THE EMERGING ROLE OF INTERDISCIPLINARITY IN CLINICAL PSYCHOANALYSIS

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THE EMERGING ROLE OF INTERDISCIPLINARITY IN CLINICAL PSYCHOANALYSIS

Topic Editors:
Aner Govrin, Bar-Ilan University, Israel
Jon Mills, Adelphi University, United States
Ronald C. Naso, Adelphi University, United States

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EDITORIAL
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Editorial: The Emerging Role of Interdisciplinarity in Clinical Psychoanalysis

Aner Govrin[1]*, *Jon Mills*[2] and *Ronald C. Naso*[2]

[1] The Program for Hermenutics and Cultural Studies, Bar-Ilan University, Ramat Gan, Israel, [2] Gordon F. Derner School of Psychology, Adelphi University, New York, NY, United States

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Editorial on the Research Topic

The Emerging Role of Interdisciplinarity in Clinical Psychoanalysis

Psychoanalysis is not isolated from the scientific and cultural world. All are intertwined, nourishing and shaping each other and having a dialogue of mutual criticism. Related disciplines such as infant observation, neuroscience, attachment theory, psychotherapy research, emotional regulation research, even philosophy have penetrated psychoanalytic thought in myriad ways. Findings from other disciplines have improved psychoanalytic knowledge on the structure of the mind, the transference, the role of dreams and affect in therapy, memory processes, trauma, and many other subjects.

This special issue provides a collection of 11 articles that deepen and develop our understanding of the ways and means that clinical psychoanalysis intersects with other disciplines. The collection draws on the work of 12 researchers from different countries worldwide. Each article illustrates various connections between psychoanalysis and other fields of knowledge, including infant development, neuroscience, and philosophy.

Its purpose is to bring readers the rich and varied writing of psychodynamic psychotherapists who crossed the border to bring informative knowledge from other fields. We hope to encourage and stimulate a research discourse that focuses on interdisciplinary psychoanalytic thinking and fruitful dialogue between psychoanalysis and other disciplines.

In "Interoception Disorder and Insular Cortex Abnormalities in Schizophrenia: A New Perspective Between Psychoanalysis and Neuroscience," Tran The et al. indicate new directions for research in the study of the correlations between the functional abnormalities of the insular cortex and the positive symptomatology of schizophrenia, with regard to the Freudian hypothesis of the primary character of psychopathology linked with interoceptive perception in relation to delusional ideas and auditory hallucinations.

In "The Emerging Role of Interdisciplinarity in Clinical Psychoanalysis," Steinmair and Löffler-Stastka describe several attempts that have been made to operationalize psychoanalytic core competencies and a transparent analysis of the psychoanalytic mindset. These attempts include neuroimaging studies, default mode network (DMN), autobiographical memory, emotion processing, Facial Action Coding System (FACS), and affective linkage of long-term memory. They show how integrating different viewpoints and analysis with various methods lead to a more complete image acquired by interdisciplinary communication and collaboration rather than fragmentation of resources.

In "Narcissistic Personality Disorder: Are Psychodynamic Theories and the Alternative DSM-5 Model for Personality Disorders Finally Going to Meet?" Schalkwijk et al. integrate contemporary psychodynamic concepts of narcissism, and the diagnostic concept of narcissism in the Model

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Edited and reviewed by:
Marco Castiglioni,
University of Milano-Bicocca, Italy

***Correspondence:**
Aner Govrin
govrina.biu@gmail.com

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for Personality Disorders (AMPD). They argue that the combined dimensional and trait conceptualization of AMPD opens the door to new integrated diagnostic perspectives, including both internal and interpersonal functioning.

In "Dreams and Trauma Changes in the Manifest Dreams in Psychoanalytic Treatments—A Psychoanalytic Outcome Measure," Fischmann et al. use the model of dream generation by Moser and von Zeppelin, which has integrated a large interdisciplinary knowledge base of contemporary dream and sleep research with psychoanalytic accounts of dreaming.

In "Psychoanalysis and Interdisciplinarity With Non-analytic Psychotherapeutic Approaches Through the Lens of Dialectics," Herzovich and Govrin refer to Hegelian dialectics in an attempt to offer an alternative approach to interdisciplinarity in clinical psychoanalysis.

In "The Emergence of Psychoanalytic Metaneuropsychology: A Neuropsychoanalytically Informed Reconsideration of Early Psychic Development," Mellor uses infant research and neuroscience to shed new light on some of the major disagreements that separated the Viennese and the London Kleinians during the British Psychoanalytical Society's Controversial Discussions.

In "The Historical Influence of Psychoanalytic Concepts in the Understanding of Brain Injury Survivors as Psychological Patients," Salas reviews key psychoanalytic ideas that have influenced the understanding of brain injury as a psychological problem, and of brain injury survivors as patients with unique psychological rehabilitation needs.

In "Project for a Spatiotemporal Neuroscience"—Brain and Psyche Share Their Topography and Dynamic," Northoff and Scalabrini posit that Spatiotemporal Neuroscience, which focuses on the spatial topography and temporal dynamic of the brain's neural activity, provides a model of the brain that is more or less analogous to Freud's view of the psyche. They show how practically, the "Project for a Spatiotemporal Neuroscience" lays the groundwork for a novel form of neuroscientific informed psychotherapy, namely Spatiotemporal Psychotherapy.

In "The Changeable Positioning of the Couch and Repositioning to Face-to-Face Arrangement to Facilitate the Experience of Being," Ünsalver et al. focus on eye gaze and the experience of being seen to support the importance of eye gaze in the psychoanalytic encounter. The authors argue that sometimes it seems necessary for the analysand to re-establish eye contact with the new caregiver to experience attunement to reconstruct and repair early object relations.

In "Clinical Applications of Neuropsychoanalysis: Hypotheses Toward an Integrative Model," Mosri explores clinical applications of neuropsychoanalysis mainly based on affective neuroscience to propose an analysis of emotions that may contribute to the gradual development of a neuropsychoanalytically informed psychotherapy.

In "The Clinical Relevance of Interdisciplinary Research on Affect Regulation in the Analytic Relationship," Altimir and Jiménez study the simultaneous capture and analysis of the verbal contents and the interaction of gestures and glances as an expression of the implicit unconscious exchange.

In "Reformulated Object Relations Theory: A Bridge Between Clinical Psychoanalysis, Psychotherapy Integration, and the Understanding and Treatment of Suicidal Depression" Shahar aims to show how a reformulation of object relations theory (RORT) using (neuro-)psychological science may enhance a clinical-psychoanalytic understanding and treatment of suicidal depression, which constitutes one of the most formidable health challenges of our time.

AUTHOR CONTRIBUTIONS

AG was the central author. RN and JM contributed in reading, editing, and adding to the text. All authors contributed to the article and approved the submitted version.

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CONCEPTUAL ANALYSIS
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The Emerging Role of Interdisciplinarity in Clinical Psychoanalysis

Dagmar Steinmair[1,2] *and Henriette Löffler-Stastka*[1]*

[1]Department of Psychoanalysis and Psychotherapy, Medical University of Vienna, Vienna, Austria, [2]Karl Landsteiner Private University for Health Sciences, Krems an der Donau, Austria

Given the tight interconnections proposed between brain and psyche, psychoanalysis was conceptualized as an interdisciplinary theory right from the beginning. The diversification of knowledge performed by different science and technology fields, concerned with the same matter (explaining mind and brain and connecting them), makes this interdisciplinarity even more visible and evident. This challenges the integrative potential lying in psychoanalytic meta-theory.

Keywords: unconscious, meta-theory, brain, mind, encoding of memory, affective experience

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Jon Mills,
Adelphi University, United States

Reviewed by:
Rainer M. Holm-Hadulla,
Heidelberg University, Germany
Rosapia Lauro Grotto,
University of Florence, Italy

***Correspondence:**
Henriette Löffler-Stastka
henriette.loeffler-stastka@meduniwien.ac.at

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CONCEPTUAL ANALYSIS

The scientific discourse is characterized by a constant questioning of truths and requires an openness to innovations and tolerating uncertainty of existing knowledge. When putting distinct strains of knowledge into relation to the whole, the circular character of interpretation of findings is impossible without considering context (hermeneutic circle; Holm-Hadulla, 2003). The psychoanalytic method underlies psychoanalytic therapeutic work as well as psychoanalytic research. It involves "exploration, validation, refutation and discovery"(Bellak, 1961). However, Freud distinguished between gaining (conscious) insights, unconscious drives and conflicts, and psychoanalytic research. Clinical observations are implemented in hypothesis generation, but verifying such theories requires hypothesis testing, according to scientific guidelines, to avoid overgeneralization from individual reflections. When investigating the human mind, psychotherapists have been aware of the overlaps with associated fields (e.g., neuropsychology, neurology, neuroradiology, philosophy, and humanities) and the role psychoanalysis has as a meta-theory. Embedding psychodynamic thinking with an evidence-based approach integrates different perspectives by applying a mixed-method approach, thus doing justice to the investigated matter's complexity.

When Freud founded the science of the unconscious, psychoanalysis, he did not invent it – literature and philosophy already had shed light on it and described the phenomena emerging from it. The notion of the unconscious (gr. alogia), defining what is not accessible by conscious processing but pushes and clusters around the conscious (gr. logos), was discussed by prominent thinkers like Euripides, Sokrates, Nietzsche, and Schopenhauer (Müller, 2012). Nevertheless, when Freud re-introduced this topic and its applicability to mental disorders, he encountered resistance and controversy. In his view, the debate was propagated due to the humiliation the awareness of unconscious drives evokes. Furthermore, the contraposition psychoanalytic theory proposed against contemporary idealism might have contributed to the resistance (Freud, 1900).

With the introduction of a censoring instance determining which unconscious and preconscious contents reach consciousness, the relationship between alogia and logos became a dynamic and potentially influenceable one (Freud, 1900). The threat posed by unconscious and previously mainly uncontrollable contents and drives was enriched by the perspective of a mediating mental function.

Freud (1925) proposed several models when trying to conceptualize the functioning of the human mind, processes, and mental structures. By definition, models are always a simplification of the matter- abstractions of reality, without claiming that they should be exact reproductions of the complex processes they aim to approximate. Thus, also psychoanalytic models changed over time- when different viewpoints had to be integrated.

In general, the effect of psychotherapy has been shown (Leuzinger-Bohleber et al., 2020)-highlighting the importance of common factors for therapy benefit (including: alliance, empathy, expectations, cultural adaptation, and therapist differences, see (Wampold, 2015). Beside the common factors specific factors apply and are necessary for treatment success – treatment differences and specific ingredients as well as adherence and competence decide whether therapists are effective (Wampold, 2015), again resulting in fewer fluctuations across different patients' therapies. Nevertheless, the formulation of generalizable outcome parameters has repeatedly been questioned and the need of defining outcome in a multidimensional way has been suggested (Diener et al., 2007). Psychotherapy goals are individually different, and thus every outcome parameter applied in research is nothing more than a surrogate. Thus, research in this field is complex and requires investigation of processes and therapeutic interactions during an ongoing therapy process within long-term treatment studies to show improvement not only in surrogate endpoints. However, the high costs of therapy so far need to be paid by the participants themselves over the years, even if a research context applies. This is problematic especially when taking into account that due to the desirable randomized double-blind design of clinical studies patient's preferences (therapy method, setting, and therapist) would have to be neglected (Leuzinger-Bohleber et al., 2020). When confronting therapy methods and settings with different frequency of treatment, how to exclude dose effects and various mediator variables?

What are the specific factors contributing to therapy success, what makes psychotherapists "effective," is it possible to establish an interdisciplinary psychotherapists' competence framework or do they differ across disciplines and therapy schools? Several attempts have been made to operationalize psychoanalytic core competencies and a transparent analysis of the psychoanalytic mindset (Tuckett, 2005; Bush, 2013; Parth and Loeffler-Stastka, 2015). The mechanism of change postulated by Bush (2013) for psychoanalysis relies on the ability and goal of creating "a shift in a patient's relationship to his mind." Through providing a sphere of reflection instead of enactment (language, gesture, mimic, etc.), symbolic thinking is enabled (Bush, 2013; Ginsburg, 2016). Psychodynamic treatments re-evoke memories, aiming at a reconsolidation of them through meaningful interactions in the psychoanalytic relationship, thus approaching them differently and provoking alternative associated memory traces (Scully et al., 2017; Leuzinger-Bohleber et al., 2020).

The development of human cognitive abilities and behavior depends on brain development and is experience dependent. Brain plasticity and sensitivity to influences are dependent on age- susceptibility to environmental factors (e.g., stress, sensory and motor experiences, drugs, hormones, and relationships) is higher at a younger age (Giedd et al., 1999; Kolb and Gibb, 2011; Morita et al., 2016). In studying developmental processes Melanie Klein's clinical work relied on infant and early mother-child relationship observation, trying to infer mental states and the relevance of external and internal factors (Sherwin-White, 2017). However, Klein assumed mental conflicts from the beginning of life caused by innate drives and fantasies and resolved by distorting defense mechanisms. Inspired by Klein's theories, Stern performed experimental and clinical studies testing the hypothesis that the early object relations are internalized appropriate to reality.

The body of evidence on the importance of therapeutic interventions related to the patient's affectivity for a positive therapy outcome is growing and investigation of emotion regulation in patients has been identified as a trans-diagnostic factor (Schäfer et al., 2017; Taylor et al., 2020). An intensive experiencing and a modified understanding of the patients' affects and defense mechanisms are necessary for successful psychodynamic therapies (Diener et al., 2007). Enactments and consciously and unconsciously expressed signals are interpreted and used to draw conclusions about conscious and unconscious mental states. To study the mind and brain connection nowadays psychoanalysts rely on research methods from various associated fields.

Computational and system dynamics modeling of psychoanalytic processes (i.e., nonlinear systems theory) allow for a sophisticated analysis of cognitive processes like dream work, for example. In conceptualizing the human psyche as a self-organizing process revealing dynamic pattern transitions awake as much as while asleep, the dream could just be the way humans get access to more affective-loaded dimensions and meanings. Automated text-analysis and affect charge-analysis together with time-series analysis of dream narratives carried out as process analysis was able to detect the change-point in a psychotherapeutic process (Gennaro et al., 2020).

Topological approaches aiming at formalizing some core aspects of psychoanalytical models rely on neuroimaging studies and neuropsychological concepts.

The detection of the default mode network (DMN) as a functional brain network active when individuals are undisturbed or carry out an undirected mental task (e.g., mind-wandering or daydreaming, thinking about their individual plans/memories) led to attempts to apply this finding to traditional psychodynamic views. DNM is active during mental processes that overlap with and constitute the concept of the Ego (Carhart-Harris and Friston, 2010; Rizzolatti et al., 2014; Lauro-Grotto, 2021). DNM is also active when dreaming. The ventromedial prefrontal cortex (vmPFC) as a part of the DNM regulates motivation, and if damaged dreaming is no longer possible (Zellner, 2013).

Thus, the psychoanalytic concept of dreams arising from wishes is supported by findings from imaging and lesion studies. Grotto discusses the concepts of mirroring (pre-reflective, motor simulation; mirror neuron system) and symmetrization (i.e., considering mental processes in relation to external reality; DNM)- theoretical concepts describing embodied cognition.

Mechanisms behind the expression of mimic expressions appearing only for milliseconds (40–500 ms; Ekman and Friesen, 1978) happen at the limit of accuracy of temporal resolution of the applied metabolic based non-invasive functional imaging methods used in human neurosciences (fMRI, PET, NIRS, etc.). The temporal resolution of non-invasive electrophysiological-based (EEG, MEG) methods is higher- with a lower spatial resolution. Burle et al. (2015) investigate how the impossibility to temporally separate different activations with a given imaging technique also degrades the imaging techniques' spatial resolution and vice versa. The low temporal resolution of metabolic processes may also mask temporally separated activations into a single, more spread one (Burle et al., 2015). Thus, combining the different imaging methods might so far be the best approach in research in humans. All the neuro-imaging methods discussed are not feasible when studying psychotherapeutic interactions in real-time but when investigating brain circuits and networks possibly relevant for mental health, like emotion recognition, memory and theory of mind, this research field is relevant also for psychoanalysts. For Lacan (1959-1960), the concept of memory was not a biological or psychological one – thus highlighting the different semantic levels of the term (Diener et al., 2007). Psychoanalytic work as mentioned above is concerned with memory retrieval and especially with problems in memory retrieval. The symbolic history of the subject is constituted of those contents that together form a signifying chain- with forgetting as an erasure of signifiers (Gennaro et al., 2020). In current neurosciences regarding autobiographical memory a brain network consisting of the prefrontal medial (facilitating retrieval monitoring) and the posteromedial cortical brain regions (enabling the visual imagery processes of memory) has been identified (Thome et al., 2020). Memorizing is thought to be dependent on the arousal and stress level at encoding and on the emotional value the content plays for the individual (Shields et al., 2017). Negative affective linkage together with high arousal leads to a more vivid memory at retrieval and to a tendency to remember the event. A meta-analysis on memory retrieval in post-traumatic stress disorder, interpreted reduced common activation of prefrontal cortices as a bias to re-experiencing with a dysfunction in the possibility to retrieve trauma-associated memories in a controlled manner (Thome et al., 2020). Thus, also current work is preoccupied with the whereabouts when memorizing fails- with Freud (1920) suggesting that when content is overwhelming at encoding, retrieval will happen in a dysfunctional manner. For post-traumatic states a disability to integrate the content in the signifying chain (Lacan, 1955-1956); a differentiation between "traumatic memory" (i.e., unconsciously repeating the past) vs. narrative memory (i.e., narrating the past as past) has been suggested (Dayan and Olliac, 2010). Contemporary conceptions of post-traumatic stress although having their roots in Freudian descriptions of hysteria and dissociation/conversion, assume a deregulation of the stress system (e.g., heightened activation of the amygdala) as an answer to threat-related stimuli (Freud, 1920).

Models associated with message processing have postulated that emotion could be influencing on the depth of information processing (Nabi, 1999). Other theories indicate that emotion influences on the ability of processing information and influence motivation (Chaiken, 1987). Thus, "the extent to which an individual elaborates on a given material" (McKasy, 2020) could be influenced by emotions. Communication scientist McKasy (2020) conducted a meta-analysis to review evidence concerning anger and information processing as compared to a neutral control, sadness, happiness, and fear group. It revealed that no significant influence of such nuanced emotions on information processing was detectable. Even when confronting angry individuals with neutral ones, the meta-analysis found an overall effect size only close to significance – but with an opposite (i.e., positive) effect of anger on information processing (McKasy, 2020).

With the social influence area, the question how information processing is influenced, especially by persuasive communication is very relevant. The persuasive impact of communicator and contextual variables (e.g., expertise, source credibility, attractiveness, liking, interpersonal similarity and message cues like length, number of presented arguments) has also been investigated in the field of cognitive psychology (Chaiken, 1987). The hypothesis that often not much cognitive effort is performed when judging the validity of an argument has been confirmed by empirical evidence, again the role of motivation and ability has been highlighted (Chaiken, 1987).

Neuroimaging studies so far showed substantial overlap in the detection of brain areas relevant for emotion processing (Botvinik-Nezer et al., 2020). However, analysis of the same dataset by different teams performed in the above-mentioned study also showed variability of findings; thus open-data-approaches suggest that the reliability of research relying only on fMRI is questionable.

Multiphoton fluorescence microscopy provides a higher spatial and temporal resolution than the other *in vivo* imaging modalities discussed above; with this method, cellular and subcellular processes can be investigated, and two- and three-dimensional images can be collected with a high temporal resolution (Dunn and Young, 2006). However, to study the human brain, the depth to which this imaging method can be applied is limited.

Already Darwin observed that facial behavior was similar across humans from different ethnic groups and even across species and drew conclusions about evolution of facial communication in mammals (Waller et al., 2020). The Facial Action Coding System (FACS) developed by Ekman and Friesen (1978) based on the work of the anatomist Hjortsjö (1970) is able to measure facial behavior based on individual facial muscle movements, recently Waller and colleagues applied this method to various non-human primate species (Waller et al., 2020). Trained investigators can identify subliminal facial micro-expressions with real-time computed face detection systems

(FACS; Ekman and Friesen, 1978). Existing evidence suggests that they represent more than motion artifacts and reflect inner, mostly unconscious emotional states. That facial expression provides means to infer emotion states has lately been investigated in mice (Dolensek et al., 2020). Five stereotyped facial expressions with measurable, completely different features were expressed in mice depending on applied emotionally relevant stimuli. They were interpreted as pleasure, disgust, nausea, pain, and fear; even a range of relative strength was shown depending on stimulus strength and contextual factors.

Thus, facial expressions in mice were not only expressed as a reaction to the trigger (e.g., tasting something sweet or bitter, or when anxiety is provoked) but were dependent on the condition of the individual mouse prior/during the application of the stimulus and context (e.g., saturated vs. hungry). From their experiments, the researchers conclude that facial mice expressions mainly reflect inner emotional states. Due to sufficient similarity – by investigating emotions in the mice-model, research in humans could eventually benefit. Most notably, given that mice brains can be studied *in vivo* with the imaging mentioned above technic (two-photon microscopy), individual insular mice-neurons' linkages to single emotions were shown (Dolensek et al., 2020).

Advances in informatics and video acquisition technology nowadays allow for a real-time automatic analysis of human expressions (Oh et al., 2018). With the ability to measure even very fast and subtle facial expressions (micro-expressions), recognition of signals expressed voluntarily or unconsciously became possible with FACS. However, the analysis of facial behaviors remains demanding because of its dynamic character and the blend of expressions limiting the description and analysis of these features (Waller et al., 2020). FACS is a flexible, descriptive instrument applicable during social interactions but the interpretation of findings relies on the categories deducible for the observer.

This method was applied to the research on effects of therapeutic interventions partly based on interpretation of body language. Detection and interpretation of subliminal signals unconsciously enacted by the patient through language, gesture, and mimic are relevant when investigating affect expression, regulation, or perception as so far suppressed affective or mental states are made accessible (Diener et al., 2007). With FACS analysis it has been concluded that interpretative and confrontational interventions are associated with contempt expression but result in a better working alliance in psychodynamic treatment (Datz et al., 2019). An initial expression of contempt (e.g., *via* facial micro-expression) could also be interpreted as a signal affect related to the necessary reality check when presented information at first impression does not fit pre-existing assumptions- thus indicating an ability to critically acclaim presented information. Eventually it could be a remnant of impressive or threatening behavior relevant in dealing with the social costs of group living. The subsequent working-through process proposed by psychotherapy is only possible in a secure environment, as hopefully provided within therapeutic relationships. The therapists work relies on the patient's ability to trust, usually achieved during early development- in highly interpersonal process relying on the ability to relax epistemic vigilance where appropriate, to follow human's instinct for social learning and adaptation to a social environment that can be trusted as a reliable source of information (Fonagy and Campbell, 2021).

Prediction of psychic functioning in adulthood from childhood or adolescent psychic symptoms or disease is not possible. A cultural-developmental model of vulnerability to mental disease has recently been proposed together with the hypothesis that there might be a "general factor that underpins an individual's level of vulnerability," relevant for vulnerability to mental diseases in general (Fonagy and Campbell, 2021). However, common mental disorders are frequent in adolescents, a recent meta-analysis showed a prevalence of 25% globally (Silva et al., 2020). More than 50% of mental disorders begin at the age of <14 years old and 75% at <25 (Kessler et al., 2007). Therefore, preventive approaches in the mental health sector now focus on youth research, identifying prediction parameters for a favorable outcome and specific therapy factors leading to improvement. So far, the evidence points to the importance of early interventions of the social environment for mentalizing and affecting regulation abilities necessary for social cognition and overall mental functioning (Correll et al., 2018; Sandbank et al., 2020; Fonagy and Campbell, 2021; Luyten et al., 2021). However, long-term RCTs of applied methods are not jet available- but poor outcomes in adults with psychic conditions rooting in childhood and adolescence demand new approaches.

As mentioned above, existing evidence suggests that unconscious but detectable signals are enacted due to internal emotional states and reactions to relevant triggers applied by the environment. Socially transmitted interactional patterns are actualized in any given social encounter- they unfold their impact through the preconscious and unconscious enactments (Balint, 1957). If mentalizing abilities are compromised (transiently due to current states or permanently due to traits), an adaptation to the situation at hand remains impossible-thus, patterns might get perpetuated rather than enriched by social learning. To break this inflexible enactment, therapeutic interventions focusing on the affective interplay in the therapeutic relationship aim at providing the conditions for a reshaping and reframing of this interplay- facilitating learning through (repeated) interaction (Leuzinger-Bohleber et al., 2020).

The psychoanalytic theory assumes that we would undervalue humans' cognitive functions by focusing only on consciously available knowledge. Most of the expressed human thoughts, affective and emotional states, and more complex behavior (like social interactions) would be unexplainable. Thus, implicitly stored knowledge, "embodied knowledge has been proposed: that is, information that is uniquely and integrally embodied in the person's personality, creativity, intelligence, perceptions, experiences, and relationships. Embodied knowledge is the essence of expertise" (Fitzpatrick, 2003).

When investigating psychotherapeutic competence, such embodied knowledge would apply. Embodied learning is achieved through lived experience; its verbalization and transmission are limited (Stern, 2007).

The importance of affective linkage of long-term memory contents might root in the apparent advantage of remembering information loaded with subjective meaning. Editing memories together with associated emotional memory traces seems to be possible at several time points: when encoding and again at retrieval (Schlichting and Preston, 2015; Scully et al., 2017; Shields et al., 2017). Mental health is associated with a bias toward remembering more events with an affectively favorable loading- or even reshaping memories toward a more pleasurable memory, aiming at an optimistic narrative (Muir et al., 2015, 2017; Phelps and Hofmann, 2019). Implicit bias is almost inevitable, as abstraction and creating somewhat stereotypical patterns from seemingly similar experiences might offer advantages, at least when fast reactions are necessary. Psychoanalysis seeks to strengthen the ability to cope with given memory contents and an adequate reality check and analysis of associated traces at the actualization, enriching them with new associable hints generated through the newly acquired implicit relational knowledge experienced in the therapeutic relationship.

Psychoanalytic therapy nowadays, should be part of a patient-oriented interdisciplinary network involving case-management (social-work, general practitioner) and when needed psychiatrist (incl. prescribing of medicine) and other relevant consultants (e.g., neurologist, internist, and gynecologist), laboratory and imaging. The importance of involvement of the patient' social network and parties affected and if not applicable the establishment of a peer group (e.g., through group therapy) has been shown (Renner et al., 2013). Mental health centers would certainly save time and resources by facilitating collaboration and communication especially when dealing with severely ill mental disease, as relapse rates are high and secondary complications and consequences often result in limited ambulatory possibilities.

For research, to conclude, when aiming at the generation of common ground with associated fields [e.g., neurosciences, (cognitive) psychology, philosophy, pharmacology, anatomy, (neuro-)biology, social sciences, humanities, and communication sciences], the inherent bias remains the same. When investigating the mind-brain connection, the object of study explores itself. However, integrating different viewpoints and analysis with various methods should lead to a more complete image acquired by interdisciplinary communication and collaboration rather than fragmentation of resources. Investigating mechanisms of change relevant to clinical psychotherapeutic work remains challenging.

AUTHOR CONTRIBUTIONS

HL-S conceived the conceptual work and specified the research fields from her clinical and research experience. DS wrote and discussed iteratively the main domains with HL-S. Both the authors contributed to the article and approved the submitted version.

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REVIEW
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Interoception Disorder and Insular Cortex Abnormalities in Schizophrenia: A New Perspective Between Psychoanalysis and Neuroscience

Jessica Tran The[1,2,3*], *Pierre J. Magistretti*[2,4,5] *and Francois Ansermet*[2,6]

[1] *Département d'études Psychanalytiques, Université de Paris, Paris, France,* [2] *Agalma Foundation, Geneva, Switzerland,* [3] *Faculté de Biologie et de Médecine, University of Lausanne, Lausanne, Switzerland,* [4] *Brain Mind Institute, Federal Institute of Technology in Lausanne, Sion, Switzerland,* [5] *Division of Biological and Environmental Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia,* [6] *Department of Psychiatry, University of Geneva, Geneva, Switzerland*

The existence of disturbances in the perception of somatic states and in the representation of the body with the presence of cœnesthetic hallucinations, of delusional hypochondriac ideas or of dysmorphophobias is a recognized fact in the psychopathology of schizophrenia. Freudian psychoanalytic theory had accorded a privileged place to the alteration of the perception of the body in schizophrenia. Freud had attributed to these phenomena a primary and prodromal role in the psychopathology of psychosis. We propose to look at this theory in a new way, starting from the perspective of recent studies about the role of the insula in the perception and representation of somatic states, since this structure has been identified as underpinning the sense of interoception. The data in the neurobiological literature about abnormalities in the insular cortex in schizophrenia has shown that insula dysfunction could constitute one of the biological substrates of disorders of body perception in schizophrenia, and could be a source of the alteration of the sense of self that is characteristic of this psychiatric pathology. Moreover, this alteration could thus be involved in the positive symptomatology of schizophrenia.

Keywords: interoception, insular abnormalities, schizophrenia, psychoanalysis, Freud, neuroscience, body perception, psychosis

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***Correspondence:**
Jessica Tran The
jessica.tranthe@ens.fr

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INTRODUCTION

The existence of disturbances in the perception of somatic states and in the representation of the body, together with the presence of cœnesthetic hallucinations and of delusional, hypochondriac ideas, or dysmorphophobias, is a recognized fact in the psychopathology of schizophrenia, which was observed in classical psychiatry. Freudian psychoanalytic theory had accorded an important place to this symptomology linked with the alteration of the perception of the body in schizophrenia. In particular, Freud had formulated the hypothesis that these phenomena would play an initial and prodromal role in the psychopathological process of psychosis, while the productive symptomology, and in particular delusional ideas and auditory hallucinations, would occur only in a second phase.

Recent discoveries in neurobiology, in particular A.D. Craig's work on interoception and the role of the posterior and anterior insula in the perception of somatic states and in the cortical representation of the image of the body (Craig, 2002), have opened up new avenues for research on the neurobiological substrates of the disorders in the perception of bodily states in schizophrenia. These results spurred researchers to investigate, using cerebral imaging techniques, the possibility of a structural and functional physiopathology in this cortical region in schizophrenic patients. The first studies have sought, in particular, to observe the existence of abnormalities in the anatomy of the insular cortex in schizophrenic patients, using data from structural magnetic resonance imaging (Parnas et al., 2005; Vollmer-Larsen et al., 2007; Jardri et al., 2008; Llorca et al., 2016). More recently, other studies have been concerned with functional abnormalities of the insula in these patients (Ardizzi et al., 2016). We propose, first of all, to review the Freudian theory of psychosis as a diachronic process with two steps, and Freud's theory of the existence of a hypochondriac "nucleus" of psychosis, in which cœnesthetic hallucinations and other alterations in the perception of somatic states play a major prodromal role. We will then return to the neurobiological data on the role of the insula in the perception of somatic states and in the representation of the image of the body. Next, we will review the results of various studies that have highlighted structural and functional abnormalities in the insular cortex in schizophrenic patients. We will study the possible correlations between the symptomatology tied to an alteration in the perception of somatic states in schizophrenia and the nature of the observed insular dysfunctions, in order to attempt to clarify how the physiopathology of the insula can appear to be one of the biological substrates of interoception disorder observable in the clinical pictures of schizophrenia. Finally, we will indicate new directions for research in the study of the correlations between the functional abnormalities of the insular cortex and the positive symptomatology of schizophrenia, with regard to the Freudian hypothesis of the primary character of the psychopathology linked with interoceptive perception in relation to delusional ideas and auditory hallucinations.

THE FREUDIAN HYPOTHESIS ABOUT THE EXISTENCE OF SOMATIC PERCEPTION DISORDER IN THE FIRST STEP OF SCHIZOPHRENIA

Freud conceived psychosis as a temporal and diachronic psychopathological process, marked by the succession of "two steps" (Freud, 1924, p. 184). Even if auditory hallucinations and delusional ideas generally appear to be the most visible symptomatology in the clinical pictures of schizophrenia, this positive symptomatology belongs, according to Freud, only to the second step of the disease process. During the first step of illness, the patient experiences an "internal catastrophe" (Freud, 1911, p. 70), a collapse of his entire psychic world, and that it was only in a second step that delusion began to be active in the manner of a "an attempt at recovery": "The delusional formation, which we take to be the pathological production, is in reality an attempt at recovery, a process of reconstruction" (Freud, 1911, p. 71).

Regarding the "first phase" of the psychopathological process at work in psychosis, Freud will theorize the existence of a hypochondriac "nucleus" (Freud, 1911, p. 37), which constitutes the stage that is the precursor to schizophrenia (Freud, 1916–1917): the beginning of the psychotic process is dominated by the weight of a cœnesthetic disorder, that is to say, a disturbance of the perception and the representation of the states of the body whose principal psychopathological manifestations are cœnesthetic hallucinations, dysmorphophobias, and hypochondriac ideas. Psychoanalytic theory thus hypothesizes the existence of a disturbance of the representation of somatic states and of the perception of the general state of the body, which characterizes the first phase of the disease process at work in psychosis.

Freud gave an illustration of this symptomatology of an alteration of body perception with the study of the clinical case of Schreber. Daniel Paul Schreber, president of the Dresden Court of Appeals, had been hospitalized in the Leipzig Clinic during different periods between 1884 and 1894, and recounted, in an autobiographical text, *Memoirs of My Nervous Illness,* his experience of psychosis (Schreber, 2000). Before the appearance of delusional ideas of persecution and of the first auditory hallucinations, the patient presents a serious disorder of the perception and the representation of his body, and the psychopathological symptomatology is dominated by the presence of hypochondriac ideas and by a great variety of cœnesthetic hallucinations, experienced as being extremely painful, and which bear witness to a massive alteration in the perception of the entirety of his bodily functioning. The patient explains that, during the first years of his illness, "he suffered destruction of individual organs of his body, of a kind which would have brought death to every other human being, that he lived for a long time without stomach, without intestines, bladder, almost without lungs, with smashed ribs, torn gullet, that he had at times eaten part of his own larynx…" (Schreber, 2000, p. 334). At the beginning of the illness, the clinical picture of Schreber is thus essentially dominated by a disorder of interoceptive perceptions, his body becoming the theater of an entire series of awful sensations, which have to do with his various organs, and which he describes as a permanent torture. Thereafter, the hallucinations and the hypochondriac ideas will evolve progressively into a delusion of persecution, since Schreber will attribute these sensations to the intervention of a supernatural exterior force:

"This was an extremely painful, caries-like state of the lower vertebrae" (Schreber, 2000, p. 151); "my lungs were for a long time the object of violent and very threatening attacks […]that for a time I seriously believed I had to fear a fatal outcome in consequence of pulmonary phthisis […] I had the definite feeling that my diaphragm was raised high in my chest to almost directly under my larynx and that there remained only a small remnant of lung in between…" (Schreber, 2000, p. 143).

This clinical case thus highlights the absolutely serious nature of the disturbances in the perception and the representation of somatic states that can be observed in the psychopathology of

schizophrenia. If one juxtaposes Freudian ideas with the recent results of contemporary neuroscientists, this hypothesis can be translated in terms of interoception disorder. According to the definition introduced by Craig in 2002, interoception designates the "*sense of the physiological condition of the body*" (Craig, 2002). Various studies have attested to the frequency of cœnesthetic hallucinations and of the presence of unusual visceral and bodily sensations in schizophrenic patients (Parnas et al., 2005); this sensorial modality is particularly specific to schizophrenia, compared with different types of hallucinations found into other clinical pictures (Llorca et al., 2016). A study of the cerebral structures involved in the perception and the representation of bodily states can thus help to shed light on the biological substrates of this interoception disorder in schizophrenia.

THE ROLE OF THE INSULAR CORTEX IN INTEROCEPTION

From an anatomical point of view, the structures involved in the perception and the representation of bodily states are essentially located in the somatosensorial cortex, the insula, and the parietal lobes, but also in the evolutionarily older structures such as the limbic system, the hypothalamus, and the brain stem (Damasio et al., 2013)—the right hemisphere being dominant for each of these regions. Several pathways are implicated in the neural processing of interoceptive signals, beginning with a rich interface between autonomic afferents and the central nervous system (Khalsa et al., 2018): primarily spinal, vagal, and glossopharyngeal afferents (Janig, 1996; Craig, 2002; Critchley and Harrison, 2013; Shivkumar et al., 2016), and several brainsterm: nucleus of the solitary tract, parabrachial nucleus, and periaqueductal gray, thalamus, hypothalamus, hippocampus, amygdala, and also cortical regions (insula and somatosensory cortices; Khalsa et al., 2009; Critchley and Harrison, 2013; Hassanpour et al., 2018). The representation of the current state of the organism is distributed, from a cerebral point of view, between a number of structures, both cortical and subcortical, and not located in a single anatomical spot. The information about the state of the viscera is thus projected in these different cerebral structures, or it is distributed in the form of neuronal "maps," like the information coming from muscles and joints (Damasio, 2000a).

The works of the neurophysiologist Arthur Craig in particular made it possible to indicate the crucial role of the insula in the representation of internal states of the body, and to describe the neuronal foundations of the *interoceptive* sense. The insula is shown to be a crucial cortical region for the perception of somatic states, a source of this "sense of the physiological condition of the body" (Craig, 2002). The data from functional imaging has also contributed to highlighting the crucial role of the insula in the treatment of emotional stimuli. The work of Craig (2009), Damasio (2003), and more recently of Critchley et al. (2004), has been able to confirm James's intuitions, according to which the emotions rely on the perception of the state of the different parts of the organism (James, 1890).

It has been established that the human insular cortices are involved in processing somatic states and body feelings (Damasio et al., 2000; Kupers et al., 2000; Brooks et al., 2002; Craig, 2002, 2010). But the Craig's view from which insula is the only source of feeling states perception in humans (Craig, 2009, 2011) is quite controversial, and L. F. Barett explicitly rejects it (Barrett and Simmons, 2015). Damasio et al. (2013) have studied a patient whose insular cortices were destroyed bilaterally as a result of Herpes simplex encephalitis, but whose all aspects of feelings were intact. From this study, they established that eventually the signals used to assemble the neural substrates of feelings hail from different sectors of the body and are conveyed by neural and humoral pathways to complex and topographically organized nuclei of the brain stem, prior to being conveyed again to cerebral cortices in the somatosensory, insular, and cingulate regions. They suggest that the neural substrate of feeling states is to be found first subcortically and then secondarily repeated at cortical level: the subcortical level would ensure basic feeling states while the cortical level would largely relate feeling states to cognitive processes such as decision-making and imagination.

However, insular cortices are an important cerebral region for the interoception. As Wyliea and Tregellas's article emphasized, interoception in the insula is demonstrated by its response during the perception of changes in the physiological state of the body (Wyliea and Tregellas, 2010), such as the observation of heart palpitations (Critchley et al., 2004), biofeedback using the changes of skin conductance (Critchley et al., 2002), thermal pain (Kong et al., 2006), pain induced electrically (Singer et al., 2004), and light touch (Lovero et al., 2009). In general, the insula is activated in the processing of signals tied to a series of somatic states: pain, body temperature, itching, tickling, visceral sensation, the state of smooth muscles, and of blood vessels. The data from functional neuroimaging has also shown an activation of the right anterior insular and orbitofrontal cortices during sexual excitation, and even during the onset of positive or negative sensations engendered by listening to a musical stimulus (Craig, 2002). This cerebral structure would thus make it possible to generate a direct thalamocortical representation of the state of the body in primates on the basis of the processing of all of these signals that convey information on somatic states.

The insula is thus at work in the processing of numerous interoceptive stimuli. But the data furnished by neuroimaging has also spurred authors such as Craig and Damasio to claim that the perception of physiological changes in the body and their evolution over time is at the origin of the sense of self (Damasio, 2000b; Craig, 2009). Furthermore, the interoceptive consciousness of the body as a whole also makes possible a representation of our organism as an entity distinct from the exterior environment: the insula thus appears to be a cortical region that is decisive for the distinction between the self and the "non-self" (Kircher et al., 2001; Devue et al., 2007).

STRUCTURAL ABNORMALITIES OF THE INSULAR CORTEX IN SCHIZOPHRENIA

The frequency of cœnesthetic hallucinations and of unusual corporeal and visceral sensations (such as "migrating inner sensations wandering through the body, electric, or

thermal feelings, abnormal sense of pulling/pressure or heaviness/emptiness inside of the body, and dysesthetic crises involving the vegetative system" (Ardizzi et al., 2016), attested to by several neuroscientific studies (Parnas et al., 2005; Vollmer-Larsen et al., 2007; Jardri et al., 2008; Llorca et al., 2016)—suggests the existence of a grave alteration in the sensitivity of patients to internal bodily signals, just like what Freud had described in his observations on the Schreber case. This symptomatology relating to an alteration in interoception in schizophrenia could be put into perspective with the data attesting to the existence of structural and functional abnormalities of the insular cortex in schizophrenic patients. If one brings these different elements together, the physiopathology of the insula may appear to be one of the neurobiological substrates of disorders of perception and of the representation of somatic states observable in the clinical pictures of schizophrenia. The first neuroimaging studies aiming to explore the role of the insula in schizophrenia sought, in particular, to observe the existence of abnormalities in the anatomy of the insular cortex in schizophrenic patients, using structural magnetic resonance imaging. One of the first studies, conducted in 2000 by American researchers at the University of Iowa, having explored the morphology of the insular cortex in these patients, observed a reduction in the cortical surface and in the volume of left insular gray matter—a reduction amplified according to the severity of the patients' symptomatology: the more severe the symptomatology presented by the patients, the more one observes a significant diminution of the volume and the surface of the insular cortex (Jang et al., 2006). But other studies have subsequently shown the existence of a modification of the morphology of the frontal temporal sides of the right insula (which, as we have seen, is the region involved in the perception of interoceptive signals) in schizophrenic patients compared with healthy patients, without finding abnormalities in the left insular cortex (Wyliea and Tregellas, 2010). In addition to a simple reduction in the volume of the insular cortical surface, D. P. Jang and his collaborators showed that the morphological deformations concerning the length of the right side of the insula is smaller among patients than among control subjects. They also underscored that this deformation could have appeared at a relatively early stage of development of the patients, and they hypothesized a neurodevelopmental origin of this structural difference in the form of the surface of the insula (a deformation that could also be associated with frontal-temporal abnormalities; Jang et al., 2006).

The diminution of the insular gray matter, both bilateral and progressive over the course of the chronic development of the pathology, appears to be a recurring result in various studies, but it is not currently clear if these deficits are localized in a particular sub-region of the insula (Wyliea and Tregellas, 2010), since they have been observed in the anterior (Makris et al., 2006) as well as posterior insula (Saze et al., 2007), or in both regions (Kasai et al., 2003; Takahashi et al., 2005). The same is true for the observation of the thickness of the insular cortical layer—diminutions on the left side, on the right side, or on both sides have been reported (Wyliea and Tregellas, 2010). Post-mortem studies have also shown a diminution in the number of neurons in the outer layers of the insular cortex, as well as a reduction in neuronal and glial cells in the second layer (Pennington et al., 2008a). Moreover, an abnormal protein expression in this layer of the insular cortex has also been observed in schizophrenic patients—as abnormally expressed proteins are involved in neuronal growth, morphogenesis, and synaptic connections, they thus affect different levels of neuroplasticity (Pennington et al., 2008b).

Nevertheless, as Haukvik emphasized in a general review, published in 2013, on the studies dealing with structural brain imaging in schizophrenic patients, even if these patients tend to have a thinner cortex in certain parts of the brain such as the insula, enlarged lateral ventricles, and smaller volumes of hippocampus, this data still does not suffice in order to distinguish, using structural brain imaging, schizophrenic individuals from those who do not present any psychiatric disorder (Haukvik et al., 2013). There is thus currently no "objective" and measurable criterium correlated in a reliable way with a diagnosis of schizophrenia, and this disease can be diagnosed today only in an exclusively clinical manner.

THE ROLE OF INSULA DYSFUNCTION IN THE DISTURBANCE OF INTEROCEPTION IN SCHIZOPHRENIA

The development of the recourse to functional MRI techniques in psychiatry for the purposes of research has also helped to indicate the potential role of different cerebral regions in the physiopathology of schizophrenia. Even if no anatomical region of the brain has thus far been judged to be essential, functional imaging has contributed in particular to a better understanding of the relations between these zones and the functional networks that connect them. Neuroscientific studies on schizophrenia have initially focused, basically, on the hippocampus and the prefrontal cortex (Sigurdsson and Duvarci, 2016), but the existence of insula dysfunction has also begun to be explored more recently.

Many neuroscientific studies linked self-consciousness to the processing and integration of multisensory bodily signals, but in particular, certain elements from functional imaging data contribute to the hypothesis of a link between the disturbance of perception and of the representation of the states of the body in schizophrenia, and the possibility of insula dysfunction.

Heydrich and Blanke (2013) performed quantitative lesion analysis in a group of patients with heautoscopy hallucination and compared the location of brain damage with those of control patients suffering from complex visual hallucinations. During heautoscopy, subjects report strong self-identification with the second own body, often associated with the experience of existing at and perceiving the world from two places at the same time. Heydrich and Blanke found that heautoscopy was associated with lesions to the left posterior insula.

In another functional magnetic resonance imaging study, Ebisch et al. (2014) provide new evidence for a cortical link between aberrant self-experience and social cognition in first-episode schizophrenia. Ventral premotor cortex and posterior insula are candidate brain regions underlying disturbances in both self-experience and self-other relationship due to their

processing of predominantly externally guided and internally guided like interoception. Their results show aberrant functional interactions of right Ventral premotor cortex and posterior insular cortex with posterior cingulate cortex, a midline region that has been shown central in mediating self-experience. Their results show more particularly increased aberrant functional interactions are positively correlated with basic symptoms like subjective self-experience disturbances.

Otherwise, the question of the processing of pain, which significantly involves the insula from a neurobiological point of view, appears also to be a major issue for the problematic of the perception of the states of the body in psychosis. A high involvement of the posterior and anterior insula in the perception of pain has been observed. Moreover, this region is activated not only in cases of pain relating to real organic lesions, but also in cases of patients suffering from chronic and neuropathic pain. The posterior insula receives, in particular, sensorial input from the somatosensorial cortices and from the ventroposterior laterals of the thalamus, this sensorial information being integrated in the anterior insular to produce, through the connections with the limbic system and the prefrontal cortex, a subjective evaluation of the emotional elements of pain (Haukvik et al., 2013). The functions of these two sub-regions are thus complementary: the posterior insula codes, in a bilateral manner, the experience of thermal pain, while the anterior bilateral insula participates in the evaluation of the intensity of pain. The two regions are activated when a subject feels, subjectively, a sensation of pain (Kong et al., 2006).

Moreover, the vision of a person who seems to be the victim of sharp pains, who produces a feeling of "empathic pain," activates solely the anterior insula (Oschner et al., 2008). On the contrary, the experiments aiming to distract a subject suffering from pain—for example by making him laugh or inciting him to concentrate on something else—imply a diminution of the activation of the anterior insula, observed by functional imaging (Brooks et al., 2002). Thus, the subjective evaluation of pain seems to be processed in the anterior insula in a somewhat autonomous and independent manner with regard to the state of the body as it is perceived at the level of the posterior insula. There would thus be a discontinuity between the reality of the physiological state of the organism, and the perception and representation of this state that is empirically observable and corroborated from a neurobiological point of view. Damasio describes this phenomenon as "either a body loop or an 'as if' loop," that is to say, as virtual neuronal maps of the body, which do not correspond to the reality of the state of the organism at a given moment (Damasio, 1996). This simulation mechanism thus operates exclusively within the central nervous system, by "short-circuiting" the body, rather than there being an authentic perception of a bodily modification happening in reality in the organism at a given moment.

Cœnesthetic hallucinations consist in a subjective sensation of pain, which does not correspond to the reality of the physiological state of the body, since this sensation has no anatomical mooring. Nevertheless, no functional imaging study has so far attempted to evaluate precisely what could be the possible role of the insula in the processing of pain in schizophrenia, and in particular its involvement in the cases of cœnesthetic hallucinations generally perceived by the patient as disagreeable or painful. It is pertinent to explore if insular cortex abnormalities in schizophrenia could be correlated with the presence of cœnesthetic hallucinations and hypochondriac delusional ideas. More generally, alteration of the interoceptive precision in schizophrenia was observed (Ardizzi et al., 2016). But it would also be expedient to determine if significant correlations can be observed between the alteration of interoception in schizophrenic patients and anatomic-functional abnormalities of the insular cortex. Finally, if a correlation between the severity of the interoception disorder and the clarity of a positive symptomatology in schizophrenic patients has been observed, it would likewise bear studying these links more closely in order to observe whether the interoception disorder in schizophrenia could, secondarily, engender abnormalities in higher cognitive functions, and if it could be at the origin, as Freud postulated, of auditory hallucinations and delusional ideas.

Indeed, Craig and Damasio have defended the thesis that the perception and the representation of states of the body plays a major role in the advent of a sense of self (Damasio, 2000b; Craig, 2009). It can thus be hypothesized that the anatomical-functional abnormalities of the insular cortex, in so far as they can be considered to alter the first level of the sense of self, which Damasio has described as the "proto-self" (Damasio, 2000b) with regard to the perception and representation of states of the body, could eventually engender disorders for the higher forms of feeling that constitute the sense of self. Thus, if one follows the psychoanalytic hypothesis of a prodromal and nodal role of a disorder of perception and of the representation of the state of the body in psychosis, it would be expedient to explore the repercussions of this disorder for the more complex forms of the sense of self (and in particular for the "core self and autobiographical self"; Damasio, 2000b) in order to find out whether the alterations of higher levels of consciousness in psychosis, involved in delusional ideas and auditory hallucinations (which affect exteroceptive perception and, more generally, the relation to the surrounding environment) could be conceived of as continuous with the alterations of the "proto-self," which relate to the disturbance of perception and of the representation of the states of the body. It could thus be supposed that the disorder of interoception may have consequences for more complex cognitive functions, and that it may be at the origin of the productive symptomatology, which would thus need to be considered to be chronologically secondary.

EMBODIED PREDICTIVE INTEROCEPTION CODING MODEL AND INSULAR ABNORMALITIES

Intuition suggests that perception follows sensation and therefore bodily feelings originate in the body. However, recent evidence goes against this logic: interoceptive experience may largely reflect limbic predictions about the expected state of the body that are constrained by ascending visceral sensations. In this Opinion article, we introduce the Embodied Predictive Interoception Coding model, which integrates an anatomical model of corticocortical connections with Bayesian active

inference principles, to propose that agranular visceromotor cortices contribute to interoception by issuing interoceptive predictions. We then discuss how disruptions in interoceptive predictions could function as a common vulnerability for mental and physical illness.

