (eudaimonic goals).

Systematic review registration: This systematic review was conducted in accordance with the PRISMA guidelines and was preregistered at Prospero platform (CRD42023491948).

KEYWORDS

emotion regulation, strategies, goals, models, theories, frameworks, wellbeing

Introduction

In recent decades, Emotion Regulation (ER) has emerged as a pivotal concept within the field of psychology, garnering substantial attention from researchers across various subfields (clinical, educational, organizational, etc.). Moreover, the study of ER has expanded beyond traditional psychological domains, encompassing interdisciplinary perspectives from fields such as psychiatry, neuroscience, or social context (Grecucci et al., 2017; Rodriguez-Moreno et al., 2022). ER has become increasingly recognized as fundamental to adaptive functioning and psychological wellbeing (Sheppes et al., 2015; Kraiss et al., 2020), being a key active ingredient in contemporary psychological interventions (e.g., Rojas et al., 2023; Roca et al., 2021).

Usually defined as the ability to monitor, evaluate, and modify emotions to attain a goal (Thompson, 1994), ER encompasses a spectrum of strategies individuals use to modulate their emotional experiences (e.g., cognitive reappraisal, suppression, acceptance, etc.), as well as diverse array of goals individuals seek to accomplish through these regulatory efforts (e.g., enhancing wellbeing, maintaining social relationships, meet a challenge, etc.) (Kopp, 1989; Tamir et al., 2007). However, studies examining the role of ER do not consistently explain the underlying model or theory they are employing, resulting in a conflation of different strategies and goals within the ER scientific literature (Sutton, 2004; Moumne et al., 2021). Without a clear conceptual foundation of the different strategies and goals employed in the main ER models and theories, researchers may struggle to interpret findings, compare results across studies, and identify gaps in the literature (Tull and Aldao, 2015).

Over the years, different models of ER have emphasized various specific strategies as either adaptive or maladaptive, and as potential risk or protective factors against psychopathology (Aldao et al., 2010; Naragon-Gainey et al., 2017). Adaptive ER strategies, such as cognitive reappraisal, acceptance, or problem-solving, involve actively modifying one's interpretation of emotional stimuli or addressing the underlying cause of distress, and are associated with better psychological wellbeing, reduced psychopathology, and positive affect. Maladaptive ER strategies, such as avoidance, suppression, or rumination, entail ineffective or counterproductive attempts to regulate emotions, often results in exacerbation of psychopathological symptoms and negative affect (Gross et al., 2019). However, in line with contemporary ER models (e.g., ER flexibility), there is no clear correspondence between the use of specific strategies and their adaptive value, and it depends on the specific regulatory goals prompting the use of ER in each given situation (Boemo et al., 2022).

Emotion regulation is a motivated process, so the strategies and outcomes of ER are contingent upon the goals it seeks to fulfill, and these goals/motives are crucial to understanding the multifaceted nature of ER processes (Tamir et al., 2020). Attempts to regulate emotions, whether by upregulating or downregulating specific affective states, can be driven by different goals and may lead to varied consequences depending on the context (Aldao et al., 2015; Ford et al., 2019). The ability to regulate emotions effectively according to ongoing goals and contextual demands is central to various aspects of psychosocial functioning, including achieving specific outcomes, maintaining social relationships, and enhancing wellbeing. For instance, Eisenberg et al. (2004) underscored the importance of emotion regulation in social functioning, highlighting its role in navigating social interactions and relationships. Brackett et al. (2010) emphasized its significance in academic and work performance, suggesting that effective ER can positively impact productivity and achievement. In fact, there is an association between ER strategies and goals: for instance, reappraisal of emotional experience is crucial for hedonic goals, whereas expressive suppression is important for social goals (Wilms et al., 2020). Importantly, ER goals are not static but can vary based on contextual demands and individual differences (Koval et al., 2023).

Despite the importance of these two concepts, most studies lack a critical categorization of how (i.e., strategies) and why (i.e., goals) people regulate their emotions, and as far as we know, no studies to date have reviewed the main ER strategies and goals across the different models and theories used in scientific literature. Therefore, this study aims to conduct a systematic review and conceptual analysis of the primary strategies and goals advocated in current scientific literature on Emotion Regulation Models, theories, and frameworks. The categorization of strategies and goals will be carried out based on the understanding of emotion as a process, as a multidimensional response, and as a state. Additionally, we conduct a critical analysis of the emotional regulation models identified in the scientific literature, comparing them with the classical theories of Aristotle, Descartes, and Darwin, which have had a significant influence on research on emotion regulation. We examine the new elements that have been incorporated and whether these emotion regulation models have a solid theoretical and conceptual foundation that guides the interpretation of results. The review aims to address the following questions: (1) what models, theories, and frameworks have been employed to elucidate Emotion Regulation in the current scientific literature? (2) What strategies and goals do these models of emotional regulation promote? (3) What differences exist concerning the modern emotional regulation models and the classical conceptions of emotional dynamics (i.e., Aristotle, Descartes, and Darwin)?

Theoretical framework

We compared contemporary ER models identified in the review with the three classic proposals that have inspired emotion theories throughout the history of psychology (Carpintero, 2003): the views of Aristotle, Descartes, and Darwin. Each of them contributes a concept of emotion, of psychological dynamics (thus, of the places where ER is possible), and of the goals of this dynamics. Aristotle was the first author to analyze emotion from the perspective of the three-response system prevalent in contemporary models (i.e., cognitive, biological, and behavioral) (Lyons, 1985). Descartes, on the other hand, introduced the dual pathway (behavioral and cognitive) that gave rise to the two classical psychological schools of thought: cognitivism and behaviorism (Martínez-Priego, 2012; Malo Pe, 2004). Finally, Darwin contributed to the study of emotions by emphasizing the importance of phylogenesis, leading to a paradigm shift in the understanding of the concept of emotion (Fernández-Berrocal, 2009).

The concept (not the term) of ER has a long history dating back to Aristotle. This author (biologist and philosopher) proposes a multidimensional explanation of emotions, encompassing cognitive, physiological, and behavioral dimensions. Specifically, in the Rhetoric (Aristotle, 1985 [1378a]), the significance of evaluative words (cognitive dimension of emotion) is the trigger for emotional

response, as in the case of an insult that triggers the emotion of anger. In the De Anima (Aristotle, 1984 [403a]), the explanation of feelings and passions occurs within the context of the operations of the living being. The human being also performs operations such as remembering, valuing, coping, etc., all thanks to their organic faculties, so Aristotle understands that emotions have a physiological basis (Davis and Panksepp, 2018; Martínez-Priego, 2012). This explanation is further elaborated in the Nicomachean Ethics (Aristotle, 2018 [1110a, 1111b]), where Aristotle distinguishes between voluntary and involuntary actions. Passions (fear, pain, regret, anger, courage, etc.) are factors that influence the distinction between these types of actions. These feelings can affect the involuntary nature of acts, but they can also be integrated into voluntary acts, facilitating the action itself (Aristotle, 2018 [1104b]). This is a model of the role of emotion in decision-making (Solomon, 1993; Phelps et al., 2014). Aristotle also presents an organizing element of affective dynamics: human growth. Indeed, all human activity is oriented toward eudaimonia, that is, happiness involving harmony of the psyche and virtuous life (not hedonic wellbeing). As is well known, virtue is not a terminal point in the biographical process but a middle ground between negative extremes for the individual (Aristotle, 2018 [1106b]). In summary, in Aristotle, cognition (intelligence), physiology (organic faculties), and action (will) (Martínez-Priego and Romero-Iribas, 2024) are the resources/strategies for ER; whereas the goal of ER is to achieve a life adjusted to reality, happy or virtuous; a life oriented toward human growth.

Descartes marked a turning point in the history of psychology by inaugurating, in a scientific manner, the distinction and separation between the soul (mind) and the body (Carpintero, 2003). This separation persists in proposals such as James (1884) or in psychological schools that omit one of the two elements, such as the mind in the case of behaviorism (Skinner, 1974). For Descartes, passions are obscure and confused ideas of the soul caused by the body, meaning they have some organic basis. Within the Cartesian model, these passions can also be termed feelings or emotions of the soul (Descartes, 1997, arts. 27–29). They are the ones that most deeply affect the soul, which is why passions are regarded with suspicion, though not inherently negatively. Within the causal relationship between body and soul (principle of emotions), we must highlight the causal relationship (control) of the will over the soul and the body, and therefore its control over the passions (Descartes, 1997, art. 18). Ultimately, Descartes establishes "control" (of knowledge or behavior) exercised by the will (mind) as a strategy of ER. The goal of this ER strategy is to make emotions useful to the body (survival and satisfaction) and the soul (so that it can reach the highest passion, which is love) (Descartes, 1997, arts. 137–139).

Later, Darwin introduced a new biological-anthropological framework for ER, marking a milestone in the history of modern science (Carpintero, 2003). Evolution signifies an increase in complexity among species, but not a qualitative difference between them. The struggle for survival and natural selection aims to adapt species to their environment (Darwin, 1854). Indeed, emotions have adaptive significance, representing the appropriate response to environmental stimuli which, as formulated years later, serve the triple adaptive, communicative, and motivational function (Frijda and Mesquita, 1994). Darwin asserts the qualitative identity between animal and human psychological dynamics (Darwin, 1872), meaning we share sensations, impressions, and emotions, although in the case of humans, they are more complex. Similarly, strategies of ER are analogous and determined by instincts. Lastly, the goal of ER is adaptation, in other words, internal and contextual homeostasis.

Emotion: a multidimensional construct

Different models of ER rely on the construct of "emotion" (Scherer, 1982; Tull and Aldao, 2015). Although there is a wide variety of "Emotion Theories" (Plutchik, 1980; Kleinginna and Kleinginna, 1981), there is consensus that emotions can be understood as: (1) the study of the triple response system: cognitive, physiological, and behavioral (Lyons, 1985; King, 2020); (2) the study of three moments: the evaluation-valuation of the stimulus, the neuroendocrine activation in response to the stimulus, and the multidimensional manifestation of the emotion (Scherer, 1982; Fernández-Abascal et al., 2010); and (3) Additionally, considering the subject and not just the construct, emotions can be defined as "states of the subject" concomitant with cognitive-evaluative (appraisal) and tendential operations (Polo, 2015a; Martínez-Priego, 2010), that is, those that drive the subject to action (Aspinwall and Taylor, 1997). Emotions are not acts, but companions of acts. In this third sense, we can intervene on the acts and not on the emotions themselves that accompany them.

While emotion as a process offers opportunities to explain how cultural context and individual differences (personality and life experiences) affect emotional states (Arnold, 1960; Komulainen et al., 2014), it also allows for viewing emotion as a psychosomatic reality by integrating the three moments of the emotional process (i.e., evaluation-valuation of the stimulus, the neuroendocrine activation in response to the stimulus, and the multidimensional manifestation of the emotion) (Rof Carballo, 1952, 1961); that is, it does not necessarily imply a view in which mind–body are juxtaposed. In such a case, it can be argued that the Emotional Brain (Rof Carballo, 1952; LeDoux, 1999) is the organ of emotion and integrates cognitive and coping-tendential aspects. Thus, the emotion construct delimits the areas where modification of the emotional process and paths for achieving better ER can be opened. Thus, emotion, whether understood as a response, process, or state, allows for identifying the different ways in which the emotional process can be modified and promote ER: changes in the triple response system, changes in the three temporal moments of the emotional process, or changes in the acts that accompany emotional states. The question of strategies and goals of ER remains to be clarified.

Strategies and goals in ER

Empirical evidence suggests that ER occurs through: (1) cognitive processes (Naragon-Gainey et al., 2017; Sutton, 2004; Gross, 2015): such as reappraisal, rumination, or distraction; (2) motivational-coping processes (Antaki and Brewin, 1982; Crespo Suárez, 1982): such as setting meaningful goals or impulse control; and (3) behavioral processes (Scherer, 1982): such as seeking social support or problem-solving. This triple pathway (cognitive, motivational-coping and behavioral) can serve as a criterion for the classification of ER strategies. Furthermore, the neuroendocrine activation processes (Etkin et al., 2015; Messina et al., 2021) would be transversal to the three previous dimensions (e.g., there is brain

activation during cognitive, motivational, and behavioral processes), and therefore, is less useful for discriminating and categorizing the different ER strategies. However, it is crucial to ask whether the ER strategy precedes the goal or vice versa. According to Aldao and Tull (2015), ER outcomes focus on changes in subjective experience (feeling), neuroendocrine activation, and expressive behavior. All these changes are, for the subject, subsequent in time to the ER strategy. However, if beliefs or implicit theories of various kinds are included in equation (Tamir et al., 2007; De Castella et al., 2013; Moumne et al., 2021), it turns out that these beliefs come first in time, and they are the goals of ER that conditions the strategies used, whether consciously or unconsciously.

Some studies suggest that hedonic and contra-hedonic goals can be distinguished in ER (Webb et al., 2012), considering that contra-hedonic ones are "suffered" to achieve other goals of greater interest to the subject. Something similar is concluded from Tamir (2009) study when seeking the reasons why people want to feel a certain type of emotion (positive or negative) and why. Ultimately, a contemporary taxonomy distinguishes between two different ER motives (Tamir, 2016): (1) hedonic goals, aim at changing the current pleasure-to-pain ratio by approaching pleasure and avoiding pain; and (2) instrumental goals (i.e., contra-hedonic nature), that target other potential benefits of emotions, such as creating and maintaining positive social relationships.

It is surprising that these two types of ER goals are established in the scientific literature (i.e., hedonic, and instrumental). It is known that the hedonic goal has an opposite: the eudaimonic goals (happiness as virtue, good life, or flourishing), while de contrary is the contra-hedonic (instrumental). However, if we adhere to a classification of emotions that considers the trigger and the target of the emotion, these can be (Martínez-Priego and Romero-Iribas, 2021): (1) self-oriented emotions: such as satisfaction, wellbeing, or pleasure; (2) other-directed emotions: such as admiration, surprise, or envy (Michie and Gooty, 2005; Ortony et al., 1988); (3) other-oriented emotions: such as forgiveness, trust, or even (4) the so-called bonding feeling (characterized by accompanying gratuitous, generous, or selfless acts for the good of another). This classification leads to expanding the goals of ER to three levels: (1) hedonic (self-oriented emotions and other-directed emotions); (2) instrumental (some other-oriented emotions); and (3) eudaimonic, which include acts linked to the good of another (Ryff and Singer, 2002), as in bonding feelings.

Methods

Overview

This systematic review was conducted in accordance with the PRISMA guidelines (Moher et al., 2009). The PRISMA checklist is available in Supplementary Table 1. Given the main goal of this study, we adopted a flexible approach tailoring the PRISMA guidelines to the needs of this review. For example, formal quality assessment (including risk of bias, reporting bias, and certainty) was not carried out because the trustworthiness of the articles included did not directly relate to the overarching research aim, which aimed to identify the existence of emotion regulation models and theories across an extensive body of literature. This systematic review was pre-registered at Prospero platform (CRD42023491948).

Search strategy

The electronic search was conducted by the review team in November 2023 to identify articles that have applied one or more emotion regulation models. The search for relevant articles entailed the use of Web of Science, Medline, and Scopus databases. These databases were chosen because they were expected to contain articles relevant to the field of emotion regulation across disciplines such as psychology, psychiatry, and behavioral sciences. The key search terms used were grouped into two different topics: Emotion Regulation and Models/Theories/Frameworks. Additional key informant consultation and manual search using reference lists from retrieved articles were also performed to identify further relevant papers of the main models. A full list of search terms can be found in Supplementary Table 2.

For this review, emotion regulation was defined as the ability to monitor, evaluate, and modify emotions to achieve goals (Thompson, 1994). Thus, emotion regulation includes both the strategies employed to regulate the emotions and the goals aimed to be achieve (Kopp, 1989). Furthermore, model/theory/framework were defined as any systematic approach used to understand, explain, or predict processes related to emotion regulation, including diverse theoretical options that target variables at different levels (Sovacool and Hess, 2017).

Eligibility criteria

We only considered for the review those papers: (1) reporting one or more models/theories/frameworks of ER in healthy individuals (i.e., general population) or emotionally disordered individuals (i.e., psychopathological populations); (2) theoretical articles describing the ER model itself or empirical studies using an ER model (in which case we referred to the original article explaining the ER model); (3) published in English; (4) published in the last 5 years (from 2019 to 2023), although there will be no time restrictions for the referenced model/theory/framework they are using; (5) published in a peer-reviewed journal (i.e., gray literature, dissertations, books, and conference proceedings were excluded); (6) indexed in psychology, psychiatry or behavioral sciences; and (7) neuroscientific models exclusively focused on the biological foundations of ER, articles focused exclusively on a single ER strategy or goal, and the validation of scales based on previous ER models were excluded from the review.

Identification and selection of studies

The search was limited to articles published in the last 5 years (from 2019 to 2023) and yield 1,012 titles for initial consideration. Subsequently, all records were imported into Zotero software and reduced to 906 after removing duplicates. Papers then were title-checked to determine relevance to the research questions before undergoing further abstract screening by two independent reviewers (CM and BP) according to the eligibility criteria. Following two rigorous rounds of title and abstract screening, 181 full texts of all potentially eligible articles were examined and further screened by the

reviewers. Articles that failed to meet the eligibility criteria were excluded and cross-checked the reasons for exclusion. Any conflicts in the decision making during the screening process were resolved via discussion with a third independent reviewer (PR) until consensus was reached. In total, 139 articles met the full eligibility criteria and were included for data extraction and synthesis. Figure 1 shows the PRISMA flowchart of articles included and excluded from the systematic review.

Data extraction and synthesis

As the standardized extraction tools, such as Covidence or RevMan, did not meet the specific needs of this review, a modified extraction form and data synthesis was developed to include relevant characteristics to the research questions and the emotional regulation models reviewed (Supplementary Table 3). A two-step extraction process was carried out: (1) categorization of the articles according to the type of use of the ER model: analyze models, discuss models, propose models, review models, and use models/instruments; (2) in the case of empirical studies, we referred to the original article explaining the ER model. Then, two independent reviewers extracted the following outcomes from the ER models identified: (1) strategies used to regulate the emotions; and (2) goals that the person aims to achieve by regulating their emotions. Furthermore, additional outcomes were also extracted: (3) name of the emotion regulation model, theory, or framework; (4) general description of the model; and (5) instances of theory use (i.e., number of occurrences in which the theory was used).

On the one hand, the ER strategies of each model were classified based on three categories (see more details in Supplementary Table 4): (1) Cognitive strategies: referring to acts (not actions) aimed at modifying some cognitive process (e.g., thoughts, attention, memory, etc.). In this category, we would find strategies such as cognitive reappraisal, distraction, attentional shifting, or nonjudgmental awareness, among others; (2) Motivational-coping strategies: referring to elicited acts (from the Latin "elicere," meaning to want or desire), which are voluntary and internal (without observable external manifestation). They are of a "conative" nature, meaning goal-oriented and motivational, but not behavioral (though they may extend into imperative acts). These acts have been termed "coping" in a dual sense: "effort" and "feeling capable" (Lazarus and Folkman, 1984). Both senses of coping precede potential behavior and influence evaluation (Scherer, 1982). In this category, we would find strategies such as setting meaningful goals aligned with personal values, emotion-focused coping, or resilience, among others; and (3) Behavioral

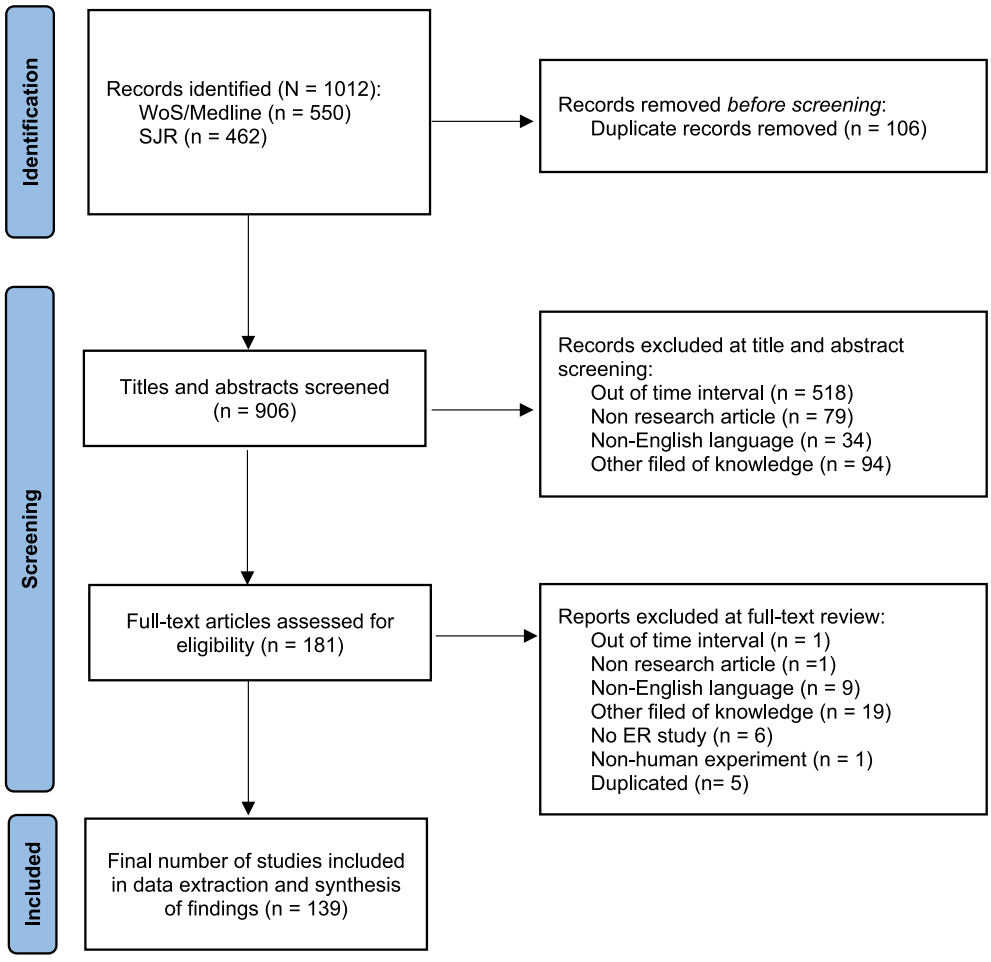


FIGURE 1
PRISMA flowchart of articles included and excluded.

strategies: referring to "imperative" (external) acts that modify behaviors and are observable by third parties. In this category, we would find strategies such as seeking social support, problem-solving, avoidance, or suppression, among others. As can be seen, the distinction between elicited and imperative acts helps avoid confusing acts of will such as hating or loving (elicited), with behaviors resulting from these acts such as violence or a caress (imperative). On the other hand, the ER goals and motives of each model were classified into three categories: (1) hedonic goals (e.g., I eat a cookie, *so I* feel better), (2) instrumental goals (i.e., contra-hedonic) (e.g., I delay a meal, *so I* will feel more attractive), and (3) eudaimonic goals (e.g., I give them a cookie as a gift, *so they* can satisfy their hunger).

Results

The review identified 10 ER models. A general analysis of the articles included in the review was conducted (Table 1), revealing that approximately 46% of the reviewed articles use models or instruments related to ER models. Another 33.1% of articles are reviews of ER models; 10.8% of the articles propose an ER model, while 8.6% of the articles analyze models and 1.4% discuss various models in a more comprehensive manner.

Within articles proposing ER models, we found that 93% of the research is based on the Process Model of Emotion Regulation (Gross, 1998). The remaining proposals are each based on different authors such as Bonano and Burton (2013), Festinger (1957), Lazarus and Folkman (1984), and Pekrun (2006). The only proposal we can consider as "new," not based on any of the most referenced authors, is that of Mirzaie et al. (2022).

The Gross model is a comprehensive framework that conceptualizes ER as a process involving different strategies employed at different stages of emotional experience. It distinguishes between ER strategies applied before the emotional response is fully generated (i.e., antecedent-focused strategies), and those applied after the emotional response has occurred (i.e., response-focused strategies). The Gross model has evolved over time toward a more integrated view of ER, expanding from the initial focus on cognitive and behavioral strategies to include attentional strategies, along with the interaction between these strategies and the temporal dynamics of the emotion.

Table 2 presents the analysis of the ER models underlying each of the articles included in this review. Most of the articles are based, *explicitly*, on the Process Model of Emotion Regulation (Gross, 1998) ($n = 87$), followed at a considerable distance by other models such as Gratz and Roemer (2004) ($n = 19$), Garnefski et al. (2001) ($n = 10$), and Tamir et al. (2007) ($n = 5$). The latter, although also by Gross, incorporates some differences from the one proposed by this author in 1998, hence the decision to include it as a different model from the original.

Subsequently, an analysis was conducted of those articles referencing or proposing ER models to verify if their proposals were novel from the most commonly used ER models in the field (Table 2); that is, articles that *implicitly* are based on other models. It was observed that these less common ER models were, in turn, based on or inspired by the most popular models of Gross (1998) ($n = 19$), Gratz and Roemer (2004) ($n = 6$), and Lazarus and Folkman (1984) ($n = 2$) among others. Therefore, from this analysis, it is inferred that there are 15 models of Emotion Regulation that emerge from the systematic review and upon which a more detailed analysis will be carried out. From these 15, those referring to ER collaterally (e.g., those that primarily focus on other issues such as Emotional Intelligence) were excluded from further analysis (Eisenberg and Fabes, 1992; Hughes and Evans, 2018; Mayer and Salovey, 1997), or Mindfulness (Lindsay and Creswell, 2019). None of these articles contributes, uses, or is based on an ER model, and the ER is used as a moderator of Emotional Intelligence or a particular strategy (e.g., mindfulness).

The summary and classification of all ER models found in the review is provided in Table 3. As mentioned in the theoretical framework, the ER strategies of each model were classified based on three categories/dimensions of emotion understood as response, process, or state: (1) cognitive control strategies (e.g., cognitive reappraisal or distraction), (2) motivational-coping strategies (e.g., setting meaningful goals or emotion-focused coping), and (3) behavioral strategies (e.g., seeking social support or problem-solving). All models include cognitive strategies ($n = 10$), seven models also include coping strategies (Lazarus and Folkman, 1984; Garnefski et al., 2001; Pekrun, 2006; Bonano and Burton, 2013; Ryan and Deci, 2017; Mirzaie et al., 2022), and six models include behavioral strategies (Gross, 1998; Gratz and Roemer, 2004; Tamir et al., 2007; Mirzaie et al., 2022; Bonano and Burton, 2013; Lazarus and Folkman, 1984). Only 4 models include all three ER strategies (Bonano and Burton,

TABLE 1 Categorization of the articles according to the type of use of the ER model.

Type of use	*N*	%
Analyze models	12	8.6%
Discuss models	2	1.4%
Propose models	15	10.8%
Review models	46	33.1%
Use models/instruments	64	46.0%

TABLE 2 Explicit and implicit ER models underlying each of the articles included in this review.

Author of the model	Year	N° Explicit	N° Implicit
Gross	1998	87	19
Gratz and Roemer	2004	19	6
Garnefski	2001	11	–
Tamir and Gross	2007	5	–
Mayer and Solovey	1997	3	–
Ryan and Deci	2017	1	1
Mirzaie et al.	2022	1	–
Pekrun	2006	1	–
Eisenberg and Fabe	1992	1	–
Huges and Evans	2018	1	–
Lindsay and Creswell	2019	1	–
Lazarus and Folkman	1984	–	2
Festinger	1957	–	1
Bonanno and Burton	2013	–	1

TABLE 3 Summary and classification of ER models.