The hypothesis that insular abnormalities in schizophrenia can be associated with schizophrenia disturbance of perception of the states of the body and more generally with schizophrenia as a pathology of self, may be completed with contributions of the embodied predictive interoception coding model. According to Friston (2010) and Clark (2013) views, Lisa Feldman Barrett and W. Kyle Simmons suggest that bodily feelings from the body are not first sensations and become after perceptions, but that interoceptive experience may largely reflect limbic predictions about the expected state of the body that are constrained by ascending visceral sensations.

We observed that Craig (2009) had asserted that the insular cortex plays a part in transforming ascending interoceptive signals into a "global emotional moment," with the anterior insula being a crucial area for human awareness. But Barrett and Simmons (2015) criticized his views, and they proposed a model that does not focus on the anterior insula as a necessary area for consciousness or emotional awareness *per se*. This is because, in their model, multiple pathways within the combined cortical interoceptive network and the ascending pathways can construct interoceptive perceptions thereby making conscious presence and emotional awareness more resilient to brain injury.

They have introduced the Embodied Predictive Interoception Coding model, which integrates an anatomical model of corticocortical connections with Bayesian active inference principles, to propose that agranular visceromotor cortices and insula contribute to interoception by issuing interoceptive predictions. According to the EPIC model, Interoceptive sensation is largely prediction: "there is an interoceptive system in the brain in which agranular cortices send visceromotor predictions to the body and transmit interoceptive predictions about the viscerosensory consequences of those predictions" (Barrett and Simmons, 2015). Barrett and Simmons suggest that agranular visceromotor cortices (including the cingulate cortex, the posterior ventral medial prefrontal cortex, the posterior orbitofrontal cortex, and the most ventral portions of the anterior insula) estimate the balance between the autonomic, metabolic, and immunological resources that are available to the body and the predicted requirements of the body, based on past experience. They also explain that disruptions in interoceptive predictions could function as a common vulnerability for mental and physical illness. The EPIC model predicts that aberrant interoceptive predictions can lead to mental diseases, for example depression (Barrett et al., 2016). Philip Gerrans has also use this model for understanding the phenomenon of pain asymbolia, a condition in which nociceptive signals of bodily damage are not attributed to the self (Gerrans, 2020). According to his view, we can suggest that insular abnormalities showed by fMRI in schizophrenia may also generate interoception predictive disorders, and have an impact in body states perception and representation, and also in self-awareness.

Furthermore, alterations of the insular cortex functioning and interoceptive system were described in many different clinical contexts, neurological and psychiatric, such as depression and anxiety disorders (Vicario et al., 2020). Nevertheless, the presence of insular alterations in other neuropsychiatric disorders does not straight determine cœnesthetic hallucinations or delusional ideas and auditory hallucinations. A future direction of research is to investigate the reasons why these insular abnormalities manifest differently in schizophrenia and other mental disorders.

CONCLUSION

The demonstration of the critical role of the insula in the perception of states of the body and in the generation of a cortical representation of somatic states opens a promising field of research in psychiatry, and makes it possible to pursue new avenues of investigation on the physiopathology of the insula in schizophrenia. Some studies have indeed shown the existence of significant anatomical and functional abnormalities of the cortex of the insula in schizophrenic patients, which could constitute the biological substrate of the alteration of interoception observed in these patients. These results help to shed new light on the importance accorded by Freudian psychoanalytic theory to the symptoms connected to corporeal perception, such as cœnesthetic hallucinations and hypochondriac ideas.

If the insula is particularly involved in the processing of pain, it would be useful to explore in greater detail what might be the role played by insula dysfunction in the disturbances of the subjective processing of pain in schizophrenic patients, in order to better understand the involvement of abnormalities of the cortical structure in cœnesthetic hallucinations, generally perceived by patients as disagreeable and painful. In particular, it would be worthwhile to study whether or not the substance of these abnormalities is correlated with the presence of cœnesthetic hallucinations in schizophrenia.

Finally, if a correlation between the severity of the interoception disorder and the clarity of a positive symptomatology in schizophrenic subjects has been observed, these links should be studied in greater detail in order to discern if the interoception disorder in schizophrenia, insofar as it engenders an alteration in the sense of self, could have, as a secondary consequence, abnormalities in higher cognitive functions, and be a source of auditory hallucinations and delusional ideas.

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JT is the main contributor of this paper as part of her Ph.D. thesis. FA and PM as supervisors, contributed to the conception and development of the research, and they revised critically the manuscript for intellectual content. All authors contributed to the article and approved the submitted version.

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Psychoanalysis and Interdisciplinarity With Non-analytic Psychotherapeutic Approaches Through the Lens of Dialectics

Yael Peri Herzovich and Aner Govrin**

Interdisciplinary Studies Unite, The Program for Hermeneutics and Cultural Studies, Bar-Ilan University, Ramat Gan, Israel

Psychoanalysis, in its purist mainstream sense, tends to be considered as an isolationist discipline that steers clear of interdisciplinary connections with other psychotherapies. Its drive for purity does not open up to influences that cast as alien and a threat to its core principles. We refer to Hegelian dialectics in an attempt to offer an alternative approach to interdisciplinarity in clinical psychoanalysis. Psychoanalysis entertains a complex dialectical relationship with the major theories it opposes. In this dynamic, psychoanalysis begins by negating the non-psychoanalytic theory as a part of self-negation (Hegel calls this phase self-alienation). But in its own process of growth, it negates this negation and reabsorbs the alienated self part. Reabsorbing the negated component, psychoanalysis does not revert to its original identity but becomes sublated into a different, more complex idea. In this epistemological process, psychoanalysis deals with its own practical and theoretical anomalies and lacunas. The paper illustrates this process using three central developments in the history of psychoanalysis: empathy in self psychology (connection with Rogers' humanist psychology), short-term dynamic psychotherapy (connection with short, intensive therapies), and mentalization-based psychotherapy (connection with cognitive-behavioral therapies). In all of these cases, psychoanalysis integrates components it previously opposed and changes these components to their own, specific characteristics. We address the epistemological shifts in the scientific status of psychoanalysis and show their connection to dialectics. Finally, we conclude that dialectical development is what allows psychoanalysis to remain relevant and up to date, to be open to interdisciplinary influences without its identity and tradition coming under threat.

Keywords: psychoanalysis, interdisciplinarity, dialectics, Hegel, philosophy of psychoanalysis

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Nicolo' Gaj,
Catholic University of the Sacred Heart, Italy

****Correspondence:***
Yael Peri Herzovich
yael020@netvision.net.il
Aner Govrin
govrina.biu@gmail.com

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PSYCHOANALYSIS AND THE EXTRA-ANALYTIC OTHER

In recent years there were several attempts to characterize the evolution of psychoanalytic thought. Makari (2000) posits that contemporary psychoanalysis, with its numerous models of mind and psychopathology, includes both a far-reaching and vital Kuhnian proto-science, as well as a historically deep practice of meanings and values. Makari believes that change in psychoanalysis is not uniform. Rather, some progress in psychoanalysis reflects the kinds of shifts Kuhn ascribed to a proto-science and change that propose a new net of meanings, an ethic, a way to live in the

world. Govrin (2004) argues that shifts in epistemological assumptions have always accompanied significant ideological nodes in the history of psychoanalysis. In other words, the psychoanalytic therapeutic concepts have changed because the cultural and philosophical context of the world view has changed, mainly from positivism to post-modernism.

In this paper, we would like to describe the evolution of psychoanalysis by using Hegel's dialectic process stages. But let us first clarify what we mean when using the broad term "psychoanalysis" and what we do not mean.

The field of psychoanalysis has gone through many theoretical evolutions since Freud's time, from an emphasis on the drives to ego psychology, object relations theory, self psychology, and is currently preoccupied with post-modern perspectives and those focusing on relationality and intersubjectivity. Therefore, psychoanalysis is not (anymore) a "monolith" but includes within it a multitude of different positions. These include ones that seek to integrate psychoanalysis and other non-analytic approaches (such as neuropsychoanalysis, infant research, and integration with CBT and other orientations). It is important to note that in this paper, we use "psychoanalysis" in its purist mainstream sense by which the nucleus of the identity of psychoanalysis lies in the "understanding" of unconscious dynamics (Migone, 2011) and uncovering and understanding the (often unconscious) conflicts and early developmental experiences associated with the client's symptoms (Boswell et al., 2010). We are aware that many other forms of psychoanalysis are oriented toward integration and mutual influence with non-analytic theories (they are usually heavily criticized by the "purists" [see for example, Blass and Carmeli (2007) criticism of neuropsychoanalysis, and Green (2000) criticism against infant research]. We are also aware that in many contemporary psychoanalytic approaches, there is not that a rigid opposition between psychoanalysis and non-psychoanalysis, being themselves not considered psychoanalytic by classical or more conservative psychoanalysts (see for examples the intersubjective or the relational tracks, etc.). However, we believe that mainstream psychoanalysis is still a dominant force, especially today when psychoanalysis needs to show its relevancy in a world that offers many other effective therapies. Furthermore, psychoanalysis still often defines itself by reference to what it is not, which means other psychotherapeutic schools.

This paper will therefore concentrate on a specific phenomenon or trend within mainstream psychoanalysis that reflects itself within many psychodynamics clinicians (Govrin, 2015)- analyst's indifference to non-analytic approaches. This is reflected by: (a) Psychoanalysis flagship journals tend to be "purists" and to overlook important developments in other fields. (b) training in many psychoanalytic institutes is essentially non-integrative. Cherry et al. (2020) conducted interviews with 69 graduates from the Columbia University Center for Psychoanalytic Training and Research since 2003. It seems that the non-analytic world had little if any place in their psychoanalytic education. Furthermore, one of the significant aims of training of the twenty first century is to show the advantage of psychoanalysis over other approaches. Fritsch and Winer (2020), in their propose "a Model of Psychoanalytic Education for the Twenty-First Century," write:

"Training the fertile fields of the 1950's had become the desert of the 2000's. A popular explanation was that we had lost cultural currency. We had been replaced both by new therapeutic approaches that promised greater benefits, faster and at a fraction of the price—CBT, DBT, Prozac—and by other sorts of mental and physical approaches: yoga, mindfulness training, EMDR."(p. 175). (c) case studies are almost exclusively pure psychoanalytic and rarely integrate other ideas from non-analytic theories.

The indifference to non-analytic theories is reflected by a dismissive approach, sometimes by criticism (Westen et al., 2004; Shedler, 2015) and most often by overlooking it. Govrin (2015) has explained the relative indifference of analysts to other theories by showing that analysts use narratives that are coherent all-encompassing, and useful even when therapeutic failures occur. Alternative theories simply do not fit the coherence of the narrative and therefore are of no use. A Foucauldian perspective also sheds light on psychoanalysis' wholeness: "Psychoanalysis is the term by which we designate one of the disciplines among the psychological and social sciences, a discipline that includes a taken-for-granted understanding of the human subject and a therapeutic technology for its management. The assemblage that comprises psychoanalysis as a discipline entails a particular discourse on human existence, a life-and identity-defining master narrative which articulates a specific form of the subject that is asserted to be natural, essential, ahistorical, and universal" (Milchman and Rosenberg, 2011, p.6).

Rejection to empirical findings and to new paradigms are widespread in science. Many post-positivist philosophers of science described scientist's resistance to change even in the face of contradicting findings. Cohen (1985), for example, writes:

"The desire to be an active part of a revolutionary movement is often in conflict with the natural reluctance of any scientist to jettison the set of accepted ideas on which he has made his way in the profession. New and revolutionary systems of science tend to be resisted rather than welcomed with open arms because every successful scientist has a vested intellectual, social, and even financial interest in maintaining the status quo" (p. 35).

In *The Origins of Modern Science,* Butterfield (1997) argued that "the most difficult mental act of all is to rearrange a familiar bundle of data, to look at it differently and escape from prevailing doctrine" (p. 106). He also writes that "of all forms of mental activity, the most difficult to induce even in the minds of the young, who may be presumed not to have lost their flexibility, is the art of handling the same bundle of data as before but placing them in a new system of relations with one another by giving them a different framework" (p. 13).

While rejecting evidence and resistance to change are features characterizing science at the descriptive level of discourse, science must be open to new evidence and change at the prescriptive level.

Psychoanalysis (in the sense we use it here) tends to be considered an isolationist discipline that makes few interdisciplinary connections with other psychotherapies. There is a common belief that psychoanalysts interact almost exclusively with each other (Malcolm, 1982). By doing so, they

deprive themselves of exposure to competing viewpoints and alternative perspectives that might enrich the psychoanalytic model (Bornstein, 2001). Training programs, major journals in the field, conferences, and the general psychoanalytic discourse invest little effort in non-analytic clinical theories and the many possibilities the introduction of some of their ideas might hold. The approach surrounds itself with a faithful community of professionals who identify with it and often define themselves by contrast with other therapeutic streams (Safran and Messer, 1997). Many scholars who reflect on this phenomenon usually think that a therapist from another therapeutic persuasion is regarded as belonging to a foreign culture (Wachtel, 2010) and that the other functions to define and maintain self-definition and the values of the approach (Sampson, 1993). The distinction between us vs. them helps to consolidate those who follow the method and give them political power (Sorenson, 2000).

Loyalists' main worry is that psychoanalysis, once exposed to another, alien direction, will not manage its own tradition's mainstay, like bringing the unconscious to consciousness. As a result, the profession, it is feared, may cave in before superficial, intense, and fast therapies [e.g., Blass (2010) and Berman (2010), response]. Psychoanalysis's motivation for maintaining the tradition's mainstay in therapeutic theory and practice consists of many reasons (some mentioned above). First, psychoanalysis is a theory and technique for treating psychological disorders; it deals with the relief of mental suffering. Its followers believe its ideas about what can count as an effective therapy (Wachtel, 2018). Second, it also involves economic competition over public resources, recognition, and prestige (Miltone, 2001; Shahar, 2011). Also, a fear of questioning identity and the wish to maintain a solid and robust identity is another reason why boundaries between schools are required (Peri Herzovich and Govrin, 2021).

Any object that threatens us must be an object which wse already recognize as relevant to us, as being in some relation to us. Not everything outside us is experienced as a threat: An alternative psychotherapeutic approach may be perceived as a threat by psychoanalysis, where a new mathematical model won't. Kristeva (1991/1988) argued that what we consider foreign – which manifests as hatred of the other – includes a hidden aspect of our own identity. The difficulty we have in accepting the other, she believes, is the outcome of our inability to acknowledge our own subjective otherness. As a result, we experience those unlike us as a threat and need to keep them out. Kristeva refers to the Freudian unconscious in her description of the hatred of the stranger as a manifestation of the unconscious projection and rejection of uncontrollable drives or unprocessed parts. In his writing about the uncanny, Freud puts this as follows: "[…] for this uncanny is in reality nothing new or alien, but something which is familiar and old-established in the mind and which has become alienated from it only through the process of repression" (Freud, 1919, p. 241). And so what is alien and threatening are materials that have undergone repression and exclusion processes to be removed from ourselves. That is to say; there is both a process of repression and a process of externalization of self components, both of which are done unconsciously. The common result is that what I experience as a stranger and as an other is not only his or her own foreignness but actually a foreignness of myself. This is why in this paper, we argue that the alienness of non-psychoanalytic approaches, in addition to forming an external threat, also represents the threat from within.

In this paper, we would like to add another aspect to the relations between mainstream psychoanalysis and non-analytic theories to show the dialectic nature of their relations. We refer to Hegel's epistemology (epistemology as the study of knowledge) to show that psychoanalysis evolves dialectically by integrating or assimilating external influences like other bodies of knowledge that also represent reabsorbing alienated self-parts.

Hegel was one of the first historical epistemologists. His dialectics is a general developmental theory of the subject, but it is particularly relevant to the development of knowledge. If we look at psychoanalysis's history through the lens of dialectics, we find that psychoanalysis' attitude to other therapeutic methods is more complicated than meets the eye. We perceive the quest for purity in psychoanalysis as a form of self-negation. Still, we believe it is only part of an entire dialectical process by which psychoanalysis does uniquely incorporate external components. While the dialectic process of affirmation of identity and becoming is unconscious, what is conscious is the consideration of other approaches as alien and extraneous to the psychoanalytic field.

Although we cannot give a complete representation of Hegel's dialectic in a psychological journal, it is possible to capture *some* of the dialectics' essential features that will shed new light on the intricate relations between psychoanalysis and other psychotherapies. According to Mills (2012), what is central to Hegel's overall philosophy is the notion of process, a thesis that has direct implications for the development of psychoanalysis. But "One does not have to espouse Hegel's entire philosophical system, which is neither necessary nor desirable, in order to appreciate the dialectic and its application to psychoanalysis and contemporary modes of thought"(p. 188).

Dialectic development in psychoanalysis occurs when an initial component of it undergoes *negation*, is rejected, and projected onto the therapeutic other (Hegel calls this phase self-alienation). Negation can take the form of criticism or total disregard, and it serves to preserve the clear identity of the theory. Over time, however, when the approach fails to offer a sufficient response to clinical challenges, *a negation of the negation*, the next step in the dialectical process, takes place. The previously cast-off, negated part is restored to the theory to deal with the perceived lack. However, as it performs this negation, it dialectically produces a synthesis with the negated component on a higher level, namely by including it, theoretically and/or practically, in a new guise. When this negated element is incorporated in the mainstream, by negating its negation, it does not retain its original identity. This is where Hegel's notion of *Aufhebung* or sublation comes in: the newly integrated element produces a more complex and different idea. While sublation negates and rejects the negated component, it also preserves that component's essence, thereby raising psychoanalysis to a higher level. In this manner, we can describe how psychoanalysis

develops in a dialectic process that tends to perfection, a stage which Hegel called Absolute Knowledge.

Hegel's idealism seeks to offer a total and absolute account of the development of the subject and of knowledge that was appropriate to his times. In our post-modern reality, such total idealist theories have become controversial. We suggest focusing on Hegel's description of the dialectical dynamic through which both subject and knowledge emerge, taking an epistemic perspective. This, we believe, yields a new way of looking at the history of psychoanalytic thinking. Considering this history as dialectical, we perceive it as interdisciplinary in essence. Such an approach resolves the tension in psychoanalysis' attitude to other psychotherapeutic disciplines because it shows how it needs them to constitute its own distinct and separate identity.

It is important to note that every human endeavor might be represented as interdisciplinary in essence. However, among different disciplines, psychoanalysis's inclination toward interdisciplinary is remarkable since it touches on so many different aspects: science, hermeneutics, biology, development, brain research, philosophy, art, and humanities. Still, the interdisciplinary relationship between psychoanalysis and other non-analytic psychotherapeutic approaches has not been sufficiently explored.

In the first part of this paper, we present Hegelian dialectics to explain how scientific knowledge develops. We shall limit ourselves to some of its central and important concepts. In the second part, we put these concepts to use in describing three major developments in psychoanalysis: the introduction and incorporation of self psychology, including the notion of empathy (by way of linking with Rogers' humanist psychology); short-term dynamic psychotherapy (by way of linking with intensive therapies), and mentalization-based therapy (by way of linking with cognitive-behavioral psychology). In the third part, we refer to the scientific status of psychoanalysis and shifts in epistemological positioning. In the concluding section, we will discuss the importance of dialectic processes in maintaining psychoanalysis' vitality.

It is important to note that Hegel's dialectical process can describe the evolution of all psychotherapies such as CBT, Gestalt, Family System Theory, and Emotion-Focused Therapy. Indeed, Hegel takes dialectic to be a general theory of development. Hegel (1892b) says that "wherever there is movement, wherever there is life, wherever anything is carried into effect in the actual world, there Dialectic is at work." (p. 148). Govrin (2016) described how CBT endorsed mindfulness, a spiritual Zen practice, and incorporated it within its rational scientific worldview by a process called "integration through conversion."

As in psychoanalysis, a similar diversity could be found in other psychotherapy movements, too (Castiglioni and Corradini, 2011). For example, there are two strands partially opposed to each other within the systemic movement: (a) the "Philadelphia School," which since the 1960's has tried to combine the systemic model with psychoanalytic concepts; (b) the "system purists" who reject all contaminations with "intrapsychic" models, in particular psychoanalysis, to focus -in an entirely relational perspective- on the analysis of pathogenic communicative models (Cf. Gurman and Kniskern, 1981–1991s). However, we believe psychoanalysis is perhaps the most interesting case to demonstrate its evolution by the dialectic process because no other psychotherapeutic school was characterized by so much negation, dismissal, and resistance to change, whether through bitter controversies between new and old psychoanalytic schools (See the Freud- Klein controversies, Steiner, 1991) or through dismissing non-analytic theories. Nearly all non-analytic psychotherapies such as client-centered therapy, family system therapy, Gestalt, and CBT evolved through negation of psychoanalysis principles, and it can be demonstrated that through a dialectic process how the negated elements have been incorporated into these systems later in a new guise, but this deserves a separate paper.

HEGEL'S METHOD

Though Hegel's thought is dense and detailed, it is possible to describe the dialectics' main thesis quite concisely. According to Thagard (1982), Hegel elaborated his dialectics concerning consciousness in his *The Phenomenology of Spirit* (Hegel, 2018/1807); in relation to history in his *Philosophy of History* (Hegel, 1956/1837), and more specifically to the history of philosophy in *Lectures on the History of Philosophy* (Hegel, 1892a), and to the logical categories in *Science of Logic* (Hegel, 1969/1812). In the first of these, Hegel elaborates how human consciousness emerges from containing only the most primitive knowledge to having the capacity to attain absolute knowledge. His logical categories describe how a "notion" evolves from the most primitive category – Being – to the overarching category of the Absolute Idea. Every process, Hegel argues, has the same structure. Thus, about consciousness, he writes: "the development of this object, like the development of all-natural and spiritual life, rests solely on the nature of the pure essentialities which constitute the content of logic" (Hegel, 1969/1812, p. 28). Still, one can form a particularly clear understanding of how Hegel's dialectics construes the growth of scientific knowledge from the dialectics of the stages of consciousness, as they appear in the *Phenomenology of Spirit* (Hegel, 2018/1807), compared, for instance, to his pure dialectics of logic [in *Science of Logic* (Hegel, 1969/1812)]: In the former, he foregrounds the human subject's development of knowledge. Our discussion, therefore, is especially relevant to the dialectics of consciousness described in the former text.

Below we will describe the dialectical process of the formation of the subject that also obtains for the process whereby knowledge is consolidated. That will be described after it as the development of a subject-like system.

Development of the Dialectics of Self-Consciousness

The Phenomenology of the Spirit (Hegel, 2018/1807) describes the emergence of the subject, from a *consciousness* whose content is another object to *self-consciousness* – now the object of consciousness is its self. This process, for Hegel, requires another subject. It is in the encounter with the other and through

mutual recognition that the two sides constitute themselves as self-conscious subjects.

Hegel begins by distinguishing between subject and object. While the object is a primary, simple given which operates according to the principle of self-identity (A=A), the subject is not aprioriy given and is never identical to itself. The subject constructs its identity and knowledge through a dialectical relationship between difference and identity. This happens in a three-stage, iterative, cyclic process: *identity*, *the negation of identity* and therefore difference, the *negation of difference* and therefore identity, and hence renewed identity. When the identity between two things is negated, difference, or opposition, between them emerges, and when this is followed by the negation of difference as opposition, identity is re-established. But this third stage, the negation of the negation, does not take us back to where we began. It produces a new, more complex tier of identity. This new level of identity is of a higher order, and it goes by the name dialectical identity. Dialectical identity simultaneously retains the difference between the two terms it includes but also cancels it, allowing their identity (Levkovich, 2011).

A particular content's primary form is negated and canceled in every dialectical process while its fundamental meaning is maintained on a higher level of formalization and expression. This content, preserved as an element in the new condition, comes about through what Hegel called *sublation* [the German word *Aufhebung* literally refers to negation or cancellation and elevation and a movement upward and ahead (Yovel, 2001)]. Each new stage sublates the one before it and replaces it. So sublation is a type of dialectic development including three moments: The negation or cancellation of a given form, retention of the fundamental content, and raising this content to a higher level of expression. Certain components are rejected in this process as essential components are accepted and preserved. Sublation retains and preserves on the one hand while also criticizing earlier forms of thinking and discarding them. It is always a qualitative renewal process, which raises the subject to a higher ontological and epistemological level. This is a dialectical, not a simple linear, analytical mode of development (Yovel, 1975).

Having described dialectical identity and the process of dialectical development, the next question to be addressed is the position of the other. In Hegel's view, the subject's identity emerges through self-alienation, whereby it becomes other than itself (negation). This implies that what is perceived as other always includes a negated part of the primary identity. It is by returning to the self from this otherness (negation of the negation) – in which the self has recognized the other and hence his own internal otherness – that consciousness can come to recognize itself, to evolve into self-consciousness attaining its own realization.

It must be stressed that the other is an actual other and not just the internal otherness of consciousness. On the one hand, it is not the self; it is, on the other, a moment of self-consciousness. Consciousness needs another consciousness to know itself. This can be explained as follows:

Subjective identity, as said, must be considered as an act of self-identification performed by reference to the other, something which is achieved at the end of a process. It is not identical to itself from the start and only approaches itself through repeated negations of its opposites, through the negation of the negation. Again, dialectical development takes off with the act of negation of a part of itself; The subject casts off this part and identifies it in the other who is experienced as foreign to it. When the dialectical process unfolds properly the subject returns to itself through the negation of the negation.

The components of itself which it formerly negated are now identified as so-called *moments* of the self. For the subject to recognize these multiple moments as his own, and at the same time have a unifying pattern of himself, he needs the mediation of the other. This is because the realization of every being in nature is conditional on the existence of the two moments that constitute its full essence: a moment of plurality and a moment of unity. Human consciousness holds both these moments. It contains the essence of Being, yet it also is Being itself and in need of another consciousness that can have its own moments. Unable to validate itself, human consciousness turns to another who will provide its full realization, namely the moment of its plurality and the moment of its unity (Shalgi, 2009).

Self-consciousness, therefore, is possible only where it is reflected in another self-consciousness; the latter serves as the means whereby consciousness knows itself, or, in Hegel's own words: "Self-consciousness is in and for itself, when, and by the fact that it is in and for itself for another self-consciousness; that is, it is only as something recognized" (Hegel, 2018/1807, p. 76, s.178).

The Dialectical Development of the Subject-Like Structure

As said, Hegel's dialectics describes not only the emergence of the human subject, but also that of subject-like structures. Dialectic logic traces the dynamic structure of mental structures in so far as they are subject-like structures, including the development of knowledge and science (Cohen and Wartofsky, 1984). The subject-like structure evolves through the other – in this case: other bodies of knowledge. Dialectical development is an iterative process that continues until the absolute realization of the subject or the body of knowledge (which constitutes self-consciousness), a condition Hegel calls the Spirit or Absolute Knowledge.

No subject-like structure features one simple and primary identity: its realization must be understood as an act of self-identification through otherness and the other. Whether we are dealing with a human entity or an entity of knowledge, both take the shape of a subject (having self-consciousness), which is never what it is right from the start and rather proceeds toward itself through its opposites: the plural and the other. A knowledge entity, therefore, comes about similarly as a subject, through negation.

Negations do not take the process back to where it began: each act of negation institutes a different state of affairs (and consciousness). Earlier stages are not erased by negation: they are retained in the very texture of the next stage as a type of memory, expressing sublation. At each stage, the collapse of one position advances the process toward another position serving as

a specific, even if temporary, response to the specific fault which came to light at the earlier stage and caused its collapse (such faults, in science, are called anomalies, lacunae or unresolved problems). In this process, the entity of knowledge (or the subject-like structure) assumes various forms and contents that are retrospectively considered as expressions of its self. Thus, this is permanently becoming and does not exist in actuality, except for eventually, at the end of the process (if there is such a thing) when it is realized in the complete process and its result (Yovel, 2001).

So for Hegel, a knowledge entity comes into being in the same manner as self-consciousness. As a subject-like structure, the concept of science refers to a knowledge entity or a system of cognition which, from being an opinion, has become an *episteme*. Scientificity, here, does not denote one or another domain of knowledge or expertise but a degree (the highest degree) of cognition that every domain of knowledge seeks to attain. For Hegel, science is the totality of its components. Developments in the body of knowledge, for him, constitute stages in the development of the Spirit. Rather than being judged as true or false, they must be considered in terms of more or less mature, with each given developmental stage including those that came before it.

So when a knowledge entity evolves into its realization as science, this does not take the shape of linear progress, but instead of dialectical movement, that is to say, a cyclic development of a subject-like structure, which negates its own point of departure and returns to it on a different level, through a process of mutual negations. This yields a stable system that, staying in constant motion, avoids fixation (Yovel, 2001).

Hegel's method, to conclude, describes the developmental totality of a system that retains all the fundamental achievements made in the process. The realization of absolute knowledge approaches itself through opposites and by means of negation: through plurality and otherness. Hence, this development requires an initial resistance of a body of knowledge to otherness, followed, later on, by recognizing other entities of knowledge that are relevant to itself and thereby recognizing itself for the sake of its ongoing development.

Hegel's dialectic is a general theory of scientific knowledge. It corresponds to many aspects of the post-positivist philosophy of science. According to Thagard (1982): "each stage of the dialectic bears the same sort of complex relation to the previous stage as a scientific theory does to its predecessor" (p. 397). According to Hegel the self-development of the subject (or subject-like structures in this case) is dependent upon recognition by other subjects. Understanding the dynamics of Hegel's dialectical method may lead to a new understanding of the historical development of psychoanalysis, as interdisciplinary in essence, in the process of becoming. Below we will employ the above principles of Hegel's method to discuss how bodies of knowledge outside the psychoanalysis domain affect the latter's dialectical development as a distinct yet simultaneously interdisciplinary domain, a mode of development that is vital and indispensable to it.

THE DIALECTICAL NATURE OF THE INTERDISCIPLINARY ENCOUNTER BETWEEN PSYCHOANALYSIS AND NON-PSYCHOANALYTIC BODIES OF KNOWLEDGE

Here we illustrate the dialectical development of psychoanalysis in its encounter with non-psychoanalytic bodies of knowledge by looking at three important developments in psychoanalysis: Kohut's self psychology; short-term dynamic psychotherapy, and mentalization-based psychotherapy.

Kohut's Self Psychology

Kohut started to develop self psychology in the 1960's because of difficulties he and most other therapists were having in treating certain patients with so-called narcissistic disorders: issues concerning self-esteem, self-equilibrium, self-regulation, and patients' very core sense of being. Analysts usually addressed these demanding, frustrating, and frequently grandiose clients by interpreting their constant demands on the analyst as stemming from defenses against unconscious aggressive and sexual Oedipal feelings directed toward the analyst. These interpretations usually enraged or depressed these patients, leading analysts, beginning with Freud, to conclude that they could not be analyzed (Tobin, 1991).

Kohut's self psychology (Kohut, 1971, 1977, 1984) foregrounded the power of empathy. He believed that any attempt to understand a patient must have its beginnings in empathy, and he called for the existing psychoanalytic practice to incorporate this insight. In his first major published article, Kohut challenged traditional psychoanalytic practitioners. He announced that the psychoanalyst's job should consist of more than the passive contemplation of the patient's free associations and the subsequent analysis of their resistance. Kohut believed that only by imagining ourselves in the patient's place employing *vicarious introspection* can we bring to life unknown inner experiences. Unlike the mainstream psychoanalysis of his time, which focused on the transference, the unconscious, and recollection, Kohut proposed a method of *empathic validation*, enabling the therapist to validate the patient's description. Kohut rejected interpretation as psychoanalysis' exclusive tool and employed extended empathic interventions to confirm the patient's perception. It is the therapist's task, he believed, to give the patient a sense of the therapist's identification with her or his feelings and to show them their understanding. Any other psychotherapy is at risk of making the patient feel ununderstood, dealing a serious blow to their narcissism.

However, the notion of empathy had already come to be seen as part of Carl Rogers' humanistic method and considered a foreign element by psychoanalysis. Rogers (1942) had been treating patients by using empathy in the 1940's. Kohut and Rogers worked at Chicago University, and although the two never met, they knew about each other (Kahn and Rachman, 2000). The problem, however, was that Rogers had developed his therapy as an alternative to psychoanalysis. On its face, the two methods seemed to clash since psychoanalysis posited that the most

important therapeutic process was uncovering the unconscious and insight based on interpretation, not on empathic validation.

Indeed, Kohut was critical of non-analytic and non-interpretive psychotherapeutic counseling, such as the humanistic approach. He likened such psychotherapeutic methods to the work of a repairman who manages to get his old alarm clock to work. Knowing nothing about clocks, all he actually did was to clean it up and oil the internal mechanism (Kohut, 1978, p. 525).

Kohut faced a problem: Could he identify psychoanalysis with an approach which he rejected and criticized? His ideas, indeed, met with strong opposition to begin with. They were taken to clash with psychoanalysis' most fundamental assumptions. Kohut was accused of mocking Freud's core values, appropriating concepts, populism, superficiality, subjectivity, ignoring the unconscious's role, rejecting the scientific method, and turning psychoanalysis into a one-dimensional method (Brenner, 1968; Stein, 1979; Moses, 1988). And yet, part of the psychoanalytic community welcomed his ideas warmly (Menaker, 1978; Schwartz, 1978). As time went by, even the most conservative institutions came to include them in their training programs. Kohut's body of work has proven to have a tremendous impact on the clinical theory and practice of psychoanalysts over the last decades (Carr and Cortina, 2011).

We would like to argue that Kohut's eventual embrace by the psychoanalytic establishment resulted from a dialectical maneuver of self psychology. Empathy was not really foreign to psychoanalysis: Freud referred to it several times in his texts on the joke (Freud, 1905) and group psychology (Freud, 1921). That said, he never used empathy as a significant analytic tool. This may have been due to Freud's desire to cast psychoanalysis as a scientific body of knowledge. Rather than introducing Rogers' "alien" element of empathy, which the psychoanalytic community rejected, Kohut showed that the scientific tradition of psychoanalysis itself implied it. He believed that psychoanalysis could not do without empathy and that it, moreover, was already active in psychoanalytic practice. He showed that empathy cohered with psychoanalysis in its basic function of data collection for the improved understanding of the patient's unconscious dynamic (Kohut, 1959). Kohut (1975) argued that empathy, being a tool for data collection just like the microscope assists the physician to examine a patient's blood, confirmed the scientific nature of psychoanalysis. Meanwhile, to ensure the status of psychoanalysis' distinct, autonomous identity, he also criticized non-analytic and non-interpretive forms of psychological counseling like humanistic psychotherapy (Kahn and Rachman, 2000).

We can then conclude that the component of subjective empathy (self), which was rejected and alienated (other), returned (self) following the negation of its negation, but – through sublation – rather than coming back in the very same form, it returned not as an emotive function but in a new, sublated form. In this process, the idea of empathy became part of psychoanalytic tradition, its definition of the unconscious, and scientificity. Kohut's simultaneous rejection of non-analytic approaches made self- psychology's entrance into mainstream psychoanalysis possible. The distinction between them and us had been preserved, even though, *and because,* this development had been prompted by an encounter with an ostensibly foreign element. This tension between autonomy and dependence was vital in the emergence of psychoanalysis' dialectic identity and its development as a body of knowledge.

Short-Term Dynamic Psychotherapy

At the same time as Kohut was attempting to change the face of psychoanalysis by introducing the concept of empathy, another no less daring attempt to change the psychoanalytic landscape was underway: the introduction of short-term dynamic psychotherapy (STDP).

The spread in the course of the 1970's and 1980's, and even before, of competing forms of non- analytic short intervention such as planned short-term therapy [an example of such non-analytic new psychotherapies are Milton Erickson brief and strategic model of psychotherapy (Erickson, 1954) and the Strategic family therapy by Haley (1963)], which offered a written protocol and highly technical approach designed for brief treatments, was quite remarkable. Many of the new methods registered an achievement that gave them a distinct edge over psychoanalysis: Not only were they quicker and cheaper, but they were also supported by research that proved their efficacy (Lemma et al., 2010).

The originators of STDP looked beyond the psychoanalytic world and were willing to respond to these presented challenges. In the main, short term therapy was developed during the 1980's and 1990's by several key psychoanalysts: Mann in Boston (Mann, 1973; Mann and Goldman, 1982), Malan in London (Malan, 1963, 1976), Sifneos in Boston (Sifneos, 1972, 1979), and Davanloo in Montreal (Davanloo, 1978, 1980). Additional founders include Donovan (1987), Gustafson (1984), Strupp and Binder (1984), and Luborsky (1984). These orthodox psychoanalysts were looking for solutions to needs that the classical approach failed to meet and sought to cope with its limitations (Mann and Goldman, 1982).

Short term therapies seemed to breach all-important psychoanalytic assumptions at once: free associations were replaced by focused therapy; neutrality and evenly-suspended attention - two fundamental analytical attitudes recommended by Freud (1912, 1915)–were substituted by therapists' active and directed interventions; the structural change was replaced by resolving a central conflict.

These changes raise the question of what elements of classical psychoanalysis we deem to be essential. How were psychoanalysts persuaded to, say, try and resolve an Oedipus complex within the span of fifteen meetings? How did they abandon free association for the sake of focused therapy? What made them become more directly involved, setting aside the pivotal psychoanalytic mode of therapeutic neutrality? These questions can be explained by means of Hegelian dialectics.

First, supporters of the new method pointed out the roots of the technique within the psychoanalytical tradition, particularly in its founder's works. Freud's early treatments were very short, compared not only to today's psychoanalysis but even in terms of today's dynamic short-term analysis. Freud met with Katarina (Freud and Breuer, 1955/1895) only once and yet

regarded the meeting as a psychoanalytic session. Gustav Mahler's consultation with Freud was also limited to one session (Jones, 1955; Reik, 1960).

Second, supporters of the approach argued that there were no clashes between a time-bound therapeutic setting, on the one hand, and the psychoanalytic approach to the psyche, its theoretical model, and associated therapeutic techniques. They emphasized that STDP was more effective in achieving analytic objectives than long-term treatment. That is to say, using STDP is not merely a compromise imposed by necessity but rather a better implementation of classical treatment. Moreover, proponents of STDP strictly stuck to employing psychoanalytic terminology and jargon.

One of the most representative examples of STDP is Mann (1973) "Time-Limited Psychotherapy." Mann limited therapy to a series of twelve sessions following an initial assessment. The idea behind this was to turn time into an active psychoanalytic-therapeutic component. Termination, and hence the time limit, can serve as the main lever for the intensive, fast mobilization of processing and change. The time limit introduces the reality principle into the therapeutic space as opposed to the pleasure principle. This rallies the forces of the ego. Mann also argued that the therapeutic focus on a "main issue" (a problem the patient has been experiencing early on in their life), was a working principle that cohered with classical psychoanalysis. Mann did not seek to replace psychoanalysis; he intended to refine and develop it.

We witness how short-term dynamic psychotherapy restored elements to psychoanalysis that were initially negated. When the negation of elements like therapeutic focus, active position, and especially short term, is negated, they do not return to their previous identity; through sublation, they become more complex and lead to theoretical development. The method becomes relevant and accessible to a larger population, including public mental health clinics that cannot offer long-term therapies. This would not have happened without dialectic development. Here the tension of the interdisciplinary encounter with the therapeutic other and the psychoanalytic tradition's organic growth allows for the mainstream to accept the new development.

Mentalization-Based Treatment (MBT)

Another change in psychoanalysis occurred in the 1990's. Confronting intensified psychological problems and an access of personality disorders, psychoanalytic communities were prompted to introduce unprecedented change in their modes of treatment while also remaining loyal to the approach from which they had developed.

Mentalization-Based Treatment emerged especially in the context of a growing need to address borderline disorder (according to the DSM definition), given classical dynamic-psychoanalytic approaches' unsatisfactory response. Over time it became clear that impairment of the ability to mentalize entails various emotional disturbances and other symptoms, and this method became widely used.

MBT was developed by British psychoanalysts Peter Fonagy, Anthony Bateman, and Mary Target (Bateman and Fonagy, 2004a,b; Bateman and Fonagy, 2006). It is an approach that links classical (Winnicott) and contemporary psychoanalytic (relational) theories, on the one hand, with research approaches in the field of developmental (Bowlby's attachment theory) and cognitive theory (Baron-Cohen's theory of mind), on the other. It is based on the cognitive-developmental theory of mind and assumes that we intuitively create preconceptions and explanations of behavior from infancy. This mentalization includes an ability to think about thoughts, beliefs, emotions, and wishes – our own and those of others, and understand that these internal events variously affect our own, as well as others' behavior. A rigid and non-mentalizing position will be reflected in monolithic, one-track thinking, while a mentalizing attitude is manifested in the ability to raise several alternative possibilities (Diamant, 2008).

The approach also refers to Winnicott when it argues that mentalizing ability depends on how the caregiver reflects the infant's experience to it. The caregiver shows the infant that what the latter sees reflects its own feelings rather than those of the career herself. This reflection allows the infant to understand that what it feels is not the same as others.

Another point of reference for the theory of mind is Bowlby's developmental theory. It claims that the most significant factor in the development of mentalization is secure attachment relations. Having experienced a secure basis, the infant can gain confidence to explore the world – not only around it but also the inner world, of self and others alike.

Though this approach is considered to be psychoanalytic, it implements interventions that are more reminiscent of cognitive-behavioral methods. Fonagy and Bateman argue that in the case of borderline personality disorder, therapy must focus on enhancing the ability to mentalize rather than encouraging insight through interpretations of the transference. To achieve healthy mentalization, the therapist enables the patient to understand things differently and from a number of viewpoints. Being given impulsive reactions to their emotions, borderline patients are asked to suspend their reactions and thoughts. They are required to process their emotions more appropriately and cultivate a better understanding of other people's perspectives.

So classical psychoanalytic practices are significantly different from MBT. In this case, too, the dialectical process can explain a great deal about how they have come to interrelate, with MBT continuing to identify itself as a psychoanalytic approach, acknowledging its roots in the tradition (especially in object relations theory). Fonagy and Bateman in fact, claim that every therapeutic act includes elements of mentalization so that MBT is not all that innovative. Psychoanalysis, they argue, has always been about recovering the ability to mentalize. It allows the patient to think or reflect on their actions and take an interest in and observe their own and others' consciousness in the secure attachment of the therapeutic relationship. According to Allen (2006), mentalizing is developing awareness of the connections between triggering events in current attachment relationships and previous traumatic experiences. Also cultivating awareness of the impact of one's behavior on attachment figures, an idea originated in Freud's ideas: "Remembering, repeating, and working-through" (Freud, 1914–1958). Allen also indicates that the concept of psychological mindedness is linked to that of

insight. Mentalizing highlights the process by focusing on mental activity while insight emphasis the content.

Through its emphasis on cognition and thought processes and thought about a thought formerly seen as extraneous to psychoanalysis, the current presence of cognition in the psychoanalytic mainstream no longer takes its cognitive-behavioral form or its older roots. Now cognition flourishes as an integral component of psychoanalysis, fitting in with its developmental theory, its psychopathology, and therapeutic practice. Thus, for instance, we can see how transference relations have been transforming a classic response to the interpretation of unconscious conflict: a systematic effort is now underway to develop the patient's ability to look at her or himself and others and to build an intelligent look at interpersonal experiential contexts that will help them regulate themselves emotionally. Unlike classical psychoanalysis, this approach abandons the relatively avoidant therapeutic position and the use of in-depth interpretations that involve historical aspects. This model, instead, assumes a more structured and active therapeutic position. It ignores unconscious contents for the benefit of conscious or near-conscious ones. Focusing exclusively on the patient's present mental condition (thoughts, emotions, wishes, desires), the therapist aims to establish the foundations of mental states.

We can put this as follows in Hegelian dialectical terms: While development grounds itself as an outcome of the classical tradition (by viewing pathology as an injury sustained in early attachment relations and in internalized object relations – in theory – and the transference, in practice), the big changes the tradition has undergone are conspicuous: self parts originally negated as being foreign – mainly cognition (in addition to focusing on the present, and therapists' active intervention, in clinical practice) – have been received back in non-identical form (i.e., mentalization). Even though in this move, the cognitive component of psychoanalysis has been restored through sublation, linking between cognition and behavior – a development ostensibly directly deriving from cognitive-behavioral approaches - the mainstream psychoanalytic approach explicitly rejects behaviorist interventions and safeguards its own focus on the patient's consciousness rather than their behavior (in other words, the intra-psychic aspect). Specific components have to keep being rejected as extraneous to enable distinct, though not fully independent, identity formation. This preserves a dialectic tension in the identity of the approach and its body of knowledge.

To conclude: investigation and observation, in a dialectic development, starts off at a certain point; this process of self-examination exposes inner contradiction, and this contradiction leads to another, new position. This new position negates the previous one, issues from it, and advances from it. Thus, in this process of sublation, the earlier condition, its negation, as well as the new condition are all included. In this dialectic, the two sides of the dialectical tension do not merely coexist, they actually entail one another: necessarily and methodically. That is to say: one does not exist and has no value in the absence of the other (Shalgi, 2009).

It could be said that when assimilating alien concepts or constructs and attributing a new status to them, the risk is to multiply theoretical constructs which refer to the same piece of reality or phenomenon. Katzko (2002) calls this shortcoming "The Uniqueness Assumption" (263):

"The uniqueness assumption typologies an observational level of discourse to reflect theoretical distinctions… Another experimenter, manipulating a different set of variables and using the uniqueness assumption to explain the data will by definition create a theory different from the first. The seed is now sown for a proliferation of mutually exclusive theoretical terminologies" (p. 265).

This is all truer to grand theories in psychotherapies who rarely use objective, independent evidence. Instead, data are part of the theory and not different from the theory. Theories that endorse previously negated elements implicitly support the uniqueness assumption by not addressing other possible influences if they are not part of their theoretical model. We cannot fully address this problem here, but we would like to mention that Katzko expects psychological research to follow the rules of strict science. This expectation is, of course, highly controversial in our field and a topic of endless debates. Besides having an empirical scientific side, psychology theory (especially psychotherapy) also offers a net of meanings, an ethic, a way to live in the world (Makari, 2000). This will seem from a scientific perspective to be unsystematic but take meaning through historical analysis.

THE SCIENTIFIC STATUS OF PSYCHOANALYSIS AND SHIFTS IN EPISTEMOLOGICAL POSITIONING

One of the main controversies within psychoanalysis is its scientific status. Here we would like to address the relationship between this controversy and dialectics briefly.

We have described the dialectics between psychoanalysis and non-analytic theories, but there is also another important dialectic in the field of the epistemology of psychoanalysis. The controversy over the scientific status of psychoanalysis cannot be fully addressed here, but it is important to note some important shifts in epistemological positioning that have occurred and the relation of this controversy to dialectics.

Hegel's dialectics epistemology is not just a theory of general knowledge but also a theory of scientific knowledge. As mentioned before, for Hegel a knowledge entity develops as a subject-like structure and comes into being in the same manner as self-consciousness. For Hegel, science is the totality of its components. Developments in science constitute the developmental stages, each one including those that came before it.

Up until the 7o's, most psychoanalysts followed Freud's scientific worldview and were committed to the idea that psychoanalysis is a science, and that meant devising a mechanistic theory to explain normal and abnormal thought (Basch, 1993). In the last decades, there was a radical shift, and many scholars suggested modern Hermeneutics and post-modernism as better epistemologies. Others seek a more intermediate position between science and hermeneutics

(Makari, 2000; Negri et al., 2019). Fusella (2014) argues that psychoanalysis has situated itself among the other disciplines as a hybrid science, not quite a pure hermeneutic on the one hand and not quite a pure science.

The change in epistemological positioning in the scientific discourse can also be seen in the disagreements about empirical evidence and the evaluation of psychoanalysis [e.g., Hoffman (2009) and Safran (2012), response]. Hoffman thinks that systematic empirical research on psychotherapy process and outcome is less relevant for psychoanalysis than the traditional case studies. In contrast, Safran (2012) describes a middle ground approach to science which recognizes that "science has an irreducibly social, hermeneutic, and political character, and that data are only one element in an ongoing conversation between members of a scientific community" (p. 710). While positivism argues for only one path to truth, hermeneutics believes that there is more than one truth. Its interest is in emergent processes and moral commitments to self-reflection and critical thought (Cushman, 2013).

It seems that relational theory has shifted away from realist aspirations or impersonal objectivity to the creative power of human imagination as regards to subjectivity, intersubjectivity, and truth (Elliott and Spezzano, 1996). Moreover, some post-modern discourses have sought to attack the scientific worldview and undermine scientific truths in order to undermine science (Kuntz, 2012). However, it is to the credit of the post-modern thinkers in relational psychoanalysis that they have insisted on rejecting radical anti-scientist post-modernism as an appropriate epistemology for psychoanalysis. In a manner often seen in dialectical development, the relational tradition has, in fact, had a positive impact on certain aspects of psychoanalysis. Post-modern approaches such as the relational approach do not necessarily lead to rejecting data, which are still a central source of intersubjective knowledge. Instead, the very acknowledgment that data necessarily requires interpretation entails a renewed centrality of data themselves. Also, post-modern theories do not necessarily mean that realism is false; the acknowledgment that objectivity is always intersubjectivity doesn't necessarily clash with a contemporary view of science. Osbeck (2019), for example, offers a holistic picture of the scientific project that acknowledges the role of imagination, perspective-taking, and values alongside observation and reason. For her, foregrounding 'the personal' also emphasizes continuity across arts and sciences, the interfaces of which contain the full range of resources for innovative thinking.

We believe that such post-modern approaches are dialectical by their nature in incorporating antagonists and contradictions. Here too, dialectics appears to be relevant. For example, classical psychoanalysts who tend to perceive psychoanalysis as a scientific discipline and to endorse realism and the correspondence theory of truth vehemently oppose scientific evidence of all sorts, particularly when it derives from non-analytic theories [as in Blass and Carmeli (2007) criticism of neuropsychoanalysis, and Green (2000) criticism against infant research]. At the same time, the relational theoreticians were the first to endorse psychoanalytically informed infant research based on systematic observations on parent-infant interaction outside psychoanalysis. Benjamin (2013) writes:

"…. infancy research electrified me. What awesome possibilities it seemed to open up, is what I felt when I first encountered the work of Stern (1974a,b) and Beebe (Beebe and Stern, 1977) in 1978. Face-to-face play was the primary illustration of how mutual recognition is possible so early! … As it now seemed that all roads were leading to recognition and intersubjectivity, somehow I had to get them all on the same map" (p. 4).

Here again, objective science was negated but then return in a different form as representing intersubjectivity, a term that infant researchers like Stern (1974a) use for lack of a better word. Paradoxically, infant research is incorporated in a post-modern approach not only for its systematic and evidence-based methods but for its detailed description of recognition and intersubjectivity. Likewise, classical psychoanalysts show indifference to non-analytic theories but only after the psychoanalytic theories are well-founded. Steiner (2000) notes that "there is no doubt that extra-analytical observations played a certain role in confirming and refining, at times, Freud's and the first child analysts' observations and hypotheses concerning the chronology of the development of the internal life of the baby and the child" (p. 10). Steiner shows that in the phase of imagining a new infant, Winnicott, Klein, Lacan, and others used non-analytic theories to validate their new theories of development.

FUTURE APPLICATION

Mainstream psychoanalysis has, as said, invested significant resources to defend its boundaries from external influences. This jealous self-protection requires an investment in keeping the self and others apart. Any attempt at development within the discipline requires proof that new ideas don't smuggle in foreign elements – which will meet rejection. However, we have seen that from a dialectical perspective, any development, any movement ahead, necessarily involves such foreign elements. This is a foreignness that should not be considered only extraneous to psychoanalysis.

In this paper, we offer a new perspective on interdisciplinarity in the psychoanalytic clinic. Rather than either isolationism or an externally imposed alienated unity in the face of the other, we have sought to reflect on psychoanalysis' encounter with other theories in terms of a dialectical movement within psychoanalysis itself. Here the other, non-analytical approach is seen to constitute an integral moment in the development of psychoanalytic knowledge.

Distinction and emphasizing salient differences between the schools in the field of psychotherapy is made in purpose to sustain professional-cultural identity. Psychoanalysis needs to hold convictions about what it believes and what it rejects for a stable and robust identity. As a result, mental barriers are formed which keep out the threat and keep the subject at a safe intellectual distance. This phenomenon is not unique to psychoanalysis; Wachtel (2010, 2018) sees the

field of psychotherapy as divided between "tribal organizations" entangled in a culture war, something more like an ethnic conflict with its attendant us-vs.-them feelings than an intellectual or scientific discussion. Differences are polarized; caricature and stereotype abound; each side is intensely attached to its own way, and self-definition is achieved by diminishing the other. "What lies outside might be not only not noticed but actively rejected since it is associated with a point of view that is derided and disdained as 'other,'" in Wachtel's words (Wachtel, 2010, p. 407). it seems that no school of therapy appears to have a monopoly on dogmatism or therapeutic insensitivity (Shedler, 2010).

Authors writing about fragmentation, disunity, and the crisis of the field, have been facing the problem from perspectives ranging from political viewpoints to rhetorical, via theoretical-methodological, historical, educational, and meta-theoretical levels of inquiry and also as a sociocultural phenomenon including organizational processes and traditional communities (Gaj, 2016). Many clinicians have sought to offer a solution to this disunity in the field; at the theoretical level by trans-theoretical approaches (Prochaska and DiClemente, 2019) and at the research level of evaluation findings by developing near-optimal systematic statistical prediction rules that should be used in preference to intuition (Dawes, 2005). Hegel's dialectics may offer another solution that does not seek unity in conformity of method or theory.

We believe that actively encouraging the position of reflection and self-skepticism and openness to and acknowledging the other, by knowing the dialectic, is of great importance: "Through mutual recognition, each discipline moves closer to appreciating the value of the other, and this process is what advances knowledge. Like spirit, which seeks recognition from the other so that it may recover its lost alienated desire, mutual recognition provides mutual validation and acceptance, which opens up further communication and dialogue" (Mills, 2012, p. 192).

Hegel's dialectical development of the subject or of Subject-Like Structures like psychoanalysis is a description of how things evolve naturally as we constitute ourselves and our knowledge. It is true that according to the dialectics, only in the affirmation of identity, difference, and then subsequently in sublation can the process of knowledge proceed. At the same time, developments in psychotherapy in general and in psychoanalysis, in particular, occur in different ways through exposure to the other (for example, Peri Herzovich and Govrin, 2021). According to this, we believe that when psychoanalysis can identify itself by finding itself in its other and by finding the other within itself – which is tantamount to acknowledging its own self-difference or alienation – it will have an ability to expose itself to other theories to conduct a respectful and stimulating interaction. This would in fact, be its way of maintaining its separate identity, exactly through acknowledging extra-analytical bodies of knowledge and its own position vis a vis them.

Psychoanalysis will reap multiple benefits from its interest in these different theories. It will get to know itself better, allow for self-criticism, questions, doubt, and it will be open to consider its own shortcomings. This will help it avoid paralysis, dwindling creativity, and growing irrelevant and outdated.

In an era marked by frequent change, psychoanalysis cannot afford to remain stuck. To stay in contact with developments and remain relevant, it needs to foster its ability to find sustenance outside itself – as long as that sustenance does not threaten its continued existence. We suggest that rather than directing its efforts to put up walls and ignoring other, non-psychoanalytic approaches, psychoanalysis should look for its commonalities with them – first, as it looks inward and then to confidently open itself to such encounters and even encourage them. According to the dialectical process, growth is enabled by the other but confirms the self in so far as it must be able to recognize the other.

To conclude, while psychoanalysis defines itself by reference to what it is not, its development necessitates an ability to recognize that what is extraneous to itself is also part of itself. When it acknowledges its other, psychoanalysis recognizes its own otherness or its multiple nature. This forms simultaneously, and dialectically, a recognition of its own unity.

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 authors.

AUTHOR CONTRIBUTIONS

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CONCEPTUAL ANALYSIS
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Narcissistic Personality Disorder: Are Psychodynamic Theories and the Alternative DSM-5 Model for Personality Disorders Finally Going to Meet?

Frans Schalkwijk[1*†], *Patrick Luyten*[2,3‡], *Theo Ingenhoven*[4‡] *and Jack Dekker*[4,5‡]

[1] Department of Forensic Special Education, University of Amsterdam, Amsterdam, Netherlands, [2] Department of Clinical, Educational and Health Psychology, University College London, London, United Kingdom, [3] KU Leuven, Leuven, Belgium, [4] Arkin, Amsterdam, Netherlands, [5] Department of Clinical Psychology, Vrije Universiteit Amsterdam, Amsterdam, Netherlands

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***Correspondence:**
Frans Schalkwijk
f.schalkwijk@gmail.com

[†]These authors share senior authorship

[‡]These authors have contributed equally to this work and share last authorship

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Narcissistic Personality Disorder is the new borderline personality disorder of our current era. There have been recent developments on narcissism that are certainly worthwhile examining. Firstly, relational and intersubjective psychoanalysts have been rethinking the underlying concepts of narcissism, focusing on the development of self and relations to others. Secondly, in the DSM-5, the Alternative DSM-5 Model for Personality Disorders (AMPD) was presented for a dimensional evaluation of the severity of personality disorder pathology. The combined dimensional and trait conceptualization of NPD opened the door to new integrated diagnostic perspectives, including both internal and interpersonal functioning. Finally, Pincus and Lukowitsky encourage clinicians to use a hierarchical model of pathological narcissism, as it opens up opportunities for shared points of interest in empirical research from different scholarly perspectives. As for most non-psychodynamic clinicians and researchers the DSM-5 clearly bears dominant weight in their work, we will take the AMPD model for NPD as our point of reference. We will discuss the narcissist's unique pattern of self-impairments in identity and self-direction, and of interpersonal disfunctioning (evaluated by assessing empathy and intimacy). Subsequently, we will examine how contemporary psychodynamic theories and the hierarchical model of Pincus and Lukowitsky additionally inform or contradict the AMPD. For us, one of the big advantages of the AMPD is the use of structured clinical evaluations of disturbances of the self and interpersonal functioning and the dimensional evaluation of severity. As psychodynamically oriented therapists, we are enthusiastic about the opportunities for inclusion of psychodynamic concepts, but we also discuss a number of sticking points.

Keywords: narcissistic personality disorder, alternative model for personality disorders, psychodynamic theory, hierarchical model for narcissism, intersubjective psychoanalysis

INTRODUCTION

Narcissistic Personality Disorder is the new borderline personality disorder of our current era (Choi-Kain, 2020). After three decades of progress have been made on Borderline Personality Disorder (BPD), Narcissistic Personality Disorder (NPD) now "… carries the potential for a new wave of investigation and treatment development." Originally, narcissism was a psychoanalytic concept developed by Freud (1914). It became a dominant theme in the 1970s in the fierce debate between the psychoanalysts Kernberg (1975) and Kohut (1972). In the years that followed, few psychodynamic theoretical advances were made and research was scarce (as can be seen in Glasmann, 1988; Heiserman and Cook, 1998). However, in 1980, "given the increasing psychoanalytic literature and the isolation of narcissism as a personality factor in a variety of psychological studies," narcissism found its way into the third Diagnostic and Statistical Manual of Mental Disorders (DSM-III; Frances, 1980, p. 1053). Narcissism had established a foothold in the diagnostic "bible." In the decades since, a robust body of research has not developed to test or substantiate Frances' assumption that narcissism is a specific personality factor. In a recent online literature search on PubMed, Choi-Kain (2020) found 27 times more articles for BPD than for NPD. Even worse, research has found a significant overlap between the diagnostic criteria for all personality disorders in DSM-IV and extreme heterogeneity in patients with the same diagnosis (American Psychiatric Association, 2011). This conclusion was particularly clear in the case of NPD (Miller et al., 2010; Pincus, 2011). Not surprisingly, in the discussion preceding the publication of the DSM-5 (American Psychiatric Association, 2013), there was heated debate about radical changes to the criteria for personality disorder (Skodol et al., 2011; Oldham, 2015). Thirty years after the inclusion of NPD in the DSM-III, it was almost removed from the fifth edition.

However, in the past two decades, there have been developments relating to narcissism that certainly merit examination. Firstly, relational and intersubjective psychoanalysts have been rethinking the concepts underlying narcissism, focusing on the development of self and relations to others (Drozek, 2019). Secondly, an Alternative DSM-5 Model for Personality Disorders (AMPD) was established in the DSM-5 for the dimensional diagnosis of personality disorders alongside the strict categorical classification of personality disorders that had been used until then (Bender et al., 2011; American Psychiatric Association, 2013; Skodol et al., 2014a). In particular, the combined dimensional and trait conceptualization of NPD opened the door to new integrated diagnostic perspectives, including both internal and interpersonal functioning (Ronningstam, 2020a). Finally, Pincus and Lukowitsky's (2010) proposal for a hierarchical model of pathological narcissism opens up the prospect of looking beyond the relatively minor differences between competing theories about narcissism in order to find common ground.

In this article, we will examine if and how these recent developments can be integrated. We begin by providing an overview of contemporary psychodynamic theories on narcissism, followed by a description of the hierarchical model of narcissism and the AMPD for NPD.

NEW THEORETICAL DEVELOPMENTS

Contemporary Psychodynamic Theories on Narcissism

An important question, clinically and conceptually, is what motivates human beings and makes them human. The traditional drive model posits that we are motivated by derivatives of innate aggression and sexual desires that can destabilize the ego or self. In recent decades, contemporary psychodynamic thinking has enriched conceptual knowledge about the motivational etiology and expression of narcissism. Turning away from the drive model implies relinquishing the assumption of specific narcissistic needs or a specific narcissistic phase in child development (Meissner, 2008). Instead, contemporary relational psychoanalysis focuses on attachment, mentalization, relational needs, and motivational affective systems (Modell, 1993; Panksepp, 1998; Akhtar, 1999; Meissner, 2009; Lichtenberg et al., 2011). As humans, we strive for development and homeostasis in self-organization, with biological and emotional forces playing an important role.

What shape does this take in optimal developmental circumstances? Self-organization develops with the adequate fulfillment of the emotional needs of babies and toddlers for attachment and emotion regulation (Schore, 2003). These needs are met in reciprocal interaction with significant others and represented in the brain as internal working models about the self, relations, and others (Bebee and Lachmann, 2002). In this development, the theory of object relations theory is also important. However, in the newer theories, the "relations" are based on a two-person psychology. These implicit working models are the materials for the "self-as-agent," for sensing that you can prevent or make things happen. It is the blueprint for developing capacities for emotion regulation, attachment, mentalizing, reflective functioning, empathizing, and epistemic trust (Fonagy, 2003). As babies and toddlers have no capacity for speech and symbolic thinking, the self-as-agent remains implicit and can only be experienced by enacting it.

As the capacity for language and symbolizing increases, however, preschoolers arrive at the realization of the self as a subject that experiences emotion: the self-as-subject develops. The self-experience of a preschooler is relatively conscious as a person who gives meaning to his or her life and is separated from, while simultaneously attached to, significant others (Gergely and Unoka, 2008). Especially after the age of seven, the capacity for reasoning grows spectacularly and the child develops the capacity to self-reflect with a bird's eye view. Consequently, the self-as-object becomes integrated in a firmer sense of identity and the child constantly self-evaluates as in an inner dialogue (Meissner, 2008). The growing capacity for self-evaluation develops alongside the capacity to experience self-conscious emotions such as shame, pride, jealousy, and envy (Wurmser and Jarass, 2008; Schalkwijk, 2015, 2018).

We will now look at how this relational theory of self-organization can be applied to narcissism. The most important

factor is the chronic frustration of the basic biological need for satisfying reciprocal interactions. A child's or toddler's frustration sets the scene for the development of dysfunctional capacities for emotion regulation, attachment, mentalizing capacities, reflective functioning, and empathizing. The self-as-agent feels more powerless than able to make things happen. Ronningstam (2020b) writes: "As a central aspect of narcissistic functioning, sense of agency influences both self-regulatory and interpersonal functioning, such as attention seeking, competitiveness, and achievements" (Ronningstam, 2020b, p. 91). These hampered capacities are part of the implicit self and thus operate outside of conscious awareness in the adult; they are ego-syntonic. Meissner (2008) and Symington (1993) suggest that, although not enacted "consciously" in the adult sense, the child has turned away from reciprocal interaction with others to protect his or her growing implicit self from chronic disappointment, from experiencing powerlessness instead of agency. Turning away from potentially frustrating interaction with significant others and opting for self-absorption is the core feature of pathological narcissism (Auerbach, 1993; Lachmann, 2007). This can already be observed in preschoolers. Brummelman et al. (2016) showed that preschoolers with a high score for either self-esteem or narcissism are differentiated by the latter verbalizing that they are great, others are stupid, interaction with others is frustrating, and one is better off on one's own. Those with high scores for self-esteem verbalized that they are great, others are great too, and working together will make the results better. This can also be seen in adult life. When one of our patients was persuaded by his children to play his computer games in the living room instead of sitting in the attic, he said: "I see no additional value in sitting downstairs. It is irritating as my daughters want me to get involved in what they are watching on TV." Basically, the patient was unable to experience the pleasure of being with someone. Inevitably, by turning away from others, a frail self-as-subject results, as it is built on frustrating self and other representations that miss benevolent, soothing, and realistic qualities. As a result, self-regulation is further impaired as the development of the self-as-object is hampered as well. The capacity for self-knowledge through reflection on the subjective self is underdeveloped, protecting the subject from painful shame (Meissner, 2008). Consequently, in an unfortunate cumulation of hampered development, all aspects of the self are frail and self-regulation is dysfunctional.

Another relatively new psychodynamic theory, intersubjective psychoanalysis, has more to say about the dynamics of narcissism (Benjamin, 2018; Drozek, 2019). By contrast with the basic need for satisfying reciprocal interactions posited by relational psychoanalysis, intersubjective psychoanalysis stresses the intrapsychic motivation for the intention to relate. Imagine not only being motivated by biological needs but also being intrinsically motivated to relate ("just for the fun of it"). Imagine wishing to recreate being in a relationship with another and re-experiencing the fulfillment that gives. According to Benjamin (2018), this makes human beings fundamentally subjects who unconditionally value themselves and the other as individually dignified. Another fundamental characteristic of narcissism, in addition to incoherent self-organization, is a severe impairment of the intrinsic motivation to seek nearness and recognize the other as a subject.

In the next section, we will explore the trauma of narcissism and the associated suffering. Drozek (2019) states that patients with severe pathological narcissism (or borderline problems) find it impossible to value themselves unconditionally or ascribe unconditional value to others. They are therefore unable to be motivationally receptive to the subjectivity of others. "Rather, these patients are often only valuing aspects of the other (e.g., attentiveness, admiration, dependency) and valuing themselves only conditionally (e.g., contingent on their ability to appease the other)" (Drozek, 2019, p. 93). In this paper, we will not enter into the therapeutic implications of an intersubjective stance of this kind. We will go no further than pointing out that the therapist should actively assume responsibility for repairing ruptures in the relationship between the patient and the therapist (Benjamin, 2018). Recognition from the therapist is insufficient for change; patients should also be actively engaged in recognizing themselves and the therapist/others. Recognition implies owning one's vulnerability and harmful aspects instead of projecting them onto the other.

The lack of intrinsic motivation for relating is associated not only with psychological distancing from and only conditionally valuing others, but also with another recent theoretical focus, namely, attachment theory. Diagnostically, one would expect insecure attachment styles. The lack of intrinsic motivation for relating would then emerge in a dismissive-avoidant attachment style, whereas the extrinsic motivation for relating, as seen in excessive reference to others for self-enhancement, would be seen in a preoccupied attachment style. Research into the relationship between pathological narcissism and attachment styles is scarce but it is growing. Banai et al. (2005) suggest that the painful longing for others to fulfill one's own needs may be a motivational component of attachment avoidance: "I don't need you!" Exploring early life experiences in a non-clinical sample, Cater et al. (2011) showed that narcissistic dynamics like entitlement, grandiosity, and vulnerability were associated with different parenting styles. Summarizing the research findings to date, Diamond et al. (2013) conclude: "Narcissistic disorders have been associated with dismissing-avoidant attachment status (…) but patients may also be characterized by preoccupied attachment status, in which the individual remains angrily or passively enmeshed with attachment figures" (Diamond et al., 2013, p. 533; see also: Ronningstam, 2020b).

In the clinical and research literature, we see specific countertransference feelings in narcissistic patients as valuable contributions to the diagnostic process. In a clinical sample, independent of the therapist's theoretical orientation, age, or gender, NPD was positively associated with criticized/mistreated and disengaged countertransference, and negatively associated with a positive therapist response (Tanzilli et al., 2015, 2017). Further research in a sample of adolescents showed that grandiose narcissistic traits were associated with angry/criticizing and disengaged/hopeless therapist responses, whereas warm/attuned therapist responses fell short (Tanzilli and Gualco, 2020). In addition, the quality of the therapeutic

alliance was lower. Adolescents with hypervigilant traits received overinvolved/worried therapist responses and few angry/criticized responses[1].

These countertransference reactions may indicate a dismissive attachment style in the patient. The negative association with positive therapist response confirms our clinical experience. As a patient said: "When you are so kind to me, I want to hit you!" The therapist's kindness or benevolence evokes shame: the patient, who is in a help-seeking, dependent position, finds the therapist's kindness humiliating. Envy can be used as a defense against shame: the patient envies the therapist's superiority and wants to take it away from him or her (Morrison and Lansky, 2008). The dynamics between shame and envy express themselves in a self-focused competitive view of others that is considered to be a characteristic of narcissism. All relations here are thought to be about winning or losing, and mutual advantage is an unthinkable reality, as seen in the aforementioned research with preschoolers by Brummelman et al. (2016).

In this paper, we depart from this contemporary relational and intersubjective line of psychodynamic theorizing, with characteristics such as the loss of reciprocal interaction, the loss of intrinsic motivation for seeking nearness, ascribing only conditional value to oneself and others, frail self-regulation, and the absence of the self-as-object. More traditional psychodynamic theories will not be replaced or dismissed and will continue to be referred to when applicable. Throughout this paper we will also refer to the Psychodynamic Diagnostic Manual, Second Edition (PDM-2, Lingiardi and McWilliams, 2017). The PDM-2 focuses on personality styles and not on personality disorders. Personality styles are "a relatively stable confluence of temperament, attachment style, developmental concerns, defenses, affect patterns, motivational tendencies, cultural influences, gender and sexual expressions and other factors–irrespective of whether that personality style can be reasonably conceptualized as 'disordered'" (McWilliams et al., 2018, p. 299). The term personality disorder is used for personality styles "denoting a degree of extremity or rigidity that causes significant disfunction, suffering, or impairment" (Lingiardi and McWilliams, 2017, p. 17). The PDM-2 is based on the integration of the vast body of clinical experience with the richness of empirical research, thus departing from the DSM-5's fundament of empirical research only. In contrast to the DSM-5's striving for simplicity by ascribing fixed patterns of symptoms, the fundamental psychoanalytic premise in the PDM-2 is that doing complexity justice by acknowledging that "opposite and conflicting tendencies can be found in everyone (McWilliams et al., 2018, p. 300)."

The Hierarchical Model of Narcissism

Synthesizing theories about narcissism with the results from research and leaving the "narcissism of minor differences" behind, Pincus and Lukowitsky (2010) proposed that pathological narcissism is best conceptualized by a hierarchical model (see **Figure 1**). In their view, pathological narcissism is basically characterized by a combination of three psychodynamic phenomena: dysfunctional self-regulation, emotion regulation, and interpersonal relations.

They consider these three dysfunctional phenomena to represent the most basic building blocks of pathological narcissism. From this perspective, in contrast to the DSM-5 NPD classification, the Pincus and Lukowitsky model allows pathological narcissism to be situated on a continuum between two prototypes, which are covered by different terms in the clinical and research literature. At one end of the spectrum we find the prototype of grandiose, thick-skinned, arrogant/entitled, shameless, oblivious narcissism (PDM Task Force, 2006; Gabbard, 2015). At the other end, we see the prototype of vulnerable, thin-skinned, hypervigilant, shame-prone, depressed/depleted narcissism: "This *narcissistic vulnerability* is reflected in experiences of anger, envy, aggression, helplessness, emptiness, low self-esteem, shame, social avoidance, and even suicidality" (Pincus, 2013, p. 95; italics Pincus). Although empirical evidence is still lacking, Pincus and Lukowitsky assume that grandiose and vulnerable narcissism can express themselves both overtly and covertly. "Thus, we might diagnose a patient with grandiose narcissism, with some elements being expressed overtly (behaviors, expressed attitudes and emotions) and some remaining covert (cognitions, private fantasies, feelings, motives, needs)" (Pincus, 2013, p. 96).

An interesting line of research was adopted by Russ et al. (2008) with the Shedler-Westen Assessment Procedure. They used atheoretical Q-sort methodology to identify, in addition to those described by Pincus and Lukowitsky, two subtypes of narcissistic personality disorder, as well as a high-functioning/exhibitionistic subtype. Patients with this third subtype, who are well represented in the clinical literature, "have an exaggerated sense of self-importance, but are also articulate, energetic, and outgoing. They tend to show good adaptive functioning and use their narcissism as a motivation to succeed" (Russ et al., 2008, p. 1479). This third subtype could be the prototype of the positive side of narcissism, a line which has not received much attention.

In their model, therefore, pathological narcissism is basically characterized by a dysfunctional regulation of self, emotions, and relations, which is remarkably consistent with contemporary relational psychodynamic theorizing. Pathological narcissism can therefore be situated between the poles of grandiose and vulnerable narcissism, which is consistent with traditional psychoanalytic theorizing but not with the original NPD concept in DSM-III and later editions. The idea that narcissism can express itself overtly and covertly is consistent with traditional psychoanalytic theory.

The Alternative Model for Personality Disorders

As stated above, the American Psychiatric Association (APA) discussion about the classification of personality disorders

[1]This research outcome has been reframed by us, as Tanzilli and Gualco use different subtypes of narcissism.

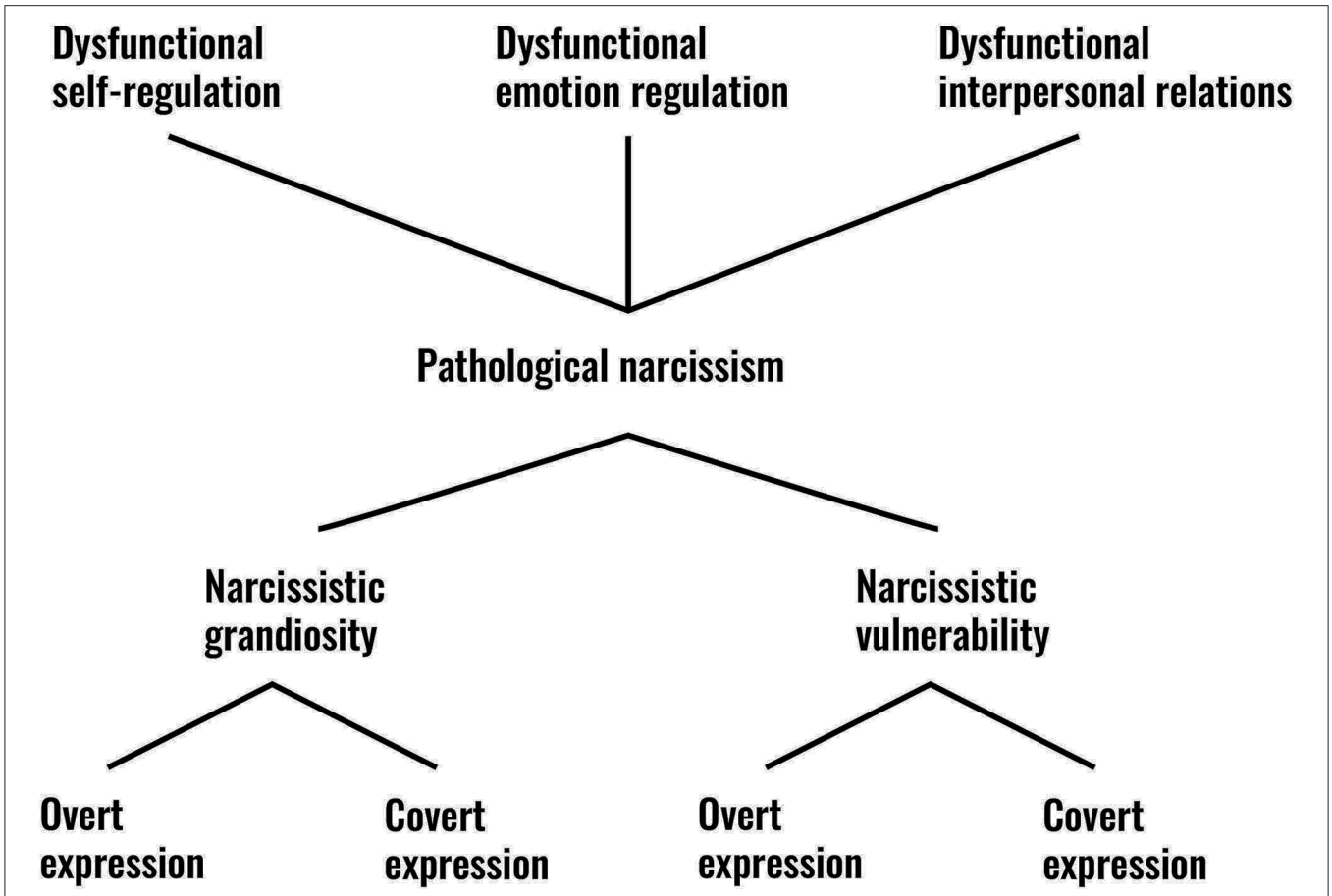

FIGURE 1 | Pincus and Lukowitsky's model of narcissism.

led to two different classification approaches in DSM-5. The first classifies the patient as usual in one of the official ten personality disorder categories, as described in section II of DSM-5. Clinicians and researchers can also adopt the new AMPD approach described in section III to assess patients' level of personality functioning and their unique trait profile. The assessment then consists of a mixture of clinical evaluation and the use of standardized instruments (Skodol et al., 2014b; Berghuis et al., 2017). In the AMPD, each personality disorder is characterized by a specific pattern of personality disfunctions and traits. In the case of narcissistic personality disorder, there is a unique pattern of self-impairment in identity and self-direction, and of impaired interpersonal functioning in empathy and intimacy. An NPD diagnosis is justified when at least two of these four elements are moderately or severely impaired. The specific traits to be assessed are grandiosity and attention seeking. It is interesting to note that, in PDM-2, the level of severity is established along the lines of Kernberg's concept of neurotic, borderline, and psychotic personality organization (Lingiardi and McWilliams, 2017).

In the next section, we will address the four AMPD elements of personality functioning and its specified traits on the basis of current psychodynamic concepts and the hierarchical model described above.

REFLECTION ON PERSONALITY IMPAIRMENTS IN NARCISSISM

In order to integrate the recent developments discussed here, we need a point of reference. As is the case for most non-psychodynamic clinicians and researchers, DSM-5 clearly plays a role in our work, and so we will adopt the AMPD model for NPD as our point of reference. Subsequently, we will examine how contemporary psychodynamic theories and the hierarchical model of Pincus and Lukowitsky additionally inform or contradict the AMPD.

Evaluating Impairment of Identity

The AMPD conceptualizes identity impairment as:

- excessive reference to others for self-definition and self-esteem regulation;
- exaggerated self-appraisal, inflated or deflated, or vacillating between extremes; and

- emotional regulation mirrors fluctuations in self-esteem (American Psychiatric Association, 2013, p. 776).

This conceptualization addresses the function of others for self-definition and self-esteem regulation. Reference to others for self-definition is adequately described in traditional psychodynamic theorizing. Kohut (1972) emphasizes how the patient uses others instrumentally as objects for enhancing the patient's self, calling them "self-objects." As soon as others no longer fulfill that function, their instrumental value becomes zero, and they are devalued as losers and discarded. Although this could appear to be counterintuitive, we argue that this applies not only to grandiose, but also to vulnerable, narcissism. In the latter, the patient enhances self-esteem by placing others in the spotlight.

Another counterintuitive combination is the AMPD's stress on "excessive reference to others" and the psychodynamic view that narcissism implies a refusal of reciprocal interaction with others and a lack of intrinsic motivation for nearness. The key to bringing together these seemingly different foci lies in the answer to the question "excessive reference to which self and which others?" The implicit self is consciously verbalized as a subjective self on the lines of: "I do not want to think and talk about the distress of my partner; I cannot bear it. It is too threatening to myself." The narcissistic patient refuses to recognize the unconditional value of the other and to live in a reciprocal world. Indeed, others do "excessively" matter but not as unconditionally valuable subjects: their relational value depends on the instrumental function they serve for the regulation of the patient's self-esteem. We agree with Meissner (2008), who sees narcissism as a psychodynamic function motivated by the need for "self-definition, self-development, self-organization, self-preservation, self-cohesion, self-enhancement, self-evaluation, self-regard, and self-esteem" (Meissner, 2008, p. 768). We are in favor of interpreting the strong focus on self-definition in AMPD's NPD as a focus on striving for coherence of identity. As for the quality of the excessive reference to others, we should not forget that, even if this reference becomes explicit, it is still located in the internal framework of a dysfunctional implicit self. Fonagy et al. (2002) add that the dysfunctioning of the self is further caused by the underdevelopment or absence of the self-as-object. Self-reflection and introspection are therefore impaired, and so is self-knowledge.

Identity is further conceptualized in the AMPD as "Self-appraisal inflated or deflated, or vacillating between extremes" and "Un-nuanced: self-loathing, self-aggrandizing, or an illogical, unrealistic combination" (American Psychiatric Association, 2013, p. 777). Likewise, in the PDM-2, the narcissistic personality style's central tension or preoccupation is inflation vs. deflation of self-esteem, whereas defense organization is dominated by idealization and devaluation (Lingiardi and McWilliams, 2017). Combining this definition with psychodynamic theorizing, we must differentiate between two diagnostic groups. In patients with narcissism, the subconscious dysfunctional regulation of the subjective self lies in its incoherence, in the vacillation between black-and-white opposites of idealization and devaluation. The patient is therefore engaged in a constant struggle with himself or herself; even narcissistic grandiosity co-occurs with insecure self-representations and sensitivity to rejection (Kealy et al., 2015). Caligor (2013) maintains that "as identity pathology becomes more severe, overt pathology in the sense of self as in the sense of others emerges" (Caligor, 2013, p. 71). In the other group who could fit this description, however, patients consciously suffer from low self-esteem. Their self is consciously experienced as consistently defective in only one direction: failing and coming up short.

Finally, the third element of identity impairment is "emotional regulation mirrors fluctuating self-esteem" (American Psychiatric Association, 2013, p. 777). In narcissism, emotions follow momentary self-esteem states whereas, in BPD, for example, self-esteem would appear to follow emotions more. One of our patients reported that her weekend had been depressing. She had frequently tried to help friends but, in the end, none of them had needed her. Where did that leave her? She felt useless and therefore depressed. The link between self-esteem and dysfunctional emotion regulation is characteristically expressed in the concept of narcissistic rage: the patient is extremely vulnerable to humiliation (perceived or otherwise) and strikes out when others are disappointing (Kohut, 1972). The PDM-2 focuses on shame, humiliation, contempt, and envy as central affects (Lingiardi and McWilliams, 2017). In a study of grandiose narcissism, shame was found to act as a mediating factor, reducing levels of aggression in patients with perfectionistic traits (Fjermestad-Noll et al., 2020). Clinically, this vulnerability is strengthened by the experience of shame when identity is negatively evaluated. Much more than guilt, shame is associated with falling short of one's expectations of an ideal, grandiose self. Shame is differentially associated with the aspect of grandiosity vs. vulnerability. Generally, shame is absent or warded off in grandiose narcissism, whereas grandiose fantasies can alternate with intense shame about needs and ambitions in vulnerable narcissism (Gramzow and Tangney, 1992; Dickinson and Pincus, 2003; Ronningstam, 2005). A more recent explanation for this fluctuation is that some patients with NPD tend toward mental concreteness, a refusal of symbolization or not symbolizing (Ronningstam, 2020b). This certainly has severe implications for the therapeutic alliance, the limitation of latitude for interpretation, and countertransference in the therapist.

Evaluating Impairment of Self-Direction

The AMPD conceptualizes the impairment of self-direction as: "Goal setting based on gaining approval from others; personal standards unreasonably high in order to see oneself as exceptional, or too low based on a sense of entitlement while frequently unaware of one's own motivations" (American Psychiatric Association, 2013, p. 767). The PDM-2 also describes as characteristic the pathogenic belief about self that "I need to be perfect to feel OK," whereas the pathogenic belief about others is: "Others enjoy riches, beauty, power, and fame; the more of those I have, the better I will feel" (Lingiardi and McWilliams, 2017).

With respect to the element of "goal setting based on gaining approval from others," our clinical experience is that the

patient can experience approval with no connection to reality. Consequently, others do not have to express their gratitude or approval in order to fulfill their instrumental function. In the splendid isolation of covert narcissism, admiring others can very well be imaginary: "Once I have published my solution for the global warming problem, everybody will admire me." The internal (and possibly hidden) goal setting, which can take place in fantasy or daydreaming and with no footing in reality, is a particular inaptness in goal setting in covert narcissism that can be easily overlooked by clinicians.

The general inaptness of personal standards that is mentioned in the AMPD is clinically highly recognizable and consistent with psychodynamic theorizing. The suggested associations between "high standards and being exceptional" vs. "low standards and being entitled," however, do not do justice to the converse clinical reality that high goal setting may also be based on the belief of being entitled and low goal setting on the belief of being exceptional anyway. Psychodynamic authors have provided good descriptions of the psychodynamics of shifting defenses in narcissism, in other words the warding of one emotion with another. For example, a patient can feel exceptional by setting extremely low standards, as in the patient mentioned above: "Once I have published my solution for the global warming problem, everybody will admire me. It's all in my mind, I just have to write it up when I feel it's time to do so." Until then, the patient will just go on as usual, keeping a low profile.

Finally, AMPD and psychodynamic theorizing match up straightforwardly in the idea of being "often unaware of one's own motivations": self-knowledge has to be avoided at any cost and often the patient has no conscious knowledge of struggling with his or her self-esteem or identity. We have already described the phenomenon in which the less patients can reflect upon themselves—an indication of weak reflective functioning—the more pathological narcissism is likely. To the best of our knowledge, little research has been conducted until now that specifically addresses the ability of reflective functioning in narcissistic patients (Diamond et al., 2013, Ronningstam, 2020b).

In our clinical experience, narcissistic patients live their lives and use treatment at their own pace: "Time is on my side." This makes treatment targeting inner change extremely difficult and time-consuming. Making narcissistic dynamics egodystonic and sensitizing the patient to hidden motives is one thing but handling the high levels of shame and anxiety that accompany the uncovering of the implicit self, which the patient feels compelled to ward off, is another (Steiner, 2011).

Evaluating Interpersonal Impairment in Empathy

With the discussion of empathy, we enter the world of interpersonal difficulties encountered by narcissistic patients. The AMPD conceptualizes empathy as the: "Impaired ability to recognize or identify with the feelings and needs of others; excessively attuned to reactions of others, but only if perceived as relevant to self; over- and underestimate of own effects on others" (American Psychiatric Association, 2013, p. 767).

The aspect of "impaired ability to recognize or identify with the feelings and needs of others" fits in well with Pincus and Lukowitsky's hierarchical model of pathological narcissism. In that model, impairment in interpersonal functioning is one of the three basic features of narcissism. Narcissism is accompanied by an impaired ability to identify the feelings and needs of others, the failure to recognize the other as a subject in her or his own right, and blocking reciprocity and mutual affect regulation (Ritter et al., 2011). The patient does not expect to benefit from sharing emotions and is not intrinsically motivated to seek nearness. The impairment in empathy is not only found in impaired mentalizing: as patients are not willing to focus their attention on the other, they will also not want to respond emotionally to what can be experienced through empathy (Allen et al., 2008). In clinical practice, the therapist's empathic interventions are often warded off by an *empathic wall*: "I don't want to be understood by you" (Nathanson, 1986).

The qualification of the patient as being "excessively attuned to reactions of others, but only perceived as relevant to self" is very apt. In as much as others do not threaten to destabilize the patient's self-esteem, they are not in the patient's mind. If empathy does come into play, the quality of empathy is most likely to be extremely poor as others are perceived on the basis of the patient's subconscious blueprint of the implicit self. In research literature on empathy, there is a distinction between affective and cognitive empathy, which are represented in two different neural circuits (Fonagy et al., 2002; Cuff et al., 2016). Clinically, if the patient has some empathic awareness of the other, we would expect cognitive empathy to be more associated with grandiose narcissism, and affective empathy to be more associated with vulnerable narcissism. Research, however, does not support our clinical experience: NPD patients have significant impairments in affective empathy, whereas cognitive empathy seems largely unaffected. Despite our clinical experience, Ronningstam (2020b, p. 84–85) concludes: "Further studies have provided evidence for compromised empathic function in NPD, that is, intact cognitive but neural-deficient emotional empathy, and impact of emotion intolerance and processing on ability to empathize (Ritter et al., 2011)."

Evaluating Interpersonal Impairment in Intimacy

The AMPD conceptualizes intimacy as follows: "Relationships are largely superficial and exist to serve self-esteem regulation; mutually constrained by little interest in other's experiences and predominance of a need for personal gain" (American Psychiatric Association, 2013, p. 767). Relationships of this kind are related to the etiology of pathological narcissism represented in the blueprint of the implicit self: the inner representations of others are not based on an integration of differentiated images of self and others, nor are others recognized as autonomous subjects. Indeed, patients only send; they do not receive and they refuse reciprocity in relations with others. They hardly engage at all in inner self-talk as someone with a well-developed self-as-object would do to acquire more self-knowledge. It should be remembered that others are not seen as persons in their own

right but rather experienced and used as instruments. In our clinical experience, therapists (and others) are most valued if they maintain an emotional distance and refrain from empathic interventions. This was seen in the example quoted above of the patient who said: "When you are so kind to me, I want to hit you!"

The need for personal gain can easily be misunderstood: the benefit is found in the enhancement of the subjective self. The instrumentality of relationships is a defense against the unbearable feeling of being dependent on the relationship (Kernberg, 1975, 1984). The exploitative quality of relations looks superficially like a "gain" but as therapists we should not forget that this gain involves a price: the patient lacks the capacity for self-soothing and existential loneness results. Characteristically, others are usually idealized or devaluated excessively and inappropriately. The patient may hyper-idealize others in order to comfortably warm him- or herself in the heat of their radiance: "Look how great we are!" ("mirror transference," Kohut, 1972). Hyper-idealizing someone also places the patient in the position of being the one who has the expertise to judge, which fuels feelings of superiority. Excessive devaluation comes to the fore if the existence of the other threatens the stability of the subjective self by association: "Who am I, if I am associated with that loser?" A patient said to one of us: "Are you divorced? Because if you are, how can you help me with my relational problems when you can't handle them yourself?" The often bitter and aggressive nature of devaluation serves to enhance the subjective self. Idealization and devaluation are associated with an insecure dismissing-avoidant attachment style (Tolmacz and Mikulincer, 2011). Ambivalence is seldom cherished as a valuable state of mind; instead, relations are about winning or losing, and jealousy is omni-present.

Anything with relational implications will be dismissed if it might give pleasure and make one emotionally alive. The evaluation of anniversary gifts is exemplary: a patient with grandiose narcissism said: "Getting presents for my anniversary is only a means of bringing more worthless trash into my house." His vulnerable counterpart always bought himself a present after his birthday, shielding himself from the disappointment that others may not give him the "right" presents. Describing the basic relational patterns of patients with NPD, Lachkar (2008) writes that their partners are quite often diagnosed with BPD. It is a tale of the deaf leading the blind and, usually, the relationship falters when the partner with BPD matures and becomes less dependent and anxious.

Sexuality in relationships is often complicated. The patient tries to avoid the humiliation of having to display needs and wishes, and of experiencing vulnerability: "Hell is other people," said Sartre (1943). Psychoanalyst Green adds to Sartre's dictum: "Hell is not other people, but rather the body. … The body is a limitation, a servitude. … The body is his absolute master–his shame" (Green, 1997, p. 127). Sexuality is often reduced to a mere physical pleasure, whether or not permeated with fantasies of being the greatest lover. Extreme self-centeredness or other-centeredness during lovemaking is characteristic, as reciprocity and empathic attunement are avoided. The partner is treated instrumentally: "What value does the other's sexual pleasure have for myself as a lover?" A male patient broke up his marriage after discovering he had been lied to for years: with great shame, his wife had told him she was unorgiastic and had faked orgasms. His self-worth as a great lover crumbled.

Sexuality can turn into perverse love: sexual excitement becomes the substitute for love and the longing of the other serves to strengthen the cohesion in the self. The own body, the other's body, or a fetish becomes a sexual object, an eroticized self which is constantly longing for stimulation (Akhtar, 2009). It is not uncommon to find NPD patients who also suffer from hypochondria: the frail implicit self has developed alongside a frail bodily self.

REFLECTION ON THE NARCISSISTIC PERSONALITY TRAITS OF GRANDIOSITY AND ATTENTION SEEKING

It should be remembered that the AMPD characterizes each personality disorder on the basis of a specific pattern of personality dysfunctions and traits. In the section above, we described the patterns of this pattern in NPD by looking at a unique pattern of self-impairments, which are evaluated by focusing on identity and self-direction, and of interpersonal functioning, which is evaluated by focusing on empathy and intimacy. We now turn to the unique trait profile of NPD: grandiosity and attention seeking.

Evaluating Personality Traits: Grandiosity

The AMPD conceptualizes grandiosity as "Feelings of entitlement, either overt or covert; self-centeredness, firmly holding to the belief that one is better than others; condescension toward others" (American Psychiatric Association, 2013, p. 768).

The description of feelings of entitlement, either overt or covert, fits in well with Pincus and Lukowitsky's (2010) suggestion that grandiose and vulnerable narcissism can be expressed both overtly and covertly and, consequently, that feelings of entitlement should not only be associated with grandiose narcissism. This perspective confirms our clinical experience but it is, at the same time, subject to some theoretical discussion. The first edition of the Psychodynamic Diagnostic Manual (PDM; PDM Task Force, 2006) differentiated between an arrogant/entitled and a depressed/depleted subtype of narcissism (Blatt, 1974). The PDM characterized "depleted self-imagery, angry, shameful, and depressed affects, self-criticism and suicidality, and interpersonal hypersensitivity/social withdrawal" (Morey and Stagner, 2012, p. 910). In the PDM-2, which focuses on personality styles and not on personality disorders, entitlement is mentioned only as a pattern in adolescents with narcissism (Lingiardi and McWilliams, 2017).

The same applies to clinging to the belief that one is better than others and condescension toward others. These characteristics can also be seen in both expressions of narcissism, and particularly in masochistic narcissism: the grandiosity of suffering is hidden by silently and secretly experiencing the grandiosity of being able to bear any adverse events (Fairbairn, 1940; Kernberg, 2007).

Entitlement and condescension are two characteristics of narcissism that have given narcissism its negative connotation in everyday speech. In psychodynamic theory, there is a close association between the nature of entitlement and a defensive wilful resistance to dependency and reciprocity. Patients wilfully decline to relate with another in order to get what they want; instead, they expect it to be served or granted without having to ask explicitly. Asking is about losing, as asking would acknowledge neediness and dependency. Research has shown that excessive and restricted forms of relational entitlement are significantly associated with insecure attachment styles (Tolmacz and Mikulincer, 2011). In the clinical situation, we encounter patients who literally refuse to give up their entitlement. Their narcissistic rage is fuelled to no purpose by a feeling of entitlement and by the demand to be compensated for the misdeeds or shortcomings of persons or circumstances in the past. In our consulting room, we meet patients who cannot cut their losses with respect to situations in the past and, in their hate, remain attached to a parent in an obsessive and spiteful way. Working through this persistence is often painstakingly difficult because the rage prevents patients from establishing the psychological distance through the self-as-object that is necessary to see the insanity of their expectations.

Evaluating Personality Traits: Attention Seeking

The AMPD conceptualizes attention seeking as: "Excessive attempts to attract and be the focus of the attention of others; admiration seeking" (American Psychiatric Association, 2013, p. 768).

Again, it is easy to associate these criteria with overt narcissism and therefore fail to notice covert attention-seeking involving putting others in the spotlight. The essence of this latter type of self-esteem regulation is that patients subconsciously see their self-effacing behavior in the service of the well-being of others as support for their self-esteem. However—and this is essential—the relationship with the other is instrumental and can therefore be perceived by the other as manipulative. In intersubjective terms: the other is treated as an object that possesses conditional value. Even when the other is placed explicitly in the spotlight and patients do not get any exposure for themselves, the self-esteem of vulnerable patients may be enhanced considerably as they attribute the other's greatness to their own contribution (Kohut's "narcissistic mirroring needs"). Vulnerable narcissism is often found in persons who claim to function best as "the second person."

Attention seeking therefore involves not only seeking admiration for oneself directly; it also includes forms of behavior in which admiration is given to others. This is a classic pitfall in treatment when, in the transference-countertransference matrix, the patient and therapist build up a mutual admiring collusion as both being "the best ever, together." This form of covert, "eager to please," narcissism is well-documented in psychoanalytic literature but often underdiagnosed in clinical practice. "Eager to please" narcissism is often associated with parentification in childhood (Miller, 1981).

CONCLUDING REMARKS

In this article we integrated Pincus and Lukowitsky's (2010) hierarchical model of pathological narcissism, contemporary psychodynamic concepts of narcissism, and the diagnostic concept of narcissism in the AMPD.

Pincus and Lukowitsky encourage clinicians to use this hierarchical model as it opens up opportunities for shared points of interest in empirical research from different scholarly perspectives. Capacities for self-regulation and emotion regulation can, for example, be operationalized from social-learning theory and from a psychodynamic perspective, with each adding valuable knowledge. Pincus and Lukowitsky's valuable review showed there has been hardly any research into NPD with a clinical patient sample. More research involving a clinical sample is therefore needed. In addition, researchers could adapt their methods in order to conduct research that is clinically relevant for mental health care by focusing on phenomena that can be addressed in psychotherapeutic treatment. Pincus and Lukowitsky's review also showed that narcissism research is skewed by the use of the Narcissistic Personality Inventory, which mostly assesses adaptive expressions of grandiose narcissism. In the hierarchical model, vulnerable narcissism emerges as a relatively new concept for non-psychodynamically informed researchers and therapists, and additional measures have to be developed to cover this concept.

For us, one of the major advantages of the AMPD is the use of structured clinical evaluations of disturbances of the self and interpersonal functioning. In the present paper, we have discussed at length the thematic content of the AMPD. As psychodynamically oriented therapists, we are enthusiastic about the opportunities to include psychodynamic and structural concepts (see also: Bornstein, 2015). In addition to the thematic content, we welcome the dimensional evaluation of the severity of personality disorder pathology, as operationalized in DSM AMPD Criterion A, which can be assessed by instruments like the Semi-structured Interview for Personality Functioning (STiP-5.1) and Level of Personality Functioning Scale Self-Report (LPFS-SR) (Hutsebaut et al., 2017), or scorings based on the Object Relations Inventory (ORI) (Borroni et al., 2020).

In addition to the thematic content, we welcome the dimensional evaluation of the severity of personality disorder pathology. Kernberg's structural model for personality organization could provide an insight into the severity of all these thematic elements, in other words whether relevant psychodynamic features are organized in a neurotic or high-level/low-level borderline way. This provides the practitioner with information about the prognosis and the indication for the treatment model (Caligor and Stern, 2020).

We also acknowledge that there are a number of discussion points. Following the example of all psychodynamic theories, the AMPD assumes in the case of NPD that there is a disturbance that goes back to early child development. However, in all honesty, there is still no empirically derived theory for the etiology of grandiose and vulnerable narcissism, even though there is now more research with children from researchers like Brummelman et al. (2016). Relational

psychodynamic theory has undeniably been supplemented with clinical child research into attachment, mentalization, emotion regulation, and parenting styles. It is, however, unfortunate that research has also shown that the link between childhood experiences and later emotional disturbances is relatively weak. More empirical data about attachment styles and emotion regulation styles in patients with narcissistic pathology would be welcome as support for the unique pattern of narcissistic relational dynamics.

In the final evaluation of the four AMPD DSM-5 elements of personality functioning, all the elements seem to have equal importance but clinical experience and psychodynamic clinical theory clearly place most emphasis on the element of identity, with self-regulation and emotion regulation as the most important aspect of this element. This problem can be resolved by further research into the relative importance of the four elements of personality dysfunction. The need to evaluate the severity of impairment in personality functioning is a valuable element in the proposed diagnostic criteria for NPD that psychodynamically oriented therapists could use to their benefit. We believe that the criteria for the two personality traits, grandiosity and attention seeking, rely too heavily on the definition of NPD in the traditional DSM-5, with its focus on grandiose narcissism. However, further research could determine whether only these two traits pertain to NPD or if other traits might be relevant as well. Future research using the Level of Personality Functioning Scale, as proposed in the AMPD, will provide ample opportunities for introducing a more sophisticated psychodynamic perspective.