Model	References	Description	Strategies	Strategies classification	Goals	Goal classification
Process Model of Emotion Regulation	Gross (1998)	Reappraisal as a central mechanism for ER, emphasizing hierarchical cognitive control structures.	Cognitive reappraisal, suppression, distraction, and acceptance, each influencing emotional outcomes differently.	*Cognitive and behavioral dimensions*	Enhancing wellbeing and homeostasis.	*Hedonic or instrumental*
Difficulties in emotion regulation	Gratz and Roemer (2004)	An integrative conceptualization of emotion regulation involves modulating emotional arousal, being aware of, understanding, and accepting emotions, and acting in desired ways regardless of emotional state. This model is proposed as the foundation for the DERS scale	Difficulties in acceptance, goal-directed behaviors, impulse control, emotional awareness, access to emotion regulation strategies, and emotional clarity.	*Cognitive, coping and behavior dimensions*	Adaptation and reducing distress.	*Hedonic or instrumental*
Cognitive emotion regulation	Garnefski et al. (2001)	ER model focused on 9 strategies that stem from the cognitive dimension of emotion. This model is proposed as the foundation for the CERQ scale.	Self-blame; acceptance; rumination; positive refocusing; refocusing on planning; positive reappraisal; putting into perspective; catastrophizing; and blaming others.	*Cognitive and coping dimensions*	Reducing distress and enhancing wellbeing-health.	*Hedonic or instrumental*
Implicit Theory of Emotions	Tamir et al. (2007)	How individuals' implicit beliefs about emotions influence their ER strategies and outcomes.	Some strategies as (Gross, 1998): cognitive reappraisal, expressive suppression, distraction, acceptance, and rumination.	*Cognitive and behavioral dimensions*	Personal and social adjustment (homeostasis).	*Hedonic or instrumental*
Self-determination theory	Ryan and Deci (2017)	Individuals are intrinsically motivated to fulfill three basic psychological needs: autonomy, competence, and relatedness.	Fostering self-awareness, cultivating mindfulness, setting meaningful goals aligned with personal values, and practicing self-compassion.	*Cognitive and coping dimensions*	Fulfillment of basic psychological needs, which leads to wellbeing and optimal functioning	*Hedonic or instrumental*
Emotion regulation flexibility and electronic patient-reported outcomes	Mirzaie et al. (2022)	Broad notion of ER emphasizing the importance of flexibility and adaptability. Highlights the affect dynamic nature so the effectiveness of ER strategies may vary depending on the context and individual characteristics.	Reframing and reappraisal vs. resilience and tenacity; Suppressing vs. emotional disclosure and social support; distraction and attentional shifting vs. acceptance and tolerance; nonjudgmental awareness vs. problem-solving; inviting vs. activating positive emotion.	*Cognitive, coping and behavioral dimensions*	Promoting emotional wellbeing- health.	*Hedonic or instrumental*
Control Value Theory of Achievement Emotions	Pekrun (2006)	Emotions are influenced by perceptions of control over outcomes and the value attached to those outcomes, which in turn shape individuals' emotional experiences during achievement-related activities.	Control appraisal and value appraisal.	*Cognitive and coping dimensions*	Optimizing emotional experiences during achievement pursuits.	*Hedonic or instrumental*
Transactional model of stress and coping	Lazarus and Folkman (1984)	Dynamic interaction between individuals and their environment, suggesting that stress arises from appraisals of the situational demands and one's resources to cope with them.	Problem-focused coping (change or manage the stressor) and emotion-focused coping (regulating emotional responses through cognitive reappraisal or social support).	*Cognitive, coping and behavioral dimensions*	Reducing distress and enhancing adaptation to stressful situations.	*Hedonic or instrumental*
Cognitive dissonance theory	Festinger (1957)	Individuals experience psychological discomfort when they hold conflicting beliefs or engage in behaviors that contradict their attitudes or values.	Three mechanisms or strategies: modify the value of the elements, increase or decrease the weight of the elements, and alter the number of the elements.	*Cognitive dimension*	Reduce cognitive-behavioral dissonance.	*Hedonic or instrumental*

(Continued)

10.3389/fpsyg.2024.1425465

TABLE 3 (Continued)

Model	References	Description	Strategies	Strategies classification	Goals	Goal classification
Regulatory flexibility model	Bonano and Burton (2013)	Individuals exhibit varying degrees of flexibility in adapting their regulatory responses based on situational demands and personal resources.	Reappraisal, suppression, distraction, problem-focused coping, repertoire of ER strategies are utilized flexibly, depending on sensitivity to external or internal feedback (contextual factors).	*Cognitive, coping and behavioral dimension*	Promoting adaptive coping and resilience in the face of adversity.	*Hedonic or instrumental*

2013; Gratz and Roemer, 2004; Lazarus and Folkman, 1984; Mirzaie et al., 2022).

On the other hand, the ER goals and motives of each model were classified into three categories: (1) hedonic goals, (2) instrumental goals (i.e., contra-hedonic), and (3) eudaimonic goals. The results showed that all reviewed ER models focus on hedonic and instrumental goals, with no model focusing explicitly on eudaimonic goals. However, the different ER models nuanced their ultimate goal differently: adaptation ($n = 3$), wellbeing-health ($n = 2$), wellbeing-homeostasis ($n = 1$), intra- and interpersonal homeostasis ($n = 1$), meeting psychological needs ($n = 1$), regulated response ($n = 1$), or reducing cognitive and behavioral dissonance ($n = 1$).

Discussion

This systematic review summarizes and classifies the main strategies and goals advocated in current scientific literature on Emotion Regulation Models, theories, and frameworks. Furthermore, we explored the distinctions between the prevailing contemporary ER models, exemplified by the Gross Model, and classical conceptions of emotional dynamics, such as those proposed by Aristotle, Descartes, and Darwin.

The results of our study show that the underlying models of ER in the scientific literature are not always explicit (Sutton, 2004; Moumne et al., 2021), or they are limited to applying ER questionnaires without considering the limitations and biases that may introduce into the study being conducted. This is evident in 27% of the works, which simply use ER scales for evaluation, especially the Emotion Regulation Questionnaire (ERQ) (Gross and John, 2003) and the Difficulties in Emotion Regulation (DERS) (Gratz and Roemer, 2004). Furthermore, the uncritical inclusion of conceptual frameworks leads to excessively diverse conclusions regarding the effectiveness of ER interventions, as suggested by previous studies that reach opposing conclusions (Gross et al., 2019; Boemo et al., 2022). This same situation seems to repeat in our systematic review: only 7% of the articles contrast, compare, or review more than one ER model. However, the crux of this situation relates to the implications of choosing ER strategies and goals.

The results of this review suggest that the most widely employed model of ER is Gross's model. With the cultivation of this emerging field, Gross hoped "to provide better answers than have ever before been possible to age-old questions about how emotions can-and should-be managed in order to optimize human functioning" (Gross, 1998, p. 288). Finally, his ER model focuses on the cognitive dimension of emotion, consisting of cognitive strategies (re-appraisal) that control and modify previous evaluations. Alongside this, hedonistic goals are established: "What are typical emotion regulatory goals? Individuals often seek to decrease negative emotions and increase positive emotions" (Gross, 1998, p. 286). A more comprehensive view of Gross's model entails not forgetting that this author is aware of the multidimensionality of emotional response: "ER is denned and distinguished from coping, mood regulation, defense, and affect regulation" (Gross, 1998, p. 271). Distinguishing each of these dimensions can lead to an analytical view of the subject. However, the analytical consideration of the human being, by not aligning with reality, leads to theoretical and practical aporias (Polo, 2016). In contrast, the classical authors open up the possibility of establishing other places and resources for ER. Of particular interest is the

inclusion of growth and pathways for the articulation of reason and emotion oriented toward a fuller life (Martínez-Priego and Romero-Iribas, 2024).

If we focus on ER strategies, as far as our study goes, all models appeal to the cognitive dimension as a key strategy for ER. This is consistent with the proposals of Aristotle (1984, 2018) [403a] and Descartes (1997). However, it differs from Darwin (1872) theory, where instinctive dynamics prevail over open human knowledge. Indeed, in the emotional process, the first moment is cognitive; even for James (1884), who cites Darwin when explaining that emotion is defined as the experience of body alterations. This body alteration is linked to a discriminative knowledge in which the stimulus adjusts to the subject like a key to a lock, instinctively. However, in the ER models reviewed, it is not always clear whether the rectification of the appraisal is merely control (as proposed by Descartes) or a hierarchy between levels of growth and improvement of knowledge of reality (as proposed by Aristotle). This second path of reappraisal implies that the knowledge rectifying the initial appraisal presupposes the first level of knowledge, part of it, and explicitly states its content; that is, it knows reality more accurately (Polo, 2015a, 2015b; Reyna-Fortes, 2024). Therefore, knowledge of reality prevails over narratives generated to improve only intrapersonal or interpersonal adjustment and, ultimately, the subject's wellbeing (Baumeister et al., 2012). The subject's narrative takes precedence over knowledge of reality.

If we adhere to Darwin's proposal, we see that it remains relevant in current models. Indeed, adaptation, pleasure, or the reduction of imbalance states appear in all the ER models analyzed. Ultimately, these are homeostatic proposals (intra e interpersonal) regarding the individual. This presents a significant challenge: the improvement processes facilitated by ER lead to a terminal point, namely, achieving equilibrium. However, no human life has this structure, as growth must always continue (Joseph and Linley, 2006). Ceasing to develop organically does not mean that human growth has concluded (Vargas, 2019). At this point, it is worth emphasizing that the ER goals condition the outcomes of the intervention, as suggested by studies by Tamir et al. (2007). For this reason, it is important to distinguish between seeking homeostasis as subjective wellbeing and striving for eudaimonic wellbeing, where personal growth provides a broader source of resources and motivation that transcends overcoming particular obstacles. Without negating the importance of these, specific goals appear as means to achieve a better end. On the other hand, the eudaimonic end aligns with the actual potential for the person's growth and enables the attainment of increasing states of happiness (Kristjánsson, 2018).

Regarding Descartes proposal, it is interesting to note the prevalence of "control" within the ER strategies employed in most models, which contrasts with some contemporary proposals that emphasize the importance of acceptance and mindfulness in ER processes (e.g., Roca et al., 2021, 2023). The underlying assumption of this dynamic can be twofold: (1) the hierarchical understanding of human operational capacities (from the sensory to the intellectual, and from coping to will); or (2) the existence of two instances: the mind and the body. The mind controls the body, either to increase pleasure or to carry out certain behaviors. However, neurophysiological studies can facilitate the psychosomatic articulation included in ER processes (Etkin et al., 2011; Etkin et al., 2015). That is, from the emotional brain and other physiological structures, it seems possible to show that there is no causal relationship between the cognitive and the behavioral (Martínez-Priego and Romero-Iribas, 2024). The presence of a causal view of some dynamics over others indicates that Cartesian dualism is still present in ER models.

The Aristotelian proposal suggests future lines of research to enrich ER models. On one hand, by explaining the psychosomatic nature of emotion, that is, the non-existence of causality between the mental and the corporeal. Thus, control would not be the main pathway for improving ER processes. On the other hand, it may allow for a deeper exploration of considering eudaimonic goal (virtue as real flourishing) as a criterion for human health, wellbeing, and growth. People's beliefs are adjusted when confronted with reality rather than with the state of satisfaction or homeostasis. Lastly, the link between free acts and those motivated by emotional states connects knowledge with sound decision-making: this is what Aristotle himself called "phronesis" and is the subject of numerous academic works (De Caro and Vaccarezza, 2021; Kristjánsson and Fowers, 2024).

Lastly, regarding the ER goals, while people may give various reasons for the same behavior (e.g., not attending a party because I do not feel like it or because such events do not align with my values), the ER models analyzed understand that the goals are of an adaptive and homeostatic nature, either hedonic or instrumental, and do not include eudaimonic goals. Expanding ER goals to include eudaimonic components could alter the motivation behind ER, even when using the same strategies. For instance, a eudaimonic goal of suppressing emotions could be to hide disappointment over a gift because I value the other person's intention more than my own satisfaction or pleasure from it. The emotional repertoire resulting from using one's own emotion regulation resources could also be improved by including, for instance, other-oriented emotions and/or bonding feelings (Martínez-Priego and Romero-Iribas, 2021).

Conclusion

In the present review, the most commonly used models in the current scientific literature have been highlighted (explicitly or implicitly). Among the ER models that emerged from the review, the Process Model of Emotion Regulation (Gross, 1998) stands out prominently as a hegemonic model in the field. Other models draw inspiration from theories stemming from Emotional Intelligence or Positive Psychology. There is a great deal of homogeneity among the proposed ER strategies and goals as well: the cognitive dimension takes precedence as the core of ER strategy, the regulation dynamic is governed by "control," and the ER goals are hedonic or instrumental in nature.

While this review fulfills the proposed objectives, it also presents a series of limitations. For instance, more years could have been included in the analysis, not just the last five (although we aimed to focus on models used currently). Additionally, other databases could have been reviewed, and other disciplines interested in ER could have been expanded. The categorization of ER strategies and objectives of each model could be further detailed, which will be the subject of future research. Another limitation of our study is that we did not explore in detail the internal processes associated with each emotion regulation strategy and goal, even though these strategies and goals are applied at specific moments within the emotional process. Future

studies should explore these internal processes more thoroughly to gain a deeper understanding of how these strategies and goals operate within the emotional process. Furthermore, future studies should consider exploring a broader range of articles, including those that focus on neuroscientific models of ER, articles focused on a single ER strategy or goal, and articles focused on the validation of scales based on previous ER models (e.g., Kraaij and Garnefski, 2019). This could help address gaps identified in our review and contribute to a more nuanced understanding of ER models across different contexts.

Although our study also has several strengths and practical implications, by addressing the complex task of reviewing and classifying the main strategies and goals advocated in the current scientific literature on ER Models, a crucial aspect for advancement in this field. Furthermore, we did not simply summarize contemporary ER models but analyzed them based on classical conceptions of emotional dynamics, such as those proposed by Aristotle, Descartes, and Darwin, which have guided and inspired current ER models. Modifying the aim of ER interventions allows for the comparison of longer-term expectations (motivations). Simultaneously, by proposing eudaimonic goals, the relative weight of short- and long-term objectives is redefined to align with reality. Empirical studies will need to consolidate this theoretically derived conclusion.

Both Descartes and Darwin are present in the analyzed ER models, Aristotle as well, as his proposal inaugurates the various areas of emotion study present to this day. However, some of their most significant contributions seem to be forgotten, such as the integration of the physical, operational, and growth dimensions within humans, as well as the view of psychological dynamics oriented towards an achievable goal through freedom: human growth.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

CM-P: Conceptualization, Formal analysis, Investigation, Writing – original draft. BG-N: Conceptualization, Investigation, Writing – original draft, Data curation. PR: Conceptualization, Methodology, Supervision, Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research, authorship, and/or publication of this article. Financial support was received for the publication of this article by the Universidad Villanueva.

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

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1425465/full#supplementary-material

References

Aldao, A., Nolen-Hoeksema, S., and Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: a meta-analytic review. *Clin. Psychol. Rev.* 30, 217–237. doi: 10.1016/j.cpr.2009.11.004

Aldao, A., Sheppes, G., and Gross, J. (2015). Emotion regulation flexibility. *Cognit. Ther. Res.* 39, 263–278. doi: 10.1007/s10608-014-9662-4

Aldao, A., and Tull, M. T. (2015). Putting emotion regulation in context. *Curr. Opin. Psychol.* 3, 100–107. doi: 10.1016/j.copsyc.2015.03.022

Antaki, C., and Brewin, C. (1982). *Attributions and psychological change: Applications of attributional theories to clinical and education practice*. Academic Press.

Aristotle (1984). The complete works of Aristotle, Vol. 1. *1st* Edn. Oxford: Princeton University Press.

Aristotle (1985). The complete works of Aristotle, Vol. 2. *1st* Edn. Oxford: Princeton University Press.

Aristotle (2018). Nicomachean ethics. Indianapolis, IN: Hackett Publishing Company.

Arnold, M. B. (1960). Emotion and personality. New York, NY: Columbia University Press.

Aspinwall, L. G., and Taylor, S. E. (1997). A stitch in time: Self-regulation and proactive coping. *Psychol. Bull.* 121, 417–436. doi: 10.1037/0033-2909.121.3.417

Baumeister, R., Vohs, K., Aaker, J. L., and Garbinsky, E. N. (2012). Some key differences between a happy life and a meaningful life. *Res. Papers Series* 2119, 1–24. doi: 10.2139/ssrn.2168436

Boemo, T., Nieto, I., Vazquez, C., and Sanchez-Lopez, A. (2022). Relations between emotion regulation strategies and affect in daily life: a systematic review and meta-analysis of studies using ecological momentary assessments. *Neurosci. Biobehav. Rev.* 139:104747. doi: 10.1016/j.neubiorev.2022.104747

Bonano, 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

Brackett, M. A., Palomera, R., Mojsa-Kaja, J., Reyes, M. R., and Salovey, P. (2010). Emotion-regulation ability, burnout, and job satisfaction among British secondary-school teachers. *Psychol. Sch.* 47, 406–417. doi: 10.1002/pits.20478

Carpintero, H. (2003). Historia de las ideas psicológicas. *2nd* Edn. Madrid: Pirámide.

Crespo Suárez, E. (1982). Los procesos de atribución causal. *Psychol. Stud.* 3, 33–45. doi: 10.1080/02109395.1982.10821327

Darwin, C. (1854). The origin of species o on the origin of species by means of natural selection, or the preservation of Favoured races in the struggle for life. New York, NY: Appelton and Company.

Darwin, C. (1872). The expression of the emotions in man and animals. London: John Murray.

Davis, K. L., and Panksepp, J. (2018). The emotional foundations of personality: A neurobiological and evolutionary approach. New York, NY: W. W. Norton & Company.

De Caro, M., and Vaccarezza, M. S. (2021). Practical wisdom: Philosophical and psychological perspectives. London: Routledge.

de Castella, K., Goldin, P., Jazaieri, H., Ziv, M., Dweck, C. S., and Gross, J. J. (2013). Beliefs about emotion: links to emotion regulation, well-being, and psychological distress. *Basic Appl. Soc. Psychol.* 35, 497–505. doi: 10.1080/01973533.2013.840632

Descartes, R. (1997). Las pasiones del alma. Madrid: Tecnos.

Eisenberg, N., and Fabes, R. A. (1992). "Emotion, regulation, and the development of social competence" in Emotion and social behavior. ed. M. S. Clark (Thousand Oaks, CA: US: Sage Publications, Inc), 119–150.

Eisenberg, N., Spinrad, T. L., and Smith, C. L. (2004). "Emotion-related regulation: its conceptualization, relations to social functioning, and socialization" in The regulation of emotion. ed. S. L. Koole (Mahwah, NJ: Lawrence Erlbaum Associates Publishers), 277–306.

Etkin, A., Büchel, C., and Gross, J. J. (2015). The neural bases of emotion regulation. *Nat. Rev. Neurosci.* 16, 693–700. doi: 10.1038/nrn4044

Etkin, A., Egner, T., and Kalisch, R. (2011). Emotional processing in anterior cingulate and medial prefrontal cortex. *Trends Cogn. Sci.* 15, 85–93. doi: 10.1016/j.tics.2010.11.004

Fernández-Abascal, E. G., Rodríguez, B. G., Sánchez, M. P. J., Díaz, M. D. M., Sánchez, F. J. D., et al. (2010). Psicología de la Emoción. Madrid: Editorial Universitaria Ramon Areces.

Fernández-Berrocal, P. (2009). Darwin y el misterio de las emociones. *Uciencia: revista de divulgación científica de la Universidad de Málaga*, 1, 32–34.

Festinger, L. (1957). A theory of cognitive dissonance. Redwood City, CA: Stanford University Press.

Ford, B. Q., Gross, J. J., and Gruber, J. (2019). Broadening our field of view: the role of emotion polyregulation. *Emot. Rev.* 11, 197–208. doi: 10.1177/1754073919850314

Frijda, N. H., and Mesquita, B. (1994). "The social roles and functions of emotions" in Emotion and culture: Empirical studies of mutual influence. eds. S. Kitayama and H. R. Markus (Washington, DC: American Psychological Association), 51–87.

Garnefski, N., Kraaij, V., and Spinhoven, P. (2001). Negative life events, cognitive emotion regulation and emotional problems. *Personal. Individ. Differ.* 30, 1311–1327. doi: 10.1016/S0191-8869(00)00113-6

Gratz, K. L., and Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: development, factor structure, and initial validation of the difficulties in emotion regulation scale. *J. Psychopathol. Behav. Assess.* 26, 41–54. doi: 10.1023/B:JOBA.0000007455.08539.94

Grecucci, A., Frederickson, J., and Job, R. (2017). Advances in emotion regulation: from neuroscience to psychotherapy. *Front. Psychol.* 8:985. doi: 10.3389/fpsyg.2017.00985

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Rev. Gen. Psychol.* 2, 271–299. doi: 10.1037/1089-2680.2.3.271

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J., and John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J. Pers. Soc. Psychol.* 85, 348–362. doi: 10.1037/0022-3514.85.2.348

Gross, J. J., Uusberg, H., and Uusberg, A. (2019). Mental illness and well-being: an affect regulation perspective. *World Psychiatr. Off. J. World Psychiatr. Assoc.* 18, 130–139. doi: 10.1002/wps.20618

Hughes, D. J., and Evans, T. R. (2018). Putting "emotional intelligences" in their place: introducing the integrated model of affect-related individual differences. *Front. Psychol.* 9:2155. doi: 10.3389/fpsyg.2018.02155

James, W. (1884). What is emotion? *Mind* IX, 188–205. doi: 10.1093/mind/os-IX.34.188

Joseph, S., and Linley, P. A. (2006). Growth following adversity: theoretical perspectives and implications for clinical practice. *Clin. Psychol. Rev.* 26, 1041–1053. doi: 10.1016/j.cpr.2005.12.006

King, P. S. (2020). "Emotional responses" in Encyclopedia of behavioral medicine. ed. M. D. Gellman (Cham: Springer International Publishing), 752–753.

Kleinginna, P. R., and Kleinginna, A. M. (1981). A categorized list of emotion definitions, with suggestions for a consensual definition. *Motiv. Emot.* 5, 345–379. doi: 10.1007/BF00992553

Komulainen, E., Meskanen, K., Lipsanen, J., Lahti, J. M., Jylhä, P., Melartin, T., et al. (2014). The effect of personality on daily life emotional processes. *PLoS One* 9:e110907. doi: 10.1371/journal.pone.0110907

Kopp, C. B. (1989). Regulation of distress and negative emotions: a developmental view. *Dev. Psychol.* 25, 343–354. doi: 10.1037/0012-1649.25.3.343

Koval, P., Kalokerinos, E. K., Greenaway, K. H., Medland, H., Kuppens, P., Nezlek, J. B., et al. (2023). Emotion regulation in everyday life: mapping global self-reports to daily processes. *Emotion* 23, 357–374. doi: 10.1037/emo0001097

Kraaij, V., and Garnefski, N. (2019). The behavioral emotion regulation questionnaire: development, psychometric properties and relationships with emotional problems and the cognitive emotion regulation questionnaire. *Pers. Individ. Differ.* 137, 56–61. doi: 10.1016/j.paid.2018.07.036

Kraiss, J. T., ten Klooster, P. M., Moskowitz, J. T., and Bohlmeijer, E. T. (2020). The relationship between emotion regulation and well-being in patients with mental disorders: a meta-analysis. *Compr. Psychiatry* 102:152189. doi: 10.1016/j.comppsych.2020.152189

Kristjánsson, K. (2018). "Virtue from the perspective of psychology" in The Oxford handbook of virtue. ed. N. E. Snow (Oxford University Press).

Kristjánsson, K., and Fowers, B. (2024). Phronesis: Retrieving practical wisdom in psychology, philosophy, and education. Oxford: Oxford University Press.

Lazarus, R. S., and Folkman, S. (1984). Stress, appraisal and coping. Cham: Springer.

LeDoux, J. (1999). El cerebro emocional. Barcelona: Ariel.

Lindsay, E. K., and Creswell, J. D. (2019). Mindfulness, acceptance, and emotion regulation: perspectives from monitor and acceptance theory (MAT). *Curr. Opin. Psychol.* 28, 120–125. doi: 10.1016/j.copsyc.2018.12.004

Lyons, W. E. (1985). Emotion. Cambridge: Cambridge University Press.

Malo Pe, A. (2004). *Antropología de la afectividad*. Eunsa.

Martínez-Priego, C. (2010). "Emoción" in Diccionario de filosofía. ed. Á. L. González (Pamplona: Eunsa), 337–342.

Martínez-Priego, C. (2012). Neurociencia y afectividad. La psicología de Juan Rof Carballo. Rotterdam: Erasmus.

Martínez-Priego, C., and Romero-Iribas, A. (2021). The emotions behind character friendship: from other-oriented emotions to the "bonding feeling". *J. Theory Soc. Behav.* 51, 468–488. doi: 10.1111/jtsb.12277

Martínez-Priego, C., and Romero-Iribas, A. (2024). Where and how do Phronesis and emotions connect? *Topoi* 43, 997–1009. doi: 10.1007/s11245-024-10022-1

Mayer, J., and Salovey, P. (1997). What is emotional intelligence? Emotional development and emotional intelligence: Implications for educators. New York, NY: Basic Book, 3–31.

Messina, I., Grecucci, A., and Viviani, R. (2021). Neurobiological models of emotion regulation: a meta-analysis of neuroimaging studies of acceptance as an emotion regulation strategy. *Soc. Cogn. Affect. Neurosci.* 16, 257–267. doi: 10.1093/scan/nsab007

Michie, S., and Gooty, J. (2005). Values, emotions, and authenticity: will the real leader please stand up? *Leadersh. Q.* 16, 441–457. doi: 10.1016/j.leaqua.2005.03.006

Mirzaie, K., Burns-Gebhart, A., Meyerheim, M., Sander, A., and Graf, N. (2022). Emotion regulation flexibility and electronic patient-reported outcomes: a framework for understanding symptoms and affect dynamics in pediatric psycho-oncology. *Cancers* 14:3874. doi: 10.3390/cancers14163874

Moher, D., Liberati, A., Tetzlaff, J., and Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med.* 6:e1000097. doi: 10.1371/journal.pmed.1000097

Moumne, S., Hall, N., Böke, B. N., Bastien, L., and Heath, N. (2021). Implicit theories of emotion, goals for emotion regulation, and cognitive responses to negative life events. *Psychol. Rep.* 124, 1588–1620. doi: 10.1177/0033294120942110

Naragon-Gainey, K., McMahon, T. P., and Chacko, T. P. (2017). The structure of common emotion regulation strategies: a meta-analytic examination. *Psychol. Bull.* 143, 384–427. doi: 10.1037/bul0000093

Ortony, A., Clore, G. L., and Collins, A. (1988). The cognitive structure of emotions. *1st* Edn. Cambridge: Cambridge University Press.

Pekrun, R. (2006). The control-value theory of achievement emotions: assumptions, corollaries, and implications for educational research and practice. *Educ. Psychol. Rev.* 18, 315–341. doi: 10.1007/s10648-006-9029-9

Phelps, E. A., Lempert, K. M., and Sokol-Hessner, P. (2014). Emotion and decision making: multiple modulatory neural circuits. *Annu. Rev. Neurosci.* 37, 263–287. doi: 10.1146/annurev-neuro-071013-014119

Plutchik, R. O. B. E. R. T. (1980). "A general Psychoevolutionary theory of emotion" in Theories of emotion. eds. R. Plutchik and H. Kellerman (New York, NY: Academic Press), 3–33.

Polo, L. (2015a). Curso de Teoría del Conocimiento (I). Obras Completas. Vol IV. Pamplona: Eunsa.

Polo, L. (2015b). Lecciones de Psicología clásica, Obras Completas. Vol. XXII. Pamplona: Eunsa.

Polo, L. (2016). Quién es el hombre. Presente y futuro del hombre. Obras Completas. Vol. X. Pamplona: Eunsa.

Reyna-Fortes, R. (2024). Esquematismo o devolución del abstracto a la realidad. La prosecución poliana del conocimiento objetivo frente al esquematismo kantiano. *Studia Poliana* 12, 133–166. doi: 10.15581/013.26.133-166

Roca, P., Vazquez, C., Diez, G., Brito-Pons, G., and McNally, R. J. (2021). Not all types of meditation are the same: mediators of change in mindfulness and compassion meditation interventions. *J. Affect. Disord.* 283, 354–362. doi: 10.1016/j.jad.2021.01.070

Roca, P., Vazquez, C., Diez, G., and McNally, R. J. (2023). How do mindfulness and compassion programs improve mental health and well-being? The role of attentional processing of emotional information. *J. Behav. Ther. Exp. Psychiatry* 81:101895. doi: 10.1016/j.jbtep.2023.101895

Rodriguez-Moreno, S., Farchione, T. J., Roca, P., Marín, C., Guillén, A. I., and Panadero, S. (2022). Initial effectiveness evaluation of the unified protocol for transdiagnostic treatment of emotional disorders for homeless women. *Behav. Modif.* 46, 506–528. doi: 10.1177/0145445520982562

Rof Carballo, J. (1952). Cerebro interno y mundo emocional. Portland: Northwest Labor Press.

Rof Carballo, J. (1961). Urdimbre afectiva y enfermedad. Introducción a la medicina dialógica. Portland: Northwest Labor Press.

Rojas, B., Catalan, E., Diez, G., and Roca, P. (2023). A compassion-based program to reduce psychological distress in medical students: a pilot randomized clinical trial. *PLoS One* 18:e0287388. doi: 10.1371/journal.pone.0287388

Ryan, R. M., and Deci, E. L. (2017). Self-determination theory: Basic psychological needs in motivation, development, and wellness. New York, NY: The Guilford Press, 756.

Ryff, C. D., and Singer, G. H. (2002). From social structure to biology: Integrative science in pursuit of human health and well-being. London: Oxford University Press, 541–554.

Scherer, K. R. (1982). Emotion as a process: function, origin and regulation. *Soc. Sci. Inf.* 21, 555–570. doi: 10.1177/053901882021004004

Sheppes, G., Suri, G., and Gross, J. J. (2015). Emotion regulation and psychopathology. *Annu. Rev. Clin. Psychol.* 11, 379–405. doi: 10.1146/annurev-clinpsy-032814-112739

Skinner, B. F. (1974). About behaviorism. New York, NY: Knopf.

Solomon, R. C. (1993). The passions: Emotions and the meaning of life. Indianapolis, IN: Hackett Publishing.

Sovacool, B. K., and Hess, D. J. (2017). Ordering theories: typologies and conceptual frameworks for sociotechnical change. *Soc. Stud. Sci.* 47, 703–750. doi: 10.1177/0306312717709363

Sutton, R. E. (2004). Emotional regulation goals and strategies of teachers. *Soc. Psychol. Educ.* 7, 379–398. doi: 10.1007/s11218-004-4229-y

Tamir, M. (2009). What do people want to feel and why? Pleasure and utility in emotion regulation. *Curr. Dir. Psychol. Sci.* 18, 101–105. doi: 10.1111/j.1467-8721.2009.01617.x

Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Pers. Soc. Psychol. Rev. Off. J. Soc. Pers.* 20, 199–222. doi: 10.1177/1088868315586325

Tamir, M., John, O. P., Srivastava, S., and Gross, J. J. (2007). Implicit theories of emotion: affective and social outcomes across a major life transition. *J. Pers. Soc. Psychol.* 92, 731–744. doi: 10.1037/0022-3514.92.4.731

Tamir, M., Vishkin, A., and Gutentag, T. (2020). Emotion regulation is motivated. *Emotion 20*, 115–119. doi: 10.1037/emo0000635

Thompson, R. A. (1994). Emotion regulation: a theme in search of definition. *Monogr. Soc. Res. Child Dev.* 59, 25–52. doi: 10.1111/j.1540-5834.1994.tb01276.x

Tull, M. T., and Aldao, A. (2015). Editorial overview: new directions in the science of emotion regulation. *Curr. Opin. Psychol.* 3, 4–10. doi: 10.1016/j.copsyc.2015.03.009

Vargas, A. I. (2019). El crecimiento del ser personal. *Studia Poliana* 13, 141–170. doi: 10.15581/013.21.141-170

Webb, T. L., Miles, E., and Sheeran, P. (2012). Dealing with feeling: a meta-analysis of the effectiveness of strategies derived from the process model of emotion regulation. *Psychol. Bull.* 138, 775–808. doi: 10.1037/a0027600

Wilms, R., Lanwehr, R., and Kastenmüller, A. (2020). Emotion regulation in everyday life: the role of goals and situational factors. *Front. Psychol.* 11:877. doi: 10.3389/fpsyg.2020.00877

frontiers | Frontiers in Psychology

TYPE Brief Research Report
PUBLISHED 04 October 2024
DOI 10.3389/fpsyg.2024.1467555

OPEN ACCESS

EDITED BY
Juan Andrés Mercado,
Pontifical University of the Holy Cross, Italy

REVIEWED BY
Ingrid Banovic,
EA7475 Centre de Recherches sur les Fonctionnements et Dysfonctionnements Psychologiques (CRFDP), France
Agata Benfante,
University of Turin, Italy

*CORRESPONDENCE
Francesco De Vincenzo
✉ francesco.devincenzo@unier.it

†Deceased

RECEIVED 20 July 2024
ACCEPTED 20 September 2024
PUBLISHED 04 October 2024

CITATION
De Vincenzo F, Iani L, Alessio C, Navarini L, Currado D, Marino A and Contardi A (2024) Euthymic despite pain: the role of cognitive reappraisal and experiential avoidance in autoimmune inflammatory rheumatic diseases—a cross-sectional study. *Front. Psychol.* 15:1467555. doi: 10.3389/fpsyg.2024.1467555

Euthymic despite pain: the role of cognitive reappraisal and experiential avoidance in autoimmune inflammatory rheumatic diseases—a cross-sectional study

Francesco De Vincenzo[1]*, Luca Iani[1†], Chiara Alessio[1], Luca Navarini[2,3], Damiano Currado[2,3], Annalisa Marino[3] and Anna Contardi[1]

[1]Department of Human Sciences, European University of Rome, Rome, Italy, [2]Rheumatology and Clinical Immunology, Department of Medicine, University of Rome "Campus Bio-Medico" School of Medicine, Rome, Italy, [3]Clinical and Research Section of Rheumatology and Clinical Immunology, Fondazione Policlinico Universitario Campus Bio-Medico, Rome, Italy

Pain is a central feature of inflammatory rheumatic diseases and is associated with psychological distress. Pain is widely recognized not as a mere physical sensation, but as a complex, multidimensional phenomenon with an affective component. A plethora of research has conceptualized adaptation to pain by focusing on minimizing the pain experience. However, pain in autoimmune inflammatory rheumatic diseases is often neither avoidable nor curable. This cross-sectional study aimed to investigate the processes explaining how pain intensity may be associated with low well-being and why some patients may live well despite pain. Drawing upon the psychological (in)flexibility model and the process model of emotion regulation, we propose that cognitive reappraisal moderates the association between pain and euthymia through experiential avoidance. Ninety-seven patients with rheumatoid arthritis, psoriatic arthritis, or axial spondyloarthritis were included for analyses (mean age = 53.4; mean time since diagnosis = 9.2 years). Most patients were women (75%), married/cohabitant (71%), and attended high school (47%). Results indicate that experiential avoidance may explain how severe pain is associated with lowered euthymia. This indirect negative effect of pain intensity on euthymia became non-significant at high levels of cognitive reappraisal, suggesting that cognitive reappraisal may serve as a protective factor for patients with autoimmune inflammatory rheumatic diseases. This study paves the way for future research in this promising context by providing an initial step towards integrating emotion regulation and psychological inflexibility in pain conditions.

KEYWORDS

euthymia, chronic pain, arthritis, psychological flexibility, experiential avoidance, cognitive reappraisal, emotion regulation, moderated mediation

1 Introduction

Research on chronic pain has mostly considered pain as a clinically relevant outcome (e.g., Martinez-Calderon et al., 2018a,b; Reiner et al., 2013). The identification of factors contributing to the experience of pain is crucial for developing targeted interventions and to identify vulnerable patients. However, research on characteristics that allow patients to live well despite pain is still limited (e.g., Flink et al., 2015; Peters et al., 2017). Studies addressing this issue are in line with the clinicians' goal to improve patients' quality of life, rather than merely striving to reduce chronic pain (Sullivan and Ballantyne, 2016). This is particularly relevant given that a significant number of patients suffering from autoimmune inflammatory rheumatic diseases—a family of autoimmune conditions primarily affecting the connective tissues and musculoskeletal organs—exhibit persistent residual pain despite the achievement of remission or low disease activity (Ishida et al., 2018; Liu et al., 2021). Some studies have demonstrated that advances in biological treatments for rheumatoid arthritis are still not enough to improve some relevant patient-reported outcomes. A recent meta-analysis investigated the temporal improvement of patient-reported outcomes over the last 30 years in light of new treatment strategies employed in early 2000s (Carpenter et al., 2020). It was found that adopting new therapy approaches [i.e., Treat-2-Target, and biologic Disease Modifying Anti-Rheumatic Drugs (DMARDs)] coincided with improvements in disease activity and physical function, but not in pain, functional disability, and mental well-being (Carpenter et al., 2020).

Pain is not merely a physical symptom (i.e., nociception); it also reflects unpleasant emotional states (i.e., affective-motivational dimension), and appraisals of meanings and consequences of pain (i.e., cognitive-evaluative dimension; Lumley et al., 2011; Melzack and Casey, 1968). The Dynamic Model of Effective Pain Adaptation emphasizes how persons adaptively respond to the pain experience, rather than focusing on pain itself (Sturgeon and Zautra, 2016). Dimensions of resilient pain adaptation include recovery, referring to the ways a person effectively returns to baseline levels of emotional and physical functioning (e.g., low pain intensity), and sustainability, reflecting the positive and meaningful engagement of a person despite the presence of pain (Sturgeon and Zautra, 2016). The latter may be operationalized as "the continuing experience of optimal emotional, psychological, and social well-being in the presence of pain" (Goubert and Trompetter, 2017, p. 3), that is flourishing (Keyes, 2002, 2005). In this context, the concept of euthymia might represent an important outcome for patients suffering from pain conditions. Euthymia includes affective and hedonic dimensions of subjective well-being (including restorative sleep), and psychological well-being, which entails an integration and balance of psychic forces (i.e., flexibility), a unifying outlook on life that guides behaviours and feelings to fashion the future consistently (i.e., consistency), resilience and tolerance to frustration and anxiety (i.e., resistance to stress; Carrozzino et al., 2021; Kusier and Folker, 2020; Fava and Bech, 2016; Fava and Guidi, 2020; Guidi and Fava, 2022).

A paucity of studies investigated well-being domains in patients with inflammatory rheumatic diseases, reflecting mainstream research focusing on negative functioning and likely glossing over the unique contributions of positive functioning (Wood and Tarrier, 2010). Nonetheless, there is evidence showing that over half of people with arthritis report high levels of emotional, psychological, and social well-being (Almweisheer et al., 2023) even those living with disabling chronic pain (Fuller-Thomson et al., 2023), and to a lesser extent (38%) in those with recurrent pain (Trompetter et al., 2019). To the best of our knowledge, euthymia has never been examined in people with inflammatory rheumatic disease, but research on other chronic health conditions suggests that lower levels of euthymia are associated with worse clinical conditions (Carrozzino et al., 2019; Cosci et al., 2021; Guidi et al., 2019; Zhang et al., 2022). Moreover, euthymia is positively associated with several dimensions of psychological well-being, suggesting only a partial overlap between the two constructs (Carrozzino et al., 2019).

A research tradition that emphasizes the processes by which people can live a fulfilling life despite pain is the one focusing on psychological flexibility (Goubert and Trompetter, 2017). Psychological flexibility allows individuals to accept inner experiences, including negative ones, while remaining sensitive to their direct experiences and engaging in values-based actions consistent with personal values (McCracken and Morley, 2014). Conversely, psychological inflexibility refers to a "rigid dominance of psychological reactions over chosen values and contingencies in guiding actions" (Bond et al., 2011, p. 678). Thus, it is strictly related to experiential avoidance, as individuals unwilling to stay in contact with unpleasant inner experiences are likely to take action to alter or avoid them (Bond et al., 2011; Hayes et al., 1996). The psychological (in)flexibility model posits that psychological inflexibility (e.g., experiential avoidance cognitive fusion, pain acceptance) is related to decreased engagement in values-based action, leading to reduced well-being (Hayes et al., 2012). In chronic pain patients, experiential avoidance predicted several outcomes, including depression and pain-related anxiety, over and beyond pain intensity, pain acceptance, and mindfulness (McCracken and Zhao-O'Brien, 2010). Although the psychological flexibility model has been successfully extended to chronic pain patients (McCracken and Vowles, 2014; Vowles et al., 2007, 2014), few studies investigated whether psychological (in)flexibility might explain associations between pain and psychological or physical outcomes. In chronic pain patients, the association between pain and psychological distress was mediated by cognitive fusion (Carvalho et al., 2019) and experiential avoidance (Goldbart et al., 2021). In patients with fibromyalgia and obesity, the pain severity-disability association was accounted for by pain acceptance (Varallo et al., 2022). The role of psychological inflexibility was also investigated in cancer patients, where cancer-related pain was positively related to psychological distress through cognitive fusion, experiential avoidance, and functional impairment (Brown et al., 2020). Overall, this initial evidence suggests that psychological flexibility model may successfully explain the relationship between pain and psychological distress.

Since pain is a complex phenomenon implying both physical and affective dimensions (Lumley et al., 2011), adaptive or dysfunctional responses to pain may rely on emotion regulation strategies used by people suffering from pain conditions. According to the process model, cognitive reappraisal and expressive suppression are the most used emotion regulation strategies (Gross, 2008, 2015). There is evidence showing that cognitive reappraisal and expressive suppression were not directly associated with pain, but expressive suppression was associated with higher anxiety and depression (Koechlin et al., 2018), and cognitive reappraisal predicted psychological distress (Karademas et al., 2020). Previous research suggested the importance of cognitive reappraisal in modulating the emotional component of episodic pain in rheumatoid

arthritis (Hamilton et al., 2005, 2007). Specifically, emotion regulation and affective intensity moderated the prospective associations between pain and both positive and negative affect, suggesting that patients could recover from arthritic pain, except for those with difficulties in regulating strong unpleasant emotions (Hamilton et al., 2005). Thus, intense unpleasant emotions may not necessarily lead to emotion dysregulation in patients with good emotion regulation abilities (Hamilton et al., 2007). A transdiagnostic perspective on psychological inflexibility and emotion regulation has been recently proposed (Faustino, 2021). Faustino (2021) found that cognitive fusion was negatively associated with cognitive reappraisal both in the clinical and non-clinical sample, whereas it was positively associated with emotion suppression only in the non-clinical sample. Moreover, cognitive reappraisal predicted cognitive fusion in both samples, suggesting that individuals who lack cognitive reappraisal abilities are more likely to be fused with their inner experience (Faustino, 2021). Indeed, cognitive reappraisal reflects a shift from an evaluation to another one (i.e., reappraisal); to do that, "individuals must have the ability to distance themselves from the first evaluation. It is the ability to shift internal dispositions accordingly with context-dependent demands that underlies psychological flexibility" (Faustino, 2021, p. 10).

The overall objective of the present study was to investigate how pain intensity may be associated with well-being and why some patients, but not others, may live well despite arthritis-related pain. Particularly, we focused on pain related to three autoimmune inflammatory rheumatic diseases, namely rheumatoid arthritis, psoriatic arthritis, and axial spondyloarthritis. These diseases share several characteristics, including pain, stiffness, fatigue, decreased physical function, and potential deformities and joint destruction (Mease et al., 2019). Previous research on the mediation role of psychological flexibility solely focused on outcomes related to negative functioning (Carvalho et al., 2019; Goldbart et al., 2021; Varallo et al., 2022). The current study sought to extend current knowledge by considering euthymia as a relevant outcome. Specifically, we hypothesized that the unwillingness to stay in contact with unpleasant inner experiences and the tendency to take action to alter or avoid them (i.e., experiential avoidance) may explain the association between pain intensity and euthymia. Drawing upon the transdiagnostic perspective of emotion regulation and previous research (Faustino, 2021; Hamilton et al., 2005, 2007), we further hypothesized that cognitive reappraisal might represent a protective factor by moderating the association between pain intensity and euthymia through experiential avoidance. Thus, the following statistical hypothesis was derived: pain intensity would be positively associated with experiential avoidance (path *a*), which in turn would be associated with lower levels of euthymia (path *b*). Cognitive reappraisal would moderate the indirect effect, such that at higher levels of cognitive reappraisal, the association between pain and experiential avoidance would be weaker, which in turn would be associated with higher euthymia.

2 Methods

2.1 Participants and procedure

This is a cross-sectional study with patients recruited consecutively at the Immuno-rheumatology Unit, Campus Bio-Medico University of Rome. Patients were asked to participate in the study if they met the following inclusion criteria: (a) diagnosis of either rheumatoid arthritis, psoriatic arthritis, or axial spondyloarthritis/ankylosing spondylitis confirmed through ACR-EULAR, CASPAR, and ASAS classification criteria, respectively; (b) ability to understand and speak Italian; (c) aged 18 or older; (d) reading and signing informed consent. Exclusion criteria included: (a) current or past diagnosis of psychiatric disorder; (b) current or recent (within 1 year) diagnosis of cancer; (c) current infective disease; (d) currently in psychotherapy; (e) past psychotherapy for at least 6 months within the last 6 years.

The participants were recruited during routine follow-up visits, which were conducted by rheumatologists twice a week, from May 2020 to November 2021. Before each follow-up visit, rheumatologists verified whether eligibility criteria were met by reviewing clinical records. For patients who met eligibility criteria, a research assistant presented the study and provided the informed consent after the follow-up visit. The points of the informed consent were verbally explained, including anonymity and the right to decline to participate or withdraw from the study. All invited patients agreed to participate. The study was approved by the ethics committee of Campus Bio-Medico University of Rome (n. 77/19 OSS), complied with the Declaration of Helsinki, and adhered to Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies (Supplementary Table S1) (Vandenbroucke et al., 2007).

2.2 Measures

Clinical data (i.e., time since diagnosis, type of disease, number of comorbidities, presence/absence of fibromyalgia) were extracted from patients' clinical records. Sociodemographic characteristics (i.e., age, gender, marital status, education level) and psychological measures were self-reported.

2.2.1 Euthymia

The Euthymia Scale (Carrozzino et al., 2019, 2021) is composed by 10 items, which are scored as a False/True response format. Sample items include "I am able to adjust to changing situations" and "I generally feel cheerful and in good spirits." Higher scores indicate higher levels of euthymia.

2.2.2 Experiential avoidance

The Acceptance and Action Questionnaire-II (AAQ-II) is a 7-item self-report questionnaire designed to measure experiential avoidance (Bond et al., 2011; Pennato et al., 2013). Each item is rated on 7-point Likert scale (1 = never true; 7 = always true). Sample items include "I worry about not being able to control my worries and feelings" and "My painful experiences and memories make it difficult for me to live a life that I would value." Higher scores indicate a greater level of experiential avoidance. Internal consistency in the original sample was good (Cronbach's alpha = 0.88; Bond et al., 2011), while it was excellent in the present sample (Cronbach's alpha = 0.93).

2.2.3 Cognitive reappraisal

The Emotion Regulation Questionnaire was designed to measure individual differences in the usual adoption of cognitive reappraisal and expressive suppression (Balzarotti et al., 2010;

Gross and John, 2003). For the purpose of this study, only the cognitive reappraisal subscale was used. It is composed of 6 items measured on a 7-point likert scale (1 = strongly disagree; 7 = strongly agree). Sample items include "When I want to feel less negative emotion, I change the way I'm thinking about the situation" and "When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm." In the original validation samples, Cronbach's alpha ranged from 0.75 to 0.82 (Gross and John, 2003). In the present study, Cronbach's alpha was 0.83.

2.2.4 Pain intensity

Intensity of arthritic pain was measured with a Numeric Rating Scale (NRS) ranging from 0 ("no pain") to 10 ("pain as bad as possible"). The patients were asked to rate their pain intensity in the last week. This instrument is commonly used to assess pain in arthritis (Hawker et al., 2011).

2.3 Data analysis

All statistical analyses were performed using IBM SPSS for Windows (version 22). Occasional missing values were imputed by computing the mean score of the respective sub-scale for each participant. Significant missing values were treated with listwise deletion ($N = 26$). Thus, analyses were conducted on 97 participants. A post-hoc power analysis (Cohen, 1988) with GPower 3.1.9.7 (Faul and Erdfelder, 1992) was conducted to check for adequacy of achieved power after excluding participants with significant missing values. Power was calculated as a function of population effect size (medium: $f^2 = 0.15$), significance level ($\alpha = 0.05$), sample size ($N = 97$), and number of tested predictors (i.e., experiential avoidance, cognitive reappraisal, pain intensity, type of disease) resulting in a statistical power of 0.83.

Univariate outliers were identified through z scores greater than 3.29 ($p < 0.001$; Tabachnick et al., 2007), whereas multivariate outliers through Mahalanobis distance (D^2), Cook's distance, and leverage values. Criteria for multivariate outliers were: (a) cases with a D^2 value greater than 20.515 (i.e., D^2 value at $p < 0.001$, 5 degrees of freedom; Tabachnick et al., 2007); (b) Cook's distance larger than 1.00 (Tabachnick et al., 2007); (c) leverage values greater than $3(p + 1)/N = 0.1856$ (p = number of predictors; N = sample size; Howell, 2012).

Independence of observations was checked through Durbin-Watson statistic. Linearity was verified through a scatterplot of studentized residuals and unstandardized predicted value for independent and dependent variables collectively. Homoscedasticity was checked through inspection of the latter scatterplot and through Breusch-Pagan test. Normality of residuals was assessed by inspecting histogram and P–P plot (Clement and Bradley-Garcia, 2022), and by following recommendations of Kim (2013) for medium-sized samples (i.e., $50 < n < 300$); specifically, normality assumption was met if the absolute z-values of skewness and kurtosis were smaller than 3.29. No outliers were identified and all assumptions were met.

Descriptive statistics were performed for all variables (i.e., sociodemographic, clinical, and psychological) by calculating means and percentages for continuous and categorical variables, respectively. Pearson correlations were computed.

Moderated mediation analysis was carried out by means of PROCESS macro (Model 7; Hayes, 2013). According to the study hypothesis, pain intensity was regarded as the independent variable, euthymia as the dependent variable, experiential avoidance as the mediator, and cognitive reappraisal as the moderator. Type of disease was dummy coded (0 = rheumatoid arthritis; 1 = psoriatic arthritis; 2 = axial spondyloarthritis) and was included as a covariate to control for differences among participants, with rheumatoid arthritis serving as the reference group. Interaction variables were mean centered (Aiken and West, 1991) and simple slope analysis was used to estimate the conditional indirect effect of pain intensity on euthymia through experiential avoidance at low (−1 SD), moderate (mean), and high (+1 SD) values of the moderator. The index of moderated mediation was used to test the moderation of the indirect effect (Hayes, 2015). All models were performed with a 5,000 bootstrap sample as recommended by Hayes (2013).

3 Results

3.1 Participants characteristics

A total of 123 patients agreed to participate and completed the questionnaires. Since 26 participants were excluded due to significant missing values (listwise deletion), the final sample comprised 97 participants. Demographic and clinical characteristics of the sample are shown in Table 1. Patients had an average age of 53. The majority were women, married or cohabitant, and completed high school. With regards to clinical characteristics, patients were diagnosed since 9.19 years and most of them did not have secondary fibromyalgia, although 61.9% had at least one comorbid medical condition.

3.2 Correlation analyses

The correlation analyses showed that pain intensity was positively correlated with experiential avoidance ($r = 0.39$, $p < 0.001$) and negatively with euthymia ($r = -0.35$, $p < 0.001$). Experiential avoidance was negatively correlated with euthymia ($r = -0.48$, $p < 0.001$), whereas higher levels of cognitive reappraisal were significantly associated with higher levels of euthymia ($r = 0.21$, $p < 0.05$). The association of cognitive reappraisal with experiential avoidance was not significant. All correlations are detailed in Supplementary Table S2.

3.2.1 Moderated mediation analysis

The moderated mediation analysis is shown in Table 2. The explained variance of the overall model was 35%, $R^2 = 0.35$, $F(4,92) = 13.98$, $p < 0.001$. Specifically, the direct effect of pain intensity on euthymia (path c') was not significant after controlling for experiential avoidance, cognitive reappraisal, its interaction with pain intensity, and type of disease ($p = -0.09$). The conditional indirect effect of pain intensity on euthymia by way of experiential

10.3389/fpsyg.2024.1467555

TABLE 1 Demographic and clinical characteristics.

Age (years), *M* (*SD*)	53.37 (13.21)
Time since diagnosis (months), *M* (*SD*)	110.32 (79.55)
Gender, *N* (%)	
Women	73 (75.26)
Men	24 (24.74)
Marital status, *N* (%)	
Married/cohabitant	69 (71.13)
Unmarried	17 (17.53)
Separated/divorced	5 (5.15)
Widowed	5 (5.15)
Missing	1 (1.03)
Education level, *N* (%)	
Elementary school	7 (7.22)
Middle school	18 (18.56)
High school	46 (47.42)
Bachelor	19 (19.59)
Post-graduate education	7 (7.22)
Type of disease, *N* (%)	
Rheumatoid arthritis	38 (39.18)
Psoriatic arthritis	38 (39.18)
Spondyloarthritis	21 (21.65)
Fibromyalgia, *N* (%)	
Yes	24 (24.74)
No	71 (73.20)
Comorbidity (number of diseases), *N* (%)	
0	35 (36.08)
1	21 (21.65)
2	20 (20.62)
3	10 (10.31)
4	6 (6.19)
5	3 (3.09)
Missing	2 (2.06)

avoidance was significant in patients with low (i.e., one *SD* below the mean = −7.10) and medium (i.e., mean = 0) levels of cognitive reappraisal. This effect was not significant in those with high levels (i.e., above the mean = 7.10) of cognitive reappraisal. The index of moderated mediation was significant (Table 2). Overall, the higher the cognitive reappraisal, the lower the effect of pain on euthymia through experiential avoidance. A graphical representation of the association between pain and experiential avoidance (path *a*) at different levels of cognitive reappraisal is provided in Figure 1. The coefficients of bootstrap results for regression model parameters are shown in Figure 2. We further explored whether the moderated mediation model was affected by covariates such as age and time since diagnosis. This analysis showed that the model did not substantially change after controlling for these covariates, $R^2 = 0.39$, $F(6,87) = 9.98$, $p < 0.001$; index of moderated mediation = 0.01, $CI_{95\%} = [0.001, 0.024]$.

4 Discussion

The main objective of this study was to investigate the link of pain intensity with well-being (i.e., euthymia) and to identify factors that contribute to better adaptation despite pain in patients with autoimmune inflammatory rheumatic diseases. Specifically, this study focused on the extent to which cognitive reappraisal, as an individual response of emotion regulation, moderates the association between pain and euthymia through experiential avoidance.

Previous research has identified psychological (in)flexibility-related constructs, such as cognitive fusion, experiential avoidance or pain acceptance, as mediators of the association between pain and disability in individuals with fibromyalgia (Varallo et al., 2022), as well as between pain and psychological distress in chronic pain (Carvalho et al., 2019; Goldbart et al., 2021) and cancer patients (Brown et al., 2020). The present study extends this knowledge beyond negative functioning by exploring how pain, cognitive reappraisal, and experiential avoidance contribute to positive outcomes, specifically euthymia, in patients with autoimmune inflammatory rheumatic diseases. Our findings indicate that patients with higher pain intensity reported increased experiential avoidance, which was associated with lower levels of euthymia. This suggests that an unwillingness to stay in contact with unpleasant inner experiences and taking action to alter or avoid them (Bond et al., 2011; Hayes et al., 1996) may explain the association between pain intensity and reduced euthymia. These results align with the psychological flexibility model (Hayes et al., 2012), which posits that psychological inflexibility is related to a lowered engagement in values-based action, thereby decreasing well-being (Hayes et al., 2012). Furthermore, the pain experience within this framework underscores how distressing cognitive content can dominate behaviour: "compelling cognitive content, such as this pain is terrible, my life is hopeless, or I am a complete failure, can have an overwhelming effect in experience where only behavior that follows or obeys what this content says can occur" (McCracken and Morley, 2014, p. 225).

Significantly, the negative effect of pain intensity on euthymia via experiential avoidance diminished as cognitive reappraisal increased. Thus, patients who effectively used cognitive reappraisal to regulate their emotions experienced improved well-being and a reduced negative impact of pain through decreased experiential avoidance. Notably, the indirect effect of pain intensity on euthymia became non-significant at high levels of cognitive reappraisal, suggesting that cognitive reappraisal may serve as a protective factor for patients with autoimmune inflammatory rheumatic diseases.

Cognitive reappraisal refers to a shift from an evaluation of an emotion-eliciting situation to another one, with a subsequent alteration of the emotional response (Faustino, 2021; Gross and John, 2003). Thus, it inherently reflects the ability of individuals in distancing from the first evaluation (Faustino, 2021). This process of distancing from initial evaluations and reappraising it in new ways

TABLE 2 Moderated mediation model.