The AMPD comes close to how psychoanalytic therapists could conceptualize their daily practice (see also: Caligor and Stern, 2020). As mentioned here, a positive aspect of the AMPD is that the diagnostic evaluation of the level of personality functioning is based on a structured clinical evaluation of four clinically relevant elements. The model addresses all the theoretical and clinical elements of pathological narcissism mentioned, such as self-regulation, affect regulation, interpersonal difficulties, grandiose/vulnerable, and covert/overt. In contrast to DSM-5 personality disorders in Section II, the AMPD clearly offers a more integrative approach. However, understandably, the basic tenet in clinical theory that distancing from the significant other forms the basis for developing NPD is not operationalized in the AMPD. Ultimately, this distancing can only be clinically inferred by assessing its consequences, which are described in the AMPD.

Now, after all this theory, the proof of the pudding is once again in the eating. In our case, the proof is to be found in the therapies we provide. Many guidelines for treating pathological narcissism have been developed in the last 10 years. Choi-Kain (2020) advocates using General Psychiatric Management, while others propose modifications of existing evidence-based treatment models for BPD to treat pathological narcissism: Mentalization-Based Treatment (Drozek and Unruh, 2020), Transference Focused Psychotherapy (Diamond and Hersh, 2020), Dialectical Behavior Therapy (Reed-Knight and Fischer, 2011), or Schema Focused Therapy (Young et al., 2003). Nevertheless, others focus on specific themes when treating pathological narcissism, for example in psychodynamic therapy (Crisp and Gabbard, 2020) or the client-centered Clarification-Oriented Psychotherapy (Maillard et al., 2020). Traditional high-frequency psychoanalysis—three to five weekly sessions on the couch—seems to have missed the boat in terms of establishing a position in the discussion.

After we concluded the draft version of this publication, the paper *The "Why" and "How" of narcissism. A process model* (Grapsas et al., 2020) came to our attention. It comes from the field of social learning and experimental psychology. Almost none of the references in that paper overlap with those in the present paper. Given the realization that there are so many overlaps, it is shocking that we seem to know so little about each other's work. For example, both fields look at internal processing in subjects with narcissism. Grapsas et al. (2020) propose a self-regulation model of grandiose narcissism that illustrates an interconnected set of processes through which narcissists pursue social status in their moment-by-moment transactions with their environments. In the same way, Ronningstam (2020b) draws attention to internal processing in patients and how it contributes to narcissistic personality functioning. "Studies provide evidence for a neuropsychological core deficit in individuals with pathological narcissism or NPD, which affects their ability to access, tolerate, identify, and verbalize emotions" (Ronningstam, 2020b, p. 85). Narcissism seems to be associated with many bioneurological phenomena that are prototypical for narcissism. Experimental research has found increased sensitivity to subtle cues of non-acceptance in facial expressions, the "denial" of physical shame reactions after being devalued, the rise of cortisol levels in situations of social threat, or the activation of brain regions sensitive to pain in response to exclusion. Ronningstam argues that more attention should be paid to all kinds of internal processing from a neuropsychoanalytic point of view. As in the treatment of traumatized patients, this approach could inform the therapist in therapeutic stalemates.

Affective neuroscience can enlighten the neurological correlates of our subjective states. Solms (2017) argues that striving for homeostasis of the self pertains specifically to "basic (brainstem) consciousness, which consists in *states* rather than *images*" (Solms, 2017, p. 6). This is the self-system Schore calls the implicit self, associated with the unrepressed unconscious. Central to Schore's thinking is the notion that the idea of a single unitary self is misleading: "What we call the self is in reality a system of self states, that develop in the early years, but grow to more complexity during the life span" (Schore, 2017, p. 74). In the first year of life, the structuralization of the right brain self develops in the course of the interdependent interaction between child and caretakers (*self-objects*), especially through processes of mismatch and repair in attachment, and with it (mal)adaptive implicit self-regulation processes develop. In early development, this implicit self, supposedly located in the lateralized right brain, is basically relational, as the self-states develop out of the interaction with the self-objects. Schore (2009, 2017) locates the brain's major self-regulatory systems in the orbital prefrontal areas of the right hemisphere. Its functioning belongs to the unrepressed unconscious; its content can be felt but cannot be translated into words or symbols. Accordingly,

in psychotherapy, it cannot be reached through interpretations making the unconscious conscious, but it becomes visible in enactments between psychoanalyst and patient. Somewhat later in early development, after the second year, the verbal, conscious left lateralized self-system ("left mind") develops. Schore writes: "Despite the designation of the verbal left hemisphere as "dominant" due to its capacities for explicitly processing language functions, it is the right hemisphere and its implicit homeostatic survival and affect regulation functions that are truly dominant in human existence" (Schore, 2017, p. 74).

The central challenge in the decade to come would seem to be to differentiate between NPD from BPD and to establish specific recommendations for treatment. Indeed, we agree with the comment made by Choi-Kain (2020) that was quoted in the introduction of this paper, that we can now look ahead to a new wave of investigation and treatment development.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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OPINION
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The Historical Influence of Psychoanalytic Concepts in the Understanding of Brain Injury Survivors as Psychological Patients

Christian Salas [1,2,3]*

[1] Center for Human Neuroscience and Neuropsychology, Faculty of Psychology, Diego Portales University, Santiago, Chile, [2] Clinical Neuropsychology Unit, Faculty of Psychology, Diego Portales University, Santiago, Chile, [3] Psychodynamic Psychotherapy Unit, J.H. Barak Psychiatric Institute, Santiago, Chile

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***Correspondence:**
Christian Salas
christian.salas@udp.cl

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INTRODUCTION

Since the early work of Goldstein (1954, 1995), psychoanalysis has been an influential theoretical and clinical perspective in comprehending our patients' emotional adjustment after brain injury. This, even though psychoanalytic mainstream has considered for decades "organic" patients as the paradigmatic example of contraindication (Cooper and Alfillé, 2011). The relationship between psychoanalysis and neuropsychological rehabilitation, the discipline specialized in helping brain injured survivors adjusting to physical, cognitive and behavioral problems, has been equally complex (Salas, 2014). Leading authors of the field have questioned whether psychoanalytic psychotherapy is suitable for this population and whether unconscious processes and early relationships have any relevance in rehabilitation (Wilson, 2014).

In this opinion article I will argue that psychoanalysis has strongly influenced the way in which psychologists, clinical neuropsychologists and rehabilitation professionals understand brain injured survivors as patients with important psychological rehabilitation needs. I will briefly summarize four key psychoanalytic ideas that have contributed to the development of neuropsychological rehabilitation.

FOUR KEY PSYCHOANALYTIC IDEAS IN NEUROPSYCHOLOGICAL REHABILITATION

Brain Injury as a Loss of Meaning in Life

This may seem an obvious idea today in neuropsychological rehabilitation, but this was not the case prior to the 90s, when rehabilitation was primarily focused on cognitive remediation and work productivity. At that time, George Prigatano, a clinical neuropsychologist influenced by Kurt Goldstein, Yehuda Ben-Yishay and Carl Jung, observed that brain injured survivors commonly reported existential problems related to the "loss of normality" (Prigatano, 1999). Interestingly, and using psychoanalytic insights, Prigatano argued that such losses should be understood from two perspectives. As a loss of the possibility to fit into societal standards, cultural notions, or *archetypes*—in the Jungian sense—regarding what is considered desirable and valuable in human beings (beauty, intelligence, success). As a consequence, Prigatano posited that psychological interventions for brain injured survivors should help them explore new cultural symbols in order to find a place in the world and rebuild meaning in life (work, love and play).

The loss of normality implied a loss of biographical normality as well, often portrayed by survivors as the longing "to be the one I was before." Prigatano argued that we could not understand such biographical loss without considering psychodynamic factors such as defenses and early relationships with attachment figures (Prigatano, 2008; Salas and Prigatano, 2018). Accordingly, Prigatano proposed that "the one I was before," and "the one I am now" were heavily defined by people's psychohistory. Our self-concept, what we consider as valuable and desirable in us, or what we dislike about us and hide from others, is the crystallization of many explicit and implicit interactions with those that cared for us. Thus, we should include psychodynamic factors in case formulations, and consider them when designing rehabilitation interventions. Otherwise, we will not understand situations where patients don't collaborate or don't adhere to interventions that are, from a clinician's perspective, obviously beneficial for them. Prigatano also observed that, due to the many cognitive impairments (loss of abstraction, cognitive inflexibility, language impairments, etc.) survivors often struggle understanding what they have lost, thus compromising the process of finding new existential meaning. He argued that rehabilitation should adapt psychological tools to bypass these impairments and facilitate meaning reconstruction after the injury. Furthermore, he extensively explored the use of symbols and metaphors to help survivors expressing and sharing their subjective experience (Prigatano, 2012). According to Prigatano, the "Journey of the Hero," a classic Jungian archetype, proved to be especially useful tool to explore and rebuild meaning.

Brain Injury as a Narcissistic Injury

It is interesting to note that Heinz Kohut used the cognitive consequences of brain damage to develop his conceptualization of narcissism. In *Thoughts on Narcissism and Narcissistic Rage* (Kohut, 1972) he described that the inability to find words, or the loss of control over our thinking processes after brain damage, can be experienced by survivors as the loss of a part of the self, triggering intense feelings of anger. To Kohut humans have a healthy, omnipotent relationship with their minds. We control our minds. We think and words emerge. We want something and our limbs reach for it. This healthy omnipotence gives us a sense of coherence between desires, thoughts and actions. According to Kohut, such omnipotence is at the base of a healthy self-esteem. After brain injury, cognitive and physical impairments often fracture the omnipotent relationship with the mind/body. In fact, a mind-body disconnection has been described as one of the most important changes faced by survivors after the injury (Levack et al., 2010).

The use of Kohutian ideas came into mainstream neuropsychological rehabilitation thanks to the work of Pamela Klonoff and colleagues. Klonoff, a clinical neuropsychologist and close colleague of Prigatano, proposed that brain damage could be experienced by some survivors as a narcissistic injury (Klonoff and Lage, 1991; Klonoff et al., 1993). This experience was thought to be particularly problematic in survivors with early relational traumas, who had not adequately developed a healthy narcissism due to environmental failures, where carers have not mirrored or re-affirmed their sense of self-worth. In these cases, a constant effort to appear perfect to oneself and others may take place—as a grandiose Self—in order to regulate a profound sense of shame that is attached to the belief that deep down there is something defective about the self. In these cases, the injury can fracture this defensive grandiose image, and primitive feelings of emptiness, worthlessness may re-emerge. Klonoff has described in detail how feelings of shame can be externalized as rage toward relatives or rehabilitation professionals and/or the self. These feelings may be so unbearable for the survivor that eradicating the self completely can work as a way of wiping out the offending, disappointing reality of feeling damaged. Kohut and Klonoff's ideas are of particular relevance in the psychological care of patients with past early traumatic histories. However, the loss of coherence between desires, thoughts, and actions, is a common experience amongst survivors, which needs acknowledgment and elaboration.

Brain Injury Can Change the Dynamics of Emotion and Personality

Following the observation of long-term psychoanalytic treatments of brain injured survivors, Kaplan-Solms and Solms (2002) reported in their seminal book Clinical Studies in Neuropsychoanalysis that brain damage did not only alter the cognitive architecture of the mind (e.g., perception, language, memory, thinking), but more importantly, could change emotion, personality and motivation. This may seem an obvious fact today, but again, it was not at the time, now 20 years ago. The work of these authors has motivated a new generation of clinicians to use a similar approach to explore emotion, personality and motivation changes in a wide range of complex neuropsychological syndromes, previously often left out of psychological care, such as profound amnesia, confabulation and emotion dysregulation (for a review see Salas et al., 2021). Clinical Studies in Neuropsychoanalysis also refuted several taboos, with perhaps the most important one, that people with brain damage could not benefit from psychodynamic psychotherapy. Due to the influence of this book the field of neuropsychoanalysis emerged and clinical neuropsychologists began to include psychodynamic ideas in case formulations, as well as more routinely use psychodynamic tools in psychological treatments.

Clinical Studies in Neuropsychoanalysis did not only help neuropsychological rehabilitation to realize that there were dynamic changes in emotion and personality after brain damage, but also influenced psychoanalysis itself, by reviving Freud's *Project for a Scientific Psychology*. Such revival was welcomed by some, but simultaneously resisted by those who argued that psychoanalytic practice does not need a material theory of the mind/brain (see the "Case against neuropsychoanalysis" debate Blass and Carmeli, 2007). However, beyond the debate about the clinical suitability and usefulness of neuroscientific insights in clinical practice, Clinical Studies put on the table a revolutionary idea: meta-psychological concepts related to the dynamics of affect and personality had a neuroanatomical

correlate. For example, lesions to specific cortical areas could modify the interactions between id, ego and super-ego. Such findings set the scene to new research programs exploring the affective nature of consciousness, the neural basis of drives and the interaction between affect and cognition (Fotopoulou et al., 2012).

Brain Injury as a Loss of the Meeting of the Minds

In the last decade there has been an increased interest in the use of relational ideas to comprehend psychological and interpersonal changes after brain injury, as well as to develop psychological interventions that could potentially address these. Psychoanalysis has contributed to this development in many ways. Initially, and thanks to the work of Pepping (1993) and Lewis (1999), concepts like transference and countertransference were proposed as relevant to understand the development of a therapeutical, or adversarial, alliance between patients, clinicians, and the rehabilitation team. It was described, for example, that different types of countertransference could be experienced by professionals, thus expanding classic theorization on countertransference: to patients' experience, to their deficits or even to their attitudes toward their deficits. The relevance of counter transferential feelings has been highlighted by researchers reporting that negative emotions (frustration, fear, anger) are common amongst rehabilitation professionals (Judd and Wilson, 2005). Transference has also been referred to as a useful concept. In 1954 Kurt Goldstein proposed the active use, and promotion, of positive transferential feelings (trust) to engage survivors in a treatment they do not always understand completely. More recently, it has been reported that feelings toward parental figures can be transferred to rehabilitation professionals (Yeates and Salas, 2020) and that specific cognitive impairments—confabulation, amnesia—can shape and influence the transferential process (Tiberg, 2014; Moore et al., 2017).

Relational ideas appeared in neuropsychological rehabilitation around the 90s and 00s with two key psychoanalytic papers that emphasized brain injury as a *relational* loss. Feigelson (1993), portrayed in a deeply moving personal article the impact that brain injury had on the survivor-beholder (a partner, a sibling), who experienced the changes asociated to TBI as a personality death: the emergence of someone that looks like the person, but feels like a stranger. Clearly here the emphasis is not in the intrapsychic changes generated by the injury, but its *impact* in the relational space that defines, and emotionally coordinates, members of a dyad. Later, Freed (2002) developed Feigelson's ideas further by stressing how brain injury, and the anxieties generated by personality change in the partner, disrupted the experience of connection and attunement: the meeting of the minds. This generated a complex problem. After the injury, the survivor needs the mind of the other as a source of external cognitive and emotional regulation (auxiliary ego function). However, due to the anxieties generated by the experience of relating to someone who felt like a stranger, the other struggles in providing cognitive, practical and emotional support. These ideas were later influential to Yeates and colleagues, who proposed a relational (epistemological) turn in neuropsychological rehabilitation. In their book *A Relational Approach to Rehabilitation* (Bowen et al., 2010) they argue that brain damage does not occur inside people's skulls, but in the space between people, often infiltrating and amplifying personal distance and disconnection. Thus, brain injury and its socio-emotional consequences can be understood as socially constructed and modulated by social context. These ideas have inspired clinicians to develop psychological interventions using a relational (attachment-based) framework (Yeates and Salas, 2020).

DISCUSSION

The main goal of this article was to review key psychoanalytic ideas that have influenced the understanding of brain injury as a psychological problem, and of brain injury survivors as patients with unique psychological rehabilitation needs. Brain injury represents to many survivors a loss of normality, demanding the reconstruction of meaning in life. Subjectively, brain injury can be experienced as a loss of coherence, compromising the sense of control over our own minds and bodies. Brain damage can alter the dynamics of emotion and personality, as well as the relational space where minds encounter each other. Despite the historical and clinical relevance of these ideas, psychoanalytic concepts and techniques disappointingly are rarely included in training programs for clinical neuropsychologists. At present, this situation appears to be related to the unfamiliarity of many professionals with the evolution of psychoanalytic psychotherapies and its actual contribution to the treatment of mental health problems. Another relevant factor relates to changes across the globe in health care systems, which have demanded briefer and less expensive forms of psychological care. This shift has influenced the type of support provided by clinicians, with a predominant emphasis on symptom remediation (Salas and Prigatano, 2018). The intention of this article has been to sketch a brief genealogy of psychoanalytic ideas in neuropsychological rehabilitation, a genealogy to which younger generations can identify and contribute with their work.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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The Emergence of Psychoanalytic Metaneuropsychology: A Neuropsychoanalytically Informed Reconsideration of Early Psychic Development

*Matthew John Mellor**

Department of Psychology, University of Exeter, Exeter, United Kingdom

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Edited by:
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University of Cape Town, South Africa

***Correspondence:**
Matthew John Mellor
mm993@exeter.ac.uk

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This paper is principally concerned with reappraising some of the major disagreements that separated the Viennese and the London Kleinians during the British Psychoanalytical Society's Controversial Discussions. Of particular focus are questions pertaining to the genesis of ego development, the beginnings of object-relating, and the role of unconscious phantasy in respect of these phenomena. The aim of the investigation is to inquire into the light that may be shed on the once intractable conflicts surrounding these questions by bringing to bear more recent developments from psychoanalysis and the neurosciences. First, various key issues from the Controversial Discussions are outlined, before the paper turns to work by Jaak Panksepp and Mark Solms that bears on these older arguments and the Freudian theories that underpinned them. With these conceptual foundations established, three questions are posed and discussed with a view to understanding the implications of recent neuropsychoanalytic thinking for some of the entrenched conflicts that divided the British Society. These questions include: (1) what does it mean for the ego if the id is conscious? (2) What does recent neuroscientific knowledge tell us about whether the ego should be thought of as present from birth? (3) How can we understand and locate unconscious phantasy if the main part of the mind that Freud thought of as unconscious is not so? Research from the arena of infant development—particularly the material and analysis of infant observation—is drawn on to illustrate various conclusions. The paper ultimately concludes that taking such an interdisciplinary approach can reveal renewed justification for aspects of the Kleinian metapsychology.

Keywords: psychoanalysis, neuropsychoanalysis, controversial discussions, infant development, unconscious phantasy, object relations, ego development

INTRODUCTION: AN UNCIVIL WAR[1]

Between 1942 and 1944, in the wake of Sigmund Freud's death and with the world at war for the second time that century, the British Psychoanalytical Society was engaged in what is widely regarded as the most attritional debate in its history (Rycroft, 1968, p. 27). Dubbed the "Controversial Discussions," the period played host to series of scientific meetings that were organised in the attempt to resolve conflicting views that different Society members held with respect to fundamental aspects of the psychoanalytic model of the mind. On one side of the divide stood the Viennese, comprised of Anna Freud and her followers, whilst on the other was a group of psychoanalysts loyal to Melanie Klein (Rycroft, 1968, p. 28). Despite the Controversial Discussions ultimately resulting in what may most appropriately be described as an agreement to disagree, their impact would shape British psychoanalysis for decades to come. Not only did the Discussions lead to the creation of a hitherto undefined "Middle Group," they also necessitated significant changes to the Society's training programme which was reorganised to reflect the theoretical and technical divisions that had proved impossible to reconcile (King and Steiner, 1991, p. 25).

An important locus of the dispute between the Viennese and the Kleinians centred on questions pertaining to "the nature and function of phantasy" (Isaacs, 1948, p. 73). As stated by King and Steiner (1991, p. 242)—authors of the definitive account of the Controversial Discussions—"the notion of unconscious phantasy [. . .] is probably the major theoretical theme of all the Scientific Discussions." The different positions taken on this subject revealed deep divides within the British Society and led to radically divergent conclusions being drawn with respect to a broad range of psychological phenomena. A chief area of contention that ran parallel to the different conceptions of phantasy concerned the genesis of ego development. It was specifically on the question of whether the ego is present from birth that some of the Discussions' most stubborn disagreements were centred.

It is with these same themes that this paper is concerned. The aim of this investigation will be to inquire into how these once intractable conflicts may be reappraised by bringing to bear more recent developments from within psychoanalysis as well as from the neurosciences; an interdisciplinary emphasis that is closely compatible with the *Frontiers* Research Topic for which this paper has been produced. An outline of some of the key issues from the Controversial Discussions will be presented, before a review of theoretical literature by Jaak Panksepp and Mark Solms is addressed; work that influences contemporary understandings of these older arguments and the Freudian theories that underpinned them. This review of current interdisciplinary developments represents a key purpose of the present paper. With these conceptual foundations established, three questions are posed and discussed. The aim of this second half of the paper is to explore the implications of recent developments from the neuropsychoanalytic domain for some of the entrenched conflicts that divided the different cohorts within the British Society. Infant development research—particularly material and analysis derived from infant observation—is drawn on to give body to various conclusions.

[1]The name given to a BBC documentary covering the Brexit referendum, which saw the emergence of profound splits in British society. Appropriated in this instance in respect of the profound splits that emerged within the British Psychoanalytical Society in the 1940s.

CONTROVERSIAL DISCUSSIONS CONCERNING THE BEGINNINGS OF LIFE

For the Viennese, it was fundamentally incorrect to suggest that the ego—the intrapsychic agency that Freud (1914, p. 7) had first described as "das Ich"– is present from birth. Claiming allegiance to Freud's original theories, Anna Freud proposed that at the very beginning of life "no ego exists" (King and Steiner, 1991, p. 420). Instead, the infant is said to be born into a state of "primary narcissism" that is characterised, in the Viennese view, as an "auto-erotic" phase that extends over the first months of life. Crucially, during this time, the infant is described as having "*no object relation* in the proper sense" (King and Steiner, 1991, p. 753–754, my emphasis). Rather, it is argued that the infant spends their opening months seeking only "*themselves* as a love-object," to quote Sigmund Freud's paper *On Narcissism* (1914, p. 88). Moreover, as Freud (1914, p. 100) would go on to state in that influential paper, "the development of the ego consists in a departure from primary narcissism and gives rise to a vigorous attempt to recover that state." In other words—and as was at the very crux of the arguments put forward by Anna Freud and her followers—a basic mutual exclusivity exists between the presence of primary narcissism and the existence of an ego that can relate to objects "in the proper sense," such that the latter is conditional on the suspension of the former.

For the Kleinians, this perspective constituted an essential misunderstanding of the infantile psyche. What's more, rather than following Freud, it was contended that the Viennese Group's proposals in fact amounted to "a distortion" of his views (King and Steiner, 1991, p. 244). In contrast to Anna Freud's position, the Kleinians affirmed that the ego *does exist* from birth; indeed, they suggested that its "considerable capacities" can be observed from the very start of life (Bott Spillius et al., 2011, p. 319). Amongst these capacities is said to be "a pre-existing knowledge of the breast and of the mother" on which and whom the child depends (Bott Spillius et al., 2011, p. 319–320). In the Kleinian schema, the expression of this inherited relational knowledge is *mediated by phantasy*, which in Thomas Ogden's terse description, can be defined as the "psychic representation of instinct" (Ogden, 1984, p. 501). Accordingly, phantasy—the psychological "corollary" of our innate biological instincts—is conceptualised as accompanying all mental activity from the very beginning of life (Bott Spillius et al., 2011, p. 3–4). In the view of Klein herself, as the ego-equipped infant navigates its primordial experience and forges burgeoning relationships with its primary objects, its phantasy is said to be governed by the primal mechanisms of "projection and introjection" (Bott Spillius et al., 2011, p. 320). The resultant

flow of psychical qualities and quantities that these mechanisms engender represents mental activity that, through the Kleinian lens, co-occurs with the rudimentary ego's oscillation "between states of integration and disintegration" (Klein, 1946, p. 179–180). Consequently, phantasy and ego are regarded as intimately connected: specifically, the presence of phantasy is understood as having a cognate co-existence with "das Ich."

With the establishment of these basic theoretical tenets, it became impossible for the Kleinians to maintain that a phase of proper primary narcissism and auto-erotism exists in the baby during the first months of life (King and Steiner, 1991, p. 253). To be clear, it was not that the Kleinians saw narcissism per se as an invalid concept. Rather, they argued that narcissism represents a defensive withdrawal to an idealised internal object and thus can only be conceived of as *secondary* (King and Steiner, 1991, p. 253). For the Viennese, it proved similarly impossible to "accept the notion of unconscious phantasy" in regard to the infant's first days, as to do so would be to imply the existence an early ego (King and Steiner, 1991, p. 243). For those that participated in the Discussions, this impasse was largely irreconcilable. Perhaps the closest that the two groups came to agreement is evidenced in Anna Freud's admission that the "synthetic function of the ego"—by which she is referring to "the synthesis of perception and reality-testing"—is "achieved in degrees from birth onwards" (King and Steiner, 1991, p. 420). Nonetheless, she would go on to state that "it would not be accurate to say that this is achieved by the ego," but rather that this "synthetic function builds the ego or constitutes *the first ego-nucleus*" (King and Steiner, 1991, p. 420, my emphasis). In Anna Freud's consistent view, it was not until "six months of age" that an ego-nucleus could be said to have developed into an ego structure capable of object relating (King and Steiner, 1991, p. 754).

PANKSEPP'S CONTRIBUTION FROM AN ADJACENT DOMAIN

In the middle of these Controversial Discussions—in June 1943—a child was born in Estonia, who, later in life, would transform our understanding of the emotions through a string of neuroscientific discoveries. Named Jaak Panksepp, the discoveries he made can arguably make a profound contribution to our retrospective appraisal of the disagreements that divided the British Psychoanalytical Society at the time of his birth. Given their import, these discoveries are worth briefly sketching out. At the centre of Panksepp's contribution lies his work on the basic emotion systems: "consciousness-creating affective circuits" that are "concentrated in subcortical regions" (Panksepp and Biven, 2012, p. 1). Taken together, these evolutionarily ancient subcortical regions of the brain comprise "at least seven emotional, or affective, systems": "SEEKING (expectancy), FEAR (anxiety), LUST (sexual excitement), CARE (nurturance), PANIC/GRIEF (sadness), and PLAY (social joy)" (Panksepp and Biven, 2012, p. 2)." For Solms (2018, p. 5)—neuroscientist, psychoanalyst and long-standing collaborator of Panksepp's—*these* are "the drives" of traditional psychoanalysis, albeit re-imagined and refined. Crucially, unlike the homeostatic drives which compel us to seek, amongst other things, sleep, sustenance and thermal regulation, the basic emotion systems outlined here constitute *relational drives,* the satisfaction of which routinely depends on objects (in the psychoanalytic sense) (Solms, 2018, p. 5). In short, to feel the affects generated by these neurological systems is to experience a sense of how one's basic emotional needs may or may not be being met (Solms, 2018, p. 5). Indeed, that, for affective neuroscientists, is the primary function of feeling: to tell you "*how you are doing* in relation to your biological needs" (Solms, 2021, p. 96).

It is this array of subcortical systems that, according to Panksepp and Biven (2012, p. 13), creates an "energetic form of consciousness"—what is also referred to as "core consciousness" (Damasio, 2000, p. 82)—that is full of raw affective intensity. Put simply, it *feels* good or bad—pleasurable or unpleasurable—to experience the consciousness that these systems create (Solms, 2021, p. 96). This leads to a conclusion with radical implications, not least because it clearly not only applies to humans: for an organism to be feeling the status of its biological needs at any given moment necessarily implies the presence of core consciousness. As Panksepp dedicated much of his working life to investigating, such "affective consciousness" (Panksepp and Biven, 2012, p. 2) can be generated using deep brain stimulation techniques that target the seven basic systems (Panksepp, 2010, p. 536). Moreover, this experimental method can reliably produce expected behavioural responses. For example, an organism experiencing the activation of their SEEKING system will exhibit foraging behaviours; if the FEAR system is activated, a fright or flight response will predominate etc. (Panksepp, 2010, p. 536–537). And whilst it cannot be claimed that the seven basic emotions, on their own, encapsulate the extensive nuance of human feeling, they are said to underlie that vast richness. For Panksepp, this narrow range of systems represent the *primary* sources of our emotional life. The great variety of "secondary" emotions that we experience are generated, it is argued, through "complex cognitive-affective amalgams" (Panksepp and Watt, 2011, p. 10) of the basic emotions that lie at the "deepest roots of the human mind" (Panksepp and Biven, 2012, p. 5), analogous to the way in which the full spectrum of colour may be created through mixing various quantities of red, yellow, and blue.

SOLMS' PROPOSED CHANGES TO THE PSYCHOANALYTIC LENS

Amongst the most established of psychoanalytic theories to have been shaken by the identification of the basic emotions relates to a framework that both the Viennese and the Kleinians stated their allegiance to: Freud's structural model of the mind. First detailed in the 1923 paper *The Ego and the Id*, the structural model represented Freud's proposal that the personality is comprised of three psychic agencies: the id, the superego, and as was so keenly debated during the Discussions, the ego. This structural model constituted an expansion of Freud's original model of the mind—the topographical model—which he had introduced in 1900 as a way of mapping the unconscious, preconscious, and conscious psychological domains (Boag, 2017). Importantly, the structural

model of 1923 did not operate as a replacement for Freud's topographical account; rather, the two theoretical frameworks are more accurately viewed as describing different dimensions of the human mind, analogous to the way in which a body of water can be understood in distinct yet mutually inclusive ways: in one sense, we might consider its depth-related hydrostatic pressure; in another, we can attend to its molecular structure. Correspondingly, the components of Freud's structural model may be compatibly located within—and across—the various topographical layers of the psyche.

Of all the components within the structural model, it is perhaps Freud's conceptualisation of the id that has undergone the most dramatic reappraisal due to Panksepp's discoveries (Solms, 2013, p. 5). For Freud (1938, p. 145), the id was described as the part of the mind that contains "the instincts, which originate from the somatic organization." As is unambiguously stated in *An Outline of Psychoanalysis*, "the id obeys the inexorable pleasure principle": it is despotically governed by "feelings of pleasure-unpleasure" (Freud, 1938, p. 198).

As may be apparent, the Freudian id thus bears the some of the same core properties as Panksepp's basic emotion systems: both are described as the source of the instincts and both are governed by the pursuit of satisfying pleasure (Solms, 2013, p. 7). Where the similarity between the id and the basic emotions ends however is in the fact that the id is located by (Freud, 1923, p. 24) within the *system unconscious*. For affective neuroscientists, the basic emotion systems are understood in wholly opposite terms. Whilst these basic affects are also described as instinctually directing the organism through "feelings of pleasure-unpleasure," they are far from being unconscious; indeed, they have been shown by Panksepp to be "the font of *all* consciousness" (Solms and Panksepp, 2012, p. 174), my emphasis). This conflict is only resolved, Solms and Panksepp (2012, p. 174) suggest, if we are willing to reconceptualise the Freudian id as *essentially conscious*. Not only does this challenge one of the bedrocks of psychoanalysis, it also upturns one of the theoretical foundations that the Viennese and the Kleinians agreed upon. Arguably however, rather than debunking the structural model entirely, Solms (2019) suggests that Freud may have simply got it, figuratively speaking, "upside-down," a view that implies the model may still represent an invaluable organisation of psychological phenomena, notwithstanding the re-orientations that it may require.

TOWARDS A BIOLOGICAL BASIS FOR PSYCHOANALYTIC METAPSYCHOLOGY

As affective neuroscientists have demonstrated over recent decades, the basic emotion systems that underpin Solms and Panksepp's recalibration of psychoanalytic metapsychology each have "a distinct brain anatomy, neuropharmacology, and physiology" (Davis and Montag, 2019, p. 2). For an encyclopaedic account of this detail, *The Archaeology of Mind* (Panksepp and Biven, 2012) represents an authoritative source. Whilst a full description of this biology and chemistry lies outside the scope of the present paper, a basic overview is nonetheless warranted. Indeed, one of the most significant implications of these discoveries relates to the brain's anatomy and how we understand the functional contributions of different brain regions. As Panksepp and Biven write:

> *"the basic biological values of all mammalian brains were built upon the same basic plan, laid out in consciousness-creating affective circuits that are concentrated in subcortical regions, far below the neocortical 'thinking cap' that is so highly developed in humans."* (Panksepp and Biven, 2012, p. 1)

This statement is radical for numerous reasons. Not only does it invite a re-evaluation of man's place in nature and broach what has enigmatically been called "the final frontier" of science: *consciousness itself* (Gunamuktananda, 2014), it also poses a specific challenge to conventional wisdom within brain science and beyond. As Solms (2013, p. 9) notes, Panksepp's proposal exposes "the corticocentric fallacy": the long-held notion that "the 'seat' of consciousness is in the cerebral cortex," to quote Freud who also ascribed to this view (Freud, quoted in Solms, 2013, p. 9). For Panksepp and colleagues however, decades of inquiry strongly suggest that "the seat" of consciousness is in fact situated, anatomically speaking, "*far below*" the cortical brain regions (Panksepp and Biven, 2012, p. 1).

Powerful evidence for this claim is provided from various sources, perhaps none of which are more compelling than the cases of hydranencephalic children documented by Merker (2007). As Davis and Montag (2019, p. 3) write, such children – who are born without a "neocortical 'thinking cap'," and yet who are *highly emotional* in ways that are "situationally appropriate" – unambiguously show that emotional responses, even in humans, "do not require the participation of the neocortex." If the cerebral cortex does not then play an integral role in the generation of emotion, which subcortical brain structures do? In Panksepp's (2010, p. 535) words:

> *The primary-process networks for emotional instincts run from midbrain periaqueductal gray (PAG) regions to medial diencephalon to various basal ganglia nuclei (amygdala, bed nucleus of the stria terminalis, nucleus accumbens, etc.) that interact with paleocortical brain functions (e.g., cingulate, insular, as well as medial- and orbitofrontal cortices) and more indirectly with certain neocortical regions to provide integration with higher cognitive activities.*

Due to the "striking cross-species homologies" that exist with respect to the more ancient primary-process neural regions, affective neuroscientists have been able to study many of these regions in animal subjects as a means of deriving insights into the human brain (Panksepp, 2010, p. 534). A crucial discovery to have emerged from such investigations concerns the central role played by the periaqueductal grey (PAG): the structure that is the "terminus of every affect circuit" (Solms, 2020, p. 14), "the genesis of every newly felt affect" (Solms, 2020, p. 14), and that's "common" significance to all affective systems has been corroborated in meta-analyses (Buhle et al., 2013; Motta et al., 2017; Gammon, 2020, p. 198). As Solms

writes in his 2021 volume, *The Hidden Spring*, when describing this structure:

> *"[The PAG] divides into two groups of functional columns. One of them, the back one [dorsal] […] is where the FEAR, RAGE and PANIC/GRIEF systems terminate. The front one [lateral] [is where] […] the LUST, CARE and SEEKING circuits terminate*" (2021, p. 137).

As such, the PAG can be seen to play a vital part in generating the very feelings of pleasure and unpleasure that are outputted by the brain's consciousness-creating affective circuits and that define the re-conceptualised id. This said, as Kunstadt (2013, p. 56, my emphasis) observes, it would not be accurate to state therefore that "consciousness *resides* in the PAG" and that this structure alone represents the "neural correlate of consciousness" (Koch et al., 2016). Indeed, correlating consciousness in a localised manner with the PAG runs counter to many of the compelling arguments put forward by embodied cognition theorists who emphasise the importance of the whole body—not just the brain—in the biology of emotion (e.g., Antonio Damasio's Somatic Marker Hypothesis and Stephen Porges' Polyvagal Theory) (Hemp et al., 2014). There is, however, good evidence to suggest that when it comes to the networked generation consciousness, the PAG functions as a crucial "nodal point": it is, as Solms (2013, p. 12) states, the "smallest region of brain tissue in which damage leads to total obliteration of consciousness," (something that is *not* observed in the aforementioned cases of hyranencephaly). In the same sense, whilst it would not be meaningful to exclusively correlate the id with this localised brain structure, it could be argued that the PAG is centrally implicated in the mental functioning associated with the id.

BEHAVIOURIST CRITICISM OF THE INTERDISCIPLINARY PROJECT

Critiques of the views hitherto explored—particularly of psychoanalytic ideas—have been widely documented, both within and outwith the psychological and brain sciences. Perhaps the most influential and sustained criticism has been levelled by behavioural psychologists such as B.F. Skinner. Claimed by Haggbloom et al. (2002) to have been "the most eminent psychologist of the twentieth century," Skinner was one of the founders of behaviourism, which, over the course of last century, came to dominate the discipline of psychology. A consistent position taken by Skinner (1950, p. 193) was to be critical of "any explanation of an observed fact which appeals to events taking place somewhere else, at some other level of observation, described in different terms, and measured, if at all, in different dimensions." As Zilio (2016, p. 202) explains, a problematic theory would thus be one "that attempts to explain behaviour by describing events that are not part of the behavioural relation such as physiological and mental events." Accordingly, both neuroscience and psychoanalysis have come in for criticism. For Skinner, the notion that expressed behaviour may be "explained" by detailing, for example, the functioning of the basic emotion systems, would be fundamentally flawed; because such phenomena occur "in different dimensions," the "radical behaviourist" (Naour, 2009) view suggests that a different "level of observation" (Skinner, 1950, p. 193) is necessarily required.

Through applying this logic, Skinner argued that many within the psychological and brain sciences—including Freud himself—proposed the existence of an "identity relation" between conceptual models derived from the distinct phenomena of behaviour and neurological functioning, simply as a means of avoiding the "accusation of dualism" (the theory that the mental and the physical—or mind and brain—"are, in some sense, radically different kinds of thing" (Zilio, 2016, p. 204; Robinson, 2020). As Skinner wrote in 1983:

> *A touch of physiology seems to save them [cognitive psychologists] from dualism, and many of them use 'brain' and 'mind' interchangeably. Freud took a similar position much earlier. He assumed that we should some day know what the ego, superego, and id, the conscious, preconscious, and unconscious, and all the dynamisms really were in neurological terms* (Skinner, 1983, p. 10).

The argument here is that by accepting such "identity relations" as valid, we grant ourselves carte blanche to propose hypothetical models of mental processes inferred from behaviour without any concern about validation and parsimony (Zilio, 2016, p. 204–205). To proceed in such a fashion would, it is alleged, be deeply unscientific.

Whilst it is indeed true that a core aspect of the neuro-psychoanalytic endeavour is to build conceptual bridges between the neurosciences and psychoanalysis, it is also true that this project fundamentally aims at establishing *more* scientifically robust levels of validation through "mutually enriching dialogue" (Yovell et al., 2015), not less. The chief goal of neuropsychoanalysis is, after all, to facilitate the *triangulation* of discoveries made within interfacing disciplines that all pertain, as Solms (2014) states, to "the same part of nature." By the same token, such triangulation can enable disproven hypotheses to be rejected; a vital cornerstone of the objective scientific method. This very ambition is what underpins the present paper. The principal research question for this conceptual analysis is thus: through engaging in an interdisciplinary dialogue and learning lessons from contemporary neuroscience, what re-envisioned shape does psychoanalytic metapsychology take? How, to borrow a term from anthropology, can we arrive at a "thick description" (Geertz, 1973, p. 3) of the psyche by expanding our horizons and incorporating new neuroscientific dimensions to develop a *meta-neuro-psychological* "way of seeing" (Berger, 1972)? Specifically, which of the explanations put forward by the Viennese and the Kleinians during the Controversial Discussions may now be regarded as having the more solid scientific justification?

DISCUSSION: EMERGENT QUESTIONS

Innumerable questions emerge from Solms' neuropsychoanalytic re-orientation of Freud's structural model. To cite but a few of them: what does it mean for the ego if the id is conscious? What does recent neuroscientific knowledge tell us about whether the ego should be thought of as present from birth? And not least,

how can we understand and locate unconscious phantasy if the main part of the mind that Freud thought of as unconscious is not so? There are, of course, many more questions that arise in addition to these, however for the purposes and scope of this paper, it is these that will be taken in turn.

What Does It Mean for the Ego if the Id Is Conscious?

As for the first of these questions, a similarly radical revaluation of traditional psychoanalytic perspectives may be warranted. For Freud (1923, p. 17–23), the ego was defined as "the coherent organization of mental processes" present in each individual that "seeks to bring the influence of the external world to bear upon the id" and its incomparably passionate tendencies. Put succinctly, it is the mental representative of external reality (Freud, 1923, p. 36). Crucially, this representative function inextricably links the ego with the body: the flesh and bone that occupies time and space as an object *in external reality*. As Freud (1923, p. 26) memorably encapsulated it, "the ego is first and foremost a bodily ego; it is not merely a surface entity, but is itself the projection of a surface." Correspondingly, the ego may thus be conceived of primarily as the body's *re-presentation* within the mind. Moreover—and central to this discussion—the ego was thought by Freud (1923, p. 17–19) to have an important (although not exclusive) relationship to consciousness. As he writes in *The Ego and the Id* when first introducing the "mental agency" of "das Ich," "it is to this ego that consciousness is attached" (Freud, 1923, p. 17–19). And whilst it is important to acknowledge that, in Freud's (1923, p. 19–24) view, parts of the ego—for example "the repressed" aspects—"can be unconscious," it was *only* the id that was described by him as essentially and exclusively "unknown and unconscious." By contrast, the ego, more so than any of the other psychic agencies that entered psychoanalytic parlance in 1923, was what Freud linked with consciousness.

Returning to the neuropsychoanalytic notion that the structural model may benefit from being upended, the implications for the ego are perhaps predictable. According to Solms and Panksepp (2012 p. 174, my emphasis) the mental functioning that is considered synonymous with the Freudian ego is, contrary to the conventional view, "*unconscious in itself.*" The variety of mental functioning being referred to here is what Solms (2013, p. 16), in his paper *The Conscious Id*, explicitly links with "the external self": the "learnt representation" of the body within the mind. For Solms (2013, p. 16), this ideational "external self"—this ego—is intimately connected to the perceptual and representational level of experience that confers a sense of our existence as an object amongst objects. The ego is thus said to enable the ability to go beyond *just feeling* (as is synonymous with the Freudian id), to "feeling this *about that*" (where "*that*" is an object of perception) (Solms and Panksepp, 2012, p. 168; Solms, 2013, p. 16).

This contextualising objectification of feeling goes to the very heart of the ego's relationship with the id: the former is said to stabilise the latter's core consciousness by "transforming affects into object representations" (Solms and Panksepp, 2012, p. 174). A crucial dynamic to note here is that this transformation process is *galvanised by affect*. Without an affective stimulus from the id, the ego would have nothing to declare and therein could not be described as conscious. It is for this reason that the ego is argued to be "unconscious in itself"; the ego relies on the output of the id's affective circuits "from their origin in some of the most ancient strata of the brain" for its irrigation and so that the "dead soil" of its unconscious representations may be brought "to mental life" (Solms, 2021, p. 91). Incomplete accounts of this subtle but important distinction are arguably why consciousness has frequently been associated with the ego, not least by Freud himself.

For Solms and Panksepp (2012, p. 173), the level of experience conferred by the ego—i.e., the sense of self as an object that "feels this *about that*"—is described as "second-person perspective." Such a perspective can be conceptually located between a "lower" viscerally affective "first-person perspective" that *just feels* (as has been considered as closely related to a conscious id), and a "higher" re-representational "third-person perspective" that enables the reflexive capacity to perceive the self from an external perspective (Solms and Panksepp, 2012, p. 173–174; Solms, 2013, p. 16). This "multi-tiered" framework of primary, secondary and tertiary levels of experience is, for Solms and Panksepp (2012, p. 145) a structural parsing of consciousness that closely echoes the philosophy of Endel Tulving. In Tulving's (1985, p. 1) view, consciousness proceeds from the "lowest" *anoetic* level, through the *noetic* level, to the "highest" *autonoetic* level. Put briefly—and in a manner that aligns with Solms and Panksepp's (2012, p. 145–146) tripartite structure—*anoetic* consciousness refers to unthinking forms of experience which may be affectively intense without being "known"; *noetic* experience is linked to exteroceptive perception and cognition; *autonoetic* experience refers to abstracted forms of perceptions and cognitions, which facilitate conscious "awareness" and reflection.

As Panksepp's work has shown, anoetic consciousness is something that evidence suggests is experienced across much of the animal kingdom (Panksepp and Biven, 2012, p. 1). By contrast, autonoetic consciousness is a much rarer phenomenon that, even within humans, is not said to be exhibited "before the age of four" (Vandekerckhove, 2009, p. 9). This brings us to a crucial point towards which this paper has been converging: the different theoretical positions in respect of the ego that the Viennese and the Kleinians espoused during the Controversial Discussions may be seen to relate to *different levels of consciousness*. In the Kleinian view, a "lower" point in Tulving's hierarchy would indicate early ego functioning. For Anna Freud and her followers, something categorically more advanced in this hierarchy would be necessary to claim the existence of an ego. Crucially, if we accept Freud's (1923, p. 36) notion that "the ego is essentially the representative of the external world," then a level of consciousness that incorporates the capacity for exteroceptive perception is a pre-requisite for the ego's existence. Accordingly, the question about the genesis of ego-presence might thus be recast as a question about the point at which a nascent second-person perspective, however rudimentary, first introduces the object-relational capacity to "feel this *about that.*"

What Does Recent Neuroscientific Knowledge Tell Us About Whether the Ego Should Be Thought of as Present From Birth?

In their 2012 paper *The Id Knows More Than the Ego Admits*, Solms and Panksepp elaborate on the second Tulvingian level of consciousness—the *noetic* level—and introduce a further concept that appears to equate this with a type of memory which has a specific aetiology that can be dated to certain points in infancy. The type of memory introduced is that of the "declarative" category; they write "the 'declarative' noetic self" is what can be regarded as "synonymous with Freud's 'ego'" and "unconscious in itself" (Solms and Panksepp, 2012, p. 174). It is worth unpacking the implications of this equivalence as they bear on the disagreements of the Controversial Discussions with some significance.

Declarative memory is defined as a type of long-term memory (as opposed to short-term "working memory") that "requires conscious recollection and includes the recognition and recall of names, objects, and events" (Bauer and Pathman, 2020, p. 1). In the literature, it is interchangeably referred to as "declarative" and "explicit" memory. Recent research investigating infant behaviour on non-verbal, imitation-based tasks has shown that this type of memory *is* apparent in the first year of life; specifically, even 6-month-olds appear able to remember actions for 24 (but not 48) hours (Bauer and Pathman, 2020, p. 2). During the months that follow, this recall timeframe expands exponentially: 9-month-olds appear to be able to remember actions for 1 month, and by 20 months of age, infants can remember for as long as 1 year (Bauer and Pathman, 2020, p. 1). If therefore it is appropriate to associate declarative memory with ego function, it would suggest that the Viennese view whereby the ego is not present until "6 months of age" (King and Steiner, 1991, p. 754) may represent the more accurate account of infant development.

However, as has been shown by cognitive neuroscientists, declarative memory is not the only type of long-term memory that humans are equipped with: non-declarative (or "implicit") memory represents another form. This second type of long-term memory is defined as inaccessible to conscious awareness and includes "skill learning," "emotional learning," and "priming" (i.e., facilitated processing of a stimulus—such as a mother's face—as a function of prior experience with it) (Bauer and Pathman, 2020, p. 1; Squire and Dede, 2015, p. 3). Crucially, the latest infant development research indicates that non-declarative memory is apparent *"virtually from birth,"* a finding evidenced by how infants show more robust processing of faces they have perceived before relative to novel faces (Bauer and Pathman, 2020, p. 1, my emphasis). If it is legitimate to entertain a broader classification of mnemonic function as indicative of the ego—specifically if the operation of declarative memory *and* non-declarative memory can both be conceptualised as ego functions (albeit involving different levels of sophistication)—then the Kleinian position is given significant credence.

Interestingly, close inspection of two of Solms' papers referenced above—*The Id Knows More Than the Ego Admits* (2012) (co-authored with Panksepp), and *The Conscious Id* (2013), which represents a "substantially revised version" (2012, p. 143) of the 2012 paper—reveals that reference to the "declarative self" undergoes conspicuous amendment; usage of this term when stating the "major conclusion" in respect of the ego's unconscious status, whilst present in 2012, is dropped in the 2013 paper in favour of "the external self" (Solms and Panksepp, 2012, p. 174; Solms, 2013, p. 16). One explanation for this subtle shift might be that the circumscribed equation of the ego with "the declarative self" and its associated memory capacity was deemed too limiting. Indeed, such a reappraisal may have been warranted as the original wording implies the following logic:

a) if the declarative self which does not appear to develop before 6 months of age is exclusively concomitant with the ego (as per a neo-Viennese view), and;
b) the presence of an ego co-occurs with object-relating (as both the Viennese and the Kleinians maintained during the Controversial Discussions), then;
c) the infant is necessarily *not* an egoic object-relating entity at birth.

However, such a conclusion is arguably not borne out by the research. As alluded to above, new-borns *can and do* exhibit non-declarative priming capacities; they will "show more robust processing" of their mother's face than they do a stranger's. If such perceptually-driven priming can be regarded as evidence of object-relating—a position that arguably has greater logical coherence than to suggest such behaviour implies auto-eroticism—then the workings of rudimentary non-declarative memory may be conceived of as conferring a nascent second-person perspective, and therein *egoic experience* of the most embryonic kind.

The Clinical Material of Infant Observation

Given the developmental period under consideration here, infant observation data constitutes a natural source of insight. Moreover, as has been noted by Rustin (2010, p. 382), psychoanalytic infant observation can be seen to "preserve several of the attributes of the clinical setting" and, as such, can be considered a forum for the development of "psychoanalytic theory and technique," akin to the traditional consulting room. A recent contribution to this area of knowledge comes from a student of Rustin—Wendy Shallcross—who undertook "the systematic study of a single recorded case of infant observation using Grounded Theory" (2014, p. 1). As Rustin (2016, p. 188) points out, himself referencing Anderson (2006), the Grounded Theory methodology is "well-suited" to infant observation-based research "because its analytic procedures are so close to the 'line by line' practise of supervision through which they [child psychotherapists] have previously learned to reflect on the meanings of clinical material"). It is to this fine-grain analysis of infant observation that we shall now turn.