	B	SE	*t*	95% Boot*CI*
Path *a*: Pain → Experiential avoidance	1.37***	0.35	3.90	[0.675, 2.074]
Interaction: Pain×Reappraisal → Experiential avoidance	−0.11*	0.05	−2.08	[−0.196, −0.016]
Path *b*: Experiential avoidance → Euthymia	−0.12***	0.02	−5.12	[−0.165, −0.073]
Path *c'* (direct effect): Pain → Euthymia	−0.09	0.08	−1.14	[−0.249, 0.068]
Conditional indirect effect: Pain → Experiential Avoidance → Euthymia Cognitive reappraisal:				
Low (−1 SD)	−0.25	0.07		[−0.399, −0.121]
Mean	−0.16	0.05		[−0.275, −0.074]
High (+1 SD)	−0.07	0.06		[−0.195, 0.033]
Index of moderated mediation	−0.01	0.01		[0.002, 0.024]

Covariates: Type of disease (rheumatoid arthritis = 0; psoriatic arthritis = 1; spondyloarthritis = 2).
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

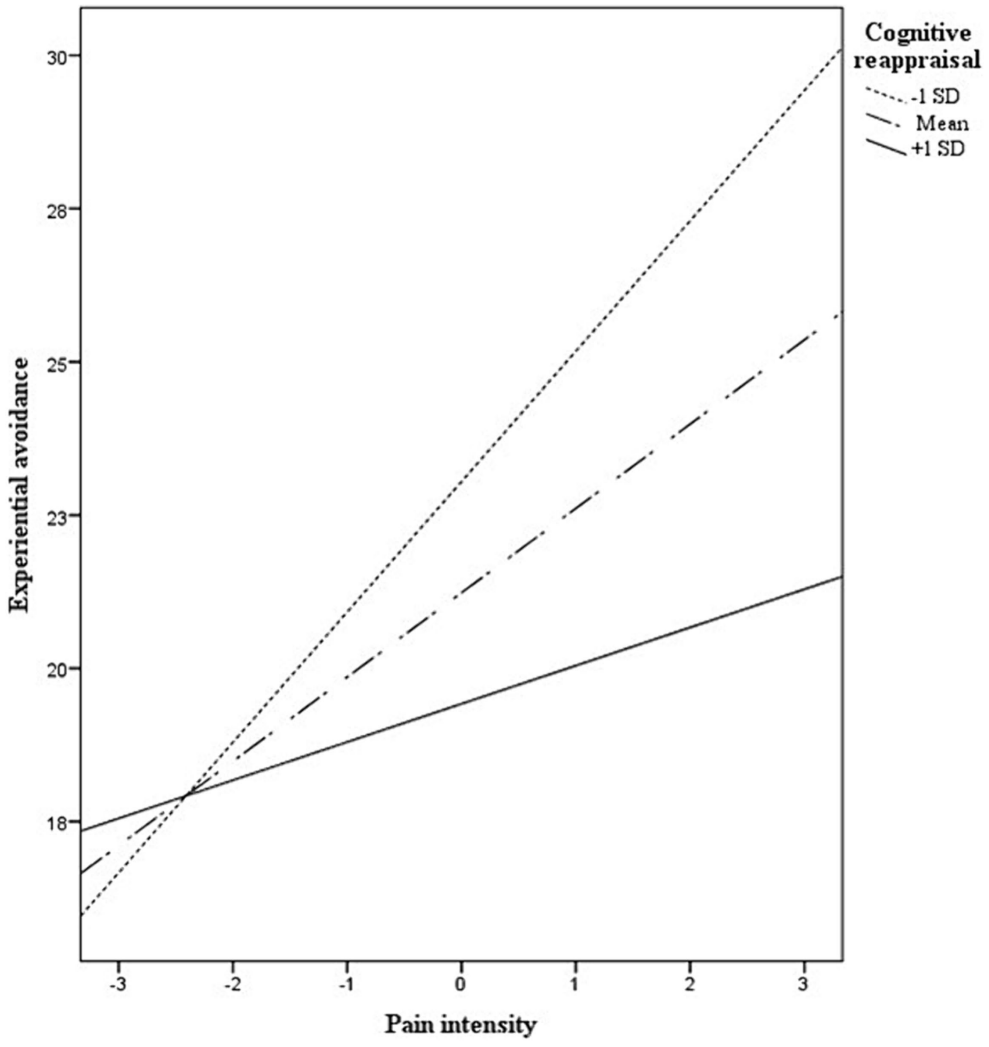


FIGURE 1
Moderation of cognitive reappraisal on the pain-experiential avoidance association.

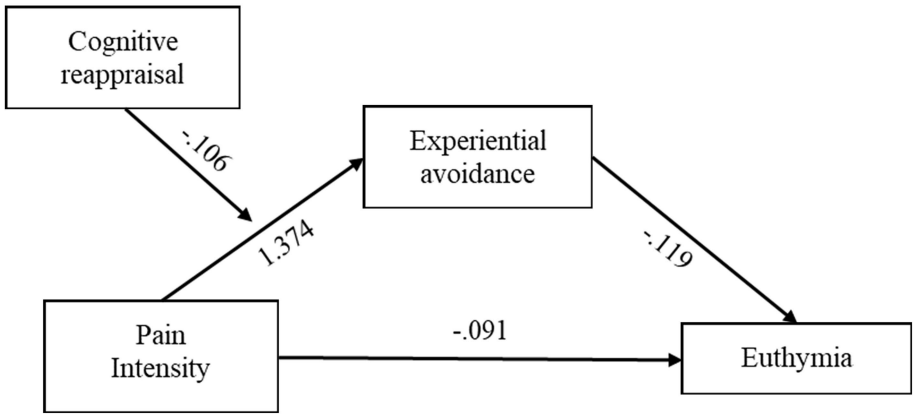


FIGURE 2
Conceptual moderated mediation model with coefficients of bootstrap results for regression model parameters.

may help patients manage painful stimuli and maintain higher levels of euthymia. Conversely, patients who do not engage in cognitive reappraisal may react to pain by avoiding unpleasant experiences, resulting in lower euthymia.

These findings have several clinical implications. Rather than solely targeting pain intensity, which often persists despite treatments (Carpenter et al., 2020; Sturgeon and Zautra, 2016; Sullivan and Ballantyne, 2016), improving euthymia may be achieved by addressing experiential avoidance and enhancing cognitive reappraisal. Acceptance and commitment therapy (ACT), which focuses on promoting behaviours congruent with one's values despite internal unpleasant experiences (McCracken and Vowles, 2014), may be particularly effective. A recent systematic review showed that ACT was effective in improving emotional distress and physical functioning in patients with rheumatic diseases (Hegarty et al., 2020). However, the review included only patients with fibromyalgia and/or osteoarthritis, suggesting a lack of evidence for other rheumatic diseases. Future studies should consider extending these results in patients with rheumatoid arthritis, psoriatic arthritis, and axial spondylarthritis.

Cognitive reappraisal may be a valuable protective factor that may prevent an escalation from pain intensity to experiential avoidance, thus supporting higher euthymia. This is particularly significant considering that emotional dysregulation and past traumatic experiences typically co-occur in patients with chronic pain conditions (e.g., Nishimi et al., 2024), and are associated with increased somatic complaints (e.g., pain; Garnefski et al., 2017). Specific training fostering cognitive reappraisal may be helpful for patients with autoimmune inflammatory rheumatic diseases. Two tactics of reappraisal are distancing, involving a psychological distance from one's construal of an emotional event, and reinterpretation, referring to the change of the meaning depicted in a stimulus (McRae et al., 2012). A longitudinal study found that both techniques reduced negative affect in healthy individuals, but only distancing showed a longitudinal reduction in perceived stress (Denny and Ochsner, 2014). Future studies may explore which cognitive reappraisal tactics may be most beneficial for patients with inflammatory rheumatic diseases to develop targeted interventions.

The results of this study should be interpreted in light of several limitations. First, the cross-sectional design of this study does not allow causal inferences. Future studies with a longitudinal design should investigate the directionality of associations between variables. Nonetheless, it is worth noting that proposed models are theoretically grounded. Second, this study relied solely on self-report measures and did not include other psychological or pain-related variables (e.g., nociceptive, neuropathic, nociplastic) that might be associated with euthymia. Third, the proposed models included only the type of autoimmune inflammatory rheumatic disease as a covariate; however, we also explored age and time since diagnosis as additional covariates. The analysis involving these additional covariates should be interpreted with caution due to limited statistical power. Future studies with a larger sample size should consider additional potential covariates to determine whether the proposed model remain significant. Fourth, a limitation is the reliance on a single measure of psychological inflexibility-related constructs. Future research could provide more comprehensive insights into the proposed associations by investigating multiple dimensions of psychological (in)flexibility (Landi et al., 2021). Furthermore, the study sample was consecutively recruited from a single clinical center, which may limit the generalizability of the findings. Finally, it should be emphasized that the study's sample comprised patients with a variety of autoimmune inflammatory rheumatic diseases. Although the type of disease was included as a covariate in the statistical models, the associations between variables may still differ across specific diagnoses (i.e., rheumatoid arthritis, psoriatic arthritis, axial spondyloarthritis). Future research should further investigate these associations within more homogeneous subgroups to better understand how different inflammatory rheumatic disease might influence the associations among study variables. Despite these limitations, the study provides valuable and theoretically grounded insights into the role of cognitive reappraisal and experiential avoidance in managing pain in patients with autoimmune inflammatory rheumatic diseases. We found that higher pain intensity was associated with lower well-being (i.e., euthymia) through increased experiential avoidance. However, cognitive reappraisal moderated this effect, reducing the negative impact of pain. These findings highlight the potential of interventions that target experiential avoidance and enhance cognitive reappraisal

to improve well-being. Future research should refine these approaches and examine their effectiveness across different rheumatic conditions.

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 humans were approved by ethics committee of Campus Bio-Medico University of Rome (n. 77/19 OSS). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

FDV: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Validation, Visualization, Writing – original draft, Writing – review & editing. LI: Conceptualization, Supervision, Writing – original draft. CA: Writing – original draft, Writing – review & editing. LN: Investigation, Resources, Writing – review & editing. DC: Conceptualization, Writing – review & editing. AM: Investigation, Writing – review & editing. AC: Conceptualization, Funding acquisition, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

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.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2024.1467555/full#supplementary-material

References

Aiken, L. S., and West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Thousand Oaks, CA: SAGE Publications, Inc.

Almweisheer, S., Bernstein, C. N., Graff, L. A., Patten, S. B., Bolton, J., Fisk, J. D., et al. (2023). Well-being and flourishing mental health in adults with inflammatory bowel disease, multiple sclerosis and rheumatoid arthritis in Manitoba, Canada: a cross-sectional study. *BMJ Open* 13:e073782. doi: 10.1136/bmjopen-2023-073782

Balzarotti, S., John, O. P., and Gross, J. J. (2010). An Italian adaptation of the emotion regulation questionnaire. *Eur. J. Psychol. Assess.* 26, 61–67. doi: 10.1027/1015-5759/a000009

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., et al. (2011). Preliminary psychometric properties of the acceptance and action questionnaire-II: a revised measure of psychological inflexibility and experiential avoidance. *Behav. Ther.* 42, 676–688. doi: 10.1016/j.beth.2011.03.007

Brown, S. L., Roush, J. F., Marshall, A. J., Jones, C., and Key, C. (2020). The intervening roles of psychological inflexibility and functional impairment in the relation between cancer-related pain and psychological distress. *Int. J. Behav. Med.* 27, 100–107. doi: 10.1007/s12529-019-09838-8

Carpenter, L., Barnett, R., Mahendran, P., Nikiphorou, E., Gwinnutt, J., Verstappen, S., et al. (2020). Secular changes in functional disability, pain, fatigue and mental well-being in early rheumatoid arthritis. A longitudinal meta-analysis. *Semin. Arthritis Rheum.* 50, 209–219. doi: 10.1016/j.semarthrit.2019.08.006

Carrozzino, D., Christensen, K. S., Mansueto, G., Brailovskaia, J., Margraf, J., and Cosci, F. (2021). A clinimetric analysis of the euthymia, resilience, and positive mental health scales. *J. Affect. Disord.* 294, 71–76. doi: 10.1016/j.jad.2021.07.001

Carrozzino, D., Svicher, A., Patierno, C., Berrocal, C., and Cosci, F. (2019). The euthymia scale: a clinimetric analysis. *Psychother. Psychosom.* 88, 119–121. doi: 10.1159/000496230

Carvalho, S. A., Pinto-Gouveia, J., Gillanders, D., and Castilho, P. (2019). Pain and depressive symptoms: exploring cognitive fusion and self-compassion in a moderated mediation model. *J. Psychol.* 153, 173–186. doi: 10.1080/00223980.2018.1507990

Clement, L. M., and Bradley-Garcia, M. (2022). A step-by-step tutorial for performing a moderated mediation analysis using PROCESS. *Quant. Methods Psychol.* 18, 258–271. doi: 10.20982/tqmp.18.3.p258

Cohen, J. (1988). Statistical power analysis for the behavioural sciences. *2nd* Edn. New York, NY: Lawrence Erlbaum Associates.

Cosci, F., Svicher, A., Mansueto, G., Benemei, S., Chiarugi, A., De Cesaris, F., et al. (2021). Mental pain and pain-proneness in patients with migraine: results from the PAINMIG cohort-study. *CNS Spectr.* 26, 491–500. doi: 10.1017/S1092852920001480

Denny, B. T., and Ochsner, K. N. (2014). Behavioral effects of longitudinal training in cognitive reappraisal. *Emotion (Washington, D.C.)* 14, 425–433. doi: 10.1037/a0035276

Faul, F., and Erdfelder, E. (1992). GPOWER: A priori, post-hoc, and compromise power analyses for MS-DOS. Bonn, FRG: Bonn University.

Faustino, B. (2021). Transdiagnostic perspective on psychological inflexibility and emotional dysregulation. *Behav. Cogn. Psychother.* 49, 233–246. doi: 10.1017/S1352465820000600

Fava, G. A., and Bech, P. (2016). The concept of Euthymia. *Psychother. Psychosom.* 85, 1–5. doi: 10.1159/000441244

Fava, G. A., and Guidi, J. (2020). The pursuit of euthymia. *World Psychiatry* 19, 40–50. doi: 10.1002/wps.20698

Flink, I. K., Smeets, E., Bergboma, S., and Peters, M. L. (2015). Happy despite pain: pilot study of a positive psychology intervention for patients with chronic pain. *Scand. J. Pain* 7, 71–79. doi: 10.1016/j.sjpain.2015.01.005

Fuller-Thomson, E., Marshall, D. J., Moses, M., and Abudiab, S. (2023). Flourishing mental health despite disabling chronic pain: findings from a nationally representative sample of Canadians with arthritis. *PLoS One* 18:e0291722. doi: 10.1371/journal.pone.0291722

Garnefski, N., van Rood, Y., De Roos, C., and Kraaij, V. (2017). Relationships between traumatic life events, cognitive emotion regulation strategies, and somatic complaints. *J. Clin. Psychol. Med. Settings* 24, 144–151. doi: 10.1007/s10880-017-9494-y

Goldbart, A., Bodner, E., and Shrira, A. (2021). The role of emotion covariation and psychological flexibility in coping with chronic physical pain: an integrative model. *Psychol. Health* 36, 1299–1313. doi: 10.1080/08870446.2020.1841766

Goubert, L., and Trompetter, H. (2017). Towards a science and practice of resilience in the face of pain. *Eur. J. Pain* 21, 1301–1315. doi: 10.1002/ejp.1062

Gross, J. J. (2008). "Emotion regulation" in Handbook of emotions. *3rd* ed. Eds. M. Lewis, J. M. Haviland-Jones, and L. F. Barrett (New York, NY: The Guilford Press).

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J., and John, O. P. (2003). Individual differences in two emotion regulation processes: implications for affect, relationships, and well-being. *J. Pers. Soc. Psychol.* 85, 348–362. doi: 10.1037/0022-3514.85.2.348

Guidi, J., and Fava, G. A. (2022). The clinical science of euthymia: a conceptual map. *Psychother. Psychosom.* 91, 156–167. doi: 10.1159/000524279

Guidi, J., Piolanti, A., Gostoli, S., Schamong, I., and Brakemeier, E. L. (2019). Mental pain and Euthymia as transdiagnostic Clinimetric indices in primary care. *Psychother. Psychosom.* 88, 252–253. doi: 10.1159/000501622

Hamilton, N. A., Zautra, A. J., and Reich, J. W. (2005). Affect and pain in rheumatoid arthritis: do individual differences in affective regulation and affective intensity predict emotional recovery from pain? *Ann. Behav. Med.* 29, 216–224. doi: 10.1207/s15324796abm2903_8

Hamilton, N. A., Zautra, A. J., and Reich, J. (2007). Individual differences in emotional processing and reactivity to pain among older women with rheumatoid arthritis. *Clin. J. Pain* 23, 165–172. doi: 10.1097/ajp.0b013e31802b4f58

Hawker, G. A., Mian, S., Kendzerska, T., and French, M. (2011). Measures of adult pain: visual analog scale for pain (vas pain), numeric rating scale for pain (nrs pain), mcgill pain questionnaire (mpq), short-form mcgill pain questionnaire (sf-mpq), chronic pain grade scale (cpgs), short form-36 bodily pain scale (sf-36 bps), and measure of intermittent and constant osteoarthritis pain (icoap). *Arthritis Care Res.* 63, S240–S252. doi: 10.1002/acr.20543

Hayes, A. F. (2013). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. New York, NY: The Guilford Press.

Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivar. Behav. Res.* 50, 1–22. doi: 10.1080/00273171.2014.962683

Hayes, S. C., Strosahl, K. D., and Wilson, K. G. (2012). Acceptance and commitment therapy. An experiential approach to behavior change. *2nd* Edn. New York, NY: The Guildford Press.

Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., and Strosahl, K. (1996). Experimental avoidance and behavioral disorders: a functional dimensional approach to diagnosis and treatment. *J. Consult. Clin. Psychol.* 64, 1152–1168. doi: 10.1037//0022-006x.64.6.1152

Hegarty, R. S. M., Fletcher, B. D., Conner, T. S., Stebbings, S., and Treharne, G. J. (2020). Acceptance and commitment therapy for people with rheumatic disease: existing evidence and future directions. *Musculoskeletal Care* 18, 330–341. doi: 10.1002/msc.1464

Howell, D. C. (2012). Statistical methods for psychology. *8th* Edn. Boston, MA: Cengage Learning.

Ishida, M., Kuroiwa, Y., Yoshida, E., Sato, M., Krupa, D., Henry, N., et al. (2018). Residual symptoms and disease burden among patients with rheumatoid arthritis in remission or low disease activity: a systematic literature review. *Mod. Rheumatol.* 28, 789–799. doi: 10.1080/14397595.2017.1416940

Karademas, E. C., Dimitraki, G., Papastefanakis, E., Ktistaki, G., Repa, A., Gergianaki, I., et al. (2020). Emotion regulation contributes to the well-being of patients with autoimmune diseases through illness-related emotions: a prospective study. *J. Health Psychol.* 25, 2096–2105. doi: 10.1177/135910531878

Keyes, C. L. M. (2002). The mental health continuum: from languishing to flourishing in life. *J. Health Soc. Behav.* 43, 207–222. doi: 10.2307/3090197

Keyes, C. L. M. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *J. Consult. Clin. Psychol.* 73, 539–548. doi: 10.1037/0022-006x.73.3.539

Kim, H. Y. (2013). Statistical notes for clinical researchers: assessing normal distribution (2) using skewness and kurtosis. *Restor. Dent. Endod* 38, 52–54. doi: 10.5395/rde.2013.38.1.52

Koechlin, H., Coakley, R., Schechter, N., Werner, C., and Kossowsky, J. (2018). The role of emotion regulation in chronic pain: a systematic literature review. *J. Psychosom. Res.* 107, 38–45. doi: 10.1016/j.jpsychores.2018.02.002

Kusier, A. O., and Folker, A. P. (2020). The well-being index WHO-5: hedonistic foundation and practical limitations. *Med. Humanit.* 46, 333–339. doi: 10.1136/medhum-2018-011636

Landi, G., Pakenham, K. I., Crocetti, E., Grandi, S., and Tossani, E. (2021). The multidimensional psychological flexibility inventory (MPFI): discriminant validity of psychological flexibility with distress. *J. Contextual Behav. Sci.* 21, 22–29. doi: 10.1016/j.jcbs.2021.05.004

Liu, V., Fong, W., Kwan, Y. H., and Leung, Y. Y. (2021). Residual disease burden in patients with axial spondyloarthritis and psoriatic arthritis despite low disease activity states in a multiethnic Asian population. *J. Rheumatol.* 48, 677–684. doi: 10.3899/jrheum.200934

Lumley, M. A., Cohen, J. L., Borszcz, G. S., Cano, A., Radcliffe, A. M., Porter, L. S., et al. (2011). Pain and emotion: a biopsychosocial review of recent research. *J. Clin. Psychol.* 67, 942–968. doi: 10.1002/jclp.20816

Martinez-Calderon, J., Meeus, M., Struyf, F., Miguel Morales-Asencio, J., Gijon-Nogueron, G., and Luque-Suarez, A. (2018a). The role of psychological factors in the perpetuation of pain intensity and disability in people with chronic shoulder pain: a systematic review. *BMJ Open* 8:e020703. doi: 10.1136/BMJOPEN-2017-020703

Martinez-Calderon, J., Struyf, F., Meeus, M., and Luque-Suarez, A. (2018b). The association between pain beliefs and pain intensity and/or disability in people with shoulder pain: a systematic review. *Musculoskelet. Sci. Pract.* 37, 29–57. doi: 10.1016/j.msksp.2018.06.010

McCracken, L. M., and Morley, S. (2014). The psychological flexibility model: a basis for integration and progress in psychological approaches to chronic pain management. *J. Pain* 15, 221–234. doi: 10.1016/j.jpain.2013.10.014

McCracken, L. M., and Vowles, K. E. (2014). Acceptance and commitment therapy and mindfulness for chronic pain: model, process, and progress. *Am. Psychol.* 69, 178–187. doi: 10.1037/a0035623

McCracken, L. M., and Zhao-O'Brien, J. (2010). General psychological acceptance and chronic pain: there is more to accept than the pain itself. *Eur. J. Pain* 14, 170–175. doi: 10.1016/j.ejpain.2009.03.004

McRae, K., Ciesielski, B., and Gross, J. J. (2012). Unpacking cognitive reappraisal: goals, tactics, and outcomes. *Emotion (Washington, D.C.)* 12, 250–255. doi: 10.1037/a0026351

Mease, P. J., Liu, M., Rebello, S., Kang, H., Yi, E., Park, Y., et al. (2019). Comparative disease burden in patients with rheumatoid arthritis, psoriatic arthritis, or axial Spondyloarthritis: data from two Corrona registries. *Rheumatol. Ther.* 6, 529–542. doi: 10.6084/m9.figshare.9725150

Melzack, R., and Casey, K. L. (1968). "Sensory, motivational and central control determinants of pain" in The skin senses. ed. D. R. Kenshalo (Springfield, IL: Thomas), 423–443.

Nishimi, K., Chen, R., Schmajuk, G., Neylan, T. C., and O'Donovan, A. (2024). Lifetime trauma exposure and arthritis in older adults. *Psychosom. Med.* doi: 10.1097/PSY.0000000000001331 [E-pub ahead of print].

Pennato, T., Berrocal, C., Bernini, O., and Rivas, T. (2013). Italian version of the acceptance and action questionnaire-II (AAQ-II): dimensionality, reliability, convergent and criterion validity. *J. Psychopathol. Behav. Assess.* 35, 552–563. doi: 10.1007/s10862-013-9355-4

Peters, M. L., Smeets, E., Feijge, M., van Breukelen, G., Andersson, G., Buhrman, M., et al. (2017). Happy despite pain. *Clin. J. Pain* 33, 962–975. doi: 10.1097/ajp.0000000000000494

Reiner, K., Tibi, L., and Lipsitz, J. D. (2013). Do mindfulness-based interventions reduce pain intensity? A critical review of the literature. *Pain Med.* 14, 230–242. doi: 10.1111/pme.12006

Sturgeon, J. A., and Zautra, A. J. (2016). "Resilience to chronic arthritis pain is not about stopping pain that will not stop: development of a dynamic model of effective pain adaptation" in Psychosocial factors in arthritis. ed. P. Nicassio (Cham: Springer International Publishing), 133–149.

Sullivan, M. D., and Ballantyne, J. C. (2016). Must we reduce pain intensity to treat chronic pain? *Pain* 157, 65–69. doi: 10.1097/j.pain.0000000000000336

Tabachnick, B. G., Fidell, L. S., and Ullman, J. B. (2007). Using multivariate statistics. New York, NY: Pearson Education, Inc.

Trompetter, H. R., Mols, F., and Westerhof, G. J. (2019). Beyond adaptive mental functioning with pain as the absence of psychopathology: prevalence and correlates of flourishing in two chronic pain samples. *Front. Psychol.* 10:2443. doi: 10.3389/fpsyg.2019.02443

Vandenbroucke, J. P., von Elm, E., Altman, D. G., Gøtzsche, P. C., Mulrow, C. D., Pocock, S. J., et al. (2007). Strengthening the reporting of observational studies in epidemiology (STROBE): explanation and elaboration. *PLoS Med.* 4:e297. doi: 10.1371/journal.pmed.0040297

Varallo, G., Suso-Ribera, C., Ghiggia, A., Veneruso, M., Cattivelli, R., Guerrini Usubini, A., et al. (2022). Catastrophizing, kinesiophobia, and acceptance as mediators of the relationship between perceived pain severity, self-reported and performance-based physical function in women with fibromyalgia and obesity. *J. Pain Res.* 15, 3017–3029. doi: 10.2147/JPR.S370718

Vowles, K. E., McCracken, L. M., and Eccleston, C. (2007). Processes of behavior change in interdisciplinary treatment of chronic pain: contributions of pain intensity, catastrophizing, and acceptance. *Eur. J. Pain* 11, 779–787. doi: 10.1016/j.ejpain.2006.12.007

Vowles, K. E., McCracken, L. M., Sowden, G., and Ashworth, J. (2014). Psychological flexibility in coping with chronic pain: further examination of the brief pain coping inventory-2. *Clin. J. Pain* 30, 324–330. doi: 10.1097/ajp.0b013e31829ea187

Wood, A. M., and Tarrier, N. (2010). Positive clinical psychology: a new vision and strategy for integrated research and practice. *Clin. Psychol. Rev.* 30, 819–829. doi: 10.1016/j.cpr.2010.06.003

Zhang, Y., Wang, X., Carrozzino, D., and Yuan, Y. (2022). Clinimetric properties of the Chinese version of the Euthymia scale. *Clin. Psychol. Psychother.* 29, 360–366. doi: 10.1002/cpp.2592

frontiers | Frontiers in Psychology

TYPE Conceptual Analysis
PUBLISHED 07 November 2024
DOI 10.3389/fpsyg.2024.1429361

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Allegra Indraccolo,
Università Europea di Roma, Italy
Evgenia Gkintoni,
General University Hospital of Patras, Greece

*CORRESPONDENCE
Ruth Mª de Jesús Gómez
✉ r.dejesus@ufv.es

RECEIVED 08 May 2024
ACCEPTED 14 October 2024
PUBLISHED 07 November 2024

CITATION
de Jesús Gómez RM and Cornu-Labat MA (2024) "Emotional regulation" or "affective regulation"? *Front. Psychol.* 15:1429361. doi: 10.3389/fpsyg.2024.1429361

"Emotional regulation" or "affective regulation"?

Ruth Mª de Jesús Gómez[1]* and María A. Cornu-Labat[2]

[1]Faculty of Education and Psychology, Universidad Francisco de Vitoria, Madrid, Spain, [2]Psychology Department, Universidad de Navarra, Pamplona, Spain

In recent decades, there has been an increased interest in psychology to understand the emotional experience. This growing interest has led to a proliferation of terms, among which regulation, intelligence, and emotional competence stand out. Research in these areas has facilitated a better understanding of what emotion entails and how to intervene in it. However, this study highlights that these contributions are insufficient if one aims to understand and intervene in how reality affects each person. In this sense, there is an advocacy for the recovery of the term affectivity, as it addresses all affective experiences and, therefore, is broader and more integrative.

KEYWORDS

emotional regulation, affective regulation, emotional intelligence, emotional competence, affectivity

1 Introduction

For more than two decades, there has been increasing interest in psychology in understanding individuals' emotional experiences. Currently, there is awareness of the importance emotions play in the development of a balanced personality, making it one of the main areas of research. This has led to a proliferation of constructs and corresponding research aimed at explaining the emotional phenomenon and how to intervene in it (Duckworth et al., 2009; Gross, 2014).