Shallcross (2014, p. 28) begins her thesis with an acknowledgment of the importance placed on attempting to suspend "possible theoretical explanation or theorization until analysis of the observational material was complete." She

then goes on to depict, both via the raw observational data and its ultimate analysis, the remarkable sensitivity that the infant shows towards their environment whilst awake as well as, strikingly, *whilst asleep*. Indeed, one of the most notable features of the recorded observations is how the baby, Kieran, "although sleeping, registers the to-ing and fro-ing of his mother" (Shallcross, 2014, p. 74). The following is reported of the second observation, at which point Kieran was only 10 days old:

> *The pram was situated opposite the window, diffused light shone onto Kieran's face... He lay with his head to the right, lying predominantly on his back. Kieran shuddered as his mother left the room. A smile flickered across his face, followed by a sucking movement and irregular breathing. Kieran's eyelids continued to flutter and occasionally became screwed quite tightly, at such times he looked as though he may be in pain or remembering pain. Susan returned, she looked into the pram and watched Kieran for a short while. Kieran's breathing steadied into a slower rhythm, his body still and relaxed.* (Shallcross, 2014, p. 74)

Whilst this brief excerpt does not constitute conclusive evidence on its own, Kieran's sensitivity to his mother's presence is representative of his presentation throughout the second observation and is echoed across many of the 46 observations that form the basis of Shallcross' research. What's more and as the author herself notes, to have detected this "mental relatedness" at such an early stage and without the infant even occupying a waking state represents an "original finding" of some import (Shallcross, 2014, p. 34).

Further to the study's raw data, Kieran's "mental relatedness" constitutes a discernible feature of the data analysis. This is recognisable within many of the codes that emerged through the initial line-by-line coding of written reports and is implicit in a variety of the overarching thematic clusters that were identified through the subsequent grouping of these codes (Shallcross, 2014, p. 204–211).[2] Clustered themes that emerged through analysis of the initial four observations from the first month of Kieran's life notably include "Immersion" (in the object), "Orientation" (to the object), and "Transformation" (through the object) (Shallcross, 2014, p. 204–211). A distinct and compelling object relational resonance was thus found to exist across much of the observational data, including that relating to Kieran's very earliest days. For Shallcross (2014, p. 28), this apparent object relating—which, as has been discussed, carries profound implications for the early ego—was primarily expressed through the infant's body; as she writes, "there was observable bodily organisation and rhythm in the baby's movements, particularly so in the presence of mother, which I came to realise indicated a significant level of integration." Consequently, having aimed to suspend premature theorising, Shallcross (2014, p. 28) ultimately concludes that her "findings are consistent with Melanie Klein's account of how object relations are operative from birth."

[2]For the original charts produced to "illustrate the clustering process" (see Shallcross, 2014, p. 207; p. 208; p. 272).

How Can We Understand and Locate Unconscious Phantasy if the Main Part of the Mind That Freud Thought of as Unconscious Is Not so?

We now return to where this paper began: "the nature and function of phantasy" (Isaacs, 1948, p. 73). However, we can now bring to bear on that central theme of the Controversial Discussions the developments detailed in this paper. As was alluded to in the opening sections, phantasy—that which is defined by Kleinians as "the psychological corollary of instinct"—has a cognate co-existence with the ego such that it is not possible to conceptualise the presence of one without implying the existence of the other (Bott Spillius et al., 2011, p. 3–4). The logic underpinning this is that it is through the *medium of phantasy* that affects (understood here as instinctual expressions of the basic emotion systems) are transformed into object representations: the hallmark of ego function. As such, affect constitutes the primary propellant of phantasy; without what Holmes (2020, p. 52), amongst others, describes as the "bottom-up" influence of core affective consciousness, "top-down" "psychic representation" (Ogden, 1984, p. 501) has no raison d'être. Accordingly, the shape of phantasy is driven both by the valence of affects that invoke it in the first place, as well as the "plots" around which psychic representation unfolds. Both these factors will be considered in turn.

Beginning with the valence of affect, the work of Wilfred Bion represents an important source of psychoanalytic insight, in particular his work on the "emotional link." This concept involves the understanding that affect invariably constitutes an integral aspect of any object relation. In Bion's own words (Bion, 1962, pp. 42–43), "an emotional experience cannot be conceived of in isolation from a relationship. The basic relationships that I postulate are (1) X loves Y; (2) X hates Y; and (3) X knows Y." These various emotional links would, in Bion's publications from the early 1960s, come to be referred to as (1) L, (2) H, and (3) K links. One of the important attributes of Bion's proposals were that, as Golse (2019) notes, they went someway "beyond the Freudian model" of the drives to incorporate the centrality of object relations within emotional experience. Furthermore, these ideas would have significant implications for Bion's understanding of the clinical encounter, as to comprehend the emotional link of any given session is, as Symington and Symington (1996, p. 29) write, to discover the "key" to the analytic hour "rather like the key signature at the commencement of a piece of music."

This collection of Bionian ideas—particularly the notion that "emotional experience cannot be conceived of in isolation from a relationship"—is highly compatible with an understanding put forward earlier in this paper in respect of the basic emotion systems: principally that they are *relational drives,* the satisfaction of which routinely depends on objects (in the psychoanalytic sense) (Solms, 2018, p. 5). In short, within both the Bionian and the neuropsychoanalytic frame of reference, emotion is understood to be the *essential catalyst* of any

object relation. Moreover, the basic emotion systems that Panksepp described can arguably add a retrospective layer of definition to Bion's theory insofar as these frameworks map onto each other with remarkable congruence. Without wishing to reduce the specificity of each of these models, three of the basic emotions (LUST, CARE, PLAY) might be more broadly considered L links; three (RAGE, FEAR, PANIC/GRIEF) could be conceived of as H links; whilst SEEKING bears a striking resemblance to the K link.[3] Bringing together the language of both frameworks, the valence of affect can be said to play the fundamental role of infusing psychic representation with an emotional colour that propels (in ways that are highly specific to the basic need being activated) the unfolding link between "X" and "Y." What's more, from the clinical standpoint, the fundamental question that the neuropsychoanalytic model developed by Solms (2018) urges therapists to ask—namely *what is the patient feeling?*—may reveal sessional keys that harbour the potential to facilitate a similar level of psychic access to that which Bion envisioned was enabled through identifying emotional links, as he conceived of them. Finally, drawing on the neuroanatomical exploration detailed in the sections above, it can be reasonably hypothesised that the PAG is likely to play an important part in any such emotional (and therein intrinsically relational) experience such as that described.

Turning now to the nature of the top-down plots that affect fuses into, the writing of Kernberg (1973, p. 364) (which, in turn, draws heavily on Ronald Fairbairn's work) is pertinent to the present discussion; specifically, the conceptualisation of "self-object-affect units." In Kernberg's view, such units are a product of the ego's "primary autonomous functions"—which are said to include perceptual capacities—as well as the capacity to "introject experiential engrams and dichotomize them according to valence, positive or negative" (Robbins, 1980, p. 480). Crucially, these introjected units are described as comprising "the 'building blocks' of the psychic apparatus, *which is at first a dual structure*" (Robbins, 1980, p. 480, my emphasis). For the purposes of this discussion, the notion that the ego functions to inculcate psychological foundations that are "*always already*" (Heidegger, 1953, p. 75) of a dual structure (and that it is doing so "at birth") (Robbins, 1980, p. 480), is of clear relevance. Moreover, it can be seen to describe something fundamental of phantasy: that the psychic representation of affect unfolds around dyadic plots that are intrinsically structured as self-object networks (or "X-Y" configurations in Bion's aforementioned algebra).

Appropriating Sullivan's (1896, p. 5) architectural aphorism that "*form ever follows function,*" what, we might ask, does the dyadic format of phantasy reveal about its function? To consider this, the notion that the basic emotion systems represent relational drives is once again worth re-stating and under-scoring (Solms, 2018, p. 5). As a result of the basic biological and relational requirements demanded by these systems, being equipped with what Hopkins (2016, p. 2) has evocatively referred to as an "innate virtual reality generator" in phantasy confers clear evolutionary advantage. In the language of Friston (2012, p. 248), it is within this "virtual reality" that we "generate predictions" about how the self (and the body that the self is felt to reside within) might go about satisfying its needs in an environment populated with objects. As might be expected of any effective "predictive model" (Hopkins, 2016, p. 2), the structure of phantasy thus mirrors the very format of the world that it is functionally required to predict. Accordingly, the function of phantasy might be most readily discerned in its actualised effects on the world that it predictively relates to; as Golse (2019) observes, the relations we exhibit constitute external expressions of the affectively impelled internal links that connect the "virtual" self and object in phantasy.

A question that remains relates to the unconscious status that Kleinians ascribe to phantasy, as it could be argued that what is described above frequently goes on *within awareness*. If, however, the ego is, as Solms and Panksepp suggest, "unconscious in itself" then arguably its "primary autonomous functions" (such as the workings of phantasy) may most appropriately be described in consonant terms as "unconscious" phenomena. Moreover, returning to an idea expressed in the discussion of the second question above—that the new-born infant's object-relating occurs on a non-declarative level—then, given the influence that psychoanalysis understands our earliest experiences to have on our unconscious minds, the non-declarative level of "top-down" ego function may represent a particularly germane platform for conceptualising the primary location of unconscious phantasy. This suggestion is, in fact, closely aligned with a conclusion that Solms (2017, p. 94) draws; as he writes in his paper *What is "the unconscious," and where is it located in the brain?*, Freud's system unconscious may be localised "in the non-declarative memory systems located beneath the cortex, primarily in the basal ganglia and cerebellum." In consequence, whilst the id may no longer be a psychic agency with which unconscious phantasy can plausibly be associated—as, for instance, Ogden (1984, p. 501) explicitly does—the ego (primarily the non-declarative domain of ego functioning) does present a neuropsychoanalytically viable candidate in this respect.

CONCLUSION

Whilst the arguments that split the British Psychoanalytical Society in the 1940s remain, for many in the psychoanalytic community, unresolved, adopting an interdisciplinary approach and drawing on developments from neighbouring fields can catalyse the generation of fresh perspectives. In particular, the work of Panksepp and Solms, as well as of others from the affective and cognitive neurosciences, can be fruitfully brought to bear on these controversial matters. As has been argued here,

[3]Bion would go on to describe "equal, but negative ties for each of the three links" (Golse, 2019). For example, -H is "*not to hate*", which Stokoe (2020) has aptly described as the re-channelled aggression of "etiquette." In a neuropsychoanalytic frame, these minus links might be conceptualised as "cognitive-affective amalgams" (Panksepp and Watt, 2011, p. 10): "top-down" modifications of the "bottom-up" basic emotions.

doing so can reveal renewed justification for aspects of the Kleinian metapsychology which regards the rudimentary ego, unconscious phantasy, and the primitive processing of affect via self-object networks, as intimately linked and ultimately fostered from the very beginning of life.

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Clinical Applications of Neuropsychoanalysis: Hypotheses Toward an Integrative Model

*Daniela Flores Mosri**

Department of Psychology, Psychoanalytic Psychotherapy, Neuropsychoanalysis, Universidad Intercontinental, Mexico City, Mexico

Neuropsychoanalysis has been established as a field based on the dialog between psychoanalysis and the neurosciences. Freud was a neurologist for 20 years and used the neuroscientific knowledge of his time as the foundation of his metapsychology. Psychoanalysis has predominantly relied on its own method to develop techniques for the different psychoanalytic treatments. It rarely uses contributions from fields outside psychoanalysis that could enrich its understanding of the mind. Neuropsychoanalysis has informed and revised several topics in psychoanalysis, for example consciousness and the unconscious, dreams, and affect amongst many others. Clear clinical applications of neuropsychoanalysis can be appreciated in the work with neurological patients. However, a constant question from clinicians is whether neuropsychoanalytic findings can contribute to psychoanalytic treatments with non-neurological patients. This paper explores clinical applications of neuropsychoanalysis mainly based on affective neuroscience to propose an analysis of emotions that may contribute to the gradual development of a neuropsychoanalytically informed psychotherapy. The task of integrating neuroscientific knowledge into psychoanalytic technique is still considered a challenge of accentuated complexity, but it is at the same time a necessary and promising endeavor that aims at improving the quality of the treatments available for human suffering and psychopathology.

Keywords: neuropsychoanalysis, clinical applications, affective neuroscience, consciousness, psychoanalytic treatment

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***Correspondence:**
Daniela Flores Mosri
dannmos@yahoo.com

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INTRODUCTION

Neuropsychoanalysis has been around for over 20 years. Clinically speaking it began its applications by offering psychoanalytic psychotherapy to neurological patients (Kaplan-Solms and Solms, 2000). The benefits of this approach have filled an important gap in the therapeutic work with these patients because it acknowledges that there is a subjective experience that needs to be addressed as part of the treatment. However, it has taken longer to use the knowledge of the dialog between psychoanalysis and the neurosciences in the clinical work with non-neurological patients. It is a consensus amongst clinicians interested in neuropsychoanalysis to affirm that their work has been modified when they integrate neuroscientific findings to their practice. However, few papers seem to directly address the topic (e.g., Johnson, 2009, 2010; Lane et al., 2015;

Flores Mosri, 2017; Solms, 2018b). The latter does not seem fortuitous. Integrating neuroscientific findings with psychoanalytic theory has proved to be a challenging task. How necessary is it to undertake such an endeavor? This paper intends to describe the reasons why it is beneficial for clinical practice to work from a neuropsychoanalytically informed approach. The document covers some of the main topics in neuropsychoanalysis that may have clinical relevance for the psychotherapeutic practice with non-neurological patients, followed by the proposal of a technique mainly based on affective neuroscience that clinicians may find useful to complement the already valuable psychoanalytic method. A dialectical way of conducting clinical work from neuropsychoanalysis is gradually becoming a neuropsychoanalytically oriented psychotherapy.

THE CHALLENGES OF PSYCHOANALYTIC TREATMENTS

Over more than a hundred years of psychoanalytic practice, its technique has been helpful to a number of people who have looked for a relief of symptoms in the consulting room. It has been renowned as a psychotherapeutic approach that has long-term effectiveness as it attempts to comprehend how symptoms originate based on unconscious processes. It is generally accepted that going back in the past to look for the origins of a symptom is useful and distinctive of psychoanalytic technique. However, its own strengths can result equally problematic, e.g., the reconstruction of memories takes time, usually years which may be too long for some symptoms. A consequence of the long-term process that psychoanalysis implies is its high cost which may render it inaccessible to some people. Another drawback is found in its unpredictability in terms of the duration and potential outcome.

Other relevant issues can be found within the psychoanalytic theory and technique. One of them is the existence of many schools in psychoanalysis that tend to fight against one another instead of attempting an integration of their claims. On the one hand, having different perspectives within psychoanalysis can constitute its unique richness. On the other, too many schools may end up splitting clinical knowledge that could be at the cost of the clinician's performance in the consulting room. But perhaps the most important implication is that it makes it hard for a person looking for help to know which approach would be best for them. Furthermore, the results of psychoanalytic treatments can vary widely from one clinician to the other. That is a natural constituent of a subjective process, yet it is unclear if the technique is what works or if it depends on the person applying it.

An added difficulty for people in search of treatment can be to know which psychotherapeutic approach is best for them, i.e., the distinction between psychoanalysis and psychodynamically or psychoanalytically oriented psychotherapies, whose differences can be hard to discriminate even for some clinicians in the field. Further problems will be detailed in other sections of this paper, but what is clear is that psychoanalysis could benefit from the dialog with other fields of knowledge to work on its weaker features (Kandel, 1999; Govrin, 2019).

The next question to address is why there should be a dialog with the neurosciences. Freud was a neurologist for 20 years before he created psychoanalysis (Sacks, 1998) which means that the basic science of psychoanalysis is neuroscience (Johnson and Flores Mosri, 2016) and that there would be no psychoanalysis at all without Freud's neurological work (Flores Mosri, 2019b). Taking account of the well-known correlates of the brain and the mind, it is no wonder that the neurosciences are crucial for Freud's proposal of a metapsychology (Solms, 2021). Furthermore, when one topic is investigated from one viewpoint only, it is more susceptible of bias and of partial comprehension. Psychoanalysis tends to trust excessively in its own method (Solms and Turnbull, 2002). Seldom does it look for additional findings coming from other fields of knowledge. A constant concern is whether it can still be defined as psychoanalysis if it opens to a dialog with other fields of knowledge. Neuropsychoanalysis in its definition follows a dialectical approach (Solms and Turnbull, 2011). Hence, a neuropsychoanalytically informed clinical practice should result advantageous when it can consider the valuable contributions of two perspectives. The best known neuropsychoanalytical model for clinical work is Mark Solms' clinical implications workshop, which he has given in several countries and that is currently available online. From there, the International Neuropsychoanalysis Society started a clinical register. There is also a paper by Solms (2018b) that addresses clinical issues. His ideas will be discussed as a foundation for further clinical efforts to work from a dialectical viewpoint, including the integrative method here proposed.

NEUROPSYCHOANALAYTICALLY INFORMED TOPICS IN CLINICAL WORK

Neuropsychoanalysis has made contributions on several topics, including consciousness and the unconscious, memory, dreams, defense, sexuality, and drives amongst others. But probably the theme that has interested clinicians the most is affect. Panksepp's affective neuroscience (Panksepp, 1998; Panksepp and Biven, 2012) and his proposal of seven basic emotion systems has been the starting point to address the need to reassess clinical work. Take for example the statement of a conscious id (Solms and Panksepp, 2012; Solms, 2013) which could hardly go without clinical implications. To build an integrative approach, three main steps are highlighted. (1) To identify and acknowledge paradoxes and ambiguities in psychoanalytic concepts. This constitutes a relevant issue as clinical work is based on hypothetical concepts. If a concept is obscure or entails a theoretical paradox, then its application to clinical work is just as vague or imprecise as the concept. (2) To integrate knowledge from different fields and perspectives into psychoanalytic theory can contribute to inform psychoanalytic topics and potentially help solve some of the conceptual and clinical problems described before. (3) To benefit from the already existent integrative attempts in neuropsychoanalysis, both theoretical and clinical. As simple as it may seem, once neuropsychoanalytic knowledge has been developed, the next challenge is to know how to apply it

in the clinical situation. The following sections will cover some of the potential modifications that may come when clinical work integrates neuropsychoanalytic knowledge.

The Conceptual Problems in Psychoanalysis

The problem of conceptualizing in psychoanalysis starts with Freud's writings. His work was ongoing, and it was not infrequent that he changed his views about certain topics and hence, needed to modify the concepts in his theoretical work. Sometimes he explained the reasons for these changes and informed readers about new data integrated into previous ideas. At other times he did not clarify that a concept had been modified or the reasons to use a different perspective. The latter has given Freud as many interpretations of his work as readers are which is hardly a problem if it only relates to a theory of the mind. However, if this theory is the foundation for clinical work, more accuracy would be beneficial. An associated outstanding difficulty has been the imprecisions of the translation of Freud's papers and books. A new edition of Freud's complete psychological works (Solms, 2018a) may contribute to clarifying some of the conceptual issues related to drives and instincts just to mention one example. The unreliability on the various editions has led to confusion and misleading interpretations of Freud's work.

To summarize, Freud's theory of the mind is the pilar of psychoanalytic practice and still the most comprehensive. As mentioned before, if it holds paradoxes and obscure concepts, clinical work becomes uncertain as well. Neuropsychoanalysis has contributed to the revision of several of the most problematic topics, e.g., the unconscious quality of the id (Solms and Panksepp, 2012; Solms, 2013), repression (Boag, 2012; Kessler et al., 2017; Solms, 2018b), and recently Solms' revision of the Oedipus complex (in Flores Mosri, 2020; Solms, in press b) and drives (Solms, in press a). When a definition remains essentially the same throughout an author's work its main characteristics stand out and refine the concept. In contrast, when the description changes several times throughout the author's work, it becomes ambiguous. Additional to the fact that a good theory needs harmony in its concepts (Balint, 1968), if that theory is used to guide clinical work it is then crucial to elucidate its potential paradoxes. One noteworthy example was the topic of a whole congress of the International Neuropsychoanalysis Society, i.e., repression (to read about the diverse perspectives addressed in this event, see Flores Mosri, 2018). One of the goals of psychoanalytic therapies is to overcome repression, namely, to turn unconscious contents of the mind into conscious ones. However, if repression can be understood in different ways that imply different meanings, then one of the most important clinical goals of psychoanalysis is unclear.

Another crucial problem with concepts in psychoanalysis relates to the many schools in which two main tendencies can be identified. The first is that different schools use the same concept for different phenomena. The concept of "structure" for instance, has been used to signify different things by different authors (e.g., Freud, 1923, 1938; Fairbairn, 1954; Bergeret, 1974). The second tendency associates with different schools and authors using different concepts or names for equivalent phenomena; minor variations seem to necessitate a different name or concept without acknowledging other authors' contributions to the same topic. Disagreement amongst clinicians can be naturally expected, nevertheless, when the essential elements are abstracted, the main sense tends to overlap importantly. The immense advantage of such overlap is the possibility of confirming one hypothesis across different schools and authors in psychoanalysis. Yet, the consequent problem is that few authors attempt an integration of overall psychoanalytic knowledge. Hence, the lack of potential discussions and integration of knowledge may be a loss for psychoanalysis in general and particularly for contributions to clinical work. Moreover, a dialog with other fields could be facilitated by clear conceptual foundations. For instance, if the concept of repression has different meanings for different authors and clinicians, attempting to operationalize it for further research renders almost impossible (e.g., see Boag, 2006; Erdelyi, 2006). How clinicians conceptualize repression may change the whole objective of their work. And repression is only one example amongst many. Psychoanalytic theory can benefit from detailed revisions to facilitate more testing of concepts (Kandel, 1999) and an ongoing clarification of how the mind works that in turn may promote more quality in clinical approaches. To that end, Govrin (2006) used Ryle's concept of "thick descriptions" to convey the need for complex theories of the mind in psychoanalysis. By expressing his concern about not generating new knowledge in psychoanalysis, Govrin highlights the need for the creation of new grand theories of the mind that may explain empirical problems that bring about hypotheses to be tested. The first step hence is the recognition of those problems that have a direct impact on clinical work.

The Unconscious Mind, Repression, and Memory

Despite the different schools and perspectives in psychoanalytic thinking the foremost topic remains the unconscious mind. The idea that making the unconscious conscious is the main goal of psychoanalytic treatment may be challenged by neuroscientific findings or at least its sense may change after considering some important facts. The dynamic unconscious is based on the notion that repression turns excessively painful experiences into unconscious split representations. Freud's first proposal referred to biographical episodes that were forgotten due to the intolerable affect that accompanied them (Breuer and Freud, 1893-1895; Freud, 1894, 1895/1950). The mental process that explains this amnesic state is defense which has the objective of weakening the intensity of a negative affect[1]. Nevertheless, the use of a defense implies a compromise formation that gives rise to symptoms. Unconscious contents attempt to recover their original conscious quality. After 1897, Freud (in Boag, 2006) modified his original conceptualization of the repressed and stated that what becomes unconscious is one of the parts that triggers conflict between opposing tendencies, i.e., drives and/or desires. The symptom would then be a symbol or a metaphor of the repressed and would

[1]Negative affect in this paper refers to affects that feel bad while positive affect refers to affects that feel good.

resolve when the unconscious content reached consciousness. If it is accepted that a painful conscious experience can become unconscious and that its cost is symptom formation, it then makes sense to aim at making the unconscious conscious. However, the knowledge that there are several memory systems (Milner et al., 1998) was not available to Freud. Alberini (in Flores Mosri, 2020) has asserted that Freud encountered the problem of having to explain multiple psychological processes relying on only one memory system. What we now know is that an experience is coded in multiple memory systems which renders it hard to forget, at least in its entirety. Furthermore, memory responds to Ribot's law which claims that older memories are less vulnerable to forgetting which can be explained by consolidation processes (Alberini, 2005). Hence, the idea of a memory that is fully forgotten is unlikely. Mnemonic diversity allows for a memory to be stored and to have an influence on behavior (Solms and Turnbull, 2002). However, there is a number of clinicians that seem to stick to the idea of forgotten repressed autobiographical memories. Boag (2006) considered this fact as a pathology of science with enormous implications on how clinical work is conducted. Neuropsychoanalytic contributions also explain how forgetting a traumatic episode may not relate with the notion of repression.

The diverse memory systems recruit different anatomical regions and circuits. If one memory system is impaired, the other systems may remain functional (Milner et al., 1998) as extensive studies with patient HM demonstrated[2] (Squire, 2009). Psychoanalytic technique relies predominantly on declarative memory, namely, episodes that can be described in words. If an experience cannot be expressed verbally, it is generally thought that it is repressed. The latter can be challenged when the different memory systems and the way in which they work are considered. Memories can fail to be declared if the episodic memory system that relies on the hippocampus is not involved in memory formation. One known cause relates to stressful experiences that activate the hypothalamic-pituitary-adrenal axis (HPA axis). If a person goes through a traumatic event, it may be the case that the release of cortisol blocks the function of the hippocampus (LeDoux, 1996; Yovell et al., 2015) which in turn impedes the formation of an episodic memory of the event. Thus, the episode is not forgotten or repressed; it was simply not coded in an episodic format in which it could be retrieved verbally. Yet, the experience will have an influence on the person's behavior due to its codification as an emotional memory that recruits the amygdala. Fear conditioning is an accurate form of memory which associates a particular context with an emotional state; this kind of association cannot be deleted as it is meant to predict future similar situations. The person is then able to avoid dangerous contexts to protect their life and integrity in the future.

Implicit memory has been linked to the unconscious (Kandel, 1999). However, associative learning can be conscious or unconscious under different conditions. The distinction depends on whether associative learning recruits the hippocampus or not. Many associations are learned implicitly and thus, cannot become declarative. The latter is important to understand unconscious contents. As a classical imaginary example, if Pavlov's dog visited a psychoanalyst's office to try to stop salivating when it hears bells, the dog would not be able to tell the psychoanalyst about the conditions in which the association was established. Furthermore, even if the dog could put the whole episode into words, that would still not modify the association (see Alberini's opinion in Flores Mosri, 2020). People are constantly exposed to spontaneous associative learning that is not coded episodically. This type of unconscious memory does not relate to repression and the dynamic unconscious in its traditional conceptualization. Notwithstanding it plays a crucial role on mental life. A neuropsychoanalytic approach to this type of formulation can clarify that some unconscious contents are not susceptible of becoming cognitively conscious. Given this condition, it seems relevant to question how useful it would be to put them into words and how else they can be tackled during psychoanalytic treatments.

Hence, clinical work needs access to those procedural and emotional memories through different methods. Freud (1938) suggested that transference was an essential part of psychoanalytic treatment. Therefore, understanding the different types of memories is relevant for clinical work, e.g., short-term working memory and long-term explicit and implicit memory systems. It has been hypothesized that transference relates to procedural and emotional memory (Turnbull et al., 2006; Moore et al., 2017). Knowing how these systems work can help to conduct more precise technical interventions during the treatment. More about the implications of this type of unconscious memories will be addressed in terms of affect in other sections of this paper.

The question now turns to what it is that could be considered making the unconscious conscious and its benefits as a psychotherapeutic instrument. Several times in the consulting room a person may claim that they do not remember certain periods of their lives, frequently their childhood. If asked directly, the person may report not having access to those memories. Whether that is due to resistance or defense is not simple to discern. If asked in an indirect way, people tend to retrieve memories of the period that they claimed that was not available for recall. It is unlikely that the experience was repressed. A viable explanation is that when the ego is not alerted then the memory is recoverable. According to Marty (1990) and Solms (2013), these memories were preconscious. When Freud (1894; Breuer and Freud, 1893-1895) still referred to repression as a motivated forgetting of painful episodes, he claimed that the defensive process began with the voluntary decision to keep the episode at a distance from consciousness. Nonetheless, if the essence of unconscious contents is their unknowable quality, then they cannot be made conscious. Representations can be considered preconscious and not unconscious; some of them are more available to be retrieved according to their given affective value. Representations linked to positive affect would be more available while images associated to negative affects may be less accessible. However, traumatic representations can be too available against

[2]HM was a patient who suffered from intractable epilepsy. He agreed to undergo a surgery to bilaterally remove medial structures of the temporal lobe, including the hippocampi. As a result of the procedure, HM presented with severe anterograde amnesia and could not establish new autobiographical memories. Remarkably other memory systems were intact, i.e., procedural and working memory.

the person's will, e.g., in posttraumatic stress disorder (LeDoux, 1996) which adds complexity to the topic of conscious and preconscious contents. And how useful is it therapeutically speaking to retrieve preconscious experiences? Breuer and Freud (1893-1895) thought that the discharge of tension was the solution to neurotic symptoms. The discharge could happen either through movement or through association. Speaking about traumatic events led to movement and thus discharge. Abreaction or catharsis would then represent the beginning of the talking cure. Freud elaborated on Breuer's initial model when he realized that verbalizing experiences that were characterized by negative affect was not sufficient to solve symptoms. He discovered the transference and proposed its analysis (Freud, 1909, 1938) and later described countertransference. Yet, the ultimate psychoanalytic goal was facilitated when working through was achieved (Freud, 1914). Freud's psychotherapeutic method then encompassed a series of steps toward the cure that included verbalizing and comprehending mental contents, identifying the characteristics of the transference-countertransference relationship, and working through defense and repetition compulsion. It is probably working through that constitutes the most obscure concept (Laplanche and Pontalis, 1973) of the psychoanalytic method. It may be the case that a person talks about traumatic contents, understands the origins of repetitive behaviors, even those seen in the transference-countertransference relationship and that they still repeat the same symptomatic pattern. Some argue that working through is missing, but it turns challenging to achieve a final step that is not clearly defined.

CLINICAL NEUROPSYCHOANALYTIC APPLICATIONS BASED ON AFFECTIVE NEUROSCIENCE

The previous sections addressed some of the most important problems that can be found in psychoanalytic technique. More can be added and some of them will be tackled in the framework of affective neuroscience. The intention of the following proposal is not to solve all the difficulties derived from psychoanalytic clinical work, but to contribute with clinical hypotheses to gradually improve our current available instruments through a neuropsychoanalytically informed approach.

The Fundamental Role of Affect

Breuer and Freud (1893-1895) quickly learned that the cause of hysteria was directly linked to affect. They proposed that unbearable affects meant an increase in the amount of energy in the nervous system. The excess of quantity had to be discharged to decrease the intensity of the negative affect. The symptom formation was a result of the operation of defense mechanisms (Freud, 1894) that aimed at decreasing the amount of subjective pain. One of the tasks of the mind is thus, to avoid unpleasurable feelings. Solms (2018b, 2019, 2020, 2021) has proposed that negative affect expresses unsatisfied needs. Panksepp (1998, 2011; Panksepp and Biven, 2012) explained that there are three types of primary affects, namely sensory, homeostatic, and emotional. They are shared by all mammalian brains and aim at survival. Solms (2021) considers that the three types of affects are homeostatic as they seek to satisfy the needs that come from the body. Negative affects indicate that there is a lack of homeostasis, i.e., that a need must be met. Unpleasurable feelings drive the mind to perform work and solve problems. In contrast, positive affects signal the return to a homeostatic state that is subjectively felt as pleasure. Panksepp and Biven (2012) declared that affects are always conscious and that they are generated at the periaqueductal gray (PAG) located in the midbrain. Affects lead to pre-wired behavioral, instinctual patterns that constitute unconditioned responses designed to favor survival. These raw affective responses constitute the primary process emotions, in Panksepp's taxonomy, SEEKING, PANIC/GRIEF, RAGE, FEAR, LUST, CARE, and PLAY[3] (see Panksepp's original formulation of the seven basic emotional systems in Panksepp, 1998). Each affective system is activated by stimuli common to the members of a species as they entail the learning of predicted situations experienced through numerous generations. These genetic pre-wired reaction patterns constitute an effective evolutionary mechanism to ensure that the members of a species do not have to learn from the start what their ancestors have experienced under certain circumstances. Solms (2021) has elaborated on the view that affects express unsatisfied needs that drive the mind to perform work to meet them. In his opinion, there is a predominant need at a time that will gain conscious attention. This need should be identified in the psychotherapeutic process to particularly work on it. Solms (in press b) has also asserted that the basic emotions conflict with one another and that it is the task of the mind to solve these conflicts.

Solms' proposal to include the knowledge of Panksepp's affective neuroscience into psychoanalytic technique expands the meaning of affects and adds complexity to the topic. Many clinicians think that expressing affects in words solves symptomatic formulations. They may refer to an unconscious quality of affects, i.e., repressed affects, that become conscious when they are put into words and next understood and associated to representations. Just like Freud, Panksepp and Biven (2012) stated that affects are always conscious and Solms (2021) has recently highlighted this conscious quality of affect. According to his proposal, affect is felt, namely, it is experienced and constitutes the fundamental quality of consciousness. Panksepp (2011) underscored the difficulties that we may encounter to recognize raw affects due to our predominant cognitive thinking. However, he emphasized that affects are experienced whether we pay cognitive attention to our feelings or not; he declared that feeling is compulsive, i.e., we cannot stop feeling which may be due to the fact that subjective experience favors survival. This acknowledgment led to further revisions of the Freudian concept of the id. Solms and Panksepp (2012; Solms, 2013) argued that the id is conscious because of the affective nature of the core brainstem regions that generate consciousness. They relied on the reports by Merker (2007) whose work with hydranencephalic children has demonstrated clear emotional

[3]The use of capital letters is to identify neural circuits, as opposed to the ordinary use of these same words.

reactions and motivations in the absence of the cortex. The latter argues in favor of the affective nature of consciousness and how it relates to subcortical structures that do not recruit the cortex. Panksepp (2011) suggested nested-hierarchy types of emotional organization. Primary process emotions learn from experience and become secondary affects based on conditioned responses that depend on upper limbic regions of the brain. It is only tertiary-process emotions that need the contribution of cortical regions. Tertiary process emotions are more available to be expressed verbally as opposed to primary and secondary-process emotions. Psychoanalytic technique has kept its foundations on a cortico-centric view of affect and consciousness, possibly following Freud (1920) or perhaps not even questioning whether neuroscientific data could inform the subject of consciousness and the unconscious, and lead to relevant revisions to both theory and technique. If emotions are conceptualized as cognitive, then it makes sense to emphasize the relevance of verbalizing them. When it is acknowledged that affects are felt, whether cognitive attention is given to them or not, then a substantial revision seems essential.

Communicating feelings in verbal language may entail various restrictions. Words express as accurately as possible what is being felt, yet subjective experience cannot be translated into a precise cognitive report as its nature is to be felt. Thinking of affects can be a useful instrument for psychoanalytic treatments as it will provide some information about what a person *thinks* that they feel or felt. However, the most reliable method so far to infer what someone else feels is the transference-countertransference quality of the therapeutic relationship. This method, however, involves other restrictions. The reliability on one's opinion about what someone else feels is always limited, as one can only feel one's own subjectivity. Inference using empathy and cognitive knowledge may get close to what someone else feels, but there is no certainty guaranteed. Thus, the decision about what emotion is predominant in a person's life to design a psychoanalytic treatment may be biased and may differ from one clinician to another. Hence, a method that analyzes affects considering different dimensions may constitute an effective way to comprehend what affects are signaling during psychoanalytic treatments.

To assess how affects work, two aspects are generally considered. First, the spontaneous reactions to the current context, namely, the present affective feeling. Second, a more general appraisal of the overall affective responses that the person predominantly experiences in a sustained way (i.e., mood). The analysis here proposed discusses a method to help clinicians understand their impressions about another person's affective states. According to Panksepp and Biven (2012), affect has different dimensions by which it can be assessed and that can guide clinical work. Based on his proposal, the suggested dimensions to analyze affects in clinical work are: (1) the subjective nature of affect; (2) behavioral responses, which can be instinctual or learned from experience; (3) the cognitive ideas about what is felt; (4) the neurobiological correlates of affect. A brief description of each dimension follows (see **Table 1**).

TABLE 1 | The different dimensions of affect analysis.

1. The subjective nature of affect
- Phenomenological consciousness
- Inferred from the transference-countertransference relationship
2. Behavioral responses
- Nonverbal expressions: Gestures and body language
- Instinctual behavior: Primary-process emotions
- Learned behavioral patterns: Secondary-process learning Associations—mainly unconscious
3. Cognitive ideas about feelings
- Tertiary-process cognitions based on primary and secondary affects
- Affective secondary- and primary-process emotions are inferable from discourse
- Preconscious representations (thing- and word-presentations)
4. Neurobiological correlates of affect
- Hypotheses

(1) The subjective essence of affect relates to the conscious nature of feelings explained before, namely, feelings are meant to be experienced in order to indicate a homeostatic imbalance that requires that the person do something to recover homeostasis. This quality of affect can be inferred from the transference-countertransference relationship. Clinicians train to build hypotheses derived from the feeling of being with a patient. However, to rely excessively on the clinician's impressions may lead to misconceptions as every clinician is prone to their own subjective biases. This is one of the reasons why the present proposal suggests considering other dimensions of affect that can complement or challenge the clinician's perspective.

(2) In terms of behavioral responses, the simplest form is the nonverbal expression of affect, seen mainly in facial expressions and gesticulations. The use of the analytic couch may restrict access to this sort of information; when a person speaks without direct eye contact with another person, body language is rarely used. The face-to-face format mainly used in psychodynamic psychotherapies evokes nonverbal expressions of affect which are a valuable source of information to complement other subjective impressions of the clinician.

Other behavioral sources can be relevant to add information to the analysis of affect. Classically clinicians in psychoanalysis are trained to pay little attention to the patient's behavior and conditionings. Yet, the free associations of patients tend to describe behaviors which following Panksepp (2011) can take mainly two forms. The first one refers to the primary instinctual behavioral patterns triggered by unconditioned stimuli, that is, unconditioned responses. An example is to explore the environment to identify potential available resources to solve our needs prompted by the subjective feeling of curiosity (SEEKING behavior) (see **Table 2**). The second form relates to behaviors that are learned from experience, namely, conditioned associations that evolve from the original primary instinctual patterns when they are insufficient to solve all the needs encountered in a certain environment. These learned patterns recruit long-term implicit memory systems such as the procedural and emotional subsystems. Procedural patterns automatize behavioral skills and habits and keep mainly an unconscious nature (Kandel, 1999; Solms, 2017). Associations are established by recruiting affective circuits such as in fear conditioning in which an emotional reaction can be triggered by a specific stimulus whose associative context can remain unknown to the person experiencing it. An

TABLE 2 | Brief summary of subjective feelings and behaviors derived from the activity of the basic emotion systems.

Basic emotion system	Subjective feeling	Behavior
SEEKING	Curiosity Positive expectancy Feeling excited about the future Hope	Exploring behavior Search
LUST	Sexual attraction Pleasure	Sexual activity
CARE	Pleasurable feelings when taking care of others	Support others Take care of others Protect others
PANIC/GRIEF	Separation distress Sadness Loneliness	Separation distress vocalizations Withdrawal
PLAY	Joy Happiness	Rough-and-tumble PLAY with peers
FEAR	Fear Anxiety Stress	Freezing Flight
RAGE	Anger	Fight Aggressive behaviors

example of the latter can be seen in specific phobias in which the person identifies the stimulus that elicits the fear reaction, but the cause of apparently senseless associations often remains unknown, that is, unconscious. Similar learning is established from early relations with others that constitute relational patterns that can be later reexperienced in the transference-countertransference relationship. In sum, behaviors are driven by affects; if clinicians pay attention to the patient's conduct, both in the consulting room and derived from the patient's verbal reports, valuable information can become available to complement or contrast against the clinician's subjective impressions of what the patient is feeling.

(3) With regard to the cognitive ideas about feelings, as mentioned before, psychoanalytic practice has relied on the verbal expression of affects as an essential part of the treatment. The concept of alexithymia (Sifneos, 1973) stressed the importance of identifying and describing feelings in words as this function is not available to people who keep an operational life (Marty, 1990) that makes them emphatically vulnerable to psychosomatic symptoms. Hence, the verbalization of feelings became one of the clearest objectives of psychoanalytic treatments, particularly for narcissistic and borderline personalities that do not seem to align with Freud's ideas of intrapsychic conflict. Two main premises seem to be used to understand this therapeutic goal. First, that affect can be unconscious and second, that affect needs to be associated to representations. Based on Panksepp's findings, neuropsychoanalysis considers that affects are always conscious. Solms (2019, 2021) has argued in favor of this position using neurobiological evidence that highlights the qualitative role of the extended reticulo-thalamic activating system and the periaqueductal gray. If affects are always conscious, it becomes a necessary question to ask why so many clinicians think that they can have an unconscious quality.

The question can be answered at different levels. First, the various dimensions of affect lead to the need of considering its neurobiological features. To understand how affects work, there is a need to comprehend the neurobiological principles upon which they operate. Affect necessarily involves a complex neurochemistry that relies on neuroanatomical circuits, seven, according to Panksepp (1998). Affect as the indicator of somatic and other needs has at least three levels of problem-solving described in **Figure 1**. The level that the cognitive dimension aims at describing is that of tertiary-process cognitions. Knowing the cognitive contents of the mind entails to consider that affect is always first, i.e., every thought comes from a feeling as affect is the foundation of psychic life. Thus, when a patient describes their ideas, they are already speaking about affect and it would be the clinician's job to infer the emotional contents from the discourse by relying on the support from the rest of the dimensions of affect analysis. It is useful to keep in mind that cognitive consciousness recruits different cortical regions including the prefrontal cortex and the short-term working memory functions to come up with a deep analysis of the problem that needs to be solved when the first two levels (i.e., the primary and secondary) have been insufficient. Thinking allows for plans of action that may be appropriate to satisfy the need that demands the cognitive conscious attention of the person. Then clinicians can be sure that the contents of a patient's thoughts are always related to an affective feeling that is indicating an unsolved problem. These ideas would correspond to preconscious representations (thing and word presentations) that are units used in working memory to help to create several options to satisfy pending needs.

The default mode network (DMN) may be another useful clinical resource to infer the contents of unresolved needs. It is activated when a person is in a resting state that does not recruit cognitive attention (Raichle et al., 2001) favoring internally focused tasks such as autobiographical memory retrieval, thinking about the future and mind wandering amongst others (Buckner et al., 2008). Carhart-Harris and Friston (2010) proposed that it suppresses prediction errors. The DMN may be at work while a person spontaneously is in a resting state. When patients are advised to retrieve some of their resting-state ideas, they tend to identify some of their pending needs and problems, for example, during prolonged sleep latencies due to insomnia.

(4) The last dimension uses the neurobiological correlates of affect as a resource to understand the subjective experience of a person. Panksepp's lifelong work has left us with numerous documents in which he described key neuroanatomical and neurochemical correlates of the seven basic emotion systems (e.g., Panksepp, 1998, 2011; Panksepp and Biven, 2012). Understanding the neurochemical cascades and specific anatomical sites of these circuits provides further possibilities to integrate data and comprehend affects. Clinicians must observe that using this neurobiological knowledge allows only to infer what may be happening with the seven basic emotion systems. It cannot be affirmed with certainty that a given circuit is active

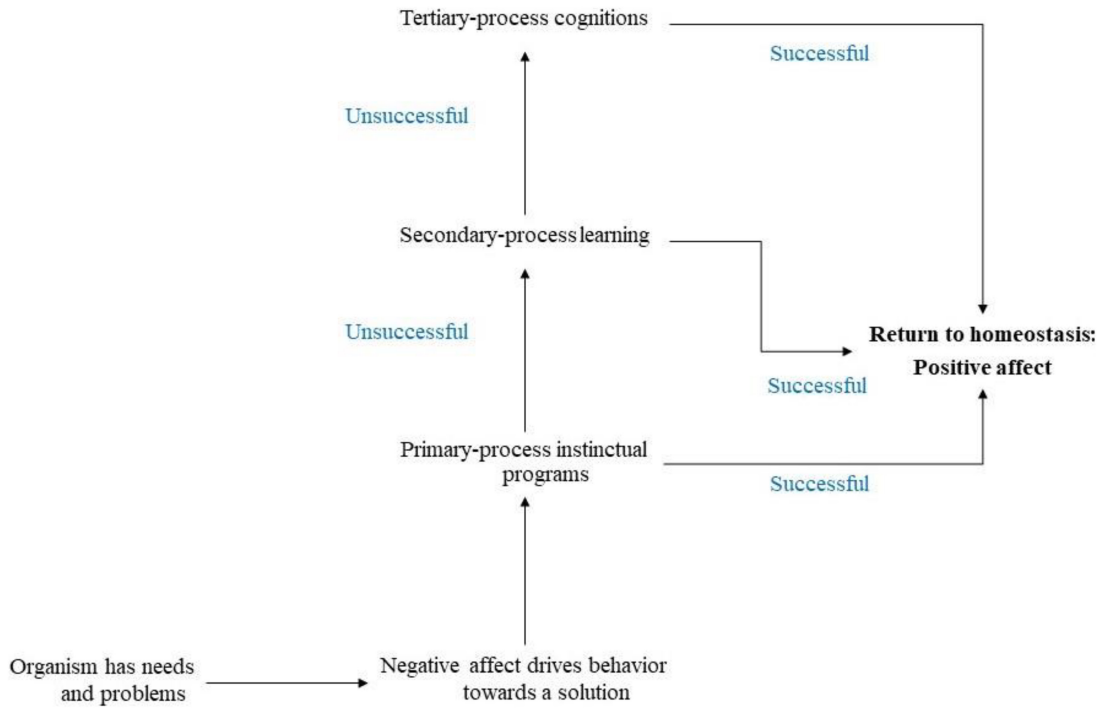

FIGURE 1 | The three levels of problem solving. Figure illustrates how negative affect triggers different levels of behavior as an attempt to solve needs and problems to diminish or eliminate the subjective feeling of negative affects. When the primary-process instinctual programs fail at problem solution, the secondary-process learnings are needed. If in turn the second level is unsuccessful then the tertiary-process cognitions are required. The return to homeostasis is signaled by a positive affect.

or not without the appropriate testing. Again, this elaborates on the importance of relying on different dimensions of analysis to further underpin clinical hypotheses.

Psychopathology Based on the Analysis of Affect

A topic that requires much work is that of symptoms and psychoanalytic diagnosis. It is classically accepted that there are three main diagnoses in psychoanalysis (e.g., Bergeret, 1974, 1975a; Kernberg, 1975; McWilliams, 2011), i.e., the neuroses, the psychoses, and narcissistic and borderline organizations. Each diagnosis requires a particular technique for different clinical objectives. Describing each of them in depth goes beyond the scope of this paper as they are topics that would require separate elaboration. Notwithstanding a general comprehension of common psychopathological issues is necessary to address clinical applications of neuropsychoanalytic knowledge.

As explained before, there is an adaptive reason why we must feel unpleasant affects. To try to avoid them, we must identify from the most basic level of consciousness, anoetic in Tulving's classification of consciousness (Tulving, 1985), what problems require to be solved to survive. When instinctual behaviors, learned associations and cognitive thinking and planning have resulted unsuccessful for a prolonged period of time, a symptomatic formulation may arise as a result of using defenses as an attempt to diminish negative feelings. The way in which a defense reduces the intensity of a negative affect is by distorting reality; when facts are not fully perceived or acknowledged, then they should not keep the ability to produce unpleasurable feelings. However, affect is kept intact now just dissociated from its original stimulus or representation; thus, it looks for a new representation to associate with forming a symbolic symptom (Freud, 1894). This description delineates the formation of a neurotic symptom that can be interpreted. Freud proposed the existence of unconscious fantasies that led to intrapsychic conflict and scarcely worked on the topic of trauma after 1897, more common in narcissistic and borderline organizations. In these cases, patients suffer from intense separation distress due to narcissistic injuries related to abandonment, rejection, abuse, and/or ambivalent feelings from the primary objects (Flores Mosri, 2017, 2019a). This type of formulation excludes the intrapsychic conflict and instead is characterized by pervasive and persistent negative affects derived from the traumatic experience that recruits several structures, amongst others, the amygdala, a limbic structure that associates feelings of fear and/or anger with determined stimuli. What the amygdala learns is hardly forgotten, which can be explained evolutionarily as a means to predict future threatening situations. If the association is kept, the likelihood to quickly react in similar contexts is enhanced. Hence, traumatic experiences cannot be forgotten and provoke chronic unpleasant feelings that people naturally would like to dismiss. Traumatic experiences are a good instance to assess if an affect is regulated or not. It may be

easy to assume that persistent negative affects are dysregulated. However, we must keep in mind that negative affects indicate an unsatisfied need or an unresolved problem. Thus, the stimuli that trigger negative affects should be identified and comprehended to evaluate whether there is a regulated emotional reaction to a stimulus or not. When the reaction is appropriate, affect is regulated despite its unpleasurable features. Trauma is a secondary-process emotional memory that must be dealt with through new learning that helps to formulate alternative resolution options to experiences that cannot be solved or deleted from memory. Yet, the original association tends to be predominant due to its predictive and adaptive character. Solms (2017) has explained that this type of implicit memory cannot be reconsolidated, i.e., it cannot become cognitively conscious and have access to the resources of working memory. Implicit memories are emotional and behavioral patterns and not representations. Neuropsychoanalytic knowledge then informs the clinician about what can be expected and what will not be achieved as therapeutic goals.

Then comes a frequent trauma derived from prolonged separation distress (PANIC/GRIEF) present in many psychopathological formulations, mainly related to narcissistic and borderline disorders. As human beings we are mammals which means that we depend on other human beings to be able to survive. Mammalian species depend on a primary caregiver to satisfy their needs during early life. The latter recruits the need to predict to survive (Friston, 2010; Fotopoulou and Tsakiris, 2017). Infants are taught by their parents how to solve their problems by reliably being available, usually providing an environment of certainty that results in basic trust (Erikson, 1950). The infant then learns how to avoid prediction errors and minimize free energy, which in turn means positive affective feelings. When early life has been characterized by the opposite, namely, uncertainty, the person is unable to learn how to build efficient predictions. The defense mechanisms used against negative affects impede the appropriate update that should follow a prediction error. This context favors enhanced feelings of uncertainty that relate to Panksepp's PANIC/GRIEF system when the primary caregiver is not reliably available, to FEAR of traumatic experiences, and RAGE against the consequent excessive frustrations that such a context entails. These subjective feelings will not cease until the problems that they are indicating are solved. If that does not happen, a chronic negative feeling commands the person's psychic life. It is then suggested to add to the analysis of affect the symptom formation. Symptoms are the best attempt to solve a problem or to satisfy needs; namely, they are an attempt to adapt and survive. When present, they express that the solution has not been found and that thus, the negative feelings that provoke them will endure. Solms (2017) refers to repression as an illegitimate or premature automatization of predictions that results in the chronic repetition of failed behavioral patterns. An alternative view of the latter refers to the simple unconscious learning of traumatic associations that are deeply rooted in structures that do not generate representations, such as the amygdala and the nucleus accumbens, generally related to reward (Berridge et al., 2009). As explained before, learned associations are not forgotten in order to predict threatening situations. If enhanced remembering of these contexts improves the possibility of surviving, then the negative affect must remain active. Overcoming trauma then entails accepting the defensive and adaptive objective of emotional memory.

In cases such as protracted separation distress, when the primary caregivers were not able to be predictable or when they were not able to provide the infant with a safe environment, chronic depressive feelings may arise (Marty, 1966; Bergeret, 1975b; Watt and Panksepp, 2009; Flores Mosri, 2019a). This context is useful to illustrate two instances. The first is that some needs and problems cannot be solved. If parents are unable to be reliable, there is not much that the infant can do to modify this situation. The unsatisfied need will persistently cause negative affect indications that promote various symptom formations. Hence, the second instance is that the psychotherapeutic process should include mourning for what cannot be solved. It implies the challenging task of accepting the frustration that derives from unsolved problems and generating alternative legitimate strategies to handle the existence of chronic negative feelings.

Thus, the idea that repetition compulsion is an expression of a death drive is challenged by neuropsychoanalytic knowledge. The reason why unsuccessful behavioral patterns are repeated relates to the involvement of procedural and emotional memory systems that recruit neuroanatomical structures that automatize the associations that they learn, for example the basal ganglia and the amygdala. Cognitive understanding of why one smokes does not stop the addictive behavior. This example calls for a top-down regulation of affective associations based on voluntarily inhibiting the repetition of inefficacious behavior patterns creating a conflict between spontaneous responses and the planned decision to try alternative solutions facilitated by working memory thinking. However, it should be mentioned that this type of top-down regulation means such a significant effort that many people fail on repeated attempts. Clinicians can easily interpret a death drive under these circumstances. No neurobiological evidence has been found to support Freud's hypothesis of a death drive or instinct. All types of negative affects aim at driving the person toward a specific action that will solve problems. When a person repeatedly fails, frustration stops being a useful drive for resolutive actions. The result is a feeling of protracted RAGE (Flores Mosri, 2019a) that impacts the SEEKING system leading it to an eventual shutdown (Watt and Panksepp, 2009) that is felt as hopelessness. The clinician may notice then that it is not a death drive, but a depressive process that is at play. To sum up, symptoms do not intend to lead a person to their death; symptoms always attempt a solution of problems with the objective of surviving.

DISCUSSION: A NEUROPSYCHOANALYTIC PSYCHOTHERAPY REVOLVES AROUND AFFECT

From the proposed applications of neuropsychoanalysis to clinical work, it can be said that a neuropsychoanalytically

informed psychotherapy takes affect as its central element. The affective nature of consciousness challenges what had been considered the main task of psychoanalysis. Solms (in press a) has argued that drives are conscious as so is the id (Solms, 2013). The neurobiological data supporting these novel notions demand an update of psychoanalytic concepts and technique. The reason why people consult is because they feel bad. They come to a psychotherapeutic process because they intend to stop feeling negative affects. A thorough analysis of emotions is then required. Psychoanalytic techniques have mainly worked without the valuable contributions of other fields, which render it vulnerable to errors at the cost of the patient's suffering. Affect is a topic that must be studied from different perspectives to be properly understood. The analysis here proposed considers distinct dimensions of affect that are inextricably associated. All topics in psychoanalytic theory relate to affects, e.g., defense, the unconscious, symptoms, dreams, object relations, transference, countertransference, the Oedipus complex, the mental apparatus, memory, drives and instincts. Hence, it is difficult to think of any topic that could possibly have more relevance to clinical applications.

Analyzing the different dimensions of affect allows the clinician to understand what the patient suffers from, which in turn enhances the possibility of designing a treatment specific for the case's features. The clinician must keep in mind that every thought expressed in language is based on emotions. If a person has difficulties with the subjective experience of negative affects, it is most likely that their thoughts will present various forms of distortion that impede accurate reconstructions of the past. Thus, an emphasis is placed on the transference-countertransference quality of the therapeutic relationship in which the clinician not only listens to what the patient speaks, but also feels the environment of the session (Balint, 1968) to better understand the patient's affective problems in order to find the best solution available that may improve the person's subjective experience.

However, the concept of homeostasis should be taken with caution, as it is an ideal. If a person could solve all their needs and problems, there would be no drive at all. Organisms constantly renew their needs creating novel challenges that drive toward motivated behaviors guided by a pleasure principle that aims at survival. We then live to feel multiple frustrations derived from our prediction errors. A psychotherapeutic process aims at minimizing entropy, namely the risk of dispersion or death (Friston, 2010; Wright and Panksepp, 2012; Solms, 2019). To succeed, the best prediction possible is to take account of a constant uncertainty that cannot be anticipated. The more a mind is ready to accept a certain amount of variability, then it is realistic enough as to know that an expected amount of frustration is inevitable and requires the task of mourning for what cannot be while remaining creative enough to find the best solutions possible for its affective existence.

There may be some concerns about whether the present proposal is suitable for psychoanalytic treatments. That remains to be discussed further, however, it may contribute to what could eventually be called a neuropsychoanalytically informed treatment.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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Dreams and Trauma Changes in the Manifest Dreams in Psychoanalytic Treatments – A Psychoanalytic Outcome Measure

Tamara Fischmann[1†], Gilles Ambresin[2†] and Marianne Leuzinger-Bohleber[3†]*

[1] International Psychoanalytic University Berlin, Berlin, Germany, [2] CHUV, Lausanne, Switzerland, [3] Universitätsmedizin der Johannes Gutenberg-Universität Mainz, Mainz, Germany

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***Correspondence:**
Tamara Fischmann
tamara.fischmann@ipu-berlin.de

†ORCID:
Tamara Fischmann
orcid.org/0000-0003-3990-8174
Gilles Ambresin
orcid.org/0000-0001-8983-8501
Marianne Leuzinger-Bohleber
orcid.org/0000-0002-2421-2564

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Although psychoanalysts are interested in symptom reduction as an outcome, they are looking for instruments to measure sustaining changes in the unconscious mental functioning. In this article it is discussed that conceptually well-founded transformation of manifest dreams analyzed with precise empirical methods could be considered as a promising indicator for such therapeutic changes. We are summarizing a dream generation model by Moser and von Zeppelin which has integrated a large interdisciplinary knowledge base of contemporary dream and sleep research. Based on this model the authors have developed a valid and reliable coding system for analyzing manifest dreams, the Zurich Dream Process Coding System (ZDPCS). One exemplary dream from the beginning and one from the third year of a severely traumatized, chronic depressed patient from the LAC Depression Study collected in psychoanalytic sessions as well as in the sleep laboratory have been analyzed applying the ZDPCS. Authors hypothesize that transformation in dreams as measured with the ZDPCS is the result of memory processes of traumatic embodied memories in the state of dreaming.

Keywords: dreams, memory reconsolidating, research methods, psychotherapeutic (psychoanalytic) treatment, differential psychotherapy research

INTRODUCTION

Both the clinical practice of psychoanalysis and its extra-clinical research have been enriched and inspired, but also challenged, by various interdisciplinary dialogues in recent decades. To mention just one example: it was long held in psychoanalysis that, following Sigmund Freud's dream theory [1900 (1961)], it was the analyst's task to investigate the latent meaning of a dream by systematically exploring the associations to a patient's dream during an analysis session. As will be discussed in the following article, both experimental dream research and dialogue with neurobiological memory research have critically challenged this limitation and have opened new doors to the systematic exploration of the manifest dream. As will be briefly illustrated by an example of a patient from the LAC study (Long-term Analysis of Chronic depression; Leuzinger-Bohleber et al., 2019a,b), this

opens up, among other things, the fascinating possibility of systematically investigating the changes of (manifest) dreams in psychoanalyses as indicators of the transformations of the unconscious micro-worlds (Moser and Hortig, 2019). If systematic changes can be detected in dreams, they would provide a measure more akin to the mental (unconscious) transformations focused on in psychoanalysis than some criteria accepted in times of evidence-based-medicine, for comparative psychotherapy studies (almost predominantly self and other assessments of symptom reduction).

As we will discuss, we therefore see these interdisciplinary dialogues as an opportunity for genuine psychoanalytic outcome research. In a detailed article, we have discussed the contribution of neurobiological memory research by the research group of Lane et al. (2015), especially their concept of memory reconsolidation, to this concern (cf. Leuzinger-Bohleber et al., 2020). We also referred to previous work on the modification of manifest dreams in psychoanalyses in a former psychotherapy outcome study (by Leuzinger-Bohleber, 1989 replicated by Kächele et al. (2015), see also Kamp et al., 2019; Pap, 2021). In the frame of this short article, we limit ourselves to the presentation of a dream generating model developed by Ulrich Moser's psychoanalytic research group in Zurich. The authors have attempted to integrate the current state of sleep and dream research into their model. What is relevant for psychotherapy research is that based on this model they have developed a sophisticated, valid and reliable system for the investigation of manifest dream content, the Zurich Dream Process Coding System (ZDPCS). We hypothesize that the ZDPCS provides an instrument that may foster the emerging role of interdisciplinary research in clinical psychoanalysis. Using two dreams of an analysand from the LAC study, it is illustrated that this coding system is suitable to capture relevant changes during a psychoanalysis.

Neuropsychoanalytic Dream Research

Dreams are at the foundation of psychoanalysis ever since Freud (1961) claimed them to be the royal road to the unconscious. Moreover, as we humans spend about one-fifth of our sleeping time dreaming, it may well be assumed that it fulfils a multitude of biological and cognitive/affective roles in humans as, e.g., a possibility to digest relevant information and unsolved conflicts by means of mental processes during sleep (see e.g., Cartwright et al., 2006; Zhao et al., 2018; Siclari et al., 2020).

Dreams as Guardians of Sleep and Memory Processes

The first scientific hypothesis regarding the function of dreaming was that of Freud (1961) who proposed that dreams were the "guardians of sleep." In his view, sleep is characterized by endogenous stimuli that activate wishes (or vice versa), which would evoke motor activity while awake, thus threatening to disrupt sleep. That is why dreams are generated: for the purpose to "divert" potentially sleep-disturbing wishes via hallucinatory wish-fulfillment from otherwise necessary motor activity. "Recent sleep research has convincingly demonstrated that sleep is accompanied by potentially disturbing endogenous arousal and motivational events, disturbed by surges of midbrain dopaminergic activation in the mesocortical-mesolimbic circuit" (Fischmann and Leuzinger-Bohleber, 2018, p. 140; for therapeutic consequences[1], see e.g., Leuzinger-Bohleber, 2015b). The latter being "the most vigorous exploratory search activity an animal is capable of" (Panksepp, 1998, p. 145). This raises the question than why do we remain asleep? According to Freud, we do so by dreaming (Freud, 1961). But dreaming's purpose is not alone to guard sleep, it is also theorized to play a major role in memory processing during sleep. An interesting hypothesis has been put forth in recent years that sleep and dreaming contribute to and influence memory consolidation and re-consolidation in a significant manner (Zhao et al., 2018; see also Lane et al., 2015).

Rapid Eye-Movement (REM) is a component of sleep, which is characterized by cyclical arousal states and where limbic forebrain structures are activated together with the amygdala, while the hippocampus is inhibited (Stickgold et al., 2001). In light of this activation process, it can be assumed that instead of reactivation of episodic memories a dream arises during this sleep phase. This provides evidence for the role of dreaming in memory consolidation, where dreams are thought to be constructed primarily from weak neocortical associations available during REM sleep (cf. Siegel, 2001; Diekelmann et al., 2009; Scarpelli et al., 2019). It is further likely that, as a result, the brain attempts to recognize and evaluate these resulting novel cortical associations in the context of their accompanying emotions mediated by limbic structures, giving dreams their typically unpredictable, bizarre, and emotionally charged character (Stickgold et al., 2001). Due to the relative loss of motor function in REM sleep, the sleeping individual is forced to resort to pictorial imagination to achieve arousal discharge. The latter is a compensation that can be assumed to be a functional consequence of REM dreaming, in addition to the accompanying strengthening or weakening of the specifically activated associations. This latter link seems to be confirmed by increased dreaming of tetraplegic patients due to Guillain-Barré syndrome and similar lower-motor-neuron lesions (Cochen et al., 2005).

As for the function of dreaming with respect to memory processes there are several theories that propose for example that the emergence of memories in dreams reactivates those memory traces in their original (perception-like) states, thus promoting learning while dreaming. It has also been shown that the embedding of emotionally relevant memory elements strengthens and consolidates them. It is also known that dreaming about newly learned material improves later recall of this material (for reviews see Payne and Nadel, 2004; Nielsen and Stenstrom, 2005).

[1]Clinical and interdisciplinary knowledge about the emergence of dreams and their possible transformations during treatments is also highly relevant for the practicing psychoanalyst, as we have discussed in various publications (e.g., in Leuzinger-Bohleber, 2015a,b). To briefly mention just one example here: Some of the chronically depressed analysands conveyed to the analyst for a long time their deep, unconscious conviction that the depression would resist any change, a conviction that of course had to be understood in detail in the analytic work and worked through therapeutically.

THE "DREAM-GENERATION-MODEL" BY MOSER AND VON ZEPPELIN – AN ATTEMPT TO INTEGRATE PSYCHOANALYTIC AND INTERDISCIPLINARY KNOWLEDGE ON DREAMS[2]

Moser and von Zeppelin (1996) consider the sleep dream as a simulated micro-world. The simulation is driven by affectivity, leading in the end to images of entities involved (*subject, object,* and *things*) and relationships linking them. A dream is triggered by events of the previous day or night. This event reactivates unresolved conflicts and problems (*current concern*). The dream has the function of retrospective problem solving. While in the waking state, in contrast to the dream state, we react immediately to our environment and by that consolidate information into our memory, there is often a restriction of consolidation processes in the waking state due to capacity restrictions of the memory system. It is interesting to note, that these consolidation processes[3] also take place during sleep in a so-called "off-line" mode. This is how new information is integrated into long-term memory. As the dream is looking for a solution of reactivated conflicts and problems the action and expression components of the affects are inhibited in the dream state as representation of the inner life dominates. But the range of affect modulation is significantly larger than in the micro-worlds of the waking state and stress is absorbed via imagination and via cognition. Affects may nevertheless become too strong and will lead to *interrupts* of the dream and might even cause waking-up, so that the dream microworld contains *situation sequences* (Sit) with *interrupts*. The dream is not involved in regulating concrete-real object relationships, but rather works with memories and with acquired solution and defense strategies [called *self-* and *object-models* and generalized interaction-representations (*RIGs*)[4], or, on a different level of observation, rather prototypical affective microprocesses (PAMs)][5]. According to this dream-generation-model, dreams often start with a *positioning field* (PF) without interactions. What appears in this PF is regulated by a security principle, which prevents the emergence of threatening affects by means of distance relations. Once the affective cathexis of the microworld is very strong, the dream narrative initiates an *interactive field of interactions* (IAF), where the PF is still there "by default" as a background presence. The dream contains procedures of approaching and distancing from the intended wish fulfillment (i.e., problem solving) via regulation of involvement and commitment as well as via interactive procedures of shaping its security regulation. Via a feedback-loop (reentry), the dream may be interrupted, if the affectivity gets too unbearable, and a new PF is created, thus increasing safety for the next situation. Every dream sequence contains a PF, which includes, always per situation, all mentioned elements: subject, objects, inanimate things, often summarized in a *PLACE*, which is a kind of spatial micro-world (for short overview of the abbreviations, see **Supplementary Material**).

Within the micro-world dream, which is considered to be an affective-cognitive bundle, initiated by current concerns, a "dream complex" can be seen as a template that enables the dream to be organized accordingly. Thus, a "dream complex" can be assumed to consist of one or more complexes that have their origin in conflictual and/or traumatic experiences stored in non-declarative long-term memory. These complexes have ultimately found their condensates in introjects, i.e., affective-cognitive templates of conflictual or traumatizing memory traces. When these introjects are triggered by closely related current concerns from the outside, these "dream complexes" may be considered structurally like stored situations of the introjected complex, and a dream emerges in search for resolving the complex. The memory traces of such complexes are characterized by invariant intense, unbearable affects connected by so-called k-lines and are stored isolated from memories with relational reality. Each of these isolated complexes contain unbound affective information and represent links between self- and object-models and generalized interaction-representations (PAMs), which are accompanied by convictions and a hope for wish-fulfillment (i.e., problem-solving). They have a repetitive character (W), as they are in constant search for a solution in order to get rid of the disturbing unbound affects[6]. We cannot describe this elaborated model of dream generation and the coding system based on it in more detail here but hope that the following illustration (see **Figure 1**) may elucidate this model (An English publication of the model is in preparation).

Outside the dream world, where the reality principle prevails, these conflictual or traumatic complexes cannot be thought of declaratively as they are being pushed into the unconscious[7] because of their intolerability. In the dream world, in which the

[2] This section is based in a former publication by Fischmann and Leuzinger-Bohleber (2018) and Leuzinger-Bohleber et al. (2020).

[3] It is well established that reconsolidation requires a night of sleep (see Leuzinger-Bohleber et al., 2020).

[4] Stern (2020) and his research group have developed the concept of RIGs (Representation Interaction Generalized) which had a great influence on empirical infant research. It is connected to the concept of schema or generalized cognitive-affective patterns which have been developed in the central early relationships and which determine mostly unconsciously the expectations to current relationships in the real world or in the transference.

[5] Hortig and Moser (2012) rather speak in this later work of prototypical affective microprocesses (PAMs), which are defined as dyad-specific processes in affective relationship regulation (see also Bänninger-Huber, 1992). They are a product of both participants. In the case of mismatch, dysfunctional PAM structures are formed.

[6] Another way of saying this – referring to the terminology of attachment research – is as follows: An internal working model (IWM) of the social world is created in childhood. In the case of abuse/neglect, the IWM is well adapted to the abusive context, but then is maladaptive later in life outside the family of origin. The IWM generates predictions that don't conform to the social reality. Thus, there are major prediction errors. These prediction errors result in affective responses. They are "unbound" in the sense of being activated and not resolved via an updated prediction or a change in circumstances/sensory input that conform to prediction. Perhaps the function of dreaming is to rework the RIG or IWM to minimize future prediction error.

[7] Lane comments that the emotional responses cannot be mentalized or mentally represented. They are not repressed. Dissociation can lead to lack of mental representation. I would also say that they are not "pushed into the unconscious" but rather that automatic emotional responses are too intense to be constructed as discrete, specific conceptualized experiences. In other words, they never made it into conscious awareness as discrete experiences.

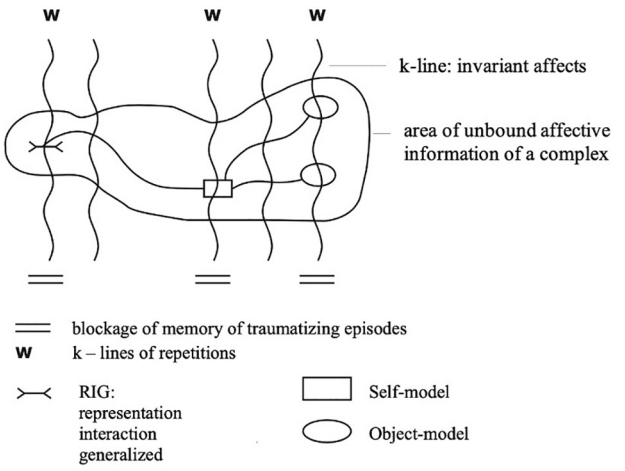

FIGURE 1 | Memory Model of conflictual complexes adapted from Moser and von Zeppelin (1996). W, repetitions (i.e., Wiederholungen) caused by invariant affects, which are not yet bound in the personal-historical life narrative of the individual; areas of unbound affective information: complexes consisting of self- and object-models and generalized interaction representation (RIG), which are grouped by k-lines of invariant affects, causing blockage of memory of closely related traumatizing episodes.

pleasure principle prevails, the affective information comes more easily to the fore, and the "dream organizer" (i.e., the dreaming sleeper) seeks a solution by creating a tolerable micro-world in which the affective information suppressed or dissociated in the waking state can come "alive" and become solvable (cf. **Figure 1**)[8]. The "dreamlike" problem solution of such unbearable complexes is facilitated by balancing innate tendencies for security and the desire for involvement. Whenever this fails in a dream, the dream scene is interrupted and either a new one is created, or the dreamer wakes up in a state of panic. Thus, the number of interrupts of dream scenes within a dream may, according to our first empirical findings (Fischmann et al., 2013; Fischmann and Leuzinger-Bohleber, 2018), be considered as one indicator for change. The less interrupts within a long dream the closer to the solution of the dream complex the dreamer is. Of course, in shorter dreams we find less interrupts: these dreams break off early.

Based on this model of dream-generation Moser and von Zeppelin (1996) have developed a coding system which can be used to analyze the manifest dream content – the Zurich Dream Process Coding System (ZDPCS). Inter-rater reliability based on 20 dreams taken from psychotherapies have been reported for the coding-system to be very satisfactory κ (Cohen's kappa) = 0.936 (Döll-Hentschker, 2008, p. 238). It can be applied to investigate systematic changes in the manifest dream content for instance of dreams of analysands during their psychoanalyses, as was done in the LAC depression study. In an attempt to further validate this instrument (ZDPCS), REM dreams elicited in a sleep laboratory of some of the analysands, who have agreed to have their severe sleep disturbances examined there, were investigated and compared to their "clinical" dreams reported during psychoanalytical sessions with very interesting findings (see Fischmann and Leuzinger-Bohleber, 2018 and **Supplementary Material**). Even though the dream content differed, the structure of the laboratory dream and the dream reported during sessions was identical – a finding which was important for the systematic investigation of the changes in the manifest dreams during the long-term treatments (see **Supplementary Material** for the specific steps taken to apply the ZDPCS).

In their newest publication Moser and Hortig (2019) slightly revised and modified the ZDPCS and present the conceptualization as well as the different categories of the coding system in great detail. In the last part of their book (part VI) they discuss different interpretations of dreams based on the ZDPCS as well as a dream series of the same patient which we are presenting in this article[9].

CASE ILLUSTRATION

More than 80% of the 252 patients examined in the LAC Study, suffered from severe childhood trauma (see Negele et al., 2015). A salient feature of traumatic events, according to psychoanalytic trauma theories is that an individual is suddenly and unexpectedly confronted with an extreme situation of utter helplessness and impotence in relation to extreme pain and threat to life without help from others, thus losing a basic sense of self-agency. Therefore, in a traumatic situation, the basic trust in a helping "other" and an active self is destroyed, which has sustaining consequences (see e.g., Bohleber, 2010; Leuzinger-Bohleber, 2015b).

Exactly such unbearable, traumatic situations characterized the nightmares of the patient X. from the LAC study and his dreams of the first 6 months of psychoanalysis: The dream-self is captured in an extremely dangerous, live threatening situation. He is flooded with panic and anxiety and has lost any capability to liberate himself from this situation (see e.g., Varvin et al., 2012). Here just one example from a dream of Mr. X. in one of the sessions during the beginning phase of his psychoanalysis.

> *"A nightmare: I am in a narrow tunnel, kind of a tube. Behind me my brother is crawling. We cannot go backward – behind us it the stormy sea. The tunnel turns to be more and more narrow. I am waking up in panic.*[10]*"*

In the frame of this article, we can only illustrate the analyses of two exemplary dreams of this patient (a) from the first 6 months of psychoanalysis and (b) from the third year of psychoanalysis (cf. **Table 1**):

[8]In other words, a function of dreaming is to establish a basis for the affect to become attached to meaning systems and become mentalizable. It could also be the case that this function during dreaming contributes to the encoding of memories along emotional lines such that in the future memories associated with a given emotional state are more easily accessible when in that emotional state.

[9]In our analyses we used an older version of the ZDPCS.

[10]In another article, we have compared these clinical dreams with dreams of the same patients during the same sequence of his psychoanalyses which he had reported in the sleeping laboratory (see Fischmann and Leuzinger-Bohleber, 2018). Moser and Hortig (2019) have analyzed the same dream in their revised and modified coding-system (p. 200 ff.).

TABLE 1 | ZDPCS dream coding a clinical dream of the first 6 months of psychoanalysis.

Dream narrative	Sit	PF	LTM	IAF
Dream from clinical situation				
I am in a narrow tunnel, kind of a tube	S1	SP (Dreamer) PLACE (tunnel) ATTR (narrow) ATTR (tube)		
Behind me my brother is crawling	S2	SP (Dreamer) OP_1 BEK (brother) POS REL	LTM	
We cannot go backward – behind us is the stormy sea	S3	SP (Dreamer) OP_1 BEK (brother) PLACE (sea) ATTR (stormy) POS REL		IR.C RES LTMFAIL (cannot go backward)
The tunnel becomes narrower and narrower	S4	SP (Dreamer) PLACE (tunnel) ATTR (narrow)		IR.D (IR.S)
I wake up in panic	EX AFF- R			

Sit, situation; PF, positioning field; LTM, loco-time motion, IAF, interaction field. See ***Supplementary Material*** *for abbreviations.*

As is discussed in detail in another article (see Fischmann and Leuzinger-Bohleber, 2018; Leuzinger-Bohleber, 2018) the manifest dreams of this severely traumatized patient changed obviously during psychoanalysis. Here an example of a clinical dream of this patient in the third year of psychoanalysis:

> *"I played with the famous jazz guitarist Ralf Towner. It went quite well, and it was fun. I didn't fail and the neck of the guitar was not soft*[11] *(laughs). The guitarist played along with my improvisations and held back. Of course, I knew that he is better than me, but this did not matter – it was just great fun. . ."* (Fischmann and Leuzinger-Bohleber, 2018, p. 149).

From the content of the manifest dream in the third year of his psychoanalysis it becomes evident that he is highly affectively aroused and is awakened by it (see **Table 2**), like in the dream from the beginning of his psychoanalysis (cf. **Table 1**), but now he is joyfully excited, and he is able to interact responsively with a "helping" object during most of the dream (cf. **Table 2**).

We hope to have illustrated to a degree by these two exemplary dreams how Mr. X's early traumatization has become observable in his manifest dreams and how this changed during the treatment. The underlying traumatic complex, of growing up with an abusive, alcoholic mother and an absent father, governed the dream organization at the beginning of treatment exhibiting his panic and anxiety and incapability of freeing himself from an extremely dangerous situation. This changed during the treatment where the traumatic complex was successively better integrated in the psychic functioning of the patient. The ZDPCS coding revealed how he established an increasing feeling of self-agency, control and basic trust in a helping "other." We interpret these findings that the "embodied memories" of the traumatization were successively better integrated in the psychic functioning of the patient (e.g., connected with this just mentioned increasing feeling of self-agency, control and basic trust in a helping other in the dream plots).

Mr. X. belongs to the selected patients of the LAC Study who was willing also to be investigated in the dream laboratory. This enabled us, as shortly mentioned above, to look at dreams he reported in the clinical situation and compare them to dreams of the same week elicited at the sleep laboratory using the ZDPCS method. We wanted to study whether we could discern changes of dreams like those discussed in the paragraph above. We were also interested to see if those changes occurred in both types of dreams – the laboratory dreams and the ones reported in the clinical situation. As we discuss in the **Supplementary Material**, we indeed were able to show that there are similar changes in the dream contents in the clinical as well as in the laboratory dreams (see **Supplementary Material**).

SUMMARY AND DISCUSSION

Changes in psychotherapeutic treatments are usually measured by the amount of symptom reduction. Although psychoanalysts are interested in this as well as a general outcome measure, they are above that looking for sustaining changes in the unconscious mental functioning. One way of achieving this is by looking at changes in manifest dream content using a precise empirical method as a promising indicator of therapeutic change as is suggested here in this article.

In the beginning of therapy, patients repeatedly report frequent nightmares which are often connected to (early) traumatization of the analysands. Nightmares are triggered not only by an extreme overwhelming anxiety, but also by the feeling of a missing, holding, containing other. This is well known from trauma theory, where trauma is defined as a situation in which the basic trust in a helping "Other" and self-agency is destroyed—an experience with sustaining

[11]The patient refers to another "funny" dream. Before the dream he had a conflict with his wife which wasn't treated openly. Instead, the conflict led to an erectile dysfunction. Then he dreamed, that he played on a guitar which had a very soft neck.

TABLE 2 | ZDPCS dream coding comparing clinical dream of the third year of psychoanalysis (Fischmann and Leuzinger-Bohleber, 2018, p. 153).

Dream narrative	Sit	PF	LTM	IAF
Dream from clinical situation				
I play with the famous jazz guitarist Ralf Towner. It goes quite well	S1	SP (Dreamer) OP BEK (Towner) ATTR (famous) ATTR (jazz g.)		IR. C RES
It is fun	EX AFF R			
I don't fail and the neck of the guitar is not soft	S2	SP (Dreamer) CEU (guitar) PART OF (neck) ATTR (not soft)		
The guitarist plays along with my improvisations and holds back.	S3	SP (Dreamer) OP BEK (guitarist) ATTR (held back)		IR.C RES
Of course, I know that he is better than me, but this does not matter	C.P.			
It is just great fun	EX AFF R			

Sit, situation; PF, positioning field; LTM, loco-time motion; IAF, interaction field. See ***Supplementary Material*** *for abbreviations.*

consequences (see e.g., Bohleber, 2010). In their model of the generation of dreams, Moser and von Zeppelin (1996) propose that traumatic complexes, stored in non-declarative long-term memory, can be characterized by the fact that extreme affects are not integrated (bonded) in a structure of human relationships. When a solution for the traumatic complexes is searched for in dreams the dream-subject tries to find a way out of the traumatic situation of extreme helplessness, impotence and unbearable negative affects, such as panic, despair, rage and death anxiety, by trying to gain a more active stance and control over the dangerous situation. This is done by creating dream situations over and over again, governed by the wish for involvement (self-agency) and the need for security. In combination with a successful psychoanalysis the dream-subject successively gains a more active stance, which can also be seen in his dreams. This marks a "turning point" in the psychoanalytic process. The case illustration given here can only hint, but not systematically show or theoretically discuss in detail, the successful achievement of how analysis brought the (split–off) trauma with its unbearable affects and unconscious beliefs back into the psychoanalytic relationship. This is postulated to have led to a modification of the patients unconscious convictions that "no one-but no one" is interested in me when I am in an unbearable, life threatening situation with complete helplessness and impotence, without any self-agency. It is well understood that the traumatic experience – and the memory of it – cannot be extinguished by the experience in the transference/countertransference of the psychoanalytic relationship but may lose its quality of the unbearable horror as well as the psychic quality of nightmares will.

Such changes in the quality of unbearable horror from which patients suffer are indicative of positive changes in psychotherapies. They are difficult to capture because they must be held unconscious by defenses to make them reasonably bearable. However, as we have tried to show here, they can be made visible through the analysis of dreams, both the latent contents of dreams in the psychoanalytic situation and manifest dreams elicited in an experimental as well as in therapeutic situations. Dreams are key to understanding unconscious conflicts and fantasies and can provide clues to possible transformations in psychic functioning. Often such transformations take place in a hidden way. Nevertheless, the psychoanalytic investigation of changes in long-term psychoanalytic therapies by means of a systematic clinical and extra-clinical approach of changes in dreams offers the possibility to capture such changes beyond symptom reduction in a clinically relevant way (see also Leuzinger-Bohleber, 2015b; Leuzinger-Bohleber and Fischmann, 2018). We thus hope to have made a valuable contribution to such comparative outcome studies. Another hope is that we could show that a dialogue between psychoanalysis and the neurosciences is fruitful in comparative psychotherapy research (see Fischmann et al., in preparation).

DATA AVAILABILITY STATEMENT

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

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Ethik-Kommission bei der Landesärztekammer Hessen. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

TF and ML-B contributed to conception of the manuscript. TF organized the database and performed the statistical analysis. GA, TF, and ML-B wrote the sections of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2021.678440/full#supplementary-material

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Reformulated Object Relations Theory: A Bridge Between Clinical Psychoanalysis, Psychotherapy Integration, and the Understanding and Treatment of Suicidal Depression

*Golan Shahar**

Department of Psychology, Ben-Gurion University of the Negev, Be'er Sheva, Israel

In contrast to the fruitful relationship between psychoanalysis/psychoanalysts and the humanities, institutionalized psychoanalysis has been largely resistant to the integration of psychoanalysis with other *empirical* branches of knowledge (infant observation, psychotherapy research, psychological and neurobiological sciences), as well as clinical ones [primarily cognitive-behavioral therapy (CBT)]. Drawing from two decades of theoretical and empirical work on psychopathology, psychotherapy, and psychoanalysis, the author aims to show how a reformulation of object relations theory (RORT) using (neuro-)psychological science may enhance a clinical-psychoanalytic understanding and treatment of suicidal depression, which constitutes one of the most formidable health challenges of our time. Specifically, he rewrote the notion of Melanie Klein *positions*—primarily the depressive position—using extant knowledge of structure of emotions, the centrality of mental representations of the future ("prospection") and the toxic nature of criticism-based emotions. This reformulation enables a dialog between clinical psychoanalysis and other therapeutic schools of thought and sheds light on the understanding and treatment of suicidal depression.

Keywords: clinical-psychoanalysis, object-relations-theory, positions, suicidal-depression, psychotherapy integration

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***Correspondence:**
Golan Shahar
Shaharg@bgu.ac.il

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Psychoanalysis has always been comfortable conversing with the humanities (Freud, 1930; Kohut, 1980; Jurist and Orfanos, 2016), as well as with the more hermeneutic branches of social sciences (e.g., Freud, 1921; Paul, 1989; Powell, 2010). By the same token, psychoanalysis has had acrimonious relationships with empirical, quantitative science, whether medical or (neuro-)psychological (Blass and Carmeli, 2007; Bornstein, 2007). Like many others, the author has repeatedly lamented this conflictual relationship between psychoanalysis and empirical science (e.g., Shahar, 2010, 2015a). In this article, the author seeks to examine one of the most unfortunate consequences of the psychoanalysis-empirical science rift: the difficulty in pursuing a dialog with other schools of psychotherapy, primarily the cognitive-behavioral, manualized-interpersonal, emotion-focused, and family-systems perspectives. To be sure, the past two decades have seen several examples of successful bridging and integration, as is shown by the development of evidence-based psychoanalytic treatments such as transference-focused therapy for borderline personality disorders (TFT; Yeomans et al., 2013), the development of psychodynamic-integrative treatments (e.g., Beutel et al., 2019), the incorporation of psychoanalytic ideas in other treatment approaches (for instance, in Schema Therapy; Refaeli et al., 2010), and collaborative research studies

involving proponents of different theoretical approaches (e.g., Levy et al., 2006). These important advancements, however, are as scarce as they are scattered. This article is offered in an effort to extend these advancements and to apply them to a gnawing problem faced by clinicians from various disciplines and perspectives, namely, suicidal depression.

THE PSYCHOANALYSIS-SCIENCE RIFT: A PRECURSOR OF THE SECLUSION OF PSYCHOANALYSIS FROM OTHER THERAPEUTIC PERSPECTIVES

A large part of the seclusion of psychoanalysis, particularly clinical psychoanalysis, from other therapeutic perspectives is the traditional animosity of psychoanalysis toward the very notion of empirical research (e.g., Kernberg, 2006). One of the ramifications of this animosity is the reluctance of the most dominant strands within psychoanalysis to embrace social-cognitive nomenclature of inner (psychological) processes.

The social-cognitive lexicon is primarily cognitive. Terms such as schemas, scripts, biases, attitudes, information-processing, problem-solving, decision-making and the like, are the offspring of the cognitive revolution in academic psychology (see Miller, 1951, 2003), a revolution that essentially ended the anti-mentalistic thrust of radical behaviorism (Skinner, 1957, 1971). Theoretical and empirical works of Albert Bandura, Walter Mischel, Daniel Cervone, and their followers have "interpersonalized" the aforementioned cognitive concepts (Mischel, 1973; Bandura, 1986; Cervone, 1991), showing how cognition actually serves as the glue of social transactions. These works of Bandura, Mischel, Cervone, and their colleagues echoed the ascendance of attachment theory into prominence within academic psychology. Commencing with the works of Bowlby (1969) of the Independent Group of the British Psychoanalytic Society (to which Winnicott also belonged) and facilitated by the subsequent works of Ainsworth and Bell (1970) and Mary Main and colleagues (Main et al., 1985), attachment theory has evolved around the understanding that actual (as opposed to fantasized) parent-child relationships create *internal working models* (IWMs) of relationships. These IWMs organize actual relational patterns throughout the life span (Mikulincer and Shaver, 2016; Fonagy and Luyten, 2018) and account for differential interpersonal patterns surfacing in close relationships (Bartholomew and Horowitz, 1991).

The contribution of this social-cognitive lexicon to psychological science is 3-fold. First, the concepts included in this lexicon are very clear, even to scholars coming from outside of psychology. Second, these concepts are empirically testable. Third, the endeavor of testing these concepts has bolstered the development of research procedures that, in turn, facilitated empirical research both within and outside of psychology (e.g., priming, Kahneman, 2011). In light of this, a select few within academic psychology who are also psychoanalytically oriented have compellingly demonstrated that the most profound psychoanalytic concepts may be described in social-cognitive terms (e.g., Blatt, 1990, 1995a; Westen, 1991, 1998; Fonagy and Allison, 2012). Unfortunately, despite the impressive accomplishment of these giant academics/psychoanalysts, from a sociology-of-science standpoint, their efforts to bridge the psychoanalysis-science rift have yielded limited success (Bornstein, 2001; Shahar, 2010).

Interestingly, at the same time, that psychoanalysis braced itself against "scientization" (Hoffman, 2009), other clinical schools of thoughts readily embraced the social-cognitive nomenclature, thereby forming a vibrant alliance with academic psychology. The obvious exemplar is cognitive-behavior therapy (CBT), which—after essentially translating social-cognitive science into straightforward clinical interventions—has succeeded in branding itself as the preeminent evidence-based approach to psychotherapy. This claim, alas, is not always in the best interest of their patients (Swedish National Audit Office, 2015; Dalal, 2019). In addition to CBT, family-systems, experiential-gestalt, and humanistic-existential psychotherapeutic perspectives also embraced the social-cognitive nomenclature. This enabled these perspectives to gain respect within academic psychology (see, for instance, Seligman et al., 2013; Fosco et al., 2016), and thus be considered seriously in published guidelines for psychological treatments for a wide range of mental disorders (e.g., Guideline Development Panel for the Treatment of Depressive Disorders, 2019)[1]. This pattern is particularly noteworthy with respect to the humanistic-existential perspective, which shares with psychoanalysis a fascination with the humanities and a philosophical/romantic writing style (see Strenger, 1989), but which has always played a major role within academic psychology and evidence-based psychotherapy (Shahar and Schiller, 2016a).

PSYCHOTHERAPY INTEGRATION: AN IDEAL ARENA FOR THE DIALOG BETWEEN PSYCHOANALYSIS AND OTHER APPROACHES

Despite the seclusion of psychoanalysis, an arena has been forming since the late 1970's, which appears to serve as the ideal locus for a potential dialog between psychoanalysis and other psychotherapeutic schools of thoughts. This arena is the psychotherapy integration movement (Ziv-Beiman and Shahar, 2015), spearheaded by the Society for Exploration of Psychotherapy Integration (SEPI; https://www.sepiweb.org/). Founded by clinicians, researchers, and theorists from diverse persuasions, SEPI is an international and interdisciplinary organization aimed at bridging across diverse therapeutic orientations. Some of many illustrious founders of SEPI, such as George Stricker and Paul Wachtel, and current leaders are prominent psychodynamically oriented academics/clinicians. It

[1]When manualized psychodynamic/psychoanalytic therapeutic packages are included within such guidelines, they resemble non-psychoanalytic therapeutic manuals in many respects (e.g., a clear structure, inclusion of psychoeducation, clear therapeutic goals, and assessment of symptoms). The extent to which such manualized psychodynamic/psychoanalytic therapeutic packages are on a continuum with psychoanalytic/psychodynamic treatment that is practiced outside scientific settings is unclear.

is, therefore, of no surprise that SEPI and its flagship *Journal of Psychotherapy Integration* (JPI) are psychoanalytically friendly. But what is more important is that, by design, SEPI and JPI push the psychoanalytically oriented members to get to know, appreciate, and learn from other schools of thought in psychotherapy.

Unfortunately, however, SEPI and its resources are largely ignored by the most dominant strands of the psychoanalytic movement. To relate an anecdote as evidence: in Israel, where the author lives and practices, there is a huge interest in SEPI and its integrative mission. But this interest, manifested by clinicians from numerous persuasions (including psychodynamic), largely escapes the Israeli psychoanalytic establishment. The author has repeatedly heard prominent figures within the Israeli psychoanalytic establishment ridicule the integrative mission and dismiss it as "just another version of CBT."

RORT: A CONCEPTUAL FRAMEWORK FOR THE PSYCHOANALYSIS-SOCIAL COGNITION DIALOG

If we were to imagine that institutional psychoanalysis would suddenly change its ways and work to engage with the academic, evidence-based social-cognitive nomenclature, a question would quickly arise: Which strand of psychoanalysis?

Psychoanalysis is characterized by having numerous schools and strands (e.g., Ghent, 1989), and it is in the habit of each school to deem the others "non-psychoanalytic" (Blass, 2010). This factor renders an answer to the above question difficult to arrive at. For the sake of the present discussion, however, let us assume that the largest strands of psychoanalysis are: (1) the classical/Freudian, which is drive-focused, (2) psychoanalytic ego psychology, (3) object relations theory and attachment theory, (4) psychoanalytic self-psychology, and (5) interpersonal/relational psychoanalysis. Which of these should be "socially cognitivized?" Interestingly, all five strands enjoy supportive research evidence, the review of which lies outside the scope of this article. Selection, therefore, should be made on a conceptual basis. My contention would be that most prominent strand of psychoanalysis, and the one that is most promising in terms of conversing with academic psychology, is object relations theory (e.g., Greenberg and Mitchell, 1983), particularly when it is linked with attachment theory (Levy et al., 1998; Levy and Blatt, 1999; Fonagy et al., 2018).

The rationale for my selection is that, from a philosophical or metapsychological perspective, object relations theory constitutes the most comprehensive theoretical statement of psychoanalysis, one that subsumes each of the other four strands, and that it lends itself most easily to clinical practice that is conversant with non-psychoanalytic schools. Specifically, ORT recognizes biological drives as central to human psychology and action, while drawing primarily from Melanie Klein, highlighting that the drives are invariably directed toward human figures. Furthermore, ORT acknowledges the principal role of the ego as a self-sector responsible for regulating thought, affect, and behavior, although the ego, as a self-sector, is always *in-relationships*. ORT can easily incorporate psychoanalytic self-psychology by acknowledging the ability of the latter to elucidate the unfolding of narcissistic phenomena (Blass and Blatt, 1992). Furthermore, as extensively argued by Mitchell (1995a) and others, the interpersonal/relational psychoanalytic strands, as much as they are adept in describing interpersonal behavior, stand upon the description of ORT of mental representations of self and others. Finally, ORT is very strongly represented within academic psychology, not only through seminal works by Westen (1991, 1998) and Blatt (e.g., Blatt et al., 1997) but also through the voluminous empirical and theoretical literature on attachment theory (Mikulincer and Shaver, 2016; Fonagy and Luyten, 2018), with its emphasis on internal working models (IWMs), a term largely equivalent to "object relations" (for similarities and differences between ORT and attachment styles, see in particular Levy and Blatt, 1999; Blatt and Levy, 2003; Shahar et al., 2004a; Fonagy and Luyten, 2018; Fonagy et al., 2018).

Building on the intellectual accomplishments yielded by ORT, my theoretical and clinical work over the last two decades has focused on bridging this theory with more recent developments within academic psychology (e.g., Shahar, 2001, 2004, 2006a, 2010, 2011, 2012, 2015a,b, 2016, 2018; Shahar et al., 2004a; Shahar and Davidson, 2009), particularly cognitive psychology, existential philosophy and psychology, neuroscience, and research on self and consciousness. The major thrust of this work is reformulating the notion of Klein (1928, 1935, 1940, 1945) of the positions.

Readers of articles in this special issue are hardly in need of an exposition of the positions, but I nonetheless offer here a brief one. According to Klein, a position is *a system* comprised of object relations, defense mechanisms, and specific anxieties. She states: "With the changes in the relation to the object, new anxiety- contents make their appearance and a change takes place in the mechanisms of defense" (Klein, 1935, p. 146). Thus, the three components do not just co-exist, they bolster and augment each other.

With respect to anxiety, Klein (1928) and her followers distinguish between a *paranoid-schizoid* anxiety centered around a fear of overwhelming aggression and a *depressive* anxiety evolving about the fear of harming the good. Per defense mechanisms, Kleinians distinguish between primitive defenses aimed at keeping the good at bay from the destructive influence of the bad (e.g., splitting, projective identification, and idealization) by polarizing good and bad, and the more neurotic defense mechanisms which aim at pushing inner flaws out of awareness. With respect to object relations, Kleinians underscore the difference between *part* object relations, whereby self and others are represented as either good or bad, and *whole* object relations, whereby both self and others are likely to contain multiple, good *and* bad, characteristics. In this theory, the paranoid-schizoid position consists of paranoid anxieties, primitive defense mechanisms, and part object relations. This position accounts for severe psychopathological syndromes, such as psychosis and borderline personality disorder. Conversely, the depressive position consists of depressive, guilt-ridden anxiety, neurotic (moderate and nuanced) defense mechanisms, and whole (ambivalent) object relations.

As the author stated previously (Shahar, 2018), Klein's notion of the positions are imbued with profound insights into the human condition, which make them particularly useful for the following reasons:

(1) The positions chart psychological development as characterized by *increasing cognitive and affective complexity* (i.e., the more primitive paranoid-schizoid position is succeeded by the more nuanced depressive position).
(2) At the same time, unlike stage theories of development (e.g., that of Freud and Piaget), once a new position is formed, it does not nullify the previous one. They coexist, with a single position occupying the center of the psyche while the other operates in the background. This coexistence of the positions enables very rapid oscillations between diverse levels of personality organization, so rapid that individuals may appear, within hours, at first highly unstable and hostile and then composed and collected, or *vice versa*. Stage-like notions of personality progression and regression do not so well-account for the existence of such rapid shifts in personality organization.
(3) The notion of positions epitomizes the fact that, in the human personality, various aspects and processes work in tandem: A unidimensional nature of paranoid anxiety necessitates dramatic defensive measures aimed at keeping the good away from the bad (e.g., splitting), and such dramatic defensive measures can only be executed by a self that is full of conviction as to who is good and who is bad. In contrast, the depressive, guilt-ridden anxiety inherently recognizes the coexistence of good and bad (Eros and Thanatos) within the self, requiring more circumscribe defensive measures that cloud specific self-aspects (e.g., repression, displacement, and reaction formation), as opposed to severing large self-segments. Put differently, a multifaceted structure of self and other representations disallows a unidimensional, paranoid anxiety.

Why, then, the need to reformulate the positions? For two reasons. First, the Kleinian jargon is problematic. "Good and bad breast," "projective identification," these terms are not just technical. They virtually alienate scholars coming from outside psychoanalysis and, as I can personally attest, even several scholars coming from within. Secondly, and not necessarily unique to the notion of the positions, their description is completely removed from knowledge accumulated through scientific methodologies for decades. I am referring specifically to knowledge about emotions, awareness, and the self.

Nuanced Emotions

In most psychoanalytic theories, including that of Klein, anxiety epitomizes negative affect. Hence, in these theories, anxiety is the emotional state imbuing most, if not all, dynamic consequences. To paraphrase Aristotle, anxiety is the prime mover of the psyche. This, however, is not the way emotions seem to work. The larger category of negative affect is much more nuanced, comprised of numerous emotions that are aversive. The obvious ones are sadness, anger, and guilt, but one can easily add to these three emotions, such as shame, disgust, disappointment, contempt, hostility, and irritability (Watson et al., 1988). Moreover, positive emotions appear to be largely independent of negative emotions, which means that people may experience both negative and positive emotions *concurrently* (e.g., Tuccitto et al., 2010). For instance, while writing these words, the author was both curious and enthusiastic (because he is interested in the topic and geared toward deciphering it) and nervous and fearful (that he would not do a good job explicating his ideas). After completing this work, he was likely to feel a measure of pride but also mental exhaustion and some emptiness.

Awareness of a Continuum

Kleinian psychoanalysis, arising from classical formulation of Freud, rests on the idea of a thick "repressive line" that squarely separates conscious from unconscious material (Billig, 1999; Fink, 2009). Along what Ricœur (1970) labels "the hermeneutics of suspicion," unconscious material is more real, and is also much more difficult to come by compared with conscious material (see Eagle, 2011).

Interestingly, this "hermeneutics of suspicion" is starkly inconsistent with research evidence attesting to the ease with which threatening mental material pushed outside of consciousness may then be summoned back based on experimental manipulation (e.g., Tzelgov, 1997; Erdelyi, 2006; Shahar, 2006b; Sedikides and Green, 2009). Consider, for instance, the *mnegic neglect effect* (e.g., Sedikides and Green, 2004), whereby—as shown in the psychological laboratory—people selectively forget feedback that threatens their self-concept. However, a simple experimental procedure ("priming") aimed at increasing accessibility to self-improvement motives completely erases the mnegic neglect effect (Green et al., 2009).

Such experimental evidence tallies with gradual transformations in psychoanalytic theory, which eschew this notion of a clear divide between conscious and unconscious materials. Beginning with Ferenczi, continuing with Balint, Winnicott, Guntrip, and Kohut, and being represented contemporaneously by Stolorow et al. (1987), Strenger (1989), and Eagle (2011), these theorists and others adopt a more continuous, experience-near, phenomenological perspective whereby material repeatedly, possibly very rapidly, oscillates between conscious and unconscious levels, often in a way that is dependent upon central life goals of patients. For instance, in psychotherapeutic work of the author with first-time parents, he is impressed by the fact that this role transition summons memories and mental material—often painful—concerning the early relationships of patients with their own parents. Such material has always been *known* to these first-time parents, although quite often, it has not entered into the center of awareness, and was thus left unprocessed. This material becomes highly accessible when patients turn into parents, arguably because it is now needed to (mis)guide their central developmental task[2].