The concept of emotional regulation is one of the most prominent in research (Adrian et al., 2011), as it addresses the fundamental concern: "How can I manage my emotions?" This question is shared with constructs such as emotional intelligence and emotional competence.

Any of the aforementioned terms exclusively address emotional experience without taking into account other sensitive experiences such as sentiment, affection, or mood.

Although there is no unanimity in how to define what an emotion is, there is some agreement on what it involves: the perception of a sensation, a physiological change, and a mobilization toward action. Compared to other affective experiences, emotion is considered the most reactive, immediate, brief, and intense (Reeve, 2009). While feelings involve greater cognitive engagement and durability, with less intensity. Emotion differs from mood in that while emotion is a reaction to a real or imaginary event, which is more or less significant and concrete, the origin of mood is more diffuse and undefined (Goldsmith, 1994). The influence of emotion is primarily on behavior, whereas mood affects cognition and attitude (Davidson, 1994). Moods last longer than emotions (Ekman, 1994). Affections are our preferences, the things and people we care about.

We can find in various publications (Hervás and Vázquez, 2006) the distinction between emotion and affectivity, for example, when discussing regulation. As will be shown later, we can speak of emotional regulation when referring to intervening in what emotions we feel and with what intensity, and of affective regulation when what is regulated is mood. However, the use of the term affective or affectivity is scarce. We do

not find in any of the developments of regulation, competence, or emotional intelligence, what relationship emotional experience has with affect and mood. From these proposals, emotion is approached as an isolated phenomenon, not in relation to other sensitive experiences. Is it possible to fully understand this phenomenon without putting it into relation with affect and mood? By conceptualizing affectivity as the capacity to be impacted by reality (Martínez, 2018), its indispensable role in forming a healthy personality and achieving a fulfilling life is confirmed. To achieve proper personality development, it is necessary to consider the person as a whole, contemplating all dimensions, with special attention to their affective dimension.

Currently, we encounter a terminological dilemma that affects the understanding and approach to the affective dimension. Although the most commonly used term is "emotion," it seems to refer only to one of the various affective experiences of the human being. However, in textbooks on the psychology of emotion, other experiences related to it are taken into account, such as mood, affects, or feelings.

With all of this in mind, we are faced with the following question: what term should we use to refer to the impact of life events on the individual and their subsequent sensitive experience? In this article, it will be argued that the term "emotional regulation," along with its counterparts "emotional intelligence" and "emotional competence," while making valuable contributions to this issue, are not sufficient because they do not take into account the affective dimension of the human being and its nature. We will advocate for the recovery of the term "affectivity," which allows for the inclusion of isolated phenomena and understanding their integration into the wholeness of the individual, making it particularly interesting for clinical and/or educational intervention.

To this end, in the first part of the work, we will analyze the inadequacy of the construct of emotional regulation and similar terms such as emotional intelligence and emotional competence to address the objective of integrating our emotional experiences. The next question we pose is the appropriateness of reclaiming the term "affectivity."

2 Emotional regulation

Emotional regulation refers to "those processes by which individuals exert influence over the emotions they have, when they have them, and how they experience and express them" (Gross, 1999, p. 275). These processes can be conscious or unconscious, with controlled regulation typically involving more effort than more automatic regulation (Gross and Thompson, 2007). They are aimed at intervening primarily in the intensity and duration of emotional experience (Thompson, 1994). It is difficult to differentiate emotionality from its regulation (Cole et al., 2004).

It's a complex term because it encompasses diverse experiences. Both pleasant and unpleasant emotions are regulated (Hervás and Vázquez, 2006). Both beneficial processes, such as emotional identification and expression, and harmful ones, such as drug use, can be employed. Therefore, a distinction can be made between adaptive and maladaptive regulation processes (Hervás and Vázquez, 2006). There is also talk of dysregulation, understood as the absence or delay in employing regulation strategies or their ineffectiveness (Hervás and Vázquez, 2006). It's important to consider that these processes can be both intrinsic and extrinsic (Thompson, 1994; Eisenberg et al., 2010), implying a vast field of research with strong educational implications when addressing the role of others in the personal development of emotional regulation processes.

Authors like Thompson (1994) include in their definition of emotional regulation the fact that we regulate to achieve our own goals. Among the authors who have addressed the question of what we seek when regulating emotions, the research of Dr. Maya Tamir stands out. She considers that emotional goals determine the destination and regulatory strategies and are the cognitive representation of the desired emotional state (Tamir, 2016). Other research focuses on addressing personal variables such as attachment and temperament that explain individual differences in the development of emotional regulation.

Zimmerman stands out among the authors who investigate the relationship between emotional regulation and attachment. This study perspective assumes the recognition of the existence of regulation patterns acquired from infancy according to the bond established with attachment figures. In terms of Bowlby, an internal working model that influences not only regulation but also the genesis of emotion. Initially, the baby lacks the capacity to regulate itself; it's others, especially attachment figures, who regulate it (Spangler et al., 1994). Attachment influences emotional regulation in all stages of life due to the internal working model generated in attachment care experiences (Bowlby, 1969; Bretherton and Munholland, 2008; Zimmerman, 1999). These internal working models include emotional and motivational characteristics, cognitive knowledge, and scripts of when and how to display attachment behavior, the availability of attachment figures, reactions to distress, or self-regard as worthy of love or not (Spangler and Zimmermann, 2014). Therefore, attachment influences behavioral organization and emotional regulation (Bowlby, 1980; Cassidy, 1994; Zimmermann et al., 2001).

Eisenberg et al. (2010) focus on differences in emotion management according to temperamental characteristics, which largely explain more automatic emotional reactivity (Bargh and Williams, 2007). These automatic, unconscious, and uncontrolled responses to stimuli or cognitions relevant to emotions can sometimes be more reliable and effective than more conscious responses (Bargh and Williams, 2007). Although inheritance can predispose us to certain types of behavior or reactions, environmental factors that mediate or moderate that relationship could be changed. During the upbringing period, both children's and parents' behavior can be modified, which is important because the mutual influence of both mediates temperamental manifestation (Eisenberg et al., 2010).

Any review of the emotional regulation construct is complex due to the vast volume of research developed over decades, which makes the present synthesis undoubtedly limited and insufficient, but it highlights a fact: there are many aspects and dimensions involved in emotional regulation, which perhaps signals the need to use a broader, dimensional construct that can give rise to different explanatory models of interaction between variables, thus allowing for a better understanding of the phenomenon.

3 Emotional intelligence and emotional competence

Emotional regulation has also been studied from the perspective of Salovey and Mayer's Theory of Emotional Intelligence (Mayer and Salovey, 1997). This model argues that Emotional Intelligence (EI) consists of four components: emotional perception and expression, emotional facilitation, emotional understanding, and emotional regulation. They consider emotional regulation as a manifestation of EI and theorize that higher EI leads to greater emotional regulation skills. Furthermore, they argue that emotional regulation is based on individuals' experiences, culture, and personal needs. They define emotional regulation as the capacity to be open to both positive and negative emotional states, reflect on them to determine if the accompanying information is useful without repressing or exaggerating them, and regulate our own emotions and those of others.

They categorized the construct as a type of intelligence because, according to their studies, it meets the criteria to be considered as such (Mayer et al., 2000). Without going into detail on this aspect, as it would go beyond the scope of the present study, it is worth briefly mentioning the three criteria that, according to the cited study, Emotional Intelligence meets to support that it is a type of intelligence: (i) conceptual, (ii) correlational, and (iii) developmental. (i) We say that Emotional Intelligence meets the conceptual criterion because, like other types of intelligence, it reflects intellectual performance by individuals. This is manifested in skills that can be measured. (ii) The correlational criterion refers to the fact that the skills described by Emotional Intelligence (like other types of intelligence) are related to each other because they are similar, but they are also distinguished from each other, with each being different from the others. (iii) The third criterion it meets is that intelligence develops with age and experience, from childhood to adulthood.

From the systematization of the construct by these authors, three lines of development have emerged: (i) the aforementioned model by Mayer and Salovey, which is based on ability; (ii) the so-called "mixed model" by Bar-On (2000). This model is based on social-emotional intelligence and is a kind of interrelationship between emotional and social competencies, facilitators, and skills that determine how efficient individuals are in understanding and expressing themselves, understanding others, relating to others, and facing challenges in this regard; (iii) Goleman's (1996) model. This model focuses mainly on competencies applied to success in the workplace. It maintains that emotional intelligence is based on five elements: knowing one's own emotions, regulating one's own emotions, self-motivation, recognizing emotions in oneself and others, and managing relationships (Fernández-Berrocal and Extremera, 2006; Gómez Leal et al., 2018). Goleman's model was widely disseminated, as it was publicized in mass media and received widespread public reception.

The repeated criticism found in various articles focuses on the confusion of the construct with a wide variety of terms that actually define personality traits (such as enthusiasm, zeal, empathy, general character) (Mayer et al., 2008, 2011).

Emotional regulation is also considered as one of the competencies within some emotional competence models. For the development of this construct, we will rely on Carolyn Saarni's definition, who was the first author to develop the concept (Fragoso-Luzuriaga, 2015; Mayer and Salovey, 1997).

Carolyn Saarni, a constructivist psychologist who has focused her research on early childhood education, defines emotional competence as "the demonstration of self-efficacy to control emotional reactions in social interactions." Based on this definition, the author presents a model that explores the factors and skills that contribute to the development of a mature emotional response, based on achieving an individual's social goals. The factors contributing to the development of emotional competence are self-identity development, moral awareness of what is right and wrong in certain social contexts, with their own codes, and personal (developmental) history (Saarni, 1997, 1999).

As a summary in explaining the construct, it is worth mentioning the eight skills that the author highlights as characteristics of emotionally competent individuals. The skills highlighted by the author are (a) awareness of one's own emotional state, (b) ability to discern emotions in others, (c) ability to describe one's own emotions, (d) empathy, (e) ability to distinguish between internal emotions and the externalization or manifestation of those emotions, (f) adaptive capacity to deal with adverse emotions that generate stress, (g) awareness of the role of emotions in relationship structure, (h) ability to be emotionally effective.

This construct, as defined by the author, refers to a process of individual maturation through which individuals develop skills to ensure that their emotions do not negatively interfere with their performance in social relationships.

Carolyn Saarni, in her work developing the emotional competence construct, makes a distinction between it and emotional intelligence, taking the definition of Mayer and Salovey (1997) for this purpose.

The cited study points out that the definition of emotional intelligence does not refer to the ethical values surrounding the individual or to the development of self-identity. The author emphasizes that in the development of these constructs, insufficient attention has been paid to the role played by context, environment, and self-development in an individual's emotional functioning (Saarni, 1999).

In a more recent work, the same author points out in more detail the three fundamental differences between the two constructs: (i) Emotional competence is a set of acquired skills that develop interdependently. The Emotional Intelligence model does not propose skill development; (ii) individuals who are emotionally competent react to environmental emotional stress with skills, while emotionally intelligent people respond through traits that are inherent to their personality; (iii) emotional competence emphasizes personal integrity as a factor contributing to emotionally competent and mature functioning. The moral aspect as a component of emotional competence has no parallel in the conceptualization of emotional intelligence (Saarni, 2011).

As we have seen, when addressing the question "how to intervene in emotional experience?" there are various concepts, explanations, and meanings. The challenge that this situation may pose is to find a way to integrate the diversity of contributions in order to gain a deeper understanding of the complexity of emotional experience. Reviving the term "affectivity" in the field of research and theoretical

development in psychology is the option proposed in this study.

4 The importance of recovering the term affectivity in psychology

The study of emotions spans multiple disciplines, including psychology, neurology, and ethics. However, a comprehensive understanding of emotions can only be achieved through anthropology (Malo, 2004). Anthropology views emotion as an inherently affective experience. Affectivity is the human faculty that enables us to experience emotions, feelings, affections, and moods. It is our capacity to be affected, engaged, and called upon by our surroundings, allowing us to respond accordingly. This engagement with reality is possible because some aspects of it resonate with us, prompting interaction (Domínguez, 2007).

4.1 Affectivity as a fundamental human faculty

Affectivity is crucial for our interaction with reality, guiding our attention, consciousness, and will. Without this faculty, we would remain indifferent to the multitude of stimuli we encounter. It is this selective responsiveness that initiates our engagement with these stimuli. Thus, affectivity can be seen as an initial characteristic that disposes us to reality, propelling us into action. This process occurs not only in response to concrete realities but also to imaginary ones, such as memories, aspirations, and dreams (Domínguez, 2007).

4.2 Distinguishing affectivity from emotion

Research shows that the most studied aspect of affectivity is emotion, leading to the frequent misconception of using the terms affectivity and emotion interchangeably (Surallés, 2009; Sancho and Martínez, 2011). However, affectivity encompasses more than just emotions; it is the broader capacity to be influenced by the meaningful aspects of reality (Costa-Lobo et al., 2020; Souza et al., 2013). This implies a combination of physical, cognitive, behavioral, and sociocultural mechanisms that include moods, emotions, and affections (Hervás and Vázquez, 2006).

4.3 Historical perspective on emotion

The term "emotion" originates from the Latin word "emovere," meaning to induce movement. It was popularized in psychological discourse through the works of Hume (Treatise of Human Nature) and Smith (The Theory of Moral Sentiments), and later by Darwin, who viewed emotion as a reactive, primarily physiological experience with significant similarities to animal experiences (Sacristán, 2020). Modern psychology, particularly from the 1960s onwards, adopted this Darwinian perspective, focusing on the external expression of emotions rather than their internal experience. This shift led to a mechanistic view of affectivity, reducing it to bodily expressions rather than aspects of the soul, as seen in earlier theories by James-Lange and Cannon-Bard.

4.4 The shift from emotion to affectivity

Dixon (2003) illustrates how the 19th century saw the rise of emotions as a distinct psychological category, replacing older concepts such as appetites, passions, feelings, and affections. By comparing medieval theological psychologies and those of the 18th century with Darwin and William James, Dixon argues that the dominance of a single descriptive category (emotion) is inadequate. Focusing exclusively on emotion fails to capture the variety of affective experiences. Restoring the concept of affectivity allows for a more comprehensive and integrative approach to human experience.

4.5 Integrating affectivity into psychological study

Within the psychology of emotion, other affective experiences like feelings and affections are acknowledged but lack the same theoretical and research development. Feelings, originating from romanticism, are seen as lasting impressions left by encounters. Affections express preferences for people or things, playing a defining and explanatory role in our lives (Sacristán, 2022).

By focusing on the psychology of emotion rather than affectivity, we miss the opportunity to study all affective experiences and their interactions. Limiting our focus to emotions means neglecting the more enduring and structuring aspects of affectivity, such as affections and feelings, and concentrating only on the immediate, reactive aspect of emotions.

There is a noticeable gap in psychological studies addressing emotions or other affective phenomena from a model of affectivity. This gap hinders our understanding of the genesis and interrelation of affective experiences with other dimensions of the person, such as cognition and will. Typically, the term "affective" is used to refer to positive or negative affective experiences (Watson et al., 1988), but a more thorough approach would encompass the full spectrum of affective experiences and their significance. Therefore, recovering and emphasizing the term affectivity in psychological discourse is essential for a holistic understanding of human experience.

Russell's (2003, 2005, 2009) proposal, with significant theoretical and research development, highlights the insufficiency of various emotion theories and advocates for the search for broader explanatory models capable of integrating and explaining the relationship between emotional phenomena that have been studied so far. Specifically, Russell's proposal focuses on a core affect, which structures the individual and explains the psychological processes that arise from interaction with reality, leading to subjective affective experience.

While it is a novel proposal that opens new and interesting paths, it does not resolve a fundamental issue: the biological and

psychological dimensions, as well as their integration, are not sufficient to fully understand the affective experience. Why does a reality affect me the way it does? Answering this question requires a necessary reference to the affected self, to its way of valuing reality. It is not enough to understand how its value systems have been formed; it is also crucial to consider how they are managed, developed, and enriched by the conscious self.

When we try to understand affective phenomena, due to their subjective, personal, and evaluative nature, it is essential to address issues such as the self, identity, consciousness, freedom, ideals, and the meaning of life. Thus, the possibility arises that a spiritual dimension may ultimately explain the integration of affective phenomena, emphasizing the importance of the ideal of life (Arnold, 1960).

5 Conclusions

After reviewing other constructs related to the affective dimension of the individual that have a notable presence in scientific literature, we can conclude that most of them primarily focus on emotional experience, without paying attention to other affective experiences. This may be because emotion is more easily observable and measurable within the complexity of human affect. However, this provides us with a limited and partial view of the human experience, as emotion is just one reaction.

The studied constructs delve into the capacities or abilities that enable better management of these emotional reactions. While Saarni's model of emotional competence relates these skills to other dimensions of the individual, such as moral awareness, identity, and personal history, and studies by Zimmerman on attachment and emotional regulation, as well as authors studying the influence of temperament and emotional regulation, link emotional management to all dimensions of the individual and their development. However, these constructs overlook the importance of affection, such as the bond or preference of the individual, which plays a fundamental role in structuring the individual's being and, therefore, in their emotional reactions.

We can therefore conclude that there is a need for a model that encompasses both emotion and mood, as well as affection, and defines the structure and relationship between them. In summary, an affective psychological model is required to capture the complexity of the human experience in its entirety.

A more comprehensive model would guide clinical and educational interventions that foster a deeper understanding of the human experience, as well as the processes of healing and growth. This approach would lead to a more integrative practice, avoiding reductionism or limitations. We would not focus solely on reactive emotional events and their management, but rather seek to better understand why they occur in the person, addressing their root causes. It would involve moving beyond reaction and control, to examine the origin, the cause, and potential interventions.

From a research perspective, this model raises longstanding and significant questions in psychology, related to the idea of a self that integrates personal experience, which originates from how reality affects the individual. Ultimately, this necessitates an anthropological reflection on the structure of the human being and the importance of a spiritual dimension, as a conscious and free subject, to fully explain all human behavior, which begins with an affective experience, in the way one is affected by something.

Author contributions

RJ: Writing – original draft, Writing – review & editing. MC-L: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

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

References

Adrian, M., Zeman, J., and Veits, G. (2011). Methodological implications of the affect revolution: a 35- year review of emotion regulation assessment in children. *J. Exp. Child Psychol.* 110, 171–197. doi: 10.1016/j.jecp.2011.03.009

Arnold, M. (1960). *Emotion and Personality. Volume I: Psychological Aspects. Volume II: Neurological and Physiological Aspects*. New York, NY: Columbia University Press.

Bargh, J. A., and Williams, L. E. (2007). "The nonconscious regulation of emotion," in *Handbook of Emotion Regulation*, ed. J. J. Gross (New York, NY: The Guilford Press), 429–445.

Bar-On, R. (2000). "Emotional and social intelligence: insights from the emotional quotient inventory," in *The Handbook of Emotional Intelligence*, eds. R. Bar-On, and J. D. A. Parker (New York, NY: Jossey-Bass), 363–388.

Bowlby, J. (1969). *Attachment (Vol 1). Attachment and Loss*. New York, NY: Basic Books.

Bowlby, J. (1980). *Loss, Sadness and Depression (Vol 3). Attachment and Loss*. New York, NY: Basic Books.

Bretherton, I., and Munholland, K. A. (2008). "Internal working models in attachment relationships: elaborating a central construct in attachment theory," in

Handbook of Attachment: Theory, Research, and Clinical Applications, 2nd Edn, eds. J. Cassidy, and P. R. Shaver (New York, NY: The Guilford Press), 102–127.

Cassidy, J. (1994). Emotion regulation: Influences of attachment relationships. *Monogr. Soc. Res. Child Dev.* 59, 228–283. doi: 10.1111/j.1540-5834.1994.tb01287.x

Cole, P., Martiin, S., and Dennis, T. (2004). Emotion regulation as a scientific construct: methodological challenges and directions for child development research. *Child Dev.* 75, 317–333. doi: 10.1111/j.1467-8624.2004.00673.x

Costa-Lobo, C., Matamá, J., and Nascimento, D. (2020). Reasoning, affectivity and school performance at the end of Portuguese elementary education: which variables to consider? *Paidéia* 30:e3008. doi: 10.1590/1982-4327e3008

Davidson, R. J. (1994). "Un emotion, mood, and related affective constructs," in *The Nature of Emotion: Fundamental Questions*, eds. P. Ekman, and R. J. Davidson (Oxford: Oxford University Press), 51–55.

Dixon, T. (2003). *From Passion to Emotions: The Creation of a Secular Psychological*. Cambridge.

Domínguez, X. M. (2007). *De todo corazón*. Fundación Emmanuel Mounier

Duckworth, K., Rodie, A., Alice, M., Emma, S., and John, V. (2009). *Self-Regulated Learning: A Literature Review. Wider Benefits of Learning Research Report*, 33. Available at: https://discovery.ucl.ac.uk/id/eprint/10015842

Eisenberg, N., Spinrad, T., and Eggum, N. (2010). Emotion-related self-regulation and its relation to children's maladjustment. *Annu. Rev. Clin. Psychol.* 6, 495–525. doi: 10.1146/annurev.clinpsy.121208.131208

Ekman, P. (1994). "All emotion are basi," in *The Nature of Emotion: Fundamental Questions*, eds. P. Ekman, and R. J. Davidson (Oxford: Oxford University Press), 15–19.

Fernández-Berrocal, P., and Extremera, N. (2006). La investigación de la Inteligencia Emocional en España. *Ansiedad y Estrés* 12, 139–153.

Fragoso-Luzuriaga, R. (2015). Inteligencia emocional y competencias emocionales en educación superior, ¿un mismo concepto? *Rev. Iberoamericana Educ. Super*. doi: 10.22201/iisue.20072872e.2015.16.154

Goldsmith, H.H. (1994). "Parsing the emotional domain from a developmental perspective," in *The Nature of Emotion: Fundamental Questions*, eds. P. Ekman, and R. J. Davidson (Oxford: Oxford University Press), 68–73.

Goleman, D. (1996). *Inteligencia Emocional*. New York, NY: Kairós.

Gómez Leal, R., Gutierrez Cobo, M. J., Cabello, R., and Fernández Berrocal, P. (2018). The relationship between the three models of emotional intelligence and psychopathy: a systematic review. *Front. Psychiatry* 9:307. doi: 10.3389/fpsyt.2018.00307

Gross, J. J. (1999). Emotion, regulation: past, present, future. *Cognit. Emot.* 13, 551–573. doi: 10.1080/026999399379186

Gross, J. J. (2014). *Handbook of Emotion Regulation*. New York, NY: The Guilford.

Gross, J. J., and Thompson, R. A. (2007). "Emotion regulation: conceptual foundations," in *Handbook of Emotion Regulation*, ed. J. J. Gross (New York, NY: The Guilford Press), 3–24.

Hervás, G., and Vázquez, C. (2006). La regulación afectiva: Modelos, investigación e implicaciones para la salud mental y física. *Rev. Psicol.Gen. Apl.* 59, 9–36.

Malo, A. (2004). *Antropología de la Afectividad*. New York, NY: Eunsa.

Martínez, C. (2018). *¿Qué caracteriza la madurez emocional y de la personalidad? Quiénes somos, cuestiones en torno al ser humano*. New York, NY: Eunsa.

Mayer, J. D., and Salovey, P. (1997). "What is emotional intelligence?" in *Emotional Development and Emotional Intelligence: Educational Implications*, eds. P. Salovey, and D. J. Sluyter (New York, NY: Basic Books), 3–34.

Mayer, J. D., Salovey, P., and Caruso, D. (2000). "Models of emotional intelligence," in *Handbook of Intelligence*, ed. R. Sternberg (Cambridge: Cambridge University Press), 396–420.

Mayer, J. D., Salovey, P., and Caruso, D. R. (2008). Emotional intelligence: new ability or eclectic traits? *Am. Psychol.* 63, 503–517. doi: 10.1037/0003-066X.63.6.503

Mayer, J. D., Salovey, P., Caruso, D. R., and Cherkasskiy, L. (2011). "Emotional intelligence," in *The Cambridge Handbook of Intelligence*, eds. J. Sternberg and S. B. Kaufman (Cambridge: Cambridge University Press), 528–549.

Reeve, J. (2009). *Motivación y Emoción*. New York, NY: McGrawHill.

Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychol. Rev.* 110, 145–172. doi: 10.1037/0033-295X.110.1.145

Russell, J. A. (2005). Emotion in human consciousness is built on core affect. *J. Conscious. Stud.* 12, 26–42.

Russell, J. A. (2009). Emotion, core affect, and psychological construction. *Cogn. Emot.* 23, 1259–1283. doi: 10.1080/02699930902809375

Saarni, C. (1997). "Emotional competence and self-regulation in childhood," in *Emotional Development and Emotional Intelligence: Educational Implications*, eds. P. Salovey, and D. J. Sluyter (New York, NY: Basic Books), 35–69.

Saarni, C. (1999). *The Development of Emotional Competence*. New York, NY: Guilford Press.

Saarni, C. (2011) "Emotional competence and effective negotiation: the integration of emotion understanding, regulation, and communication," in *Psychological and Political Strategies for Peace Negotiation*, eds. F. Aguilar, and M. Gallucio (New York, NY: Springer), 55–74.

Sacristán, R. (2020). *Movidos por el amor*. Estudio del dinamismo afectivo. San Dámaso.

Sacristán, R. (2022). *Educación y afectividad*. Jalones para una pedagogía del amor. Didaskalos.

Sancho, D., and Martínez, A. (2011). Afectividad positiva y salud. *Enfermería Global* 10, 120–124. doi: 10.4321/S1695-61412011000400010

Souza, V. L. T., Petroni, A. P., and Andrada, P. C. (2013). Affectivity as an aspect of teachers' identity constitution: a view from psychology. *Psicol. Soc.* 25, 527–537. doi: 10.1590/S0102-71822013000300007

Spangler, G., Schieche, M., Ilg, U., Maier, U., and Ackermann, C. (1994). Maternal sensitivity as an external organizer for biobehavioralregulation in infancy. *Dev. Psychobiol.* 27, 425–437. doi: 10.1002/dev.420270702

Spangler, G., and Zimmermann, P. (2014). Emotional and adrenocortical regulation in early adolescence: prediction by attachment security and disorganization in infancy. *Int. J. Behav. Dev.* 38, 1–13. doi: 10.1177/0165025414520808

Surallés, A. (2009). *De la intensidad o los derechos del cuerpo. La afectividad como objeto y como método*. Runa XXX, 29–44.

Tamir, M. (2016). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Person. Soc. Psychol. Rev.* 20, 199–222. doi: 10.1177/1088868315586325

Thompson, R. A. (1994). "Emotion regulation: a theme in search of definition," in *The Development of Emotion Regulation and Dysregulation: Biological and Behavioral Aspects. Monographs of the Society for Research in Child Development 59 (2–3, Serial no. 240)*, ed. N. A. Fox, 25–52.

Watson, D., Clark, L. A., and Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: the PANAS scales. *J. Pers. Soc. Psychol.* 54, 1063–1070. doi: 10.1037/0022-3514.54.6.1063

Zimmerman, P. (1999). Structure and functions of internal working models of attachment and their role for emotion regulation. *Attach. Hum. Dev.* 1, 291–306. doi: 10.1080/14616739900134161

Zimmermann, P., Maier, M. A., Winter, M., and Grossmann, K. E. (2001). Attachment and adolescents' emotion regulation during a joint problem-solving task with a friend. *Int. J. Behav. Dev.* 25, 331–343. doi: 10.1080/01650250143000157

frontiers | Frontiers in Psychology

TYPE Conceptual Analysis
PUBLISHED 17 January 2025
DOI 10.3389/fpsyg.2024.1454900

OPEN ACCESS

EDITED BY
Claudia Navarini,
European University of Rome, Italy

REVIEWED BY
Francesco De Vincenzo,
European University of Rome, Italy
Elena Ricci,
University of Bari Aldo Moro, Italy

*CORRESPONDENCE
Juan Pablo Rojas-Saffie
✉ jrojas@uft.cl

RECEIVED 25 June 2024
ACCEPTED 20 December 2024
PUBLISHED 17 January 2025

CITATION
Rojas-Saffie JP, Álamos-Vial N and Pinzón-Merchán M (2025) Is PTSD symptomatology a mechanism of emotional regulation? Insights from an interdisciplinary point of view.
Front. Psychol. 15:1454900.
doi: 10.3389/fpsyg.2024.1454900

Is PTSD symptomatology a mechanism of emotional regulation? Insights from an interdisciplinary point of view

Juan Pablo Rojas-Saffie[1,2]*, Nicolás Álamos-Vial[1] and Manuela Pinzón-Merchán[1]

[1]Department of Psychology, Faculty of Education, Psychology and Family, Universidad Finis Terrae, Santiago, Chile, [2]Center for Research in Education, Psychology and Family (CIPEF), Faculty of Education, Psychology and Family, Universidad Finis Terrae, Santiago, Chile

Post-traumatic stress disorder (PTSD) symptomatology has historically been considered a psychic ailment that is part of a mental disorder. However, it has often been proposed that it could play an adaptive role, in that it would prevent individuals from being exposed to content or situations that they would not be prepared to process. Within the literature on emotional regulation (ER), PTSD symptomatology has commonly been linked to the concept of emotional dysregulation (ED). However, some definitions open the possibility that traumatic symptomatology could be considered ER, from which delicate conclusions would follow. To resolve this dilemma, we turn to interdisciplinary dialogue, specifically with the aid of Thomistic anthropology, whose concepts allow us to understand precisely the relationship between voluntary and involuntary processes and the close relationship between the concepts of reason and regulation. Even though part of the PTSD symptomatology involves psychic mechanisms aimed at modifying emotional states, it is concluded that it is necessary to continue conceptualizing it as ED. The theoretical and practical implications of this discussion are reviewed.