[2]Diluting the boundaries between conscious and unconscious materials in general, and defense mechanism in particular, brings to the fore notion of S. Freud (1895) of disavowal, which he used as an alternative to denial. There is a dispute within

Why is it important to replace the thick repressive line perspective on awareness with one that is continuous/phenomenological/experience-near? Because the latter opens pathways to understanding the positions. In stress theory and research, there is a traditional distinction between defense mechanisms and coping strategies (Haan, 1977; Cramer, 2006; Vaillant, 2011), which is based on the notion that defense mechanisms are unconscious whereas coping strategies are conscious. However, adopting a continuous/phenomenological/experience-near perspective essentially nullifies this distinction, in turn encouraging the consideration of both defense mechanisms and coping strategies as partly conscious ways to regulate affect. In fact, the author posits that the term *affect regulatory strategies* should be used instead of defense mechanisms in describing specific positions. The author illustrates it below when outlining a reformulated depressive position.

A "Projected" Self

The vast majority of psychoanalytic theorizations of self and "objects" focus on the impact of the past—particularly early relationships with caregivers—on object relations and on the reactivation of these object relations in the present and in the interpersonal arena. In contrast, the future tense is quite neglected in psychoanalytic theory. This is as interesting as it is unfortunate, given that the bulk of empirical research amassed over the last four decades now clearly points to the centrality of the future in the psyche (Seligman et al., 2013). Specifically:

(1) Mental representations of future goals and "projects" appear to have a profound impact upon our behavior (Austin and Vancouver, 1996);
(2) A form of cognition called *prospective memory* has been discovered, pertaining to memory for actions planned to be performed in the future (McDaniel and Einstein, 2007). Prospective memory is considered a cognitive faculty, which is highly important for everyday life;
(3) Several brain areas (e.g., Brodmann Area 10 at the prefrontal cortex, PFC) and processes are considered to be in charge of future planning;
(4) Theory and research comparing humans with other species suggest that the principal function of the PFC, an area largely unique to humans, is to plan for the future (Amati and Shallice, 2007);
(5) Representations of the self in the future (future self) predict behavior in general, and behavior aimed at influencing the future (e.g., saving for retirement) in particular.

Here, as in the case of awareness, this slew of empirical research is consistent with small, albeit insistent, streams of psychoanalytic theorizing that does touch upon the role of the future in the psyche (Summers, 2003). Consider, for instance, worlds of Sullivan (1953):

> *"If he is interested in psychiatry, he is almost certain to come to consider the role of foresight in determining the adequacy and appropriateness of the energy transformations, his overt and covert activity, with respect to the actual demands of the situations in which he finds himself involved with significant others* (Sullivan, 1953, p. 369; italics in the original).

And, later, on the same page:

> *I am saying that, circumstances not interfering, man the person lives with his past, the present, and the neighboring future all clearly relevant in explaining his thought and action; and the near future is influential to a degree nowhere else remotely approached among species of living.* (Sullivan, 1953, p. 369; italics in the original).

In a contribution entitled "The Future as Intrinsic to the Psyche and Psychoanalytic Theory," Summers (2003) reviews the scant treatment of the future in psychoanalysis. For instance, he mentions emphasis of Loewald on expectations of the superego, language of action of Schafer, in which the self-narrative includes future goals, notion of Bolas of destiny (which the author believes is quite similar to the humanistic notion of self-actualization), and others. In applying this review to the clinical situation, Summers (2003) states:

"It follows that the analyst who looks at time in only a linear fashion, in which the past affects the present and future, adopts a simplistic and limited view of temporality that does not fit the lived experience of time. Because the present moment is embedded in and only gains meaning in the projected future, or pluperfect tense, understanding the patient's present requires that the analyst grasp the patient's experience of the future and how the present moment fits into it. The emptiness, passivity, and complacency we see in so many patients reflect their loss of the future, an inability to live in the pluperfect tense, and this empty future issues in the bleakness of their present lives. Because the present and past gain their meaning via their relationship to the projected future, or the pluperfect tense, when the future looks dim, the present becomes empty and the past constricting. When the future looks bright, the present shines and the past is viewed as potentially useful, as a way to transform the present. To be sure, we can all look at the past and find reasons why the future looks so bleak and the present empty, but it is equally true that the void in the future leads to an empty present and a sense of imprisonment in the past. (Summers, 2003, pp. 139–140)".

This relatively recent theoretical thrust within psychoanalysis, consistent with empirical research, draws psychoanalysis closer to philosophical and psychological existentialism (May, 1958; Cooper, 1999; Shahar, 2010), with its emphasis on authenticity and goal-directed action.

the psychoanalytic literature as to the exact meaning of disavowal and – relatively – whether it is a defense mechanism (Zepf, 2013). It seems, however, that there is a consensus that, in disavowal, the person dims awareness of an external fact so as to maintain inner coherence (Priel, 1991; Shahar and Schiller, 2016b). Whether it may be deemed a defense mechanism or not appears to be contingent upon the extent to which disavowal is conscious, because S. Freud, who was vague with respect to this issue, considered defense mechanisms as unconscious (but see Vaillant, 1992). From the position proposed here, it is of little importance of whether disavowal is conscious or not, a defense mechanism (in the Freudian sense) or not. It is deemed an important affect regulatory mechanism, and we consider it to be central to the psyche and extensively used.

This brings us to integrating the above issues for the sake of reformulating the position of Klein. Here is the proposed definition of the author:

A position is an amalgamation of affect, its regulation, and schemas and scripts of self-in-relationships, all of which augment one another and form a distinct and coherent experience of the world. Positions are formed throughout childhood and adolescence, and are maintained *via* interpersonal action. They are projected into the future, representing the hope and fears of an individual, and, as such, are guiding cognition, motivation, emotion, and behavior. Although all positions strive to be confirmed in the interpersonal arena, those positions, which occupy a large space in the psyche, and which are trauma based, are likely to create a maladaptive social environment that culminates in psychopathology.

Breaking down the key segments of this definition, we may note that:

(1) Positions are causal systems that include reciprocal influences of affect, affect regulation, and schemas and scripts. Put differently, positions epitomize the perspective whereby affect, motivation, and cognition are all co-causative (Beck, 1996).
(2) The evolutionary advantage of positions is the clarity they afford. The humans need a clear worldview so that they can know how to act (Amati and Shallice, 2007; Shahar, 2015b). The subjective experience of the position is vivid and could be given the following words: "This is what the world looks like, and I should act accordingly."
(3) Rather than being merely mentalistic, positions are translated *into action,* whereby people try to shape reality in accordance with their worldviews. Thus, positions that include persecutory features are likely to translate into enemy-making actions, whereas positions, which include optimistic features, are likely to lead to positive outcomes. Concepts such as self-fulfilling prophecy, a vicious or virtuous cycle, positive feedback loop, and dynamic equilibrium are all consistent with this characteristic of the positions (see, in particular, Wachtel, 1994).
(4) As indicated in items 2 and 3 on this list, positions are projected into the future. The future, therefore, is a good place to start from in an attempt to understand and modify positions (Shahar, 2011, 2012).
(5) There are likely to be many more positions in the psyche than the two identified by Melanie Klein (and of these two, at least one, the depressive, needs an extensive reformulation, offered below). The author can think of paranoid-schizoid, depressive, obsessive, somatic, dissociative, playful/humoristic, and stress-resisting positions, among others. From an evolutionary point of view, we can say "the more the merrier," because many positions increase the repertoire of adaptive behavior of an individual, particularly under threat. However,
(6) There is a possibility that a single position may "eclipse the others," in that it occupies a disproportionally large segment of the psyche. When this happens, a concerted—albeit only partially conscious—effort is made by the individual to confirm this position in the interpersonal arena, and this effort is likely to be successful. When the interpersonal arena is shaped according to the position, psychopathology ensues. The distinct nature of the psychopathology (e.g., anxiety, depression, eating disorders, somatization, and psychosis) "speaks," by means of symptoms, the inner drama of the positions.

THE REFORMULATED DEPRESSIVE POSITION AND ITS UTILITY IN TREATING SUICIDAL DEPRESSION

My career, both academic and clinical, is largely devoted to neutralizing clinical depression, an affliction which the World Health Organization (World Health Organization, 2012) considers a major pandemic of our time, even more so during and after the current COVID-19 pandemic (Ettman et al., 2020). Although depression has been studied extensively, and despite the development of numerous empirically supported therapeutic protocols developed to treat the disorder (including psychodynamic psychotherapy), depression still spreads around the modern world (Rottenberg, 2014; Dowds, 2018). Its heterogeneity (i.e., that individuals with different symptomatic profiles might be similarly diagnosed as depressed (Coyne, 1986; Monroe and Anderson, 2015), relapsing-recurring course (Kessler et al., 2005), medical, educational, and economic complications (Blumental and Lett, 2003; Lépine and Briley, 2011), and the fact that it is potentially lethal [i.e., suicide (Joiner, 2007)] renders this clinical condition an ever more formidable challenge to researchers, practitioners, and policy makers.

It would, therefore, be natural for me to consult writings of Klein, particularly those concerning the depressive positions, in order to understand this ubiquitous disorder. However, as the author has previously argued (Shahar, 2018), a close reading of work of Klein on depression reveals that, for her, clinical depression is an obscure construct. Klein was at her best describing psychotic-like and other "primitive" psychopathological conditions, while her description of depression sometimes gives the impression that the condition is, actually, an indication of *health.* She merely hints at psychological processes that render individuals vulnerable to depression (e.g., failure in repairing a good object harmed by actions of the self) but rarely, if ever, explains this vulnerability, and how it translates into symptoms (see also Ogden, 1992, for whom the "depressive" position is actually a "historical" position, representing an achievement of a normal personality organization). Indeed, when Klein writes about clinical depression, the writing quickly "regresses" into paranoia and/or mania (e.g., Klein, 1935, p. 158).

On the other hand, when my reformulation of the Kleinian positions is applied to the extant knowledge of depression, new avenues are opened in the understanding of the disorder, and, particularly, the path leading from depression to suicidality. In **Figure 1A**, the author presents a graphical summary of RORT and, in **Figure 1B**, a graphical summary of the reformulated depressive/suicidal position. This summary goes beyond his

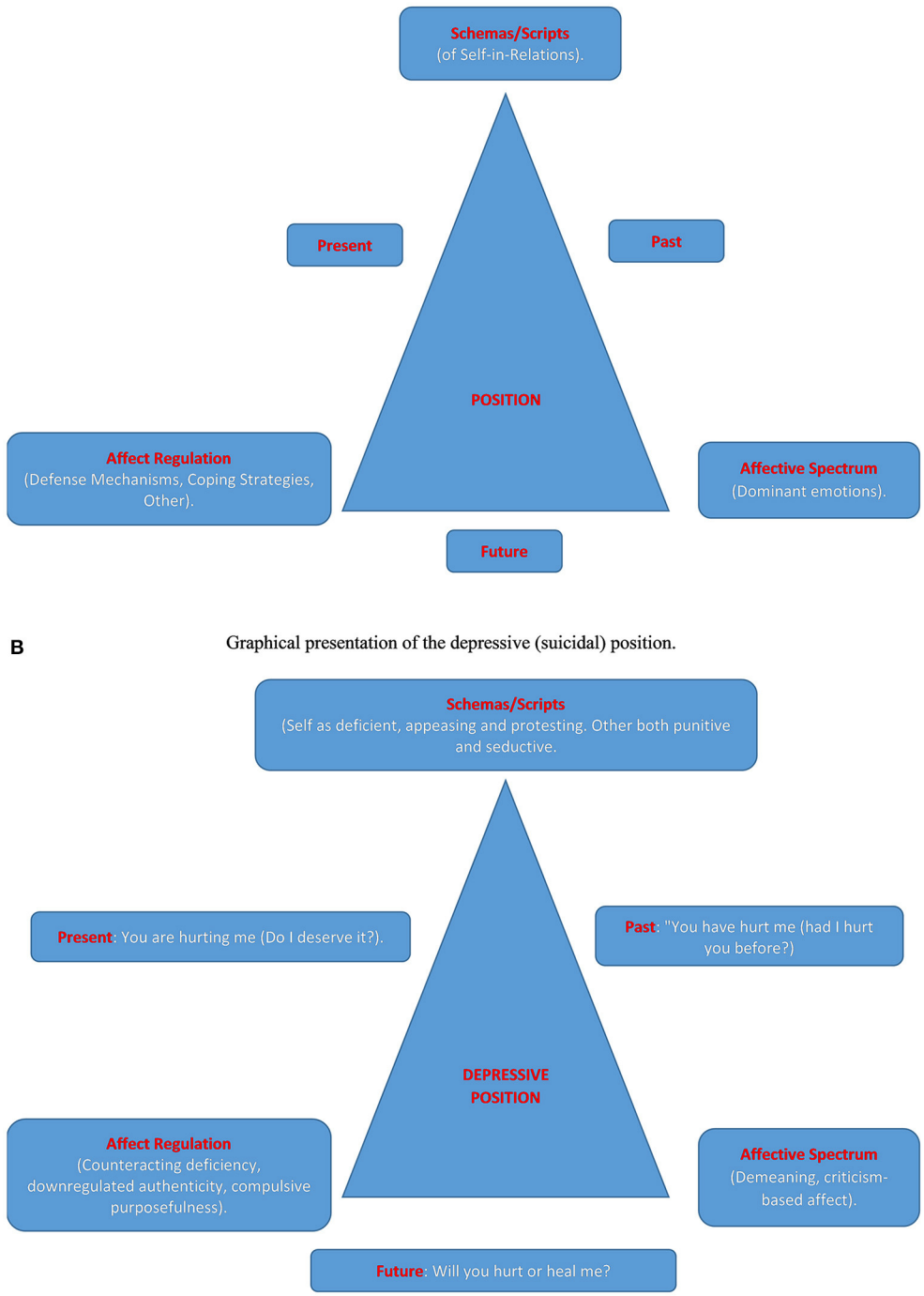

FIGURE 1 | (A) Graphical presentation of RORT. **(B)** Graphical presentation of the depressive (suicidal) position.

previous formulation of this position (Shahar and Schiller, 2016b; Shahar, 2018).

To understand how the author crafted **Figure 1B**, one should get acquainted with some key findings concerning the nature of unipolar depression. In particular, and consistent with cyclical psychoanalysis of Wachtel, a consensus is being formed among clinicians and researchers alike that depression is profoundly interpersonal (Pettit and Joiner, 2006). That is,

people with depression actively, if inadvertently, create the very interpersonal, social conditions that are implicated in the onset, relapse/recurrence, and maintenance of the disorder. Life stress is a prototypical example. Stressful life events, such as a breakup or divorce, job loss, loss of a loved one, and other "exit events" (Paykel, 2003), have been demonstrated for decades to predict the depressive onset and recurrence (Brown and Harris, 1978). However, mounting evidence suggests that rather than constituting a *force majeure*, stress might actually be propelled by the depressed persons themselves (Hammen, 1991). Other social and interpersonal factors that are implicated in depression and might be generated by the depressed person are lack of social support (Dew and Bromet, 1991) and lack of positive life events (Bylsma et al., 2011).

But is it depression *per se* that is actively maintaining itself? The works of (in alphabetical order) Blatt, Dunkley, Gilbert, Shahar, Zuroff, and others suggest that behind this active maintenance of depression lies a formidable force called *self-criticism* (Blatt, 1995b). Defined as tendency of individuals to set unrealistically high standards for performance and to "bash oneself" once these standards are not met, self-criticism has been shown to generate stress, "degenerate" social support and positive events, and to erode therapeutic relationships. All of these effects are demonstrated even when depressive symptoms are statistically controlled. In fact, in many of these studies, when the propagating research findings of depression and self-criticism were compared, it was the former, rather than the latter, that produced depressogenic interpersonal conditions (see Shahar, 2015b, 2016, for review). Moreover, depressive symptoms and related psychopathology might also prospectively predict an increase in self-criticism over time (e.g., Shahar et al., 2004b; Schiller et al., 2016; Shahar and Henrich, 2019). This suggests that depression and self-criticism are co-causative, constituting a "self-critical cascade" (Shahar, 2015a, 2016). The author suggests that the reciprocal relationships between self-criticism and depression be viewed as a segment of *a larger system of mutually causative elements characterized by affect and cognition*, that is, the depressive position (reformulated).

Research has shown that self-criticism activates a host of other emotions besides sadness, which is prototypical for depression. Shame, anger, and contempt might constitute such affective states (Whelton and Greenberg, 2005). Moreover, self-criticism and painful affect might be reciprocally related through maladaptive defense mechanisms such as acting out, undoing, projection, devaluation, denial, isolation, splitting, and turning against oneself and others (Besser, 2004), as well as more conscious, maladaptive coping strategies, such as venting distress to others without attempting to solve the putative problem (Dunkley et al., 2003), and highly maladaptive motivational regulative endeavors, namely, attempting to suppress authentic interest in activities (Shahar et al., 2003). Some of the aforementioned defense mechanisms, notably projection, turning against others, and splitting, actually shed light on a very close link—also likely to be reciprocal—between self-criticism and representations of other people. Specifically, self-criticism is shown to be strongly associated with the perception of others as harsh, punitive, and judgmental (Mongrain, 1998).

Synthesizing this voluminous line of empirical findings, the author proposes the following:

Affect

The most dominant affect in the reformulated depressive position is neither anger nor sadness but, rather, a demeaning, criticism-based affect. It consists of emotions, such as anger, shame, guilt, content, disgust, disappointment, hatred, and envy. The overall affective tone is that of putting down (either self or other) and focusing on deficiencies.

However, the author proposes that, within this toxic emotional solution, there exists a single emotion that is considered positive, namely, hope. The rationale for this postulate is as follows. Bearing in mind the very rare (and obscure) exception of psychotic depression, unipolar depression is not accompanied by a severe impairment in reality testing. Depressed individuals know at a very basic level what they and the world are made of. This means that people with depression are aware of their strengths and virtues, even though they focus on their deficiencies. In fact, it is this focus on deficiency alongside an awareness of the strength of one that leads to hope: If I succeed in doing/accomplishing this or that, I will be exempt from feeling so deficient.

Affect Regulation

What are the defenses, coping strategies, and other regulatory maneuvers that are utilized in the depressive position? The author posits that the long list of regulatory maneuvers that have been identified by previous research should be grouped into three regulatory clusters: *counteracting deficiency*, *downregulating authenticity*, and *maintaining hope through "prospection."*

Counteracting deficiency is straightforward. Experiencing oneself as deficient is incredibly painful, particularly in Western cultures that elevate competence and appearance (hence, the depression-modernity link). Accordingly, a host of maneuvers (defenses, coping strategies) are employed in the service of counteracting deficiency. Some maneuvers are aimed at freeing the self from deficiency, perhaps through turning attention away from it (displacement) or tying it to others (projection, turning against others; Besser, 2004). Another way of counteracting deficiency is inciting guilt in others. This may be done *via* turning against the self so as to seek reassurance (Joiner, 1994; Joiner et al., 1999), manifested *via* coping strategies such as venting distress (Dunkley et al., 2003). Another way to counteract deficiency is to rule it out, convincing self and others that one is wonderful and/or seamless. Klein (1940) has referred to this maneuver as the manic defense (see also Winnicott, 1958; Ogden, 1992; Barett, 2006), which consists of denial of difficulties and threats, disavowal of mellow sentiments, such as loneliness, and inflating self-importance while putting others down.

Another set of regulatory maneuvers is *downregulating authenticity*. Why would that be important? Because, as was so compelling argued by Winnicott (1965) in his treatise of the true self, as well as by Rogers (1963) in describing organismic valuing, authenticity is inherently *spontaneous*, rendering it *unpredictable*. If my inner world is unpredictable, I cannot prevent a situation where I will be caught deficient in some respect. I therefore

should always be prepared, which means that I should beware of *going-on-being* (Winnicott, 1960): When the cannons are heard, the muses are silent.

The author and his colleagues conducted a study on self-criticism and motivation (Shahar et al., 2003), demonstrating just this. We assessed 900 American adolescents with regard to their personality, depression, and sources of motivation in both the academic and social domains. We found an unusually strong negative association between self-criticism and "autonomous motivation," a term developed within self-determination theory (Deci and Ryan, 1985, 2000; Ryan and Deci, 2000), which pertains to doing things because one wants to do them (true self, organismic valuing): The higher the self-criticism of the adolescents, the lower their "autonomous motivation." This association was held even after controlling for depressive symptoms, and it completely accounted for the adverse effect of self-criticism on positive life events (Shahar et al., 2003, Shahar and Priel, 2003; Shulman et al., 2009).

How is authenticity being downregulated? Primarily by a selective use of isolation of affect (Freud, 1926; Schafer, 1954), directed toward emotions such as joy and enthusiasm. In the cognitive-behavioral world, such a maneuver will be labeled "experimental avoidance," and research has attested to the link between this construct and self-criticism (Moroz and Dunkley, 2019).

Finally, there is the issue of maintaining hope. How can I keep hope from being annihilated altogether by all these horrible experiences? I can do this by firmly believing that the positive prospect I desire can arrive as a consequence of exact planning and hard work. If I only plan my actions meticulously, I can accomplish enough for others to deem me as non-deficient, hence worthy of love. Thus, defenses, such as intellectualization and rationalization (e.g., Kyle, 2014), are added to the above isolation of affect (joy, spontaneity, and enthusiasm), and they will be used in the service of what I referred to as "compulsive purposefulness" (Shahar et al., 2020), a constant pursuit of worthy goals. Horney (1950) would call it the "tyranny of the shoulds."

Schemas and Scripts

Within an emotional context that highlights deficiency, it is little wonder that schemas and scripts of the self are characterized by self-criticism (Shahar, 2015b). It is also not surprising that the other toward which the self is attuning is schematized as punitive and judgmental (Mongrain, 1998). The author has posited this previously (Shahar, 2018) but would now like to go beyond his previous contribution by here imbuing self and others with *agency*[3]. Namely, self and others are schematized and scripted in the psyche as acting upon each other (Shahar, 2004, 2010). The other conveys judgment and disappointment, while the self is actively attempting to shield against these punitive judgments and disappointments in two ways: appeasing the other and protesting against the other. Appeasement is done by way of what Klein calls "reparation" (see Thieberger, 1991): a fantasy of reconstituting the other as good is accompanied by solicitous behavior. The self is trying to "be good" so that the other deems the self as non-deficient. Protests come to the fore either when the self does not succeed in appeasing the other, or by way of a "preemptive strike": "Are you mad at me?" The tone of the latter question is angry rather than inquisitive. It is better understood as "how dare you be mad at me when I am so good!"

In addition, there is a subtle experience of the other as seductive, in an evaluative, rather than erotic, sense. The seduction may be represented by the following unsaid words: "If you only accomplish this or that, be this or that, then I will cease judging you and will lovingly accept what you are." Such seduction is, of course, intimately tied to the subtle hope described above, which dwells within the affective spectrum of the person.

Time Axis

As the author has shown in prior sections, all three time points are included in the reformulated depressive position. The past produces storage of autobiographical memories from which the person draws the experience of being wronged (maltreated) by the other, but also the possibility of being, at least, partly responsible for the wrongdoing because the person somehow offended the other (Ferenczi, 1933). Hence: "You have hurt me. Had I hurt you before?"

In the present, there are active exchanges, both internally and externally, between self and others that revolve around hurt, grievance, and wrongdoing: Someone is always hurting someone else. These schemas and scripts surface but are also amalgamated by the aforementioned regulatory maneuvers, shifting blame from self to other and *vice versa*. Thus: "You are hurting me. Do I deserve it?"

Following Sullivan (1953) and Summers (2003), however, the author, here, highlights the role of the future, where both dread and hope lie (Mitchell, 1995b). The self yearns for an experience of an accepting other but dreads a scenario whereby, despite all efforts, the other will remain judgmental and punitive. The tragedy is that the self, *via* interpersonal action, actually solidifies this punitive judgment by evoking rejections, confrontations, and interpersonal loss (Buss, 1987).

Interpersonal Action

This issue is, probably, the most important one in terms of bridging psychoanalytic theory and empirical psychology, as well as bridging clinical psychoanalysis and other therapeutic schools of thought. The tendency of depressed individuals to contribute to their own interpersonal strife is consensually agreed upon (Coyne, 1976a,b; Hammen, 1991; Joiner and Coyne, 1999; Joiner, 2000). One of the great strengths of psychoanalysis in general, and of object relations theory in particular, is their ability to give life to interpersonal descriptions of depression by portraying the inner drama that underlies social exchanges (Mitchell, 1995a). Horney (1937) called this *externalization*, positing that it serves as the basis of the *vicious cycle*. Both terms play a major role in writings of Wachtel about *cyclical psychoanalysis*. While most treatments of externalization and the vicious cycle focus

[3]The author has previously proposed replacing "object relations" with "agents in relations (AIR)" in order to capture the agentic, goal-directed nature of interpersonal relations and mental representations of self with others (Shahar, 2010).

on the present, the author proposes to extend these into the future. Depressed individuals project into their future both their hope for an accepting other as well as their expectations of a judgmental and punitive one. Their actions, however, automated throughout the years, tend to be more consistent with the latter than the former. In a manner consistent with the concept of Klein of projective identification but also with role responsiveness of Sandler (1976), their actions exert pressure on others to react negatively rather than with compassion: "Are you mad at me?"; "No, I am not"; "Yes, you are!"; "Well, now I am."

CONTRIBUTION OF RORT TO UNDERSTANDING AND TREATING SUICIDAL DEPRESSION

The issue of suicide is much broader than that of suicidal depression. As a global public health problem (World Health Organization, 2014), suicide stems from a wide array of psychopathologies. Nevertheless, mood disorders are prominent within this array (Henriksson et al., 1993; Bertolote et al., 2003; Dumais et al., 2005), and major depressive disorder (MDD), in particular, has been a particularly salient risk factor (Malone et al., 1995). However, there are many patients with MDD who do not eventually attempt suicide, rendering suicidal depression a riddle in urgent need of solving.

Let us now rely on the reformulated depressive position and see how it sheds light on suicidal depression. Depressed individuals project their self-with-other representations onto the future (see **Figure 1B**). They expect (dread) that others will hurt (criticize) them, but, at the same time, they hope that these others will actually heal them, that they will accept them as they are. However, as noted above, their interpersonal behavior is consistent with their dread, rather than their hope (Mitchell, 1995b): In an attempt to counteract deficiency, they project criticism onto others, thereby provoking rejection and loss. The latter activate self-criticism, demeaning affect, and the punitive internal other. This is employed alongside the aforementioned downregulation of authenticity, which, using terms of Winnicott, diminishes the true self and bolsters the *false self*. Hope is still maintained *via* compulsive purposefulness, but the latter depletes ego resources. Ultimately, hope is replaced with frustration and agitation, which further traps the person in interpersonal turmoil, perhaps to an irreversible point. The internal other thus becomes more persecutory, necessitating its physical annihilation. The author holds, in other words, that suicide is really murder-suicide.

These postulates have important implications for the understanding and treatment of suicidal depression. The author enumerates these implications below.

Implications for the Understanding of Suicidal Depression

1. The deterioration from "uncomplicated depression" to suicidal depression is most noticeable in the interpersonal arena. However,
2. This arena interacts with a complex mental structure, such that the intrapersonal and interpersonal are reciprocally causative.
3. The deterioration is likely to be both exhaustive—encompassing virtually all key relationships—and relatively fast (i.e., involving the severing of one relationship after the other).
4. The crux of the exchange between person and context is the presence of gnawing deficiency and the inability to tolerate it [see Zetzel (1964) for a discussion of the inability to tolerate depression].

Implications for the Treatment of Suicidal Depression

1. The transference-countertransference matrix is a crucial arena for identifying, understanding, and diffusing the deterioration to suicidal depression. Namely, patients will do everything within their power to evoke a sense of deficiency into the therapist and the therapeutic relationship.
2. At the same time, the patient's harbor hope that the therapist will not retaliate (Winnicott, 1969), whereby retaliation may be manifested by either crumbling or attacking back.
3. By not retaliating, therapists "hold" the future for their patients.
4. Holding the future (Shahar and Schiller, 2016b) inevitably involves the use of both psychoanalytic understanding and techniques (e.g., interpretation) as well as active techniques aimed at assisting the patients in refraining from begetting vicious interpersonal cycles.
5. Efforts geared toward helping the patients refrain from begetting vicious cycles should be made early in the treatment process. Otherwise, the link between the inner world (the depressive position) and the interpersonal arena might maladaptively amalgamate.
6. Use of active techniques can and should be employed to bolster psychodynamic exploration, and *vice versa*: Psychodynamic exploration can and should set the stage for the employment of active techniques (Shahar and Govrin, 2017).

Points 4 through 6 above are particularly pertinent to the aim of the present article, which seeks to build a dialog between clinical psychoanalysis and other therapeutic schools of thought. I will, therefore, elaborate on these points by illustrating the psychodynamic use of a very potent active technique for treating suicidal depression: behavioral activation (BA). Inspired by behaviorism and social-cognitive theories (Dimidjian et al., 2011), BA consists of systematically encouraging patients to pursue pleasurable and meaningful daily activities *in the face of* depressive anhedonia (i.e., the absence of positive affect). This strategy "reboots" the neurobiological reward system underlying operant conditioning, thereby alleviating anhedonia and, in turn, other depressive symptoms. Rigorous studies demonstrate that BA is superior to "standard" CBT in terms of improving depressive outcomes (Dimidjian et al., 2011).

Aner Govrin and I (Shahar and Govrin, 2017) have presented a conceptual framework for employing active techniques,

primarily BA, in a way that not only reduces depressive symptoms but also bolsters psychoanalytic and existential growth and gain. Specifically, we argued that by systematically encouraging patients to schedule pleasurable/meaningful activities in their daily routine, BA not only "reboots" the reward system but also increases awareness of the patients of their various self-concept aspects and representations of other people, because the patients essentially expose themselves to a variety of people and social environments. Moreover, when the patients execute activities even though they "do not feel like acting," they strengthen their ego resources and adaptive defense mechanisms. Because pleasurable and meaningful activities are often done with others, BA assists the patients in establishing their own "holding environment." The goal-directed nature of these activities fosters hope. Pleasurable and meaningful activities also facilitate existential values such as responsibility, participation (being in the world), and transcendence over rumination and worries. In our work, Govrin and the author emphasized that these potential psychoanalytic and existential gains can only ensue if the therapist targets them explicitly and discusses them with the patient.

Could such a psychoanalytic and existential use of BA be also relevant to suicidal depression? The answer of the author is "yes," and to demonstrate it, he refers to **Figure 1B**. Considering *affect* first, positive activities foster emotions, such as joy and enthusiasm, which are likely to dilute demeaning, criticism-based affect. Curiosity, another emotion likely to dilute demeaning affect, is defined as "a positive emotional-motivational system associated with the recognition, pursuit, and self-regulation of novel and challenging opportunities" (Kashdan and Fincham, 2004, p. 291), and considered a strong protective factor (Kashdan, 2004). In a fascinating study on military veterans with suicidal ideation, Denneson et al. (2017) found that curiosity reduced the strength of the associations between distress and suicide ideations. Turning to affect regulation, the very same study by Denneson et al. (2017) showed that curiosity *prospectively* weakened the effect of distress on increased coping efficacy to stop negative thoughts. Thus, positive affect, such as joy, enthusiasm, and curiosity, strengthens defenses and improves cognition and reality testing, thereby minimizing the adverse effect of counteracting deficiency. These emotions work against downregulating authenticity, and, instead of making purposefulness compulsive, they transform goal-directed action into *play* (Winnicott, 1989). Moving on to schemas and scripts, ability of patients to produce pleasurable/meaningful activities in the face of the tyranny of negative affect is inconsistent with a deficient self and is highly consistent with a realistically based positive sense of self, that these activities are done with others increases accessibility to "good objects" (i.e., positive schemas of other people) in a way that echoes what Blatt and Auerbach call "adaptive projective identification" (Blatt et al., 1996; Auerbach and Blatt, 2001). This is also likely to occur within the transference-countertransference matrix, as the joint therapeutic effort to identify pleasurable/meaningful activities and to support patients in scheduling and employing them may infuse the therapeutic alliance with a sense of comradery and mutual gratitude. All of these adaptive outcomes concerning affect, affect regulation, and schemas/scripts constitute a counter vector to the toxic one depicted in **Figure 1B**. This counter vector is manifested not only *via* inner events (thoughts, affects) but also *via* interpersonal action (establishing and maintaining nurturing relationships alongside creating interpersonal strife). The experience of the time axis, primarily the future, is also influenced: "It is not the other who is going to heal me. It is I who is going to do so, partly by creating a benevolent other."

One caveat is in order here. Just as in the case of uncomplicated depression, all of the benefits of BA for the treatment of suicidal depression are contingent upon the willingness of the therapist (and skill) in engaging the patient in a discussion of these issues. Thus, we may say, in faithfulness to seminal legacy of Wachtel (1987, 2014), that insight can and should follow action but also *vice versa*.

CONCLUSION

The author opened this article, lamenting the sordid state of affairs with respect to the seclusion of (clinical) psychoanalysis from prominent strands in psychology, psychiatry, psychopathology, and psychotherapy, and noted the hostility and ignorance of psychoanalysis toward the social-cognitive nomenclature. Next, he presented RORT and demonstrated how, using this nomenclature, work of Melanie Klein on the positions could be brought to life in a manner that is more scientifically accurate and appealing to people outside of psychoanalysis. He then applied RORT to the understanding of depression in general (the reformulated depressive position) and suicidal depression, in particular, showing how such reformulation is potentially useful, not only in terms of shedding light on suicidal depression but also in treating it psychoanalytically using techniques (e.g., BA), borrowed from other therapeutic schools of thoughts (e.g., CBT). When this is accomplished, psychoanalysis not only usefully assimilates other approaches into its midst but also accommodates them, in turn allowing for its own development and growth.[4]

Reflecting on my own approach to psychotherapy, RORT may be seen as a special form of theoretical integration, which the author titles *accomodative integration*. It is theoretical because it relies on ORT but also on existentialism and cognitive research. However, in contrast to assimilative integration, in which the external influences are peripheral to the original therapeutic persuasion, in RORT, the external influences (existentialism and cognitive psychology) repeatedly transform the original persuasion (ORT) and propel the latter to *accommodate* the former.

[4]The psychotherapy integration movement stipulates four forms of psychotherapy integration (Ziv-Beiman and Shahar, 2015). *Theoretical integration* consists of a clear, albeit integrated, theoretical position concerning human development, personality, psychopathology, and psychotherapy, from which techniques are derived. *Eclecticism* amounts to matching interventions with the problems of patients irrespective of theory. *Common-factors integration* refers to offering interventions that have been shown to be effective in all strands of therapy (e.g., empathy). Finally, *assimilative integration* pertains to adherence to a single theoretical approach, while assimilating interventions from other strands of psychotherapy into it. An example would be a self-proclaimed psychodynamic psychotherapist who will occasionally use CBT techniques.

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/s.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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"Project for a Spatiotemporal Neuroscience" – Brain and Psyche Share Their Topography and Dynamic

Georg Northoff[1,2,3] and Andrea Scalabrini[4]**

[1]Faculty of Medicine, Centre for Neural Dynamics, The Royal's Institute of Mental Health Research, Brain and Mind Research Institute, University of Ottawa, Ottawa, ON, Canada, [2]Mental Health Centre, Zhejiang University School of Medicine, Hangzhou, China, [3]Centre for Cognition and Brain Disorders, Hangzhou Normal University, Hangzhou, China, [4]Department of Psychological, Health and Territorial Sciences (DiSPuTer), D'Annunzio University of Chieti-Pescara, Chieti, Italy

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***Correspondence:**
Georg Northoff
georg.northoff@theroyal.ca
Andrea Scalabrini
andrea.scalabrini@unich.it

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What kind of neuroscience does psychoanalysis require? At his time, Freud in his "Project for a Scientific Psychology" searched for a model of the brain that could relate to incorporate the psyche's topography and dynamic. Current neuropsychoanalysis builds on specific functions as investigated in Affective and Cognitive (and Social) Neuroscience including embodied approaches. The brain's various functions are often converged with prediction as operationalized in predictive coding (PC) and free energy principle (FEP) which, recently, have been conceived as core for a "New Project for Scientific Psychology." We propose to search for a yet more comprehensive and holistic neuroscience that focuses primarily on its topography and dynamic analogous to Freud's model of the psyche. This leads us to what we describe as "Spatiotemporal Neuroscience" that focuses on the spatial topography and temporal dynamic of the brain's neural activity including how they shape affective, cognitive, and social functions including PC and FEP (*first part*). That is illustrated by the temporally and spatially nested neural hierarchy of the self in the brain's neural activity (*second and third part*). This sets the ground for developing our proposed "Project for a Spatiotemporal Neuroscience," which complements and extends both Freud's and Solms' projects (*fourth part*) and also carries major practical implications as it lays the ground for a novel form of neuroscientifically informed psychotherapy, namely, "Spatiotemporal Psychotherapy." In conclusion, "Spatiotemporal Neuroscience" provides an intimate link of brain and psyche by showing topography and dynamic as their shared features, that is, "common currency."

Keywords: spatiotemporal neuroscience, neuropsychoanalysis, self, psychotherapy, spontaneous activity of the brain, common currency, brain and psyche

> *"Every attempt to discover a localization of mental processes … has miscarried completely. The same fate would await any theory that attempted to recognize the anatomical position of the system (consciousness) – as being in the cortex, and to localize the unconscious processes in the subcortical parts of the brain. There is a hiatus which at present cannot be filled, nor is it one of the tasks of psychology to fill it. Our psychical topography has for the present nothing to do with anatomy."* ~ Freud, 1915.

INTRODUCTION

How can we link psychoanalysis to neuroscience? Freud himself tried to connect psychoanalysis and neuroscience in his early writing "Project of a Scientific Psychology" (1895). However, in the following, he gave up on such project focusing mainly on the development of psychoanalysis. These efforts flare up again our time including various clusters of recent neuroscientific research (Boeker, 2018). One cluster is the "*embodied brain hypothesis*" that conceives cognitive and affective functions of the brain to be closely linked to the body and its interoceptive functions. This has led to concepts like "*embodied remembering,*" "*embodied unconscious,*" "*embodied memories,*" "*embodied feelings,*" and "*embodied testimony*" (Edelman, 1987, 1989, 1992; Northoff, 2011, 2012a; Leuzinger-Bohleber, 2018; Mucci, 2019).

Yet another cluster of neuroscientific research is the dynamic neuropsychology by AR. Luria that, through Solms' clinical-anatomical localization approach to psychodynamic features, provides one link of brain and psyche. Moreover, in addition to Cognitive Neuroscience, the development of Affective Neuroscience by especially Jaak Panksepp (1998) represents another cluster where primary and secondary emotions are linked to primary and secondary processes (Panksepp and Biven, 2012; Solms, 2015). Finally, yet another more recent cluster is developed by Mark Solms when he aims to link the free energy and predictive coding approach by Karl Friston to psychoanalysis: He considers the biologically and physically defined concepts of free energy and predictive coding to reflect what Freud referred to as mental or psychical energy (Solms and Friston, 2018; Solms, 2020, 2021). That, according to Solms, provides the key connection of brain and psyche as core feature of a "New Project for a Scientific Psychology" (Solms, 2020, 2021).

Despite all progress, neuroscientific approaches adhere to a scientific psychology that, as traditionally conceived, is based on specific functions and the third-person perspective. Just as the psyche in psychology, the brain is conceived in terms of specific functions showing extrinsic contents, affective, cognitive, or social: these are localized in particular regions of the brain, remain the same over time and are investigated by probing the brain's task-related activity. As in the case of the psyche in psychology, this amounts largely to a non-energetic, mostly static, content-based, and third-person-based view of the brain.

Psychoanalysis, in both its original inception and current manifestations, contends such view of the psyche as presupposed in psychology. Instead, the psyche is conceived as highly energetic (like cathexis) rather than non-energetic, it is continuously changing, and thus, dynamic rather than static exhibits a structure or organization that shapes its contents and aims for a first- or second- rather than third-person-based view of the psyche (e.g., Northoff et al., 2007; Schilbach, 2010; Przyrembel et al., 2012; Longo and Tsakiris, 2013). This leaves a gap, a "gap of contingency" (*see below*), when compared to the current view of the brain in neuroscience. The energetic, dynamic, structural/organizational, and first/s-person features of the psyche in psychoanalysis are related to a brain that is non-energetic, static, content-based, and third-person-based. Such mismatch between the models of psyche (in psychoanalysis) and brain (in affective, cognitive, and social neuroscience) renders impossible to take into view their intimate connection, that is, how neural activity transforms into psychic activity. Our view of brain-psyche is consequently blocked by a gap with their connection remaining contingent (rather than necessary *a posteriori*; Northoff, 2018) – we will therefore speak later of a "gap of contingency." (see the dotted lines and black lines in **Figure 1** and the black arrow in **Figure 2** as below).

How can we close the "gap of contingency" between brain and psyche? One way is to take into view the brain in terms that are analogous to the model of the psyche in psychoanalysis. Specifically, one may want to conceive the brain in terms of its energy, dynamic, structure/topography, and first/s-person perspective. Brain and psyche can then be conceived in analogous terms with the ultimate hope that these features are shared by brain and psyche as their "common currency" (Northoff et al., 2020a). Importantly, that should close the current "gap of contingency" between brain and psyche allowing for their tighter connection (i.e., necessary *a posteriori*; Northoff, 2018) as searched for by both Freud and Solms in their respective projects for a scientific psychology.

The goal of our paper is to develop the kind of neuroscience that is necessary to intimately connect brain and psyche in order to complete Freud's "Project for a Scientific Psychology" (1895). Rather than relying on the characterization of the brain as in current Cognitive and Affective and Social Neuroscience, we propose taking an alternative view, one that focuses on the brain's energy, dynamic, structure, and conceives it in first/second-person perspective. Specifically, we aim to develop a more comprehensive and holistic model of the brain in terms of its intrinsic temporal dynamic and spatial topography – this requires "Spatiotemporal Neuroscience" (Northoff et al., 2020a,b; *first part*). That approach will be illustrated empirically by the example of the self featured by its topography (*second part*) and dynamic (*third part*) in brain and psyche.

Spatiotemporal Neuroscience carries major theoretical implications for the "Project for a Scientific Psychology" by both Freud (1895) and Solms (2020). Additionally, it carries major practical implications as it lays the ground for a novel form of neuroscientifically informed psychotherapy, namely "Spatiotemporal Psychotherapy" (*fourth part*). We conclude that "Spatiotemporal Neuroscience" provides a strong candidate for complementing Freud's unfinished "Project for a Scientific Psychology" (1895) including its most recent version of a "(New) Project for a Scientific Psychology" by Mark Solms (2020, 2021). We therefore speak of a "Project for a Spatiotemporal Neuroscience."

PART I: PSYCHOANALYSIS AND NEUROSCIENCE – VIEWS OF PSYCHE AND BRAIN

Psyche in Psychoanalysis – Dynamic, Topographic, and Spatiotemporal

One of Freud's key observations was that the psyche is dynamic, that is, it changes over time with the changes following a

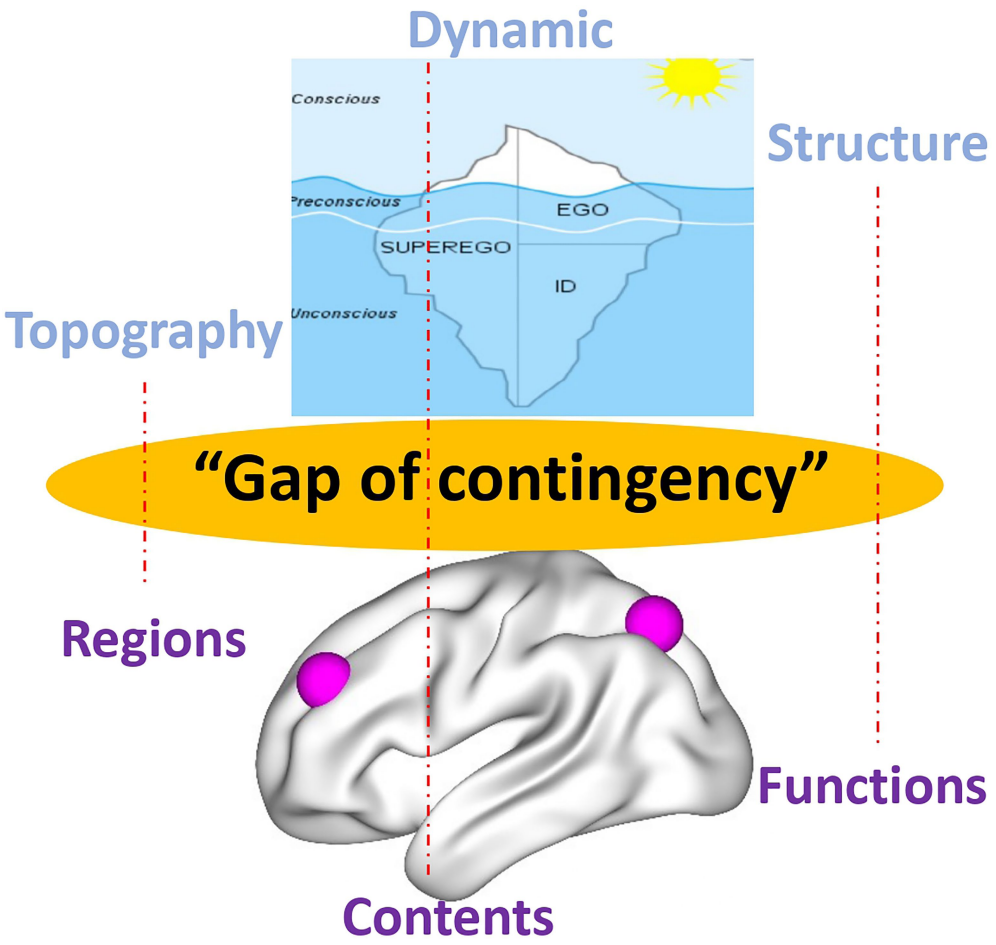

FIGURE 1 | Different models of the psyche in psychoanalysis (upper) and the brain in current neuroscience (lower) with red dotted lines indicating insufficient contingent connection, that is, "gap of contingency."

certain pattern that establish a particular structure or organization. The emphasis on the dynamics of the psyche is well reflected in his notion of mental or psychic energy, that is, cathexis, that fuels drives, libido, instinct, and the dynamic unconscious where cathexis remains unconstrained. This mental energy is key in structuring and organizing the psyche in a dynamic way. That is reflected in his first topographical model of the unconscious-conscious as well as in his second topographical model of the three-fold relation of *Id*, *Ego*, and *Super-ego*.

Freud aimed to decipher a deeper and more fundamental layer of the psyche beneath its functions and contents when focusing on its dynamic and topography. How, though, can we describe dynamic and topography of the psyche independent and prior of their functions and contents? Freud himself emphasizes the spatial and temporal features of the psyche – we may require a spatiotemporal approach complementing the affective and/or cognitive approach to the psyche. This is well reflected in the following quote by Freud himself.

"Accordingly, we will picture the mental apparatus as a compound instrument, to the components of which we will give the name of 'agencies', or (for the sake of greater clarity) 'systems'. It is to be anticipated, in the next place, that these systems may perhaps stand in a regular ***spatial*** *relation to one another, in the same kind of way in which the various systems of lenses in a telescope are arranged behind one another. Strictly speaking, there is no need for the hypothesis that the psychical systems are actually arranged in a spatial order. It would be sufficient if a fixed order were established by the fact that in a given psychical process the excitation passes through the systems in a particular* ***temporal*** *sequence. In other processes the sequence may perhaps be a different one; that is a possibility that we shall leave open. For the sake of brevity we will in future speak of the components of the apparatus as 'ψ-systems'"* (Freud 1900, p. 535; *bolds by us*).

Psyche in Psychology – Static, Modular, and Non-spatiotemporal

The conception of the psyche in psychoanalysis by dynamic, topography, and spatiotemporal features stands in contrast to the view of the static view of the psyche. The psyche is often

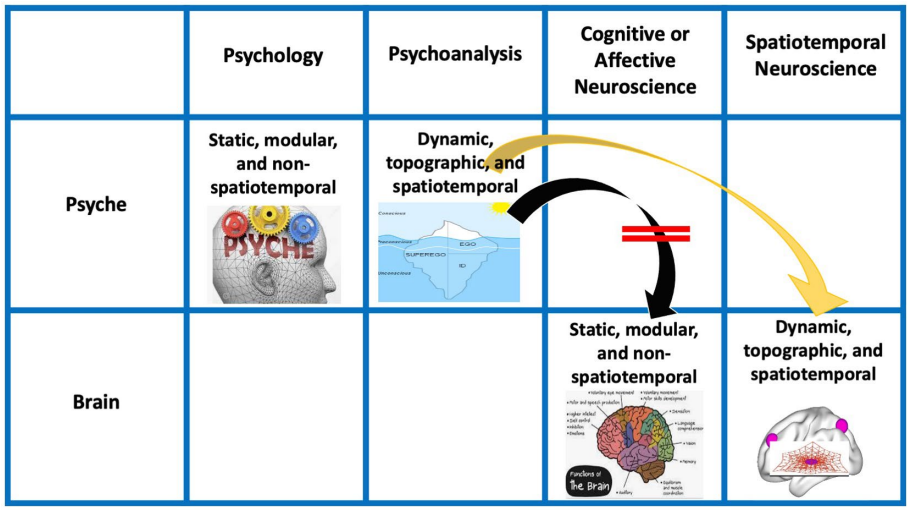

FIGURE 2 | Views of psyche and brain in psychology, psychoanalysis, and different forms of neuroscience. Arrows indicate the combination of the models of the psyche in Psychology and Psychoanalysis with the model of brain as in Cognitive/Affective Neuroscience (green arrow, black arrow) as well as of psychoanalysis with Spatiotemporal Neuroscience (orrange arrow). Red lines (on the black arrow) indicate the mismatch between the models of psyche (in psychoanalysis) and brain (in Coginitive/Affective Neurosscience).

conceived as collection of functions in terms of modules that are merely added together, standing side-by-side in parallel. For instance, different memory systems (like working memory, semantic, and episodic memory) and distinct emotions or form of attention are distinguished from each other operating more or less independently or in a modular way. Accordingly, there is no assumption of an overall psychic structure, that is, topography encompassing all functions in an organized whole.

Moreover, the various psychological functions are considered to be stable and non-changing thus being static – the dynamic beneath the functions is thus often neglected. Together, this amounts to a view of the psyche in psychology in terms of functions and their contents while their underlying spatial and temporal features are neglected. This stands in contrast to the view of the psyche in psychoanalysis where spatial and temporal features are assumed to shape and constitute the psyche (*see above*).