KEYWORDS

trauma, psychopathology, PTSD, self-regulation, emotional dysregulation, Thomistic anthropology, Integral psychology of the person, Thomistic psychology

1 Introduction

The symptomatology of Post-traumatic stress disorder (PTSD) plays a leading role in the origin of clinical psychology. Hundred and thirty years ago, Breuer and Freud (1885/1936) postulated that psychic trauma could trigger a particular type of hysteria, traumatic hysteria, which was characterized, among other things, by a set of spontaneous psychosomatic phenomena, that are automatic and uncontrolled by the subject. Freud (1917/1977, XVI) departed early from the psychiatric approach of his time, which considered neurotic symptomatology as the simple effect of an imbalance of the nervous system, stating that it should be interpreted according to a psychological sense; somehow, the symptoms fulfilled a function within the psychic organization of his patients. In particular, the forgetting of traumatic events would prevent the patient from facing the irreconcilability of such contents with the "ethical and aesthetic purposes of the ego" (Freud, 1917/1977, XVI, p. 151). Psychoanalytic therapy proposed that unraveling the meaning of the symptom was fundamental for patients to recover psychic health.

The symptomatology of PTSD has been linked repeatedly to the concept of emotional dysregulation (ED) (Carmassi et al., 2022; Powers et al., 2015a; Raudales et al., 2019). However,

some authors have glimpsed an adaptive role in some PTSD symptoms. For example, forgetting some memories could be a mechanism to prevent the self from dealing with content that it is unable to cope with Modai (1994). Freud himself (Freud, 1917/1977) claimed that neurotic symptoms could be perpetuated over time due to their secondary gains. From this point of view, PTSD symptomatology could be reread in the key of emotional regulation (ER). However, such a reading is complicated, since ER and ED have been considered as incompatible phenomena: "The failure to regulate emotion is called dysregulation" (Macklem, 2008, p. 13).

The present study will attempt to explore whether PTSD symptomatology can be really understood as an ER, or whether it is actually more appropriate to keep it within the category of ED. The relevance of this answer is evident from a theoretical perspective. If PTSD symptomatology involves some ER mechanism, then the extent to which PTSD is properly a pathology would have to be questioned. Furthermore, the difference between ER and ED would become much more blurred, making this distinction less relevant. However, these questions could also have practical implications. If PTSD symptomatology involves ER mechanisms and has some adaptive value, to what extent should this symptomatology be tolerated or even incorporated into normal life? Would it be appropriate for the clinician to aim to eliminate it? Considering that traumatic experiences are a recurrent theme in people's lives and in psychological consultation, the answer to this question is particularly relevant.

The interpretation of PTSD symptomatology from the point of view of ER has been tangentially touched upon in some publications (Ford, 2013; Cole et al., 2019) and also in the clinical literature, especially psychoanalytic literature (Freud, 1915/1961; see also Baumeister et al., 1998; Derakshan et al., 2007). However, the topic does not seem to have been directly addressed before, let alone from an interdisciplinary perspective, which is key to exploring those questions in psychology that are subject to philosophical perspectives. In particular, in this article we will develop a Thomistic approach, which has been shown to be of great use in dialoguing with the dilemmas of contemporary psychology (e.g., Asociación de Psicología Integral de la Persona, 2022; Cartagena, 2021; Cornelius, 2006; Cubillos, 2022; De Haan, 2019; Droste, 2022; Dryden, 2016; Fowers et al., 2023; Marple et al., 2024; Navarini and De Monte, 2019; Ratchford et al., 2023; Rojas-Saffie and García-Matte, 2024; Rojas-Saffie et al., 2024; Schell, 2022; Spalding et al., 2019; Suazo, 2022; Verdier, 2022).

In order to achieve a fruitful interdisciplinary dialogue, we will begin by reviewing the concepts of trauma, PTSD symptomatology, ER and ED in the literature. Then, we will consider some concepts from Thomistic anthropology to distinguish various pathways that enable emotion regulation and to clearly differentiate ER and ED. In the light of this dialogue, we will try to answer whether PTSD symptomatology can be considered ER.

2 Theoretical framework

2.1 Trauma

The concept of psychological trauma has been the subject of multiple discussions and debates (e.g., Archambeau et al., 2011; Blair et al., 2020; Gradus and Galea, 2022; van der Hart et al., 1989; Isobel et al., 2017; Jongedijk et al., 2023; Nadal et al., 2019; Padykula and Conklin, 2010; Sar and Ozturk, 2006; Tennant, 2004; Weathers and Keane, 2007). Innumerable definitions of trauma have been proposed, which has led to difficulty in achieving cross-sectional consensus (Gershuny, 1999; Weathers and Keane, 2007).

Pierre Janet was one of the first authors to describe what we now call Post-Traumatic Stress Disorder (van der Kolk, 2000b). According to the French psychiatrist, memory encoding and retrieval are fundamental to the functioning of the mind. This is because, throughout life, individuals would organize and integrate their memories and personal experiences, allowing them to develop flexible cognitive schemas. This would enable them to manage future challenges and appropriate actions in the present. He observed that hysterical patients, often traumatized, lacked the ability to integrate traumatic memories, hindering their ability to assimilate new experiences (van der Kolk et al., 1994).

According to this approach, the memory of trauma would persist as "unconscious fixed ideas that cannot be "liquidated" as long as they have not been translated into a personal narrative and instead continue to intrude as terrifying perceptions, obsessional preoccupations and somatic re-experiences such as anxiety reactions" (van der Kolk et al., 1994, p. 585). In the words of Balaev (2018), "trauma is thus defined in relation to the process of remembering and as an event harbored within the unconscious that causes a splitting of the ego or dissociation" (p. 361).

Nowadays, the concept of trauma is often approached from a more descriptive perspective, as can be seen in PTSD, the DSM-V-TR diagnosis most closely linked to trauma. According to it, trauma occurs when someone is exposed to "actual or threatened death, serious injury, or sexual violence" (American Psychiatric Association, 2022, p. 303), producing a series of symptoms that lead to "clinically significant distress or impairment in social, occupational, or other important areas of functioning" (Id.).

2.2 PTSD symptomatology

For the purposes of this article, we will focus exclusively on PTSD symptomatology as described in the DSM-V-TR (American Psychiatric Association, 2022). It is right that there is valuable literature about its symptomatology (e.g., Carmassi et al., 2022; van der Kolk et al., 1994), however, our interest is not to make an exhaustive review, but to take a proposal and examine whether it is possible to analyze it from an ER point of view. The DSM-V-TR proposal has seemed appropriate to us because it is one of the most accepted and well-known.

The diagnosis of PTSD in the DSM-V-TR includes 8 criteria, of which 4 refer directly to symptomatology (criteria B, C, D and E). Criterion B deals with intrusive symptoms; criterion C, with avoidant symptoms; criterion D, with negative alterations in cognition and mood; and criterion E, with alterations in arousal and reactivity. In addition, the DSM-V-TR (American Psychiatric Association, 2022) contemplates the necessity of identifying whether PTSD is accompanied by dissociative symptoms such as depersonalization or derealization (see Table 1).

2.3 Emotional regulation

As with *trauma*, the concept of ER does not have a consensus definition either. This has led to the use of the same term to designate similar but different realities (Rojas-Saffie and García-Matte, 2024). Emotion regulation is concerned with modulation or

TABLE 1 Posttraumatic stress disorder diagnostic criteria by DSM-V-TR (American Psychiatric Association, 2022).

Criteria related to symptomatology	Symptoms
B. Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:	1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s). 2. Recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event(s). 3. Dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings). 4. Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s). 5. Marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).
C. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred, as evidenced by one or both of the following:	1. Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s). 2. Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
D. Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:	1. Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs). 2. Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world (e.g., "I am bad," "No one can be trusted," "The world is completely dangerous," "My whole nervous system is permanently ruined"). 3. Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others. 4. Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame). 5. Markedly diminished interest or participation in significant activities. 6. Feelings of detachment or estrangement from others. 7. Persistent inability to experience positive emotions (e.g., inability to experience happiness, satisfaction, or loving feelings).
E. Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:	1. Irritable behavior and angry outbursts (with little or no provocation) typically expressed as verbal or physical aggression toward people or objects. 2. Reckless or self-destructive behavior. 3. Hypervigilance. 4. Exaggerated startle response. 5. Problems with concentration. 6. Sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep).
Specify whether:	With dissociative symptoms: 1-Depersonalization: Persistent or recurrent experiences of feeling detached from, and as if one were an outside observer of, one's mental processes or body (e.g., feeling as though one were in a dream; feeling a sense of unreality of self or body or of time moving slowly). 2-Derealization: Persistent or recurrent experiences of unreality of surroundings (e.g., the world around the individual is experienced as unreal, dreamlike, distant, or distorted).

maintaining of feelings, behaviors, and physiological responses that comprise an emotion (Gross, 2002). For the purposes of this article, we will initially use as operational definition the one proposed by Gross (2015): "the defining feature of emotion regulation is the activation of a goal to influence the emotion trajectory" (p. 5).

The need to recognize that some inadvertent processes can be considered ER is manifested in the distinction between explicit and implicit ER (Dillon et al., 2007; Koole et al., 2015; Sperduti et al., 2017; Tupak et al., 2014). Explicit ER is that which occurs from conscious processes, with some level of control, and associated with some insight (Gross and Thompson, 2007; Gyurak et al., 2011; Phillips et al., 2008). On the other hand, implicit ER may be defined as "any process that operates without the need for conscious supervision or explicit intentions, and which is aimed at modifying the quality, intensity, or duration of an emotional response" (Koole and Rothermund, 2011). Implicit ER can thus be instigated even when people do not realize that they are engaging in any form of emotion regulation and when people have no conscious intention of regulating their emotions (Braunstein et al., 2017; Gyurak et al., 2011; Torre and Lieberman, 2018).

Although implicit ER is presumably unconscious, that does not mean that it lacks a goal-directed nature. For instance, Hopp et al. (2011) propose that "despite this variety of unconscious emotion-regulation processes, theoretical considerations suggest that one common pathway may underlie many of them: unconscious goal pursuit, or, implicitly represented values regarding emotion regulation"

(p. 533). As Custers and Aarts (2010) explain "unconscious goal pursuit results from the design and workings of the brain and mind, which process and represent behaviorally relevant information in such a way that goal pursuit can be controlled by the social situation without conscious awareness of the activation and operation of the goal" (p. 50). This fits well with approaches that distinguish between conscious and unconscious goal pursuit (Bargh et al., 2001; Bargh and Williams, 2006).

It is important to note that although implicit ER would operate unconsciously, it is not necessarily associated with maladaptation, since "implicit emotion-regulation processes are associated with psychological health outcomes only among individuals who habitually use an adaptive, relatively conscious emotion-regulation strategy" (Hopp et al., 2011, p. 541).

2.4 Emotional dysregulation

Emotion dysregulation (ED) can be defined as "patterns of emotional experience or expression that interfere with appropriate goal-directed activity" (Thompson, 2019, p. 806), suggesting that one of its core elements is the opposition between goal-directed activity and emotional activity. Other approaches have emphasized its maladaptive nature (e.g., Beauchaine, 2015), noting that ED interferes with appropriate behaviors, or involves emotions expressed or experienced inappropriately for the context (Cole et al., 2019). According to D'Agostino et al. (2017) emotional dysregulation has five dimensions: decreased emotional awareness, inadequate emotional reactivity, intense experience and expression of emotions, emotional rigidity and cognitive reappraisal difficulty.

ED has been identified as a key factor in the etiology and maintenance of multiple psychopathologies (Gasol et al., 2022; Keeshin et al., 2021; Pop-Jordanova, 2023) such as depression (Gao et al., 2022), anxiety (Suveg et al., 2010), sleep disturbance (Zhou et al., 2023), borderline personality disorder (Linehan, 1993; Ford and Courtois, 2014) and attention deficit hyperactivity disorder (Bemmouna and Weiner, 2023).

Many articles on emotional dysregulation implicitly refer to it as contrary to emotional regulation. However, although in the long term it represents a risk, it has been observed that emotional dysregulation involves patterns of behavior that may be adaptive in the immediate context, as a means of survival for the person (Cole et al., 2019; Webermann and Murphy, 2018). In that sense, emotional regulation and emotional dysregulation would not be quite opposites. In the words of Cole et al. (2019): "emotion dysregulation is a pattern of emotion regulation that is interpreted as dysregulated based on the implications for interfering with healthy, competent development" (p. 1192). Similarly, Linehan (1993) proposes that emotional dysregulation is at the basis of behaviors such as deliberate self-harm; however, at the same time, she conceptualizes it as an emotional regulation strategy (see Briere and Gil, 1998; Gratz and Roemer, 2003).

2.5 Relationship between PTSD and ER/ED in the literature

Studies have proposed two types of relationship between PTSD and ER. The first of these we will call the "inverse relationship," in the sense that the occurrence of one of the variables prevents the occurrence of the other. And the second one, a "direct relationship" between PTSD symptomatology and ER, in the sense that they are mutually favoring variables.

2.5.1 The inverse relationship

A recurrent conclusion in the literature postulates that PTSD generates difficulties in the ER (Ehring and Quack, 2010; Ion et al., 2023; van der Kolk, 2007a; Powers et al., 2015b; Yin et al., 2022). As mentioned by Ehring and Quack (2010), "a number of authors suggest that emotion regulation difficulties are one of the complex symptoms that specifically develop after early-onset chronic interpersonal trauma" (p. 588; see also Lee et al., 2018). Southam-Gerow and Kendall (2002) found that children who have suffered abuse are more likely to have difficulties in emotional expression, recognition and communication, which influence emotional regulation. Another study found that abused children have greater problems in emotional regulation and behavioral problems such as the presence of anger, less self-control, and greater degrees of negative emotions (Erickson et al., 1989). In addition, it has been found that emotion regulation problems persist into adulthood and may be an important mechanism in which childhood abuse leads to adult psychopathology (Alink et al., 2009; Kim and Cicchetti, 2010). Trauma has been taken by some authors as a source of mental disorders that could be related to the lack of ER such as, for example, adolescent behavioral problems and addictions (Perry and Szalavitz, 2007). Ion et al. (2023) found that childhood trauma is associated with reduced emotion regulation success. For their part, Cavicchioli et al. (2021) hold that dissociation, a phenomenon inherently related to trauma, is a maladaptive regulatory mechanism.

Some researchers have shown that ER is learned in the interaction with primary caregivers, as they model adaptive behaviors and guide the exploration of the emotional world. In this sense, children would present a higher propensity to develop trauma because they are in the early stage of acquiring regulatory strategies and developing their attachment system (Ehring and Quack, 2010; van der Kolk, 2007a; van der Kolk, 2007b; Liotti, 2004).

The development of ER is seen as a protective strategy against clinical disorders associated with trauma: mood disorders (Lee et al., 2018) and depression (Yin et al., 2022). ER is a central issue in positively managing the effects of trauma and neglect (van der Kolk, 2014). In fact, it has been argued that early interventions that focus on emotional regulation prove to be positive for people experiencing traumatic situations (van der Kolk, 2007b; Zhou et al., 2023).

This inverse relationship can also be seen in studies that consider the development of ER as a way of processing the trauma associated with PTSD (Benight et al., 2018; Conti et al., 2023; van der Kolk, 2007a; Lee et al., 2018). As stated by van der Kolk (2000a) emphasizing self-regulatory needs may be an advantageous approach in patients susceptible to react adversely to standard treatment for PTSD. On the other hand, self-regulation could be viewed as a key to processing trauma and its consequences adaptively (Benight et al., 2018).

2.5.2 The direct relationship

Finally, a "direct relationship" between PTSD symptomatology and ER can be postulated, in the sense that they are mutually favoring variables. This relationship could be observed in those studies that consider PTSD symptomatology as a protective form of ER. As mentioned by Ford (2013) "dissociation in the wake of psychological

trauma appears to be a compensatory self-protective adaptation to threat, which can be understood as the involuntary substitution of survival-based hypervigilance" (p. 240). From this perspective, some PTSD symptoms would be adaptation-oriented:

- Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s). (B4): This distress may be a way to dissuade the individual from exposure to life-threatening situations.
- Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s) (C1): The avoidance of these cognitions and affects could be aimed at avoiding the subject the displeasure of reconnecting with traumatic contents.
- Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s) (C2): The same applies as above.
- Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs). (D1): Forgetfulness or mental lacunae may be intended to protect the subject from contacting contents that he or she is unable to cope with (Hurtado, 2016).
- Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame). (D4): Fear, terror and anger could be aimed at keeping individuals prepared to react to any threat. Guilt could be aimed at provoking reflection in individuals so that they discover what their responsibility was in what happened and thus not expose themselves again in the future. Shame could be aimed at avoiding social criticism.
- Markedly diminished interest or participation in significant activities (D5): This could be aimed at avoiding exposure to situations where serious and unexpected threats to life could arise.
- Hypervigilance (E3): The fixation of attention on potential risks would help the subject to anticipate, avoiding the emergence of sudden and unforeseen threats.
- Dissociative symptoms: The dissociative mechanisms prevent the subject from connecting with the emotion, thereby preventing him from experiencing psychic pain.

Although both types of relationship are supported in the literature, it does not seem reasonable that they are simultaneously correct. Either PTSD symptomatology is inversely related to emotional regulation, or it is directly related to it. If the relationship is inverse, then it would be inappropriate to say that PTSD symptomatology is a mechanism of emotional regulation. But if the relationship is direct, then it would be appropriate to say so. Let us review how interdisciplinary dialogue can aid us in resolving this dilemma.

3 Interdisciplinary dialogue

3.1 The *cogitative* and its relationship with the rational and sensitive dimensions of the human soul

Thomas Aquinas, in line with Aristotle, proposed that human beings perform their psychological activity thanks to a set of operative capacities called *faculties* (Aquinas, 1920, I, c. 77). According to the nature of the human soul, some of them belong to the sensitive dimension, such as the capacity to sense -external and internal senses- (1920, I, c. 78, a. 3; a. 4) and to have emotions -sensitive appetite- (1920, I, c. 80; c. 81), and others to the rational dimension, such as the capacity to understand -reason- (1920, I, c. 79) and to want -will or rational appetite- (1920, I, c. 80; c. 82). The former operate according to the sensible characteristics of the world and are common to humans and animals. The latter operate according to the essential aspects of things, and are exclusive to human beings (1920, I, c. 78, a. 1). Table 2 represents synthetically the Thomistic faculties scheme.

Despite this multiplicity of faculties, the human soul is considered an indivisible unity, which is expressed in the fact that these faculties do not operate dispersedly, but in a coordinated way (Aquinas, 1920, I, c. 76, a. 3). In fact, human beings, by their nature, are made to live according to their reason and will and accompanied at the same time by emotions (1920, I-II, c. 4). For this to be possible, it is necessary to

TABLE 2 Thomas Aquinas's scheme of human faculties.

Psychic dimension	Cognitive faculties		Appetitive faculties	
Rational dimension	Reason	Faculty that allows the human being to understand, reason and rule over emotions.	Will or rational appetite	Faculty that allows the human being to tend toward the intangible good and make choices.
Sensitive dimension	Internal senses	Memory: faculty that stores images in terms of lived experiences.	Sensitive appetite	Concupiscible appetite: faculty that tends toward tangible good, insofar as delectable.
		Cogitative: faculty that evaluates images as convenient or harmful.		
		Imagination: faculty that forms the internal image of the external stimulus.		Irascible appetite: faculty that tends toward the tangible good, insofar as arduous.
		Common sense: faculty that integrates the information of the stimuli.		
	External senses	Faculties oriented to sense the external world, such as touch, taste, smell, hearing, and sight.		

admit an intrinsic capacity to rule over their affectivity. This implies, on the one hand, that the sensitive appetite is naturally open to be guided (Aquinas, 1920, I, c. 81, a. 3; Aquinas, 1999, c. 8), and on the other hand, that reason is capable of guiding it (Aquinas, 1920, I-II, c. 17, a.7; Botkin, 1921).

Aquinas proposed that every emotional movement arises from a judgment or evaluation made by an internal sense called *cogitative*, which assesses the stimuli as convenient or harmful to the vital interests of the subject (Aquinas, 1920, I, c. 78, a.4). For example, if it is something desirable, but not yet obtained, then desire arises; once it is obtained desire ceases and delight arises.

Now, cogitative can be moved in two ways. First, moved by reason, as, for example, when those who are angry consider the good intentions of others to lessen their anger (Aquinas, 1920, I, c. 81, a. 3). And second, before reason realizes it (Echavarría, 2016), allowing itself to be moved by external or internal stimuli (e.g., memories), as when we pass by a street from our childhood and experience involuntary emotions (see Figure 1).

3.2 Voluntary and involuntary emotional modification

As we have already explained, the assessment of the cogitative allows an emotion to arise. Now, we can consider that this emotion can also become a stimulus for the cogitative, moving it to evaluate its convenience or inconvenience. From this second assessment a second emotion will arise, which may compete with the original one and predominate over it, producing an emotional modification.

We have not found Thomistic authors who have described this scenario; however, it can indirectly be deduced from the mechanism proposed by Anna Terruwe to explain psychic repression (Terruwe and Baars, 1981). In the following, we will review two examples of the cogitative elaborating judgments about some emotion, one moved by reason and the other provoked by internal stimuli.

First, let us imagine someone who is afraid of public speaking. Such a fear may arise from a cogitative evaluation similar to this: "it is dangerous to speak in public." If the person does not have a pathology, he/she will realize that it is an inappropriate affect and could modify it –or at least manage to attenuate it– by means of rational considerations such as: "I have done this before," "this always happens to me and everything ends up going well," "this audience is favorable," "it is normal to feel nervous," etc. These considerations have the power to move the cogitative to modify its first assessment ("it is dangerous to speak in public") for another one closer to reason ("speaking in public is possible"), giving rise to a new affective state. The influence of reason on the affections through the cogitative is exemplified by Aquinas (1920): "this can be experienced by each one in himself, since, having recourse to certain general considerations, anger, fear, and other similar passions are mitigated or intensified" (I, c.81, a. 3).

Secondly, let us exemplify when the cogitative is moved by internal stimuli: imagine someone who experiences an erotic desire in conflict with social norms. This emotion is accompanied by pleasant images and memories related to sexual satisfaction, but also by negative ones, such as the pain of their partner and possible social rapprochement. Cogitative may value these latter images as extremely dangerous, causing fear to arise before reason notices it. Now, since fear is a passion that involves avoidance (Aquinas, 1920, I-II, c.42, a.1), it follows that the soul will turn its attention away from the affect perceived as dangerous and also from the cogitative's original assessment ("this person is desirable"), focusing on other things. Thus, the erotic desire is extinguished and the emotional state changes, without it being necessary to deal with it, because there is no awareness of such desire.

In summary: an emotional modification always implies an assessment of the cogitative about affect. Now, the fact that cogitative can be moved by reason or directly by the senses gives rise to two

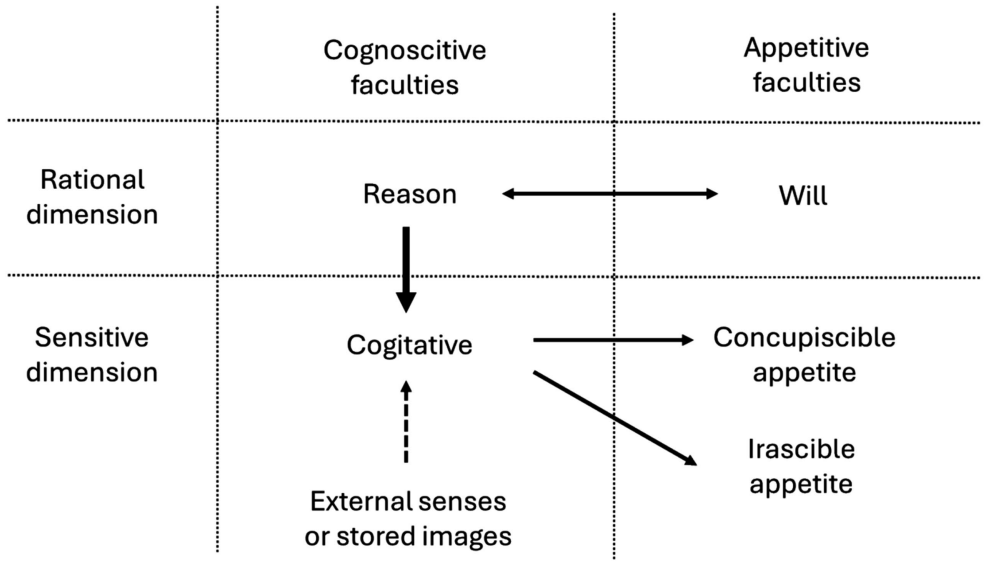


FIGURE 1
Dynamics of the human psychic faculties. The movements of the concupiscible and irascible appetites are triggered by the valuation of the cogitative. The cogitative is usually moved by reason, but it can also be moved by the external senses or by stored images without the interference of reason. The external senses are moved by external stimuli. The reason and the will move each other mutually.

types of emotional modification (EM), which we will call *voluntary* and *involuntary*. Voluntary EM would occur when the emotional modification comes from the initiative of reason, while involuntary EM would occur when such modification comes from a spontaneous evaluation of the cogitative of an external or internal stimuli (see Table 3). Voluntariness is a dimension present in some definitions of emotional regulation and absent in others, as can be seen in Table 4.

3.3 Voluntary/involuntary EM and explicit/implicit ER

The concepts of voluntary EM and involuntary EM seem to fit with those of explicit ER and implicit ER. However, although they may overlap in some cases, they do not encompass the same realities, because they arise from different criteria. What defines explicitness of ER is consciousness [i.e., whether the subject is aware of the regulation], whereas what defines voluntariness is wanting [i.e., whether the subject wants to regulate]. Consciousness and wanting, in the Thomistic scheme, are activities of diverse faculties (reason and will respectively), and therefore, they are of a different nature. Indeed, to become conscious is a cognitive act, while to want is an appetitive act (see Figure 1). Consequently, it is not necessary that what is conscious always coincides with what is wanted: there is nothing to prevent the existence of voluntary acts performed unconsciously or inadvertently, and involuntary acts performed consciously.

For Aquinas (1920), an act is voluntary when two conditions are fulfilled (I-II, c. 6, a. 1). First, that the principle of the act be in the agent; in other words, that it be intrinsic. According to this condition, both animals and human beings are capable of acting according to intrinsic principles. The second condition is that there is perfect knowledge of the end, which implies not only knowing for what purpose one wants to perform some act, but also understanding the reason for this end and the proportionality of the act to achieve the end (Aquinas, 1920, I-II, c. 6, a. 2). This means that the agent is able to choose between different means to achieve the end. Only human beings can know the end in this way.

Now, voluntary acts can be conscious, as when one calls a friend to unburden oneself of the problems of the day, or they can be performed unconsciously, as when a person smiles kindly when greeting. The latter act is voluntary in that it is performed by individuals who habitually wish to be kind, and it is unconscious in that kind people are not always aware that they are smiling when they greet. In all these cases there is a voluntary intention to regulate emotionality. Although these are acts with a greater or lesser level of awareness, people always retain self-control. Aquinas (1920) illustrates

TABLE 3 Types of EM according to their voluntariness.

Type of EM	Faculty that elicits the EM through cogitative	Purpose	Examples
Voluntary	Reason	Ordering the affections to act rationally.	Calming down before presenting in class, reacting wisely to an unforeseen event, etc.
Involuntary	Senses	Diminish displeasure or similar.	Drug cravings, dissociation in response to trauma, nail biting in response to anxiety, etc.

TABLE 4 Examples of definitions related to emotional regulation grouped according to the inclusion of intentional agency.

	Definition	Commentary
Definitions that consider intentional agency	"We define self-regulation as processes by which the self intentionally alters its own responses, including thoughts, emotions, impulses, performance, and behaviors, based on standards" (Baumeister and Vohs, 2016, p. 68).	The intentionality of the self is made explicit, which is considered as the agent executing the ER.
	"We can describe self-regulation as a largely unconscious form of volition that involves, and yet goes beyond, the integrative intelligence of motives. Volitional self-regulation draws not only on those networks of experiences that are relevant for one's needs but on all autobiographical experiences that have contributed to the development of a coherent self-image" (Kuhl, 2018, p. 544).	It is explicitly mentioned that self-regulation is an act of the will, which does not contradict the fact that it can be unconscious.
Definitions that do not explicitly state intentional agency	"Emotion regulation refers to the processes by which individuals influence which emotions they have, when they have them, and how they experience and express these emotions" (Gross, 1998, p. 275).	It is individuals who influence their emotions, but it is not clear whether this is voluntary or not.
	"Emotion regulation may be defined as goal directed processes functioning to influence the intensity, duration and type of emotion experienced" (Gyurak et al., 2011, p. 2).	It is not made explicit who is the agent executing the ER.

the compatibility between voluntariness and inadvertence of an act with an example:

> One need not always be thinking of the last end, whenever one desires or does something: but the virtue of the first intention, which was in respect of the last end, remains in every desire directed to any object whatever, even though one's thoughts be not actually directed to the last end. Thus while walking along the road one needs not to be thinking of the end at every step. (I-II, c.1, a.6, ad. 3)

The voluntariness of some inadvertent or unconscious acts is well grounded in the thought of Aquinas (1920) through his doctrine of the virtues (I-II, c. 55–67). These habitual dispositions are obtained through conscious and voluntary effort (1920, I-II, c. 63, a. 2). Once acquired, however, the virtues become what Aquinas calls "second nature" (1920, I-II, c. 32, a. 2, ad. 3). This implies that the new spontaneous or automatic reactions will be in accord with the acquired virtue: for example, one who has attained the virtue of good eating-called abstinence-has his appetite regulated so that he spontaneously desires to eat in a balanced way (1920, II-II, c. 146, a. 1). Now, the spontaneity of virtue does not deny the participation of reason; on the contrary, it demonstrates that its powerful influence continues to operate even though the issue is not being consciously considered by the person. This is exemplified by Aquinas (1920) when he states that the virtue of fortitude, which implies the participation of reason (I-II, c. 56, a. 4), is best manifested when a sudden threat arises, which does not allow for premeditation (1920, II-II, c. 123, a. 9).

The novelty of this approach is that there would be no problem in admitting that implicit ER, although unnoticed by the subject, may be under the rule of reason. From this perspective, some of the studies on implicit ER actually deal with voluntary EM. For example, in the *emotional conflict task* (Egner et al., 2008; Etkin et al., 2006), the delay in responding to incongruent stimuli is inadvertent for the participant, but it is reasonable, since such delay allows for better performance. In other words: the delay is unconscious, but it is voluntary, since it is in accordance with the intention to respond well, which can be presupposed in the participants.

On the other hand, there are involuntary acts, which respond to impulses or internal mechanisms that are beyond the control of the will, such as, for example, starting to cry in the middle of a discussion or stuttering when feeling very nervous. In these situations, although the person is aware of his or her actions, he or she is unable to control them. In other words, there are situations in which there is a divergence between the EM that occurs unconsciously and the EM that would have been executed voluntarily if the individual had had the possibility to do so. We can think of addictions: uncontrollable craving is often triggered as a way to regulate negative emotions (Köpetz et al., 2013; Tripp et al., 2015). However, in addiction treatment programs, patients are taught to voluntarily choose more adaptive ways to regulate these emotions. Something similar occurs in some mechanisms that are set in motion in the face of trauma, such as dissociation and the impossibility of remembering (Ford, 2013). We could also consider bodily movements in the face of anxiety, such as nail biting or leg movements (Snorrason et al., 2010).

To understand the nature of involuntary EM, we must consider that, from a Thomistic point of view, human beings have inclinations that derive from their nature (Aquinas, 1920, I-II, c.94, a.2). In the first place, an inclination common to all substances, which consists in the tendency toward the conservation of one's own being. Secondly, an inclination toward more determined goods, according to what human beings have in common with the other animals, such as sexual union, the education of children, or the establishment in some kind of dwelling. And thirdly, "there is in man an inclination to good, according to the nature of his reason, which nature is proper to him: thus man has a natural inclination to know the truth about God, and to live in society" (Id.).

If the sensitive dimension, through cogitative, is capable of executing acts of EM, it will undoubtedly do so in accordance with the goals that human beings share with the rest of living beings. In other words, involuntary EM would operate in pursuit of goals such as self-preservation, avoidance of displeasure, safety, procreation, breeding, and other interests shared with animals. From this point of view, some PTSD symptoms can be understood as involuntary EM (see Table 5).

TABLE 5 Classification of PTSD symptoms according to the involuntary goal that can be attributed to it.

PTSD symptom	Involuntary pursuit goals
Intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s) (B4).	Self-preservation.
Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame) (D4).	
Markedly diminished interest or participation in significant activities (D5).	
Hypervigilance (E3).	
Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s) (C1).	Avoidance of displeasure.
Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s) (C2).	
Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs) (D1).	
Dissociative symptoms.	

3.4 Can involuntary emotional modification be considered emotional regulation?

There are at least three arguments that can be put forward to support that involuntary EM can be considered emotional regulation. First, it has already been said that the involuntary operation of the cogitative, from which involuntary EM arises, follows certain rules. Moreover, it acts in accordance with certain ends related to the preservation of the individual. If emotional regulation, as Gyurak et al. (2011) state, "may be defined as goal directed processes functioning to influence the intensity, duration and type of emotion experienced" (p. 2), then nothing would prevent us from considering EM as emotional regulation.

Secondly, we have stated that involuntary EM operates according to what we have in common with other animals, namely, the sensitive dimension. Now, it seems absurd not to admit emotional regulation in animals. A hungry tiger can restrain its desire to pounce on prey until it finds the appropriate moment when such a pounce will bear the expected fruit. Lions that lose the battle to be the alpha male give up their desire to mate with the females. The opossum that is placidly feeding will enter a state that simulates death if a predator appears.

Third, if the symptomatology of PTSD were not emotional regulation, then it would be a chaotic reaction. But as we have just argued, an important part of this symptomatology can be interpreted as an attempt to follow certain rules with adaptive arrangements. This is far removed from the concept of chaos, which implies an absence of discernible patterns. Therefore, it seems more appropriate to consider involuntary EM as emotional regulation.

Despite these arguments, we consider that involuntary EM should not be considered as emotional regulation. To explain our position, we will begin by reviewing the distinction made by Thomas Aquinas between human acts and acts of man. For the Italian thinker, not all actions performed by human beings are properly human:

> Of actions done by man those alone are properly called "human," which are proper to man as man. Now man differs from irrational animals in this, that he is master of his actions. Wherefore those actions alone are properly called human, of which man is master. Now man is master of his actions through his reason and will; whence, too, the free-will is defined as "the faculty and will of reason." Therefore those actions are properly called human which proceed from a deliberate will. And if any other actions are found in man, they can be called actions "of a man", but not properly "human" actions, since they are not proper to man as man. (Aquinas, 1920, I-II, c. 1, a. 1)

As we can see, what distinguishes human beings from the rest of the animals is their capacity to reason, which leads them to be masters of their actions. Hence, properly human acts are those that come from his will. On the other hand, the acts that the human being performs without the participation of his will should not be considered human, but acts of the human being. Among these acts, Thomas Aquinas mentions "when one moves one's foot or hand, or scratches one's beard" (Aquinas, 1920, I-II, c. 1, a. 1, arg. 3).

From this point of view, only voluntary emotional modification could be considered properly human. Insofar as it is governed by reason and guided by the will, this EM is appropriate to the nature of the human being, which is the rational nature, even if it is executed without warning –as in the example of the kind person who smiles without realizing it–. In contrast, involuntary EM would be a phenomenon that occurs in the human being, an act of the human being, but not a properly human act.

Similarly, if we focus our interest on understanding human ER, then we can only consider as ER that which is carried out according to reason and will. On the contrary, ER that occurs outside of volition should not be called ER. Considering that voluntariness is what defines the concepts of voluntary EM and human ER, it seems appropriate to conclude that both concepts describe the same reality. Therefore, involuntary ER cannot properly be considered ER, unless one wishes to call it so by *analogy*[1]. However, this would be a contradiction in terms: the expression "involuntary emotional regulation" contradicts itself, since ER is always voluntary, as we have argued.

Having said this, we will now move on to answer the first three arguments that seemed to demonstrate that involuntary EM can be considered ER.

First, it is true that involuntary EM fits within the definition of ER provided by Gyurak et al. (2011). However, this definition omits to refer to the voluntariness of ER. Considering that human ER is characterized as voluntary, it is possible that this definition is overly broad. As we showed in Table 4, there are several definitions that consider voluntariness as an essential note of ER. These definitions seem closer to the notion of human ER that we are proposing. From this perspective, involuntary EM cannot be considered ER.

Secondly, it is true that adaptive emotional changes do occur in animals. However, they are very different from those that occur in humans when they self-regulate emotionally. Human ER occurs according to reason and will, which move the cogitative to evaluate affects in a reasonable way, from which new affects arise. In contrast, the emotional change of animals does not occur according to reason and will, since animals lack these powers. Their *estimative* –the animal faculty analog to human cogitative (Aquinas, 1920, I, c. 78, a. 4)– assesses according to rules and ends that are inscribed in animal nature, without it being necessary for the animal to know such rules and ends. Hence, the EM of animals are stereotyped: all lions react in the same way to the same affective stimuli. They are not able to govern their affections freely, in the sense that they cannot oppose them. In contrast, human ER is diverse, and even creative, as human beings differ in their way of reasoning and find their own way of coping with their affects. In this sense, there are two ways of responding. It can be said that animals do not possess ER, in the sense of what we understand as human ER, but rather adaptive EM. Now, on the other hand, it also seems correct to say that animals possess animal ER, in the sense that their ER would be in accordance with their animal nature. From this perspective, it would not be appropriate to homologate it with human emotional regulation, since the latter occurs according to reason and will -which animals lack-, but neither with involuntary EM, since it is a type of regulation inappropriate to human nature. In contrast, animal ER is entirely proportionate to animal nature.

1 To call something "by analogy" means that it is improperly called because of some kind of similarity to the main exemplar. For example, a toy car is not properly a car, but only by analogy.

Third, it seems to us true that involuntary EM is not equivalent to a chaotic response. However, that does not automatically make it human ER. As we have shown, involuntary EM can occur in humans, which is distinguished from ER due to the absence of voluntariness, but which is also distinguished from chaos in that it acts according to rules and to certain ends. Therefore, differentiating from chaotic reaction is not enough for us to consider involuntary EM as ER.

3.5 Can involuntary emotional modification be classified as emotional dysregulation?

In order to answer this question, we must start by clarifying what emotional dysregulation consists of. The most general answer is offered by Macklem (2008), who states: "the failure to regulate emotion is called dysregulation" (p. 13). From this perspective, any response that departs from emotional regulation could be categorized as emotional dysregulation. A second, more narrowly defined response is offered by Cole et al. (2019): "emotion dysregulation is a pattern of emotion regulation that is interpreted as dysregulated based on the implications for interfering with healthy, competent development" (p. 1192). According to this perspective, a response can only be labeled as emotion dysregulation if it constitutes a pattern that could be considered emotion regulation in a different context.

Which of these two uses is the most appropriate for the concept of ER? The term "dys" means: "inseparable prefix, opposite to *eu*, with notion of hard, bad, unlucky, etc.; destroying the good sense of a word, or increasing its bad sense" (Oxford English Dictionary, 1933). This prefix has been widely used in medicine to name various pathologies. On the other hand, the prefix "dis" has a much broader meaning, as it implies a "privative sense, implying removal, aversion, negation, reversal of action" (Oxford English Dictionary, 1933). In other words: while "dys" is used to refer to a specific sense of negation, namely the spoiling of something, "dis" is used for any form of negation.

If we apply this to our discussion, the word "dysregulation" would mean something more specific than simply the lack or absence of regulation, as suggested by Macklem (2008). Indeed, dysregulation would rather mean "bad" regulation. In that sense, Cole et al.' (2019) definition seems to fit more in this spirit. For them, ED is not simply a lack of regulation, but regulation that has gone bad because of its inappropriate context. In contrast, Macklem (2008) concept could be called "disregulation."

If we accept that ED is a bad form of ER, then it should be distinguished from problems of ER, as already formulated by Cicchetti et al. (1995). While ED would imply a maladaptive pattern of ER, such as emotion suppression (Beauchaine and Hinshaw, 2008), problems of ER would consist of certain difficulties in the execution of a fully adaptive ER, as when someone manages to calm down, but takes longer than optimal. On the other hand, ED should be distinguished from chaotic responding, which lacks recognizable patterns. This is exemplified by Ford (2013) with respect to dissociation: "from a self-regulation perspective, dissociation is a shift to defensive modes of psychological operations rather than a loss or breakdown" (p. 240).

Taking all this into consideration, involuntary EM would be equivalent to ED. Both involve an emotional change guided by certain rules and in order to achieve certain ends. Moreover, both are maladaptive: while involuntary EM occurs in human beings without the participation of their reason –which is the power with which we can respond appropriately to situations–, ED is an inappropriate response to the context. By establishing this equivalence, both concepts illuminate each other. On the one hand, involuntary EM is revealed as a response inappropriate to the context, and on the other hand, ED is revealed as a phenomenon that occurs outside of reason, following purposes that spring from the sensitive dimension and that may even occur against the individual's will.

3.6 Implications for the distinction between ER and ED

The identification of ER with voluntary EM and of ED with involuntary EM aid us to better illuminate the difference between ER and ED. In comparing the two concepts, it has seemed to us that there are at least seven criteria that could help us clarify the difference between ER and ED. Without claiming to be exhaustive, we have taken these concepts from the literature review and theoretical discussion we have wielded up to this point: degree of consciousness, voluntariness, rule, purpose, cogitative motor, adaptive value, and associated psychic consequences (see Table 6).

With respect to the degree of awareness, ER can be conscious or unconscious, or in other words, explicit or implicit. It can be conscious, as when individuals intend to modulate their affect to better adapt to their context, or it can be unconscious or inadvertent, as when in a situation of discomfort they change their body posture to feel more

TABLE 6 Comparison between emotional regulation and emotional dysregulation.

Comparison criteria	Emotional regulation	Emotional dysregulation
1. Degree of consciousness	Conscious or unconscious.	It is mainly unconscious but can also be conscious.
2. Voluntariness	Voluntary	Involuntary
3. Type of rule	Rule of reason	Rule derived from natural inclinations or learned by experience
4. Purpose	Rational good	Partial sensitive good at the cost of total evil
5. Cogitative motor	The reason	The senses
6. Adaptive value	It is adaptive	It is debatable whether it is adaptive in the short term, but in general terms it is maladaptive.
7. Associated psychological consequences	Health, freedom, order, well-being	Pathology, loss of freedom, disorder, malaise
8. Example	Looking at things with perspective to calm down	Dissociating affects so as not to feel dissatisfaction

secure. What both possibilities have in common is voluntariness. ED, on the other hand, usually occurs unconsciously, such as when individuals lose control of their impulses but only others are able to realize it. However, it could also be conscious, as when individuals become aware of the moment in which they are dissociating, although they cannot do anything to stop the process. What is common to both cases is the involuntariness of such operations.

The rule followed by the ER is always that of reason. This is capable of considering concepts and principles universally, so that the purpose of the regulated acts would always be toward the rational good. For example, when individuals who are angry perform a breathing exercise in order not to answer their partner in an offensive way, they do so keeping in mind principles such as: "do not harm" or "it is not good to get angry." On the other hand, the rule that determines deregulation is that of natural inclinations, specifically those that human beings have in common with the rest of living beings, and also the rules that arise from learning from experience. For example, when a victim of a traffic accident begins to feel rejection and to avoid everything related to motoring. In both cases the purpose of deregulation is the sensible good, that is, the good captured by the senses, which is partial in the sense that it seeks immediate satisfaction without thinking about the total human good. For example, in the case of the accident, the person prefers to avoid means of transportation even if this makes him late for work.

The cogitative faculty, in the case of the ER, is moved by reason. This implies that the movement is initiated by the person himself on the basis of the assessment presented by the higher faculty as convenient, according to an evaluation of the circumstances and with a view to the greater good. In contrast, in the ED the cogitative faculty is moved by the senses, so that it follows natural inclinations and rules derived from experience or nature, apart from rational considerations and the will.

ER, insofar as it is executed with a view to a complete human good, is capable of achieving behavior that is adaptive, but it can even go beyond that. Through ER, behaviors can be performed that conform to higher values, which are even capable of getting people in trouble with their context, for example, when some people choose to do the right thing knowing that it will cause incomprehension and rejection. In contrast, ED does not help to achieve adaptive behavior (D'Agostino et al., 2017). Although it works toward immediate ends, which are in accordance with the basic natural inclinations, it is maladaptive because it fails with respect to the medium and long term ends. It is important to consider that, from a Thomistic perspective, human life consists of much more than the attainment of the inclinations that it shares with the rest of living beings, as we have already explained (Aquinas, 1920, I-II, c.94, a.2). Human beings only reach their fullness to the extent that they live in accordance with reason (Aquinas, 1920, II-II, c. 141, a.1), and life according to reason not only pursues adaptation to the environment, but also life in society, the search for truth, transcendence (Aquinas, 1920, I-II, c.94, a.2) and also for happiness (Aquinas, 1920, I-II, c.1). Therefore, although ED aims at some kind of short-term adaptation, it is incapable of bringing human beings closer to their fullness. The ER, on the other hand, can do so, since its criterion comes from reason.

The psychic consequences are diametrically opposed. The ER would be associated with well-being and psychic health, generating the conditions for the human being to act freely, without the interference of disordered and unmanageable emotions. This would facilitate the adaptive behavior mentioned above. On the other hand, ED would be associated with discomfort and psychic disorder, which hinder human beings from acting according to their self-determination.

According to this comparison, it becomes certain that ER and ED are concepts that refer to different realities. This is no coincidence, since they are realities that are defined by contrast. Many definitions of ED include interference with behavior regulated according to rational ends. In other words, a person cannot be emotionally regulated and dysregulated at the same time. It is true that emotional dysregulation has been defined by some authors as emotional regulation out of context. Although it is true that we can mentally abstract emotional regulation, in real life it always occurs in a given context. However, if that context is not the appropriate one for it to occur, then it does not seem appropriate to conceptualize this mechanism as emotional regulation.

From a Thomistic point of view, this opposition is explained from the nature of the human soul, whose faculties are open to the guidance of reason. The faculties of the sensitive dimension can operate autonomously, without listening to reason, but this is improper of human nature, since it is constituted to be properly governed by its higher faculties. To the extent that reason is able to rule the affections in a habitual way, as occurs in virtue, the human being is self-possessed and can act freely. On the other hand, if affections direct their activity, human beings become alienated, lose control of their actions and are unable to conduct their lives in a humane way. Therefore, the rational management of the affections is not compatible with capitulation to them, at least with respect to the same act.

3.7 Is PTSD symptomatology an ER mechanism?

After this long discussion, we are finally in a position to answer this question. We have already stated that PTSD symptomatology can be understood as involuntary EM. In turn, we reviewed that it is not appropriate to consider this type of EM as ER, but rather as ED. Consequently, the symptoms of PTSD (see Table 5) should not be considered an ER mechanism –direct relationship–, but of ED –inverse relationship–. As we have argued, this is not because ED lacks rules and purpose, but because human ER is that which is performed according to human nature, which is rational, and as such occurs with the participation of the will. In contrast, ED occurs outside of reason, even against the will of the individual. Table 7 summarizes the relationship between all the concepts discussed throughout this interdisciplinary dialogue.

4 Discussion

The interdisciplinary approach has allowed us to affirm that PTSD symptomatology should be considered as ED. To achieve this, we have made use of the concepts of voluntary and involuntary EM, which are derived from the Thomistic anthropological view. From here, we have been able to distinguish clearly between emotional regulation and

TABLE 7 Relationship between ER-ED, voluntary-involuntary EM and explicit-implicit ER.

	Emotional regulation		Emotional dysregulation
Voluntary or involuntary EM	Voluntary EM		Involuntary EM
Adaptivity	Adaptive		Maladaptive
Explicit or implicit ER	Explicit ER	Implicit ER	N/A
Conscious degree	Conscious	Unconscious	Unconscious
Example	e.g. Someone decides to contain my joy.	e.g. Without thinking about it, someone gets more serious at a funeral.	e.g. Someone dissociates when faced with a problem.

dysregulation as two psychological phenomena that are opposed in many ways, but at the same time are similar in that they constitute patterns of EM that follow certain rules (cf. Tamir, 2015) according to certain purposes.

In this article we have proposed that the voluntariness-involuntariness opposition is different from that of consciousness-unconsciousness. This distinction seems to bring us quite close to the proposal of Braunstein et al. (2017), who states that two dimensions or axes can be distinguished within ER: on the one hand, the distinction between implicit and explicit goals, and on the other, the distinction between controlled and automatic processes of change. Everything seems to indicate that implicit-explicit would be homologous to conscious-unconscious, while controlled-automatic would be equivalent to voluntary-involuntary. From our point of view, the second comparison would be inaccurate, since within voluntary acts we can include acts of control, as when one tries to control laughter at a funeral, but we can also include automatic acts, such as the smile of a kind person. On the other hand, within involuntary acts we can include maladaptive acts of control, such as one who is unable to relax and let go, and automatic acts, such as the development of mental lacunae in a trauma. In the end, voluntariness is not synonymous with control, since even lack of control can be voluntary, as when someone chooses to watch a horror movie. Nor is it synonymous with automaticity, since automatic responses can be voluntarily allowed, as when someone disposes to fall asleep. In that sense, the antinomy "voluntary-involuntary" seems to us more appropriate than "controlled-automatic." In fact, the concept of "control" does not seem so appropriate to describe ER, since it connotes restriction (Cole et al., 1994; Gratz and Roemer, 2003). Moreover, the opposite concept to controlled is not automatic, but uncontrolled, which is different.

These findings challenge the classic definitions of ER, which were possibly developed with the intention of portraying voluntary EM. Indeed, in reviewing the literature on ER it is clear that researchers are trying to better understand how we voluntarily modify our emotions to better adapt to context. Considering that volition is the distinctive note of voluntary emotional modification, and therefore also of human emotional regulation, it seems to us that this notion should be part of the definition of emotional regulation. As we have shown in Table 4, there are already several definitions that include volition as an essential characteristic of ER. It seems to us relevant that the other definitions be revised or reformulated according to the reflection we have wielded in this article.

Although some authors had already affirmed that ED could be considered a type of ER, in this article we have gone deeper into this affirmation, backing it up with the anthropology of Thomas Aquinas. It is interesting to note that for the Italian thinker there is no problem in admitting finality in the field of involuntary actions. Such a proposal may be shocking to the scientistic view, which usually excludes teleology from its explanatory paradigm. However, teleology has been present since the beginnings of clinical psychology. For example, psychoanalysis assumed that psychic activity is driven by *eros* and *thanatos*, both of which strive for satisfaction, and humanistic theory assumed that the human organism was guided by a force or tendency that drives the individual to self-actualization or self-actualization.

Our proposal has some implications for psychotherapy. The emotional dysregulation of patients can be read in the key of involuntary EM, allowing us to hypothesize that symptomatology implies a certain type of order. In other words, it is not chaos, but a mechanism whose motives are sometimes consciously unknown to us. In a way, this concept is already incorporated in psychotherapy. Many times therapists try to understand the meaning of symptoms, discovering in them intentions unnoticed by the patients. For example, from a psychoanalytic point of view, PTSD symptomatology can be interpreted as secondary gain, and from an Adlerian approach, as a self-sabotage which allows patients to exempt themselves from corroborating their inferiority.

Following our proposal, it is not enough for patients to realize that their symptomatology operates involuntarily under a non-rational logic. It is necessary that they reach voluntary EM, since only this allows the criterion to regulate the affects to come from reason, establishing an order that allows a true human life, achieving an appropriate integration to the context and the reduction of symptoms and flexibility when using it. If Freudian therapy consists of "making the unconscious conscious," a therapy from our paradigm would imply "regulating the dysregulated" or its equivalent "making the involuntary EM voluntary." The importance of ER for clinical psychology was emphasized by Cole et al. (1994):

> Although clinical theory has not defined emotion dysregulation explicitly, emotion regulation is an implied goal of most treatment models. Understanding emotion patterns and their historical roots, learning to recognize emotions and to express them appropriately, and experiencing problematic emotion patterns in order to modify them are major goals of many therapies. (p. 7)

Interestingly, some therapeutic techniques such as mindfulness and EMDR seem to promote just the opposite view. Mindfulness involves accepting emotions, aiming for a non-judgmental awareness rather than active rational control. On the other hand, EMDR uses the technique of bilateral stimulation, which triggers a process of free association -without reason controlling the thoughts that appear-,

during which reprocessing of the trauma occurs. In both cases it seems that the aim is to make the voluntary involuntary. Strictly speaking, however, neither case involves abdicating the rational dimension, since patients must make the choice of focusing attention on the present, letting emotions flow or reprocessing the thoughts that arise while bilateral stimulation is performed. Recall that voluntariness is not synonymous with control (Cole et al., 1994). Although mindfulness and EMDR imply opening oneself to uncontrolled thoughts, this is only possible when the person freely agrees to do so, and this requires choice. In short, regulating emotions rationally and voluntarily is not exactly the same as controlling them, but rather choosing the means that best suit the person's needs, which in some cases may involve letting them flow. From this point of view, both mindfulness and EMDR are therapeutic techniques that are coherent with our proposal since they promote a rational mastery of people over themselves. Other techniques that can be suggested at a therapeutic level are narrative therapy techniques, grounding and mentalization; all of these techniques promote self-awareness and reflection on one's own mental and bodily states that lead the person to act voluntarily from reason.

However, it seems important to us to discard the idea that ED is a process without meaning, rule or order. As Cole et al. (1994) state: "Dysregulated does not mean unregulated" (p. 8). Whether it is called ED or involuntary EM, in all cases it is possible to discover an order that follows rules different from those we rationally follow and purposes that the subject has not voluntarily set for himself. It seems important for psychology to approach the understanding of these rules, which escape the logic of reason, without losing sight of the fact that human beings reach their fullness to the extent that they live according to the rules that they impose on themselves through their rationality.

At this point, we can answer some of the questions raised in the introduction. Although some symptoms of PTSD may improperly be considered an emotional regulation mechanism, they should essentially be considered dysregulation. Therefore, it is not necessary to question whether PTSD is a pathology. On the other hand, the distinction between ER and ED has become more sharply demarcated. Despite its possible short-term adaptive value, this symptomatology should not be considered part of normal life and should therefore be addressed by the clinician.

It is certainly important to review the empirical applicability of our proposal. To the extent that we can discover in all PTSD symptomatology some kind of rule or order, then it will be possible to corroborate that all dysregulation hides involuntary EM. It would also be interesting to extend this proposal to other types of symptomatology, and even to other types of involuntary human activity. On the other hand, it would be interesting to corroborate whether all ED is an obstacle to achieve a truly human life.

5 Conclusion

ER is a topic of high relevance for psychology and of important application for psychotherapy. Trauma-associated symptomatology has been commonly conceptualized as ED, mainly because it does not seem to help achieve successful adaptation. From our point of view, this symptomatology is appropriately classified as ED, since it would consist of involuntary mechanisms, and therefore, not regulated by reason. In contrast, the emotional regulation proper to human beings would always be voluntary: by their very nature they can only live humanely if they live according to their reason.

The contributions of interdisciplinary reflection have been key to sustain this position with clarity and validity. In particular, the anthropological scheme of Thomas Aquinas has shown great aptitude for dialogue with contemporary psychology. The precision of his concepts, the distinction between the rational and sensitive dimensions -which does not deny the unity of the human psyche- and the dynamic understanding of the faculties have been of great help in this occasion, and in others mentioned in the introduction.

We hope that rethinking PTSD symptomatology will stimulate researchers to continue delving into one of the inaugural mysteries of clinical psychology, in order to reach a synthesis where the contributions of great clinicians can be incorporated together with the progress of theoretical and experimental science. The therapeutic benefits of this advance will undoubtedly be well received by our patients.

Author contributions

JR-S: Conceptualization, Investigation, Methodology, Project administration, Supervision, Visualization, Writing – original draft, Writing – review & editing. NÁ-V: Conceptualization, Investigation, Writing – original draft, Writing – review & editing. MP-M: Conceptualization, Investigation, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Acknowledgments

We would like to thank Vicente Silva, Nicolás García, and Gonzalo Letelier for their invaluable help during the conceptualization and preparation of this article. In addition, we thank the Association of Integral Psychology of the Person for inspiring us to interdisciplinary dialogue and the rediscovery of Thomas Aquinas' work.

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

References

Alink, L. R., Cicchetti, D., Kim, J., and Rogosch, F. A. (2009). Mediating and moderating processes in the relation between maltreatment and psychopathology: mother-child relationship quality and emotion regulation. *J. Abnorm. Child Psychol.* 37, 831–843. doi: 10.1007/s10802-009-9314-4

American Psychiatric Association. (2022). *Diagnostic and statistical manual of mental disorders (5th ed., text rev.)*. Washington, DC: American Psychiatric Association Publishing.

Aquinas, T. (1920). *The summa Theologica*. London: Burns Oates and Washbourne.

Aquinas, T. (1999). *Disputed question on the virtues in general*. Indiana: St. Augustine's Press.

Archambeau, O. G., Elhai, J. D., and Frueh, B. C. (2011). Definition of psychological trauma and threshold for functional impairment in PTSD. *J. Clin. Psychiatry* 72, 416–417. doi: 10.4088/jcp.10l06592

Asociación de Psicología Integral de la Persona (2022). Psicología integral de la persona. Bases para un meta-modelo de Psicología clínica. *Studium. Filosofía Teología* 25, 91–116. doi: 10.53439/stdfyt49.25.2022.91-116

Balaev, M. (2018). "Trauma studies," in *A companion to literary theory*. ed. D. H. Richter (Oxford: John Wiley' Sons Ltd), 360–371.

Bargh, J. A., Gollwitzer, P. M., Lee-Chai, A., Barndollar, K., and Trötschel, R. (2001). The automated will: nonconscious activation and pursuit of behavioral goals. *J. Pers. Soc. Psychol.* 81, 1014–1027. doi: 10.1037/0022-3514.81.6.1014

Bargh, J. A., and Williams, E. L. (2006). The automaticity of social life. *Curr. Dir. Psychol. Sci.* 15, 1–4. doi: 10.1111/j.0963-7214.2006.00395.x

Baumeister, R. F., Dale, K., and Sommer, K. L. (1998). Freudian defense mechanisms and empirical findings in modern social psychology: reaction formation, projection, displacement, undoing, isolation, sublimation, and denial. *J. Pers.* 66:10811124.

Baumeister, R. F., and Vohs, K. D. (2016). "Strength model of self-regulation as limited resource: assessment, controversies," in *Advances in Experimental Social Psychology*. eds. J. M. Olson and M. P. Zanna (Elsevier), 54, 78–128. doi: 10.1016/bs.aesp.2016.04.001

Beauchaine, T. P. (2015). Future directions in emotion dysregulation and youth psychopathology. *J. Clin. Child Adolesc. Psychol.* 44, 875–896. doi: 10.1080/15374416.2015.1038827

Beauchaine, T. P., and Hinshaw, S. P. (2008). *Child and adolescent psychopathology*. Hoboken, NJ: Wiley.

Bemmouna, D., and Weiner, L. (2023). Linehan's biosocial model applied to emotion dysregulation in autism: a narrative review of the literature and an illustrative case conceptualization. *Front. Psych.* 14:1238116. doi: 10.3389/fpsyt.2023.1238116

Benight, C. C., Harwell, A., and Shoji, K. (2018). Self-regulation shift theory: a dynamic personal agency approach to recovery capital and methodological suggestions. *Front. Psychol.* 9:1738. doi: 10.3389/fpsyg.2018.01738

Blair, K. J., Monroy, A., Rook, J. M., Wood, E., Foianini, J. E., Haider, A. H., et al. (2020). What is trauma? Qualitatively assessing stakeholder perceptions in Santa Cruz de la sierra, Bolivia. *Glob. Public Health* 15, 1364–1379. doi: 10.1080/17441692.2020.1761424

Botkin, F. R. (1921). The theory of the emotions in the psychology of Thomas Aquinas [thesis dissertation]. The University of Nebraska-Lincoln.

Braunstein, L. M., Gross, J. J., and Ochsner, K. N. (2017). Explicit and implicit emotion regulation: a multi-level framework. *Soc. Cogn. Affect. Neurosci.* 12, 1545–1557. doi: 10.1093/scan/nsx096

Breuer, J., and Freud, S. (1885/1936). *Studies in hysteria*. New York and Washington: Nervous and Mental Disease Publishing Company.

Briere, J., and Gil, E. (1998). Self-mutilation in clinical and general population samples: prevalence, correlates, and functions. *Am. J. Orthopsychiatry* 68, 609–620. doi: 10.1037/h0080369

Carmassi, C., Conti, L., Gravina, D., Nardi, B., and Dell'Osso, L. (2022). Emotional dysregulation as trans-nosographic psychopathological dimension in adulthood: a systematic review. *Front. Psych.* 13:900277. doi: 10.3389/fpsyt.2022.900277

Cartagena, N. L. (2021). Resilience, emotion regulation, and Thomas Aquinas. *Heythrop J.* 62, 485–497. doi: 10.1111/heyj.12349

Cavicchioli, M., Scalabrini, A., Northoff, G., Mucci, C., Ogliari, A., and Maffei, C. (2021). Dissociation and emotion regulation strategies: a meta-analytic review. *J. Psychiatr. Res.* 143, 370–387. doi: 10.1016/j.jpsychires.2021.09.011

Cicchetti, D., Ackerman, B. P., and Izard, C. E. (1995). Emotions and emotion regulation in developmental psychopathology. *Dev. Psychopathol.* 7, 1–10. doi: 10.1017/s0954579400006301

Cole, P. M., Ashana Ramsook, K., and Ram, N. (2019). Emotion dysregulation as a dynamic process. *Dev. Psychopathol.* 31, 1191–1201. doi: 10.1017/S0954579419000695

Cole, P. M., Michel, M. K., and Teti, L. O. (1994). The development of emotion regulation and dysregulation: a clinical perspective. *Monogr. Soc. Res. Child Dev.* 59, 73–102. doi: 10.1111/j.1540-5834.1994.tb01278.x

Conti, L., Fantasia, S., Violi, M., Dell'Oste, V., Pedrinelli, V., and Carmassi, C. (2023). Emotional dysregulation and post-traumatic stress symptoms: which interaction in adolescents and young adults? A Systematic Review. *Brain Sci.* 13:1730. doi: 10.3390/brainsci13121730

Cornelius, R. R. (2006). Magda Arnold's Thomistic theory of emotion, the self-ideal, and the moral dimension of appraisal. *Cognit. Emot.* 20, 976–1000. doi: 10.1080/02699930600616411

Cubillos, C. (2022). El ser, la naturaleza y la Psicología: algunos apuntes sobre la interpretación psicológica del concepto de persona. *Studium. Filosofía Teología* 25, 129–140. doi: 10.53439/stdfyt49.25.2022.129-140

Custers, R., and Aarts, H. (2010). The unconscious will: how the pursuit of goals operates outside of conscious awareness. *Science* 329, 47–50. doi: 10.1126/science.1188595

D'Agostino, A., Covanti, S., Monti, M. R., and Starcevic, V. (2017). Reconsidering emotion dysregulation. *Psychiatry Q.* 88, 807–825. doi: 10.1007/s11126-017-9499-6

De Haan, D. D. (2019). Approaching other animals with caution: exploring insights from Aquinas's psychology. *New Blackfriars* 100, 715–737. doi: 10.1111/nbfr.12509

Derakshan, N., Eysenck, M. W., and Myers, L. B. (2007). Emotional information processing in repressors: the vigilance-avoidance theory. *Cognit. Emot.* 21, 1585–1614. doi: 10.1080/02699930701499857

Dillon, D. G., Ritchey, M., Johnson, B. D., and LaBar, K. S. (2007). Dissociable effects of conscious emotion regulation strategies on explicit and implicit memory. *Emotion* 7, 354–365. doi: 10.1037/1528-3542.7.2.354

Droste, K. (2022). Una introducción a las pasiones humanas a la luz de santo Tomás de Aquino. *Studium. Filosofía Teología* 25, 117–127. doi: 10.53439/stdfyt49.25.2022.117-127

Dryden, J. (2016). Passions, affections, and emotions: methodological difficulties in reconstructing Aquinas's philosophical psychology. *Literature Compass* 13, 343–350. doi: 10.1111/lic3.12261

Echavarría, M. F. (2016). El corazón: Un análisis de la afectividad sensitiva y la afectividad intelectiva en la psicología de Tomás de Aquino. *Espíritu, LXV* 151, 41–72.

Egner, T., Etkin, A., Gale, S., and Hirsch, J. (2008). Dissociable neural systems resolve conflict from emotional versus nonemotional distracters. *Cerebral Cortex* 18, 1475–1484. doi: 10.1093/cercor/bhm179

Ehring, T., and Quack, D. (2010). Emotion regulation difficulties in trauma survivors: the role of trauma type and PTSD symptom severity. *Behav. Ther.* 41, 587–598. doi: 10.1016/j.beth.2010.04.004

Erickson, M. F., Egeland, B., and Pianta, R. (1989). "The effects of maltreatment on the development of young children," in *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect*. eds. D. Cicchetti and V. Carlson (Cambridge University Press), 647–684.

Etkin, A., Egner, T., Peraza, D. M., Kandel, E. R., and Hirsch, J. (2006). Resolving emotional conflict: a role for the rostral anterior cingulate cortex in modulating activity in the amygdala. *Neuron* 51, 871–882. doi: 10.1016/j.neuron.2006.07.029

Ford, J. D. (2013). How can self-regulation enhance our understanding of trauma and dissociation? *J. Trauma Dissociation* 14, 237–250. doi: 10.1080/15299732.2013.769398

Ford, J. D., and Courtois, C. A. (2014). Complex PTSD, affect dysregulation, and borderline personality disorder. *Borderline Personality Disorder Emot. Dysregulation* 1:9. doi: 10.1186/2051-6673-1-9

Fowers, B. J., Novak, L. F., Kiknadze, N. C., and Selim, M. (2023). Is the concept of personality capacious enough to incorporate virtues? *Front. Psychol.* 14:1232637. doi: 10.3389/fpsyg.2023.1232637

Freud, S. (1917/1977). *Introductory lectures on psychoanalysis*. New York: W. W. Norton and Company (Original work 1917).

Freud, S. (1915/1961). Repression. In J. Strachy (Ed. and Trans.), *The standard edition of the complete works of Sigmund Freud* (Vol. 14, pp. 143160). London: Hogarth Press. (Original work 1915)

Gao, W., Yan, X., and Yuan, J. (2022). Neural correlations between cognitive deficits and emotion regulation strategies: understanding emotion dysregulation in depression from the perspective of cognitive control and cognitive biases. *Psychoradiology* 2, 86–99. doi: 10.1093/psyrad/kkac014

Gasol, X., Navarro-Haro, M. V., Fernández-Felipe, I., García-Palacios, A., Suso-Ribera, C., and Gasol-Colomina, M. (2022). Preventing emotional dysregulation: acceptability and preliminary effectiveness of a DBT skills training program for adolescents in the Spanish school system. *Int. J. Environ. Res. Public Health* 19:494. doi: 10.3390/ijerph19010494

Gershuny, B. (1999). Relations among psychological trauma, dissociative phenomena, and trauma-related distress a review and integration. *Clin. Psychol. Rev.* 19, 631–657. doi: 10.1016/s0272-7358(98)00103-2

Gradus, J. L., and Galea, S. (2022). Reconsidering the definition of trauma. *Lancet Psychiatry* 9, 608–609. doi: 10.1016/S2215-0366(22)00196-1

Gratz, K. L., and Roemer, L. (2003). Multidimensional assessment of emotion regulation and dysregulation: development, factor structure, and initial validation of the difficulties in emotion regulation scale. *J. Psychopathol. Behav. Assess.* 26, 41–54. doi: 10.1023/b:joba.0000007455.08539.94

Gross, J. J. (1998). The emerging field of emotion regulation: an integrative review. *Rev. Gen. Psychol.* 2, 271–299. doi: 10.1037/1089-2680.2.3.271

Gross, J. J. (2002). Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology* 39, 281–291. doi: 10.1017/s0048577201393198

Gross, J. J. (2015). Emotion regulation: current status and future prospects. *Psychol. Inq.* 26, 1–26. doi: 10.1080/1047840X.2014.940781

Gross, J. J., and Thompson, R. A. (2007). "Emotion regulation: conceptual foundations" in *Handbook of emotion regulation*. ed. J. J. Gross (New York: Guilford Press), 3–24.

Gyurak, A., Gross, J. J., and Etkin, A. (2011). Explicit and implicit emotion regulation: a dual-process framework. *Cognit. Emot.* 25, 400–412. doi: 10.1080/02699931.2010.544160

Hopp, H., Troy, A. S., and Mauss, I. B. (2011). The unconscious pursuit of emotion regulation: implications for psychological health. *Cognit. Emot.* 25, 532–545. doi: 10.1080/02699931.2010.532606

Hurtado, M. E. (2016). Trauma, disociación y memoria. En contexto de violación de los Derechos Humanos en Chile [Tesis de magister no publicada]. Universidad Alberto Hurtado (Chile)

Ion, A., Bîlc, M. I., Pițur, S., Pop, C. F., Szentágotai-Tătar, A., and Miu, A. C. (2023). Childhood maltreatment and emotion regulation in everyday life: an experience sampling study. *Sci. Rep.* 13, 6–8. doi: 10.1038/s41598-023-34302-9

Isobel, S., Goodyear, M., and Foster, K. (2017). Psychological trauma in the context of familial relationships: a concept analysis. *Trauma Violence Abuse* 20, 549–559. doi: 10.1177/1524838017726424

Jongedijk, R. A., Boelen, P. A., Knipscheer, J. W., and Kleber, R. J. (2023). Unity or anarchy? A historical search for the psychological consequences of Psychotrauma. *Rev. Gen. Psychol.* 27, 303–319. doi: 10.1177/10892680231153096

Keeshin, B. R., Bryant, B. J., and Gargaro, E. R. (2021). Emotional dysregulation: a trauma-informed approach. *Child Adolesc. Psychiatr. Clin. N. Am.* 30, 375–387. doi: 10.1016/j.chc.2020.10.007

Kim, J., and Cicchetti, D. (2010). Longitudinal pathways linking child maltreatment, emotion regulation, peer relations, and psychopathology. *J. Child Psychol. Psychiatry* 51, 706–716. doi: 10.1111/j.1469-7610.2009.02202.x

Koole, S. L., and Rothermund, K. (2011). "I feel better but I don't know why": the psychology of implicit emotion regulation. *Cognit. Emot.* 25, 389–399. doi: 10.1080/02699931.2010.550505

Koole, S. L., Webb, T. L., and Sheeran, P. L. (2015). Implicit emotion regulation: feeling better without knowing why. *Curr. Opin. Psychol.* 3, 6–10. doi: 10.1016/j.copsyc.2014.12.027

Köpetz, C. E., Lejuez, C. W., Wiers, R. W., and Kruglanski, A. W. (2013). Motivation and self-regulation in addiction: a call for convergence. *Perspect. Psychol. Sci.* 8, 3–24. doi: 10.1177/1745691612457575

Kuhl, J. (2018). "Individual differences in self-regulation," in *Motivation and action*. eds. J. Heckhausen and H. Heckhausen (Cham, Switzerland: Springer), 529–577.

Lee, J., Sunghee, O., Chung, T., Park, Y. S., and Ha, T. (2018). 1.39 interplay of childhood trauma and emotional regulation in mood disorders. *J. Am. Acad. Child Adolesc. Psychiatry* 57, S147–S148. doi: 10.1016/j.jaac.2018.09.054

Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York: The Guilford Press.

Liotti, G. (2004). Trauma, dissociation, and disorganized attachment: three strands of a single braid. *Psychotherapy* 41, 472–486. doi: 10.1037/0033-3204.41.4.472

Macklem, G. L. (2008). "Emotional dysregulation: emotion regulation gone wrong," in *Practitioner's guide to emotion regulation in school-aged children*. ed. G. L. Macklem (Boston, MA: Springer US), 13–24.

Marple, C. A., Jeffrey, A., and Schnitker, S. A. (2024). Reappraisal as a means to self-transcendence: Aquinas's model of emotion regulation informs the extended process model. *Philos. Psychol.* 1-28. doi: 10.1080/09515089.2024.2307991

Modai, I. (1994). Forgetting childhood: a defense mechanism against psychosis in a holocaust survivor. *Clin. Gerontol.* 14, 67–71. doi: 10.1300/J018v14n03_07

Nadal, K. L., Erazo, T., and King, R. (2019). Challenging definitions of psychological trauma: connecting racial microaggressions and traumatic stress. *J. Soc. Act. Counsel. Psychol.* 11, 2–16. doi: 10.33043/jsacp.11.2.2-16

Navarini, C., and de Monte, E. (2019). Fear as related to courage: an Aristotelian-Thomistic redefinition of cognitive emotions. *HUMANA. MENTE J. Philos. Stud.* 12, 167–189.

Oxford English Dictionary (1933). *Regulation*. Oxford: The Clarendon Press.

Padykula, N. L., and Conklin, P. (2010). The self regulation model of attachment trauma and addiction. *Clin. Soc. Work. J.* 38, 351–360. doi: 10.1007/s10615-009-0204-6

Perry, B., and Szalavitz, M. (2007). *The boy who was raised as a dog: And other stories from a child psychiatrist's notebook*. New York: Basic Books.

Phillips, M. L., Ladouceur, C. D., and Drevets, W. C. (2008). A neural model of voluntary and automatic emotion regulation: implications for understanding the pathophysiology and neurodevelopment of bipolar disorder. *Mol. Psychiatry* 13, 833–857. doi: 10.1038/mp.2008.65

Pop-Jordanova, N. (2023). Emotional dysregulation is the Core problem in psychopathological manifestations. *Prilozi* 44, 7–16. doi: 10.2478/prilozi-2023-0020

Powers, A., Cross, D., Fani, N., and Bradley, B. (2015a). PTSD, emotion dysregulation, and dissociative symptoms in a highly traumatized sample. *J. Psychiatr. Res.* 61, 174–179. doi: 10.1016/j.jpsychires.2014.12.011

Powers, A., Etkin, A., Gyurak, A., Bradley, B., and Jovanovic, T. (2015b). Associations between childhood abuse, posttraumatic stress disorder, and implicit emotion regulation deficits: evidence from a low-income, inner-city population. *Psychiatry* 78, 251–264. doi: 10.1080/00332747.2015.1069656

Ratchford, J. L., Pawl, T., Jeffrey, A., and Schnitker, S. A. (2023). What is virtue? Using philosophy to refine psychological definition and operationalization. *Philos. Psychol.* 37, 2597–2622. doi: 10.1080/09515089.2023.2203157

Raudales, A. M., Short, N. A., and Schmidt, N. B. (2019). Emotion dysregulation mediates the relationship between trauma type and PTSD symptoms in a diverse trauma-exposed clinical sample. *Personal. Individ. Differ.* 139, 28–33. doi: 10.1016/j.paid.2018.10.033

Rojas-Saffie, J. P., and García-Matte, N. (2024). Emotional self-regulation and personality in the light of Thomas Aquinas's philosophical anthropology. *Front. Psychol.* 15:1419202. doi: 10.3389/fpsyg.2024.1419202

Rojas-Saffie, J. P., García-Matte, N., and Silva-Beyer, V. (2024). Allport, Aristotle and Aquinas: an interdisciplinary definition of personality. *New Ideas Psychol.* 75:101096. doi: 10.1016/j.newideapsych.2024.101096

Sar, V., and Ozturk, E. (2006). What is trauma and dissociation? *J. Trauma Pract.* 4, 7–20. doi: 10.1300/j189v04n01_02

Schell, P. (2022). La libertad en la vida psíquica. *Studium. Filosofía Teología* 25, 27–61. doi: 10.53439/stdfyt49.25.2022.27-61

Snorrason, Í., Smári, J., and Ólafsson, R. P. (2010). Emotion regulation in pathological skin picking: findings from a non-treatment seeking sample. *J. Behav. Ther. Exp. Psychiatry* 41, 238–245. doi: 10.1016/j.jbtep.2010.01.009

Southam-Gerow, M. A., and Kendall, P. C. (2002). Emotion regulation and understanding: implications for child psychopathology and therapy. *Clin. Psychol. Rev.* 22, 189–222. doi: 10.1016/s0272-7358(01)00087-3

Spalding, T. L., Stedman, J. M., Gagné, C. L., and Kostelecky, M. (2019). *The human person: what Aristotle and Thomas Aquinas offer modern psychology*. Cham, Switzerland: Springer Nature.

Sperduti, M., Makowski, D., Arcangeli, M., Wantzen, P., Zalla, T., Lemaire, S., et al. (2017). The distinctive role of executive functions in implicit emotion regulation. *Acta Psychol.* 173, 13–20. doi: 10.1016/j.actpsy.2016.12.001

Suazo, B. (2022). Salud psíquica: una comprensión formal. *Studium. Filosofía Teología* 25, 11–26. doi: 10.53439/stdfyt49.25.2022.11-26

Suveg, C., Morelen, D., Brewer, G. A., and Thomassin, K. (2010). The emotion dysregulation model of anxiety: a preliminary path analytic examination. *J. Anxiety Disord.* 24, 924–930. doi: 10.1016/j.janxdis.2010.06.018

Tamir, M. (2015). Why do people regulate their emotions? A taxonomy of motives in emotion regulation. *Personal. Soc. Psychol. Rev.* 20, 199–222. doi: 10.1177/1088868315586325

Tennant, C. (2004). Psychological trauma: psychiatry and the law in conflict. *Austral. N. Z. J. Psychiatry* 38, 344–347. doi: 10.1080/j.1440-1614.2004.01362.x

Terruwe, A. A., and Baars, C. W. (1981). *Psychic wholeness and healing: Using all the powers of the human psyche*. New York: Alba House.

Thompson, R. A. (2019). Emotion dysregulation: a theme in search of definition. *Dev. Psychopathol.* 31, 805–815. doi: 10.1017/S0954579419000282

Torre, J. B., and Lieberman, M. D. (2018). Putting feelings into words: affect labeling as implicit emotion regulation. *Emot. Rev.* 10, 116–124. doi: 10.1177/1754073917742706

Tripp, J. C., McDevitt-Murphy, M. E., Avery, M. L., and Bracken, K. L. (2015). PTSD symptoms, emotion dysregulation, and alcohol-related consequences among college students with a trauma history. *J. Dual Diagn.* 11, 107–117. doi: 10.1080/15504263.2015.1025013

Tupak, S. V., Dresler, T., Guhn, A., Ehlis, A.-C., Fallgatter, A. J., Pauli, P., et al. (2014). Implicit emotion regulation in the presence of threat: neural and autonomic correlates. *NeuroImage* 85, 372–379. doi: 10.1016/j.neuroimage.2013.09.066

van der Hart, O., Brown, P., and van der Kolk, B. A. (1989). Pierre Janet's treatment of post-traumatic stress. *J. Trauma. Stress.* 2, 379–395. doi: 10.1007/BF00974597

van der Kolk, B. A. (2000a). Posttraumatic stress disorder and the nature of trauma. *Dialogues Clin. Neurosci.* 2, 7–22. doi: 10.31887/DCNS.2000.2.1/bvdkolk

van der Kolk, B. A. (2000b). Trauma, neuroscience, and the etiology of hysteria: an exploration of the relevance of Breuer and Freud's 1893 article in light of modern science. *J. Am. Acad. Psychoanal.* 28, 237–262. doi: 10.1521/jaap.1.2000.28.2.237

van der Kolk, B. A. (2007b). Más allá de la cura por el diálogo: experiencia somática, improntas subcorticales y tratamiento del trauma. *Revista Toxicomanías* 51, 3–21.

van der Kolk, B. A. (2014). *The body keeps the score: Mind, Brain and Body in Transformation of Trauma*. London: Penguin Books.

van der Kolk, B. A., Herron, N., and Hostetler, A. (1994). The history of trauma in psychiatry. *Psychiatr. Clin. N. Am.* 17, 583–600. doi: 10.1016/s0193-953x(18)30102-3

van der Kolk, B. A. (2007a). "The developmental impact of childhood trauma" in *Understanding trauma: Integrating biological, clinical, and cultural perspectives*. eds. L. J. Kirmayer, R. Lemelson and M. Barad (Cambridge: Cambridge University Press), 224–241.

Verdier, P. (2022). Hacia una Psicología integralmente humana: ¿es el hombre un objeto más de la naturaleza? *Studium. Filosofía Teología* 25, 77–90. doi: 10.53439/stdfyt49.25.2022.77-90

Weathers, F. W., and Keane, T. M. (2007). The criterion a problem revisited: controversies and challenges in defining and measuring psychological trauma. *J. Trauma. Stress.* 20, 107–121. doi: 10.1002/jts.20210

Webermann, A. R., and Murphy, C. M. (2018). Childhood trauma and dissociative intimate partner violence. *Violence Against Women* 25, 148–166. doi: 10.1177/1077801218766628

Yin, B., Wang, Y.-X., Fei, C.-Y., and Jiang, K. (2022). Metaverse as a possible tool for reshaping schema modes in treating personality disorders. *Front. Psychol.* 13:1010971. doi: 10.3389/fpsyg.2022.1010971

Zhou, A., McDaniel, M., Hong, X., Mattin, M., Wang, X., and Shih, C. H. (2023). Emotion dysregulation mediates the association between acute sleep disturbance and later posttraumatic stress symptoms in trauma exposed adults. *Eur. J. Psychotraumatol.* 14:2202056. doi: 10.1080/20008066.2023.2202056

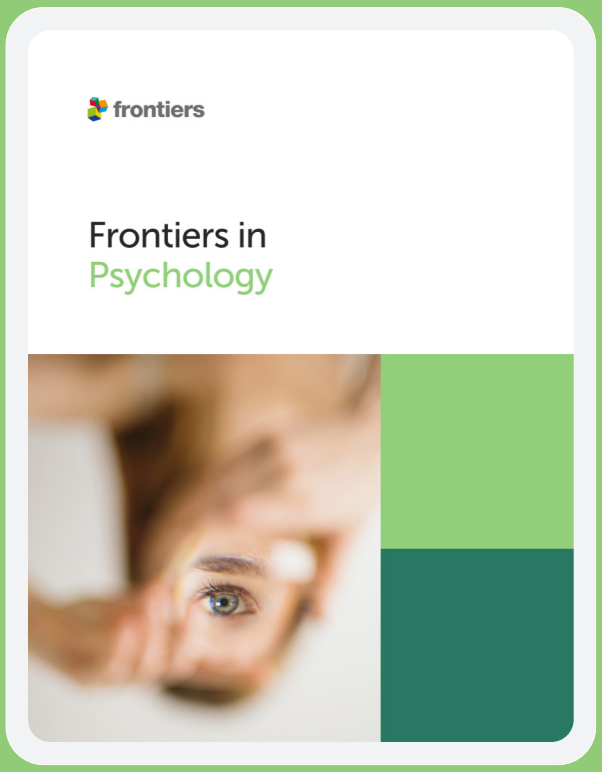
Frontiers in Psychology

Paving the way for a greater understanding of human behavior

The most cited journal in its field, exploring psychological sciences - from clinical research to cognitive science, from imaging studies to human factors, and from animal cognition to social psychology.

Discover the latest Research Topics

See more →



Frontiers

Avenue du Tribunal-Fédéral 34
1005 Lausanne, Switzerland
frontiersin.org

Contact us

+41 (0)21 510 17 00
frontiersin.org/about/contact