Finally, there is also a methodological difference between psychoanalysis and psychology regarding first/second vs. third-person perspective. Psychoanalysis requires first/second person reports with subjective experience for understanding the dynamic manifestations of psychic energy as well as the structure of conscious-unconscious and *Id–Ego–Super-Ego*, that is, their topography. That stands in contrast to psychology. Here, the focus is on objective observation in third-person perspective as to eclipse and exclude any traces of subjective first/second perspective. Even stronger, first/second person experience is often criticized as non-scientific in conventional psychology that focuses strictly on third-person perspective to acquire data. Hence, the dynamic vs. static approach to the psyche stand in opposition and are exclusive on methodological grounds. This makes urgent a more cohomprensive and holistic approach.

View of the Brain in Cognitive, Affective, and Social Neuroscience – Static, Regional Modular, and Non-spatiotemporal

Neuroscience and its different branches like cognitive, affective, social, and cultural (just to name a few) are developed largely as extension of the respective branches in psychology. This means that the static, modular, non-spatial and non-temporal, and third-person-based view of the psyche is more or less transferred to the brain itself.

Particular cognitive or affective functions are associated with specific brain regions whose neural activity, as related to these functions, is conceived non-changing, that is, static, and modular, that is, localized in specific brain regions (like the localization of primary and secondary emotions in distinct subcortical and cortical regions; Panksepp, 1998). The brain itself and its neural activity are consequently conceived as static, modular, non-spatiotemporal, and third-person-based. This view of the brain, although necessary for the discover of brain-related functions and contents, predominates in current Cognitive and Affective Neuroscience (and related branches like Social and Cultural Neuroscience) and lacks of a more holistic and comprehensive approach.

The primacy of functions and contents goes along with a focus on task-related activity that measures the impact of the former on the brain's neural activity. Analogously to the functions themselves, task-related activity is then also considered in a static and regional modular way independent of potentially underlying spatial and temporal features. Taken together, Cognitive and Affective Neuroscience (and their various siblings) considers the brain and its task-related activity in more or less the same terms as the psyche is viewed in psychology.

Given such analogy in their characterization, the brain and their task-related activity are supposed to account for the psyche

thus bridging the gap between neuroscience and psychology (see green arrow in **Figure 2**). In contrast, such view of the brain does not bridge the gap to the view of the psyche in psychoanalysis as that is dynamic, topographic, and spatiotemporal rather than static, modular, and non-spatiotemporal (see black arrow with red bars in **Figure 2**).

"Common Currency" – Temporal Dynamic and Spatial Topography Are Shared by Brain and Psyche

How can Cognitive, Social, and Affective Neuroscience account for the psychodynamic view of the psyche? The various clusters of their connection pointed out in the introduction cannot but suffer from a fundamental discrepancy between brain and psyche. They all aim to connect a static, regional modular, and non-spatiotemporal brain, featured by its extrinsic task-related activity, with a dynamic, topographic, and spatiotemporal psyche characterized by its intrinsic spontaneity. The only way to remedy this discrepancy is to view the brain in a way that is analogous to the psyche in psychoanalysis. The brain and its neural activity may thus need to be conceived as dynamic, topographic, and spatiotemporal – this is the aim of what recently has been introduced as "Spatiotemporal Neuroscience" (Northoff et al., 2020a,b).

One key feature of the brain is its spontaneous activity that refers to the absence of specific tasks or stimuli as it can be measured during the resting state (Logothetis et al., 2009; Raichle, 2009, 2010; Northoff, 2012b, 2014a,b, 2018). The spontaneous activity can be characterized topographically by various interacting networks like default-mode network, salience network, and central executive network, whose relationships seem to be modulated by the brain's global activity, that is, global signal topography (Tanabe et al., 2020; Zhang et al., 2020; Scalabrini et al., 2020a). While on the temporal side, the brain's spontaneous activity is characterized by fluctuations or oscillations in various frequency ranges (*see below for details*) that, together, provide a certain temporal dynamic structure (Buzsaki, 2006; He, 2014; Scalabrini et al., 2017; Northoff, 2018; Scalabrini et al., 2019).

The spontaneous activity itself has recently been associated with various internally oriented cognitive functions like mind-wandering (Smallwood and Schooler, 2015; Christoff et al., 2016; Northoff, 2018), mental time travel or episodic simulation (Schacter et al., 2012; Northoff, 2017), autobiographical memory, and self-referential processing (Northoff et al., 2006; Northoff, 2016). Hence, the spatial topography of the spontaneous activity may itself be related to different forms of cognition (Smallwood et al., 2021; Yeshurun et al., 2021). This leaves open how the spontaneous activity mediates such cognitive (and also affective and social) functions during both resting state and task-related activity, though. Addressing this question is key in providing an intimate connection of brain and cognition/emotion, that is, of neural and psychological activity and hence of brain and psyche.

We postulate that, in order to provide such intimate connection, brain and psyche must share some features, a "common currency" (Northoff et al., 2020a,b). Freud's topography and dynamic of the psyche entails a spatial and temporal view of the psyche: the temporal and spatial organization and structure of the psyche shapes its contents and functions. Relying on Freud and our spatiotemporal characterization of the brain's spontaneous activity, we now propose that spatial topography and temporal dynamic are shared by both neural and psychical activity. What Freud described as mental topography and dynamic of the psyche characterizes also, in more or less analogous ways, the brain's neural activity including both spontaneous and task-related activity. Spatial topography and temporal dynamic are thus shared as "common currency" of brain and psyche (Northoff et al., 2020a,b).

View of the Brain in Spatiotemporal Neuroscience – Dynamic, Topographic, and Spatiotemporal

We are now ready to determine what we recently introduced as "Spatiotemporal Neuroscience" (Northoff et al., 2020a,b). As explicated above, Cognitive, Affective, Social and Cultural Neuroscience largely view the brain as static, regional modular, and non-spatiotemporal. This contrasts with Spatiotemporal Neuroscience that conceives the brain's neural activity (including both spontaneous and task-related activity) largely in dynamic, topographic, and spatiotemporal terms.

Rather than on the neural activity of affective, cognitive, etc. functions and contents themselves, the focus in Spatiotemporal Neuroscience is on the spatial topography and temporal dynamic of their neural activity during both internally and externally oriented cognition. Spatiotemporal Neuroscience thus conceives both the brain's neural activity and the psyche's mental activity primarily in spatial topographic and temporal dynamic terms: It focuses on the brain's spatial and temporal features that constitute its dynamic and topography, and how they, in turn, shape cognitive, affective, and social brain function including their respective contents. This makes it clear that Spatiotemporal Neuroscience neither stands contradictory to nor is exclusive with Affective, Cognitive, and Social Neuroscience. Instead, the former integrates and embeds the letter in a broader more comprehensive spatial and temporal context, that is, topography and dynamic (see **Figure 3**).

The same also applies to predictive coding and free energy. Spatiotemporal Neuroscience provides the spatial topographic and temporal dynamic context within which predictive coding and free energy operate; they provide what has been called "deep temporal model" (Kiebel et al., 2008; Friston et al., 2017) or "temporal thickness" (Seth, 2015). Spatiotemporal Neuroscience focuses primarily on the dynamic and topographical features that for instance characterize free energy (Friston et al., 2015), that indeed has been demonstrated to be scale-free and operates at multiple nested spatial scale and timescale. The same applies to the link of first and third person. Spatiotemporal Neuroscience takes into consideration first-person experience of mental features and

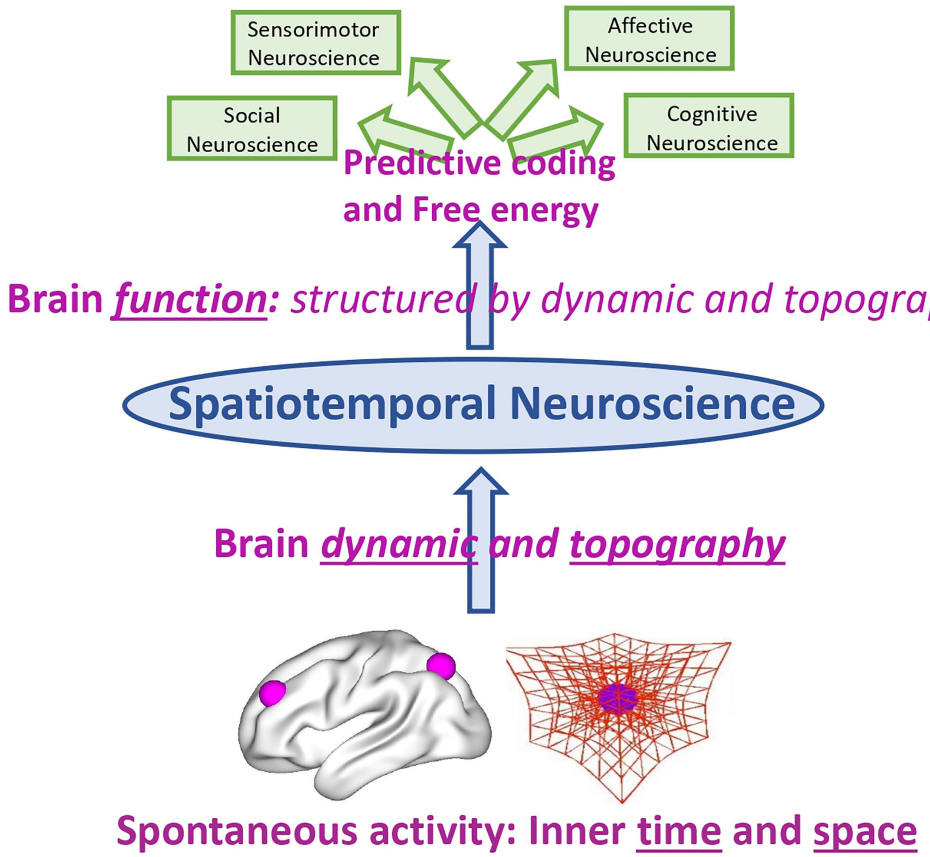

FIGURE 3 | Spatiotemporal Neuroscience – from brain dynamic and topography to brain function.

links them to third-person observation about the brain – this link is made possible through spatiotemporal features being shared by both first and third person as their "common currency." This shall now be demonstrated by the example of self whose topography (*second part*) and dynamic (*third*) in both its psyche and brain are discussed in the next two parts.

PART II: SPATIAL TOPOGRAPHY – NESTEDNESS AS "COMMON CURRENCY" OF SELF AND BRAIN

Topography of the Brain – Spatial Layers and Nested Hierarchy

Topography refers to a particular spatial organization or structure of brain and psyche. One key feature of their topography is hierarchies. Hierarchies have been postulated in both neuroscience and psychoanalysis. They may thus offer insight into the intimate connection of, for instance, brain and self. The English neurologist Hughling Jackson early on proposed a three-layer hierarchy of the brain with lower, middle, and higher centers that were assumed to be associated with different regions and psychological functions (see Wiest, 2012 for an overview). More recently, MacLean (1990) and Panksepp (1998, 2012) conceived the brain's subcortical–cortical organization in terms of a radial-concentric pattern and associated its different layers different levels of emotions (like primary, secondary, and tertiary emotions). Panksepp (1998) and Damasio (2010) associated such hierarchy of the brain with different concepts of self, like bodily self, autobiographical self, and extended self. A more radial-concentric approach to the brain is the three-layer anatomical model of the brain as proposed by Feinberg and Northoff (Northoff et al., 2011). We will see that, together with the recent data, this supports the idea of a spatially nested hierarchy of self based on the brain's radial-concentric organization.

A clearly hierarchical organization of self (which we here use in a broader sense) which embeds and contains the concept of ego has also been proposed in psychoanalysis by Freud. Strachey (1961) and Kernberg (1984) noted how Freud preserved the German *Ich – Ego* as a mental structure and psychic agency but also as the subjective experiential self in all his writing. In synthesis, Strachey and Kernberg propose that Freud never dissociated the *Ich – Ego* from the experiencing self. Moreover, Freud suggested the *Id* to be the lowest level of the topography of the psyche that remains essentially unconscious but nevertheless strongly influences the upper levels of the *Ego* and the *Super-ego*.

Together, this amounts to a nested hierarchy of self where the lower layer somewhat re-surfaces within the next upper layer and so forth (see also Wiest, 2012). While Freud's rigid three-layer partition was criticized later by others, the multi-facedness of self with its sense of subjectivity permeating across bodily, affective, and cognitive layers remains a key feature in both neuroscience and psychoanalysis. We will demonstrate that the model of a nested hierarchy of self is strongly supported by recent neuroscience in both its spatial and temporal aspects – therefore, we characterize the neural (and psychological) hierarchy of self by spatial and temporal nestedness.

From the Brain's Topography to the Self – Three Input Layers (Interoceptive, Extero-Proprioceptive, Mental)

A recent large-scale meta-analysis in healthy subjects by Qin et al. (2020) investigated and analyzed different imaging studies that focused on different aspects of self, inner body (interoceptive), outer body (extero-proprioceptive), and the own cognitive or mental states. They observed different regions to be associated with each of the three layers; at the same time, there was regional overlap as the regions of the lower layer were included within the next upper layer (*see below for details*). Together, this amounts to a spatial multi-layered nested hierarchical model of self (Qin et al., 2020) including (1) interoceptive self (2) extero-proprioceptive self, and (3) mental self (**Figure 4**).

The interoceptive self, that is, how the brain processes and perceive the body's inner organs and their input, was investigated through fMRI task studies that measured interoceptive awareness of the own body including cardiorespiratory awareness, urogenital, and gastrointestinal awareness. That was complemented by extero-proprioceptive self fMRI studies focusing on external bodily inputs like facial or proprioceptive inputs connected to the self. Finally, they also included the "typical" more cognitive mental self fMRI studies employing trait adjectives or other stimuli where subjects have to become aware of their own self as distinct from others.

Based on the interoceptive studies, there is a most basic or lower layer of self, an interoceptive self that is related to regions that mostly process interoceptive stimuli from the own body, that is, bilateral insula, dorsal anterior cingulate cortex, thalamus, and parahippocampus thus including mainly regions of the salience network (Menon, 2011; Qin et al., 2020). The fact that these regions were shared among the different kinds of interoceptive awareness, that is, cardiorespiratory, urogenital, and gastrointestinal, suggests that these regions are key in integrating different interoceptive inputs of the various organs of the inner body (Craig, 2003, 2010). One can thus speak of an *"interoceptive or vegetative self"* (Babo-Rebelo et al., 2016, 2019), "*bodily self*" (Tsakiris, 2017), "*proto-self*" (Damasio, 2010), or "*SELF*" (Panksepp, 1998) as most basic and fundamental layer of self. Following particularly Panksepp (1998), the SELF provides a complex network infrastructure where all basic emotional operating systems converge on primitive brain regions such as the thalamus and the periaqueductal gray (PAG). This network is similar across all mammalian species and represents the interoceptive and thus affective foundation of SELF and necessary for the construction of higher levels of self (Northoff and Panksepp, 2008). This is in line with the interoceptive level of self-processing proposed by Qin et al. (2020) that is considered the ground level of the hierarchy.

The next or middle layer of self includes what Qin et al. (2020) describe as proprioceptive or exteroceptive self; the fMRI studies focusing on external bodily-related inputs like facial or proprioceptive inputs yielded regions like bilateral insula, interior frontal gyrus, premotor cortex, temporo-parietal junction (TPJ), and medial prefrontal cortex. As these regions process inputs from different sensory modalities, they may be key in not only integrating extero- and proprioceptive modalities but also different exteroceptive sensory modalities, that is, cross-modal integration. Despite their differences, these regions share the processing of proprioceptive inputs related to the own body – one can thus speak of a "*proprio- or extero-ceptive self, or embodied self"* (Panksepp, 1998; Gallagher, 2005; Damasio, 2010; Tsakiris, 2017).

Finally, the most upper layer of self (Qin et al., 2020) is based on fMRI studies that yielded typical DMN midline regions like medial prefrontal cortex and posterior cingulate cortex as well as the regions included in the second level, most notably bilateral TPJ, and first level, bilateral insula and thalamus. These regions seem to be recruited when on needs represent one's own self in mental states – one can therefore also speak of a *"mental or cognitive self"* (Qin et al., 2020) or "*extended self*" (Damasio, 2010).

Together, these findings suggest what Qin et al. (2020) describe as "nested hierarchy of self": Regions of the lower level were included in the next higher level where they were complemented by additional regions and so forth. For instance, bilateral insula was present on the most basic level, that is, the interoceptive self and resurfaced (in completely independent imaging studies) again in both second, that is, proprio-exteroceptive, and third, that is, mental self, levels. The same hold true for the bilateral TPJ that first showed in the intermediate layer of the proprioceptive self and re-resurfaced again in the third level of the mental self. Accordingly, each of the hierarchical levels of self recruits both overlapping and separate regions compared to other levels amounting to spatial nestedness with a spatially nested hierarchy of self (**Figure 4**).

Spatial Topography of Self – Tripartite Structure of Ego Vs. Different Input Layers of Self

The constitution of the nested hierarchy of self by the brain provides close connection to psychoanalysis. We here refrain from associating the spatial topographical findings of the brain with the tripartite psychodynamic topography proposed by Freud (since it might be rather too speculative and unprecise; see **Figure 5**). Instead, we pursue another more empirical path

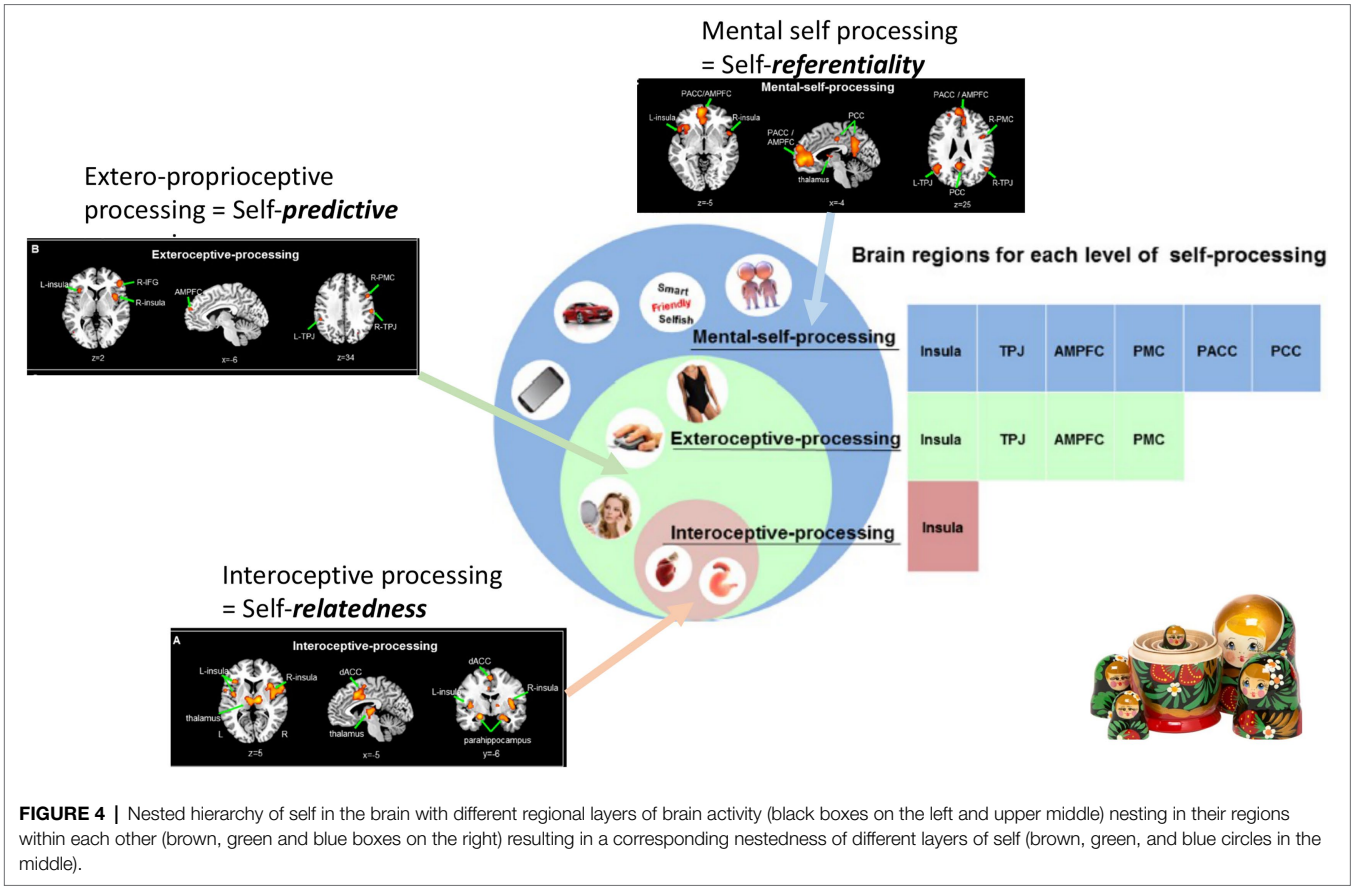

FIGURE 4 | Nested hierarchy of self in the brain with different regional layers of brain activity (black boxes on the left and upper middle) nesting in their regions within each other (brown, green and blue boxes on the right) resulting in a corresponding nestedness of different layers of self (brown, green, and blue circles in the middle).

where the empirical data are converged with a more relational model of self.

We have seen that all three layers of self, interoceptive, proprio-exteroceptive, and cognitive mental, are based on the respective inputs from the inner body, the outer body, and the cognitive (and ultimately neuronal) input from within the brain itself. The self, operationalized as a whole subjective experience at different nested levels and different from the ego described by Freud, is here operationalized in terms of its input processing, that is, how it processes and relates to the distinct types of inputs, that is, interoceptive, proprio-exteroceptive, and cognitive mental.

Importantly, the self is here no longer conceived conceived as an isolated entity that "resides" inside the inner regions and structures of brain, body, and mind. Instead, the self is constituted by processes that reach beyond the boundaries of brain, body, and mind to the external world by taking on different degrees of expansion, that is, self-expansion (Northoff, 2016; Scalabrini et al., 2018).

First, the self is constituted by integrating the different interoceptive inputs from within the inner body – the interoceptive self. Second, these processes expand beyond the inner body by reaching out to the outer body, the proprio- or exteroceptive self. Third, these processes extend beyond the outer body to the brain and its cognitive input – this is the mental or cognitive self. While targeting distinct inputs, these processes constitute a sense of self that reaches beyond the boundaries of brain, body, and environment: They, as we will lay out below, constitute a virtual three-dimensional spatial structure that integrates brain, body, and environment by nesting them within each other, that is, spatial nestedness.

Topography of Brain and Psyche – Spatial Nestedness as "Common Currency" of Brain and Self

We take the self as paradigmatic instance about the relation of brain and psyche. Specifically, we demonstrate how the topography of the brain constitutes a particular spatial structure or organization across all of its regions/networks. This suggests the importance of spatial topography for the brain at a deeper and more fundamental layer, that we intend as a deeper organizational and structuring principle, beyond its single regions/networks with their respective cognitive, affective, and social functions.

Even more relevant, we could demonstrate how the brain's topographic organization of spatial nestedness is related to correspondingly nested layers of self. This supports, albeit tentatively, the assumption that spatial topography, that is, spatial nestedness is shared as "common currency" by both brain and self and, more generally, by brain and psyche.

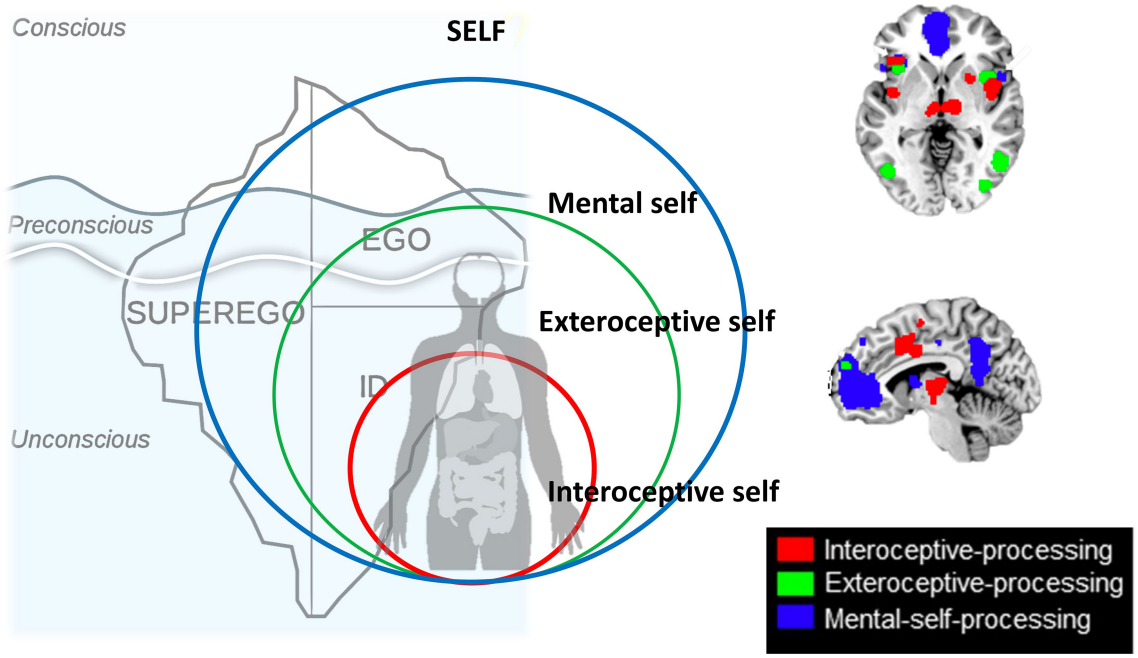

FIGURE 5 | The model of self that embeds and contains the topographical model of Id-Ego-Superego conceptualized by Freud.

Freud and psychoanalysis target a deeper layer of the mind. Rather than focusing on the conscious at the surface, they venture into the unconscious depth of our psyche. The view of the brain in terms of topography (and dynamic) now allows to take into view a corresponding depth layer within the brain itself. Rather than on specific functions with their affective, cognitive, or social contents (either conscious or unconscious), the focus is here on topography (and dynamic), something that eludes even our unconscious let alone our consciousness – it is the non-conscious brain that yields our unconscious psyche.

We see here that such most fundamental or depth layer of the brain is key in providing the structure or organization of the basic layers of the psyche like the spatial nestedness constituting the hierarchy of self. We consequently speak of a "Basis model of self-specificity" (BMSS) which, in a nutshell, states that self-specificity permeates all layers of input processing including interoceptive, exteroceptive, proprioceptive, and cognitive/mental (Northoff, 2016).

The Qin et al. (2020) study illustrates that such basic or fundamental sense of self with (Scalabrini et al., 2021) its different layers is featured by a particular topographic organization, that is, spatial nestedness as shared by both brain and self as their "common currency" (Northoff et al., 2020b). Such more basic and fundamental view of the role of self aligns more or less well with the various psychodynamic conceptions departing from an intra-psychic vantage point (e.g., Freud) and moving further to a more interpsychic or relational point of view of self as proposed by Kohut, Winnicott, Stern, Bromberg, Fonagy, Solms, and Panksepp and Biven (and many others; see Northoff, 2011; Scalabrini et al., 2018; as well as Spagnolo and Northoff, 2021 for details).

PART III: TEMPORAL DYNAMIC – SCALE-FREENESS AS "COMMON CURRENCY" OF BRAIN AND SELF

"The brain might be a transformer station, in which the relatively infinite tension or intensity of the psyche proper is transformed into perceptible frequencies or "extensions." ~ Carl Jung, Letters Vol. II, Pages 43–47.

Dynamic of the Brain –Operation Across Different Timescales in a Scale-Free Way

The brain's spontaneous neural activity can be characterized by different frequencies ranging from infraslow (0.01–0.1 Hz), over slow (0.1 – 1hz), fast (1 – 40 Hz) to ultrafast (40-180 Hz; Buzsaki, 2006). Power is strongest in the infraslow range and decreases across the slow, fast, and ultrafast ranges following a power law distribution (He et al., 2010; He, 2014; Huang et al., 2016). Together, the different frequencies and their distinct degrees of power constitute a complex temporal structure in the brain's spontaneous activity which, in large parts, can be featured by the balance between infraslow, slow, and faster frequencies.

The relationship between these frequencies is maintained across different temporal scales and can therefore be characterized by what is described as "scale-free dynamics" (Linkenkaer-Hansen et al., 2001; He et al., 2010; He, 2014). Roughly, scale-free activity describes the fractal (i.e., self-similar) organization and thus temporal nestedness in the relationship between power and the different frequency ranges: the longer and more powerful slower frequencies

nest and contain the shorter and less powerful faster frequencies – this amounts to long-range temporal correlation (LRTC) which operates across different time scales or frequencies (Linkenkaer-Hansen et al., 2001; He et al., 2010; He, 2014; Northoff and Huang, 2017; see **Figures 6A,B**).

The LRTC makes it possible to assess the degree to which past neuronal patterns exert their influence on future dynamics, thus accounting for LRTC (Linkenkaer-Hansen et al., 2001; Northoff and Huang, 2017). That amounts to a form of memory that is here defined not by specific contents that are encoded, stored, and recalled or retrieved. Instead, memory refers here to the structure, the temporal structure of the neural activity across distinct time points. One could thus speak of temporal memory or dynamic memory, that is, process- and structure-based memory, as distinct from the more content-based cognitive memory in the traditional sense (Hasson et al., 2015; Northoff, 2017). Accordingly, LRTC and henceforth scale-free activity provide not only temporal stability through their correlation of different timescales, that is, temporal continuity, but also temporal memory, that is, temporal stability, through connecting past, future, and present timepoint (**Figure 6A**).

The Scale-Free Self – The Brain's LRTC Shape the Self

Is the self related to the LRTC of the brain's neural activity? Recent studies have shown that the brain's scale-free activity, as measured with either Power Law Exponent (PLE) or Detrended Fluctuation Analysis, is related to mental features such as the self (Huang et al., 2016; Scalabrini et al., 2017, 2019; Wolff et al., 2019). Together, these studies show that the degree of resting state PLE directly predicts: (1) the degree of self-consciousness (Huang et al., 2016; Wolff et al., 2019) (2) task-related activity during self-specific stimuli (Scalabrini et al., 2019), and (3) the degree of temporal integration on a psychological level of self-specificity (Kolvoort et al., 2020).

Let us describe the findings in more detail. Huang et al. (2016) and Wolff et al. (2019) recorded resting state activity in fMRI and EEG of the brain, that is, a task-free condition without any external demands. They calculated the degree of the brain's PLE in both fMRI and EEG. The same subjects also underwent psychological investigation of their self with the self-consciousness scale. Both studies found the same relationship of brain PLE and self-consciousness: The higher the PLE, that is, the more the slow-fast power balance is

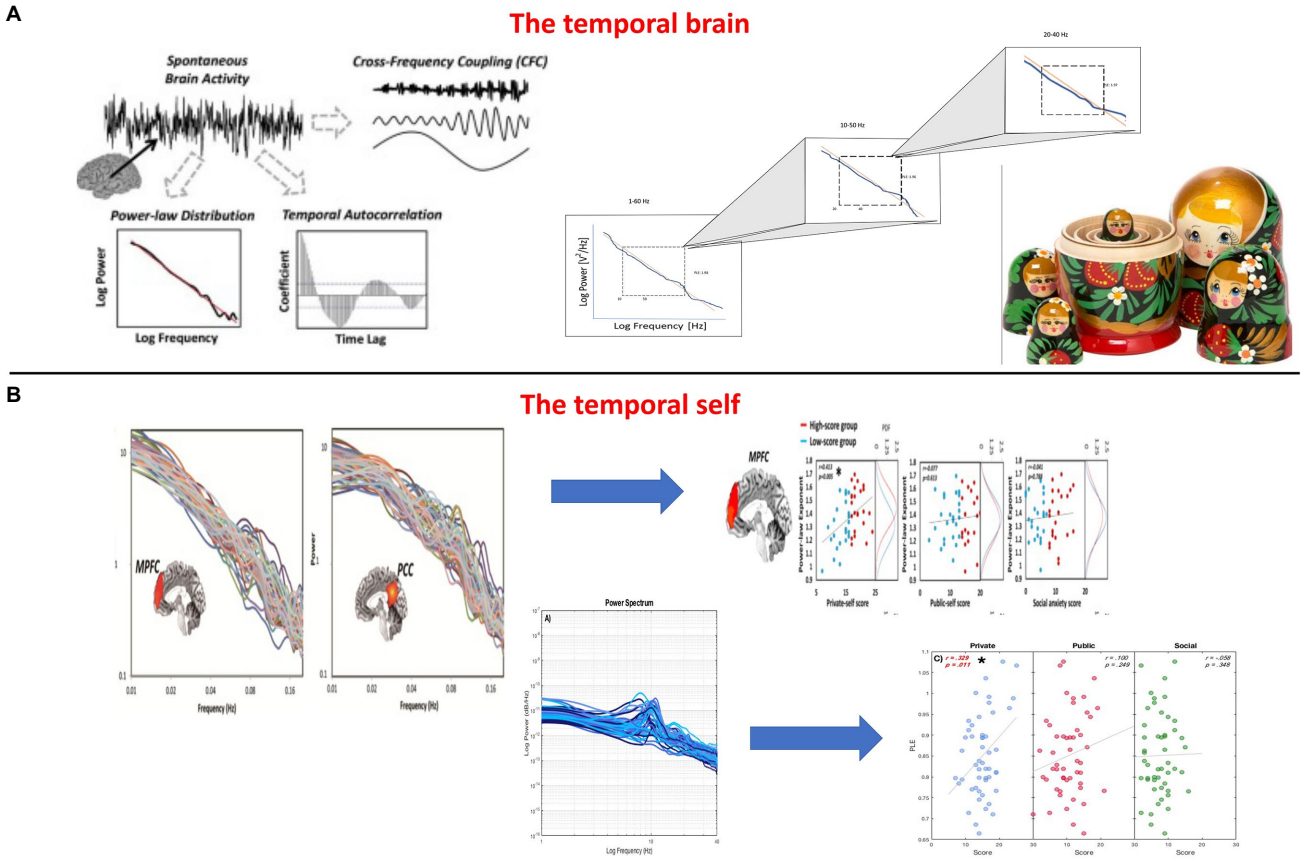

FIGURE 6 | (A) The temporal brain – Temporal nestedness with scale-free activity in the brain (left and upper right) just like Russian dolls with their spatial nestedness (lower part). **(B)** The temporal self – From the brain's scale-free activity with its temporal nestedness to the self in infraslow frequencies of fMRI (upper right/Huang et al., 2016) and faster frequencies of EEG (lower right, Wolff et al., 2019).

shifted toward the slow pole, the higher the degree of the subject's private self-consciousness (see **Figure 6B**).

Importantly, these findings hold only for the PLE as index of slow-fast balance but not for either the slow or fast frequencies alone. Finally, it shall be mentioned that this concerns a wide range of frequency range, from very slow (0.01 to 0.1 Hz), as covered by fMRI (Huang et al., 2016), to faster ones as measured in EEG (1-80 Hz) (Wolff et al., 2019). This means that it is the degree slow-fast integration, that is, their degree of scale-freeness, that is related to the sense of self. The self is thus intrinsically scale-free as it connects and links different timescales short/fast and long/slow. Such cross-scale self exhibits both temporal continuity and discontinuity and nests them within each other in a scale-free way: temporal continuity, as mediated by the more powerful slower frequencies, nests and contains temporal discontinuity, as related to the less powerful faster frequencies.

Dynamic of Brain and Psyche – Scale-Freeness as "Common Currency" of Brain and Self

Is such self-specificity of the brain's internal resting state activity also carried over to external task demands during self-specific tasks? This was studied in fMRI by Scalabrini et al. (2017, 2019). He measured both rest and task during the active touch toward an animate (another person) and non-animate (mannequin hand) targets. They observed that the degree of PLE in the resting state predicted the degree to which subjects could differentiate in their task-related activity between animate and non-animate targets. Given that rest and task states occur and are measured at distinct points in time, this strongly suggest a memory effect: The temporal or dynamic memory of the resting state is carried over to the task state as otherwise the latter could not be modulated by the former. Given that such temporal memory effect in terms of rest-task modulation was related to the self-non-self differentiation, one would strongly assume it to be self-specific.

How does such self-specific temporal memory of the resting state affect the task states? This was addressed by Kolvoort et al. (2020) in an EEG study on self. They measured resting state in EEG and conducted a psychological self-task where subjects were required to associate self- and non-self-specific stimuli across different time delays (from 200 ms to 1,400 ms). They demonstrate that the self-specific effects in terms of accuracy was preserved across all temporal delays with intersubject variation. That, in turn, was related to the resting state PLE: the higher the resting state PLE, that is, the stronger the slower frequencies relative to the faster ones, the stronger the self-specific effect was preserved across the different time delays on the psychological level. This suggests that temporal integration of different timescales as indexed by temporal memory may be key in mediating the co-occurrence temporal stability and flexibility of the self.

Together, these findings suggest that the self is intrinsically dynamic in that it integrates and combines temporal continuity and discontinuity across different timescales, that is, in a scale-free way. The data show that the brain's degree of scale-freeness is key in mediating the self which, psychologically, is manifest in the link of temporal continuity and discontinuity. Since temporal discontinuity and continuity concern different timescales, that is, fast and slow, one can also speak of scale-freeness on the psychological level of self (which remains to be demonstrated empirically, though).

More generally, scale-freeness may be shared by both brain and self as their "common currency." This points to the importance of (1) conceiving the brain in terms of dynamic, that is, scale-freeness of neural activity and (2) taking into view the corresponding manifestation of dynamic in organizing the psyche in a temporal way, that is, the scale-freeness of self. Accordingly, the example of self strongly encourages the utility and validity of Spatiotemporal Neuroscience for providing the intimate (and necessary) connection of brain and psyche through topography and dynamic.

PART IV: "PROJECT FOR A SPATIOTEMPORAL NEUROSCIENCE" – EXTENDING FREUD AND SOLMS

"Project for a Spatiotemporal Neuroscience" – Complementing and Extending Freud

After having provided empirical support for Spatiotemporal Neuroscience, we are now ready to provide an answer to Freud's original quest for an intimate link of psyche and brain as developed in his "Project for a Scientific Psychology." Following Freud's view of the psyche, Spatiotemporal Neuroscience considers the brain's neural activity as topographic, dynamic, and essentially spatiotemporal. Hence, spatial topographic and temporal dynamic features provide the features that are shared by the brain's neural activity and the psyche's psychodynamic features, their "common currency" (**Figure 7**).

Taken in a nutshell, Spatiotemporal Neuroscience provides the missing link of brain and psyche which remained elusive to Freud at his time. We therefore speak of the need for a "Project for a Spatiotemporal Neuroscience." What do we mean by "Project for a Spatiotemporal Neuroscience" and how does it stand in relation to Freud's original "Project for a Scientific Psychology"?

The "Project for a Spatiotemporal Neuroscience" aims to develop the kind of neuroscience that, by establishing a temporal dynamic and spatial topographic view of the brain and its various functions, allows for their intimate connection with the psyche's psychodynamic features (see orange arrow in **Figure 2**). This complements and extends Freud's original Project which, due to the lack of neuroscientific research at its time, could not conceive the dynamic and topography of the brain. Accordingly, the "Project for a Spatiotemporal Neuroscience" provides Freud with the kind of neuroscience that allows him to intimately link his view of the psyche to the brain and thus to complement his original project.

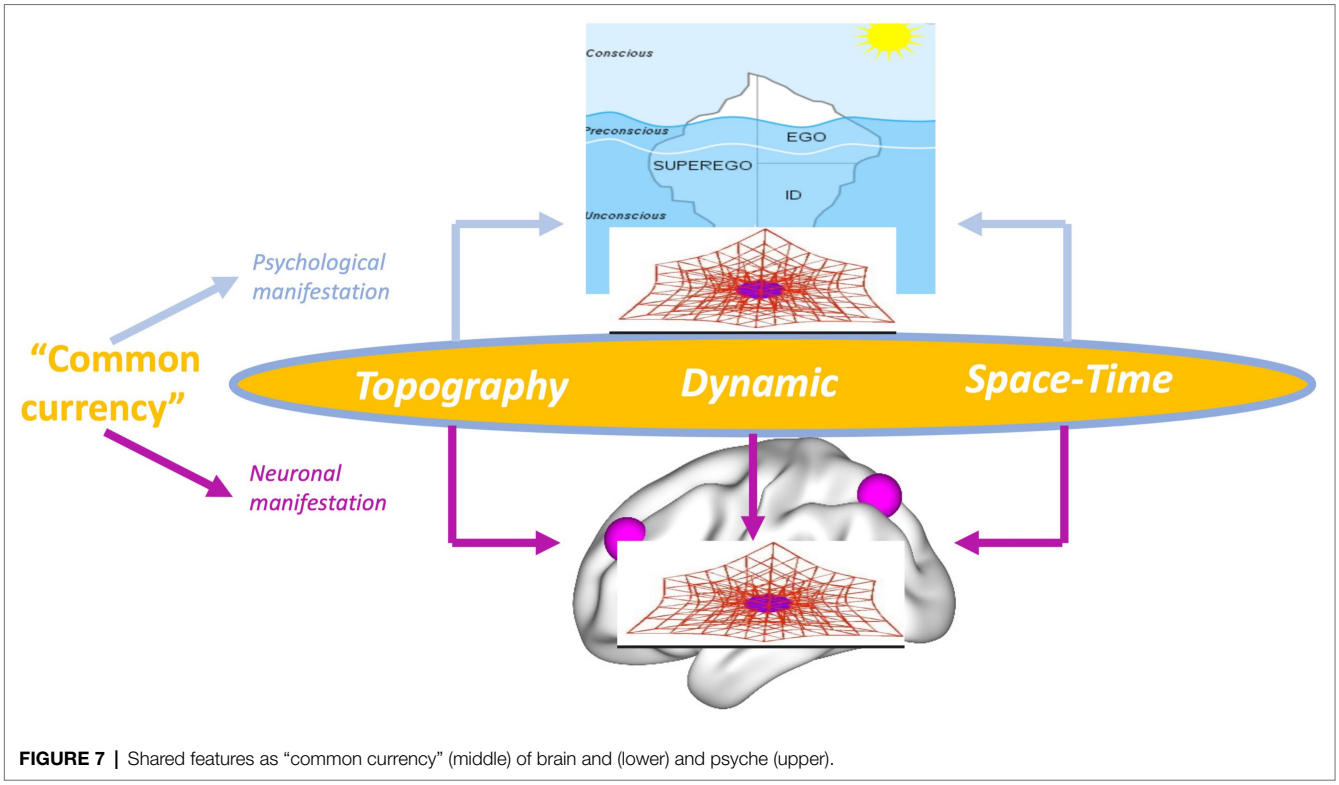

FIGURE 7 | Shared features as "common currency" (middle) of brain and (lower) and psyche (upper).

"Project for a Spatiotemporal Neuroscience" II – Empirical Convergence With Solms' "(New) Project for a Scientific Psychology"

How does our "Project for a Spatiotemporal Neuroscience" stand in relation to the recently proposed "(New) Project for a Scientific Psychology" by Mark Solms (Solms, 2020)? Mark Solms recently proposed a "New Scientific Psychology" (Solms, 2020, 2021) where he casts Freud's original "Scientific Psychology" in the terms of free energy and predictive coding. He uses the physical-biological framework of affective neuroscience (AF, Panksepp, 1998), free energy principle (FEP) and predictive coding (PC) to account for psychodynamic concepts like memory, primary and secondary processes, cathexis, dreams, and the ego as basic structure or organization. Following Freud's "Scientific Psychology," he uses the original text as template for reformulating it in terms of Friston's FEP coupled with the Affective Neuroscience by Panksepp, relying particularly on what Panksepp call the primal "SELF" where the role of the PAG and the brain stem is central for both *"the terminus of every affect circuit and the genesis of every newly felt affect"* (Solms, 2020, p.10).

How does Solms' Project of a "New scientific Psychology" stand in relation to the here proposed "Project for a Spatiotemporal Neuroscience"? First and foremost, both are not exclusive but compatible. There is plenty of convergence between Panksepp's AN, Friston's FEP coupled with PC on the one hand and the spatiotemporal approach to the brain in terms of Spatiotemporal Neuroscience. His "(New) Project for a Scientific Psychology" thus converges with our "Project for a Spatiotemporal Neuroscience."

Prediction and free energy are driven by a deeper layer of the brain's temporal dynamics, that is, deep temporal models (Kiebel et al., 2008; Friston et al., 2017). Deeper layer is not here understood in terms of time and space scales but in terms of a deeper organizational and structuring principle that holds across all other subsequent layers as well as across all time–space scales. Spatiotemporal neuroscience may thus provide the temporal (and spatial topographic) underpinnings driving PC as we see in the case of the self. The same holds analogously in the case of FEP that has been demonstrated to be scale-free and that operated at multiple and nested spatial scale and timescale (Friston et al., 2015): These represent the intrinsic temporal dynamic and spatial topographical features of FEP. In other words, the spatiotemporal, that is, dynamic and topographic configurations in the matching of brain and environment are key in mediating the degree of free energy, that is, FEP. Accordingly, both FEP and PC may be driven, on a holistic and more fundamental level, by dynamic and topography. Spatiotemporal Neuroscience thus provides a deeper more holistic and comprehensive empirical layer of the brain that can integrate and make us better understand how the brain can yield PC and FEP. In this context, we tried to explicate a deeper layer in FEP and PC that drives and organizes both but is not yet by itself explicated as such. A similar relation can be found between Spatiotemporal Neuroscience and Panksepp's AN. Also in this case, Spatiotemporal Neuroscience provides the dynamic and the topography that organize and structure the generation of affects and feelings.

Again our approach is not exclusive but rather holistic and comprehensive in its' own purpose to provides the topographical and dynamic ground on which the different functions and manifestation of the brain and psyche are generated. Hence, our "Project for a Spatiotemporal Neuroscience" empirically converges with and complements Solms' "(New) Project for a Scientific Psychology."

"Project for a Spatiotemporal Neuroscience" III – Conceptual Extension of Solms' "(New) Project for a Scientific Psychology"

Do we need both FEP/PC and Spatiotemporal Neuroscience? Or is one sufficient to explain the psyche? FEP/PC explain and mathematically formulate brilliantly the physical-biological features of the brain as both FEP and PC strongly borrow from physics and biology. However, that leaves open in both FEP/PC and Solms how the brain's states are connected to and, ultimately, can transform into psychical or mental states. Let us highlight this point.

We are encountering theoretical and empirical questions in our aim to intimately connect brain and psyche: what provides the necessary condition or intrinsic feature of the transition and connection from brain to psyche? Why and how does the brain's neural activity transform into psychic activity with its various functions (affective, social, cognitive, etc.) shaped by PC/FEP? Necessary connection (as theoretical concept) and transformation (as empirical concept) mean here that if the neuronal state appears in a particular way, it cannot avoid being associated with or entailing the presence of a particular psychical or mental state. We are thus encountering a "gap of contingency" between brain and psyche something that, in the specific instance of consciousness, has also described as "hard problem" in philosophy (Chalmers, 1996).

How can we close the "gap of contingency" between brain and psyche? This is the moment where Spatiotemporal Neuroscience, together with the assumption of "common currency," comes in. Brain and psyche share spatial topographic and temporal dynamic features as their "common currency" which underlie and shape PC and FEP and subsequently the respective affective and cognitive functions. This, as detailed in Northoff (2018), provides an intrinsic or necessary *a posteriori* connection of brain and psyche. The "gap of contingency" can consequently be closed and, even stronger, be resolved by Spatiotemporal Neuroscience through its assumption of spatial topography and temporal dynamic providing the "common currency" of brain and psyche.

This carries major implications for the relationship of our "Project for a Spatiotemporal Neuroscience" to Solms' "(New) Project for a Scientific Psychology." By providing analogous views of brain and psyche in terms of topography, dynamic, and spatiotemporality, the "Project for a Spatiotemporal Neuroscience" bridges and resolves the "gap of contingency" of brain and psyche. Since the "gap of contingency" is still present in Friston's concepts of FEP and PC, Solms' "(New) Project for a Scientific Psychology" cannot avoid this gap either (**Figure 8**).

This is the moment where the "(New) Project for a Scientific Psychology" may want to turn to our "Project for a Spatiotemporal Neuroscience": the latter's focus on the brain's topography and dynamic providing the shared feature or "common currency" with the psyche can close the "gap of contingency" in Solms' "(New) Project for a Scientific Psychology." Taken in this sense, the "Project for a Spatiotemporal Neuroscience" conceptually extends the "(New) Project for a Scientific Psychology" by providing a more intimate, that is, necessary *a posteriori* (Northoff, 2018) connection of brain and psyche (**Figure 9**).

Closing the "gap of contingency" of brain and psyche is not only of theoretical-conceptual importance but also in a very practical sense. The "Project for a Spatiotemporal Neuroscience" allows us to develop a novel form of psychodynamic psychotherapy, namely, Spatiotemporal Psychotherapy. Although it remains to be fully explicated, we at least want to provide some initial hints about such temporally and spatially based psychotherapy.

Spatiotemporal Psychotherapy I – Spatial and Temporal Integration of Self Through the Therapist

What is the goal of psychotherapy? In our neuroscientifically informed view, the goal of psychotherapy is (1) to reverse maladaptive topographic-dynamic re-organization of brain and (2) to establish a more adaptive and stable spatiotemporal nestedness of brain and self thereby re-establishing a proper nested hierarchy of self. This process, in accordance with contemporary psychoanalysis, might serve to re-establish the subjective sense of integrity, coherence, and continuity of self over time and space, similar to what has been described by Philip Bromberg: "health is the ability to stand in the spaces between realities without losing any of them – the capacity to feel like one self while being many" (Bromberg, 1996, p. 166).

Psychotherapeutically, this means that we may need to operates at the subjects' level of perception (or experience) of time, i.e., dynamics, and space, i.e., topography as the building blocks of individuals self-states (and ultimately their brain's temporal dynamic and spatial topographic structure) to remedy and heal their discrepancies, discontinuities, dis-integrity of the sense of self. In this context, we explicitly refer to contemporary psychoanalysis of self and relatedness (i.e., object relations) leaving beyond classical concept of psychoanalysis, such as drives, conflicts, and defense mechanisms. Our target is here to focus on the sense of self and its intrinsic features. Our aim is to neuroscientifically inform psychotherapy and expand our knowledge on the self and its intrinsic features at neuro-psychodynamic level. At the current stage, our model here does not aim to change or provides new therapeutic techniques; nevertheless, spatiotemporal psychotherapy provides a more comprehensive and neuroscientific informed framework that might be useful for therapists.

For instance, the therapist may need to operate at building blocks of consciousness and unconscious processing through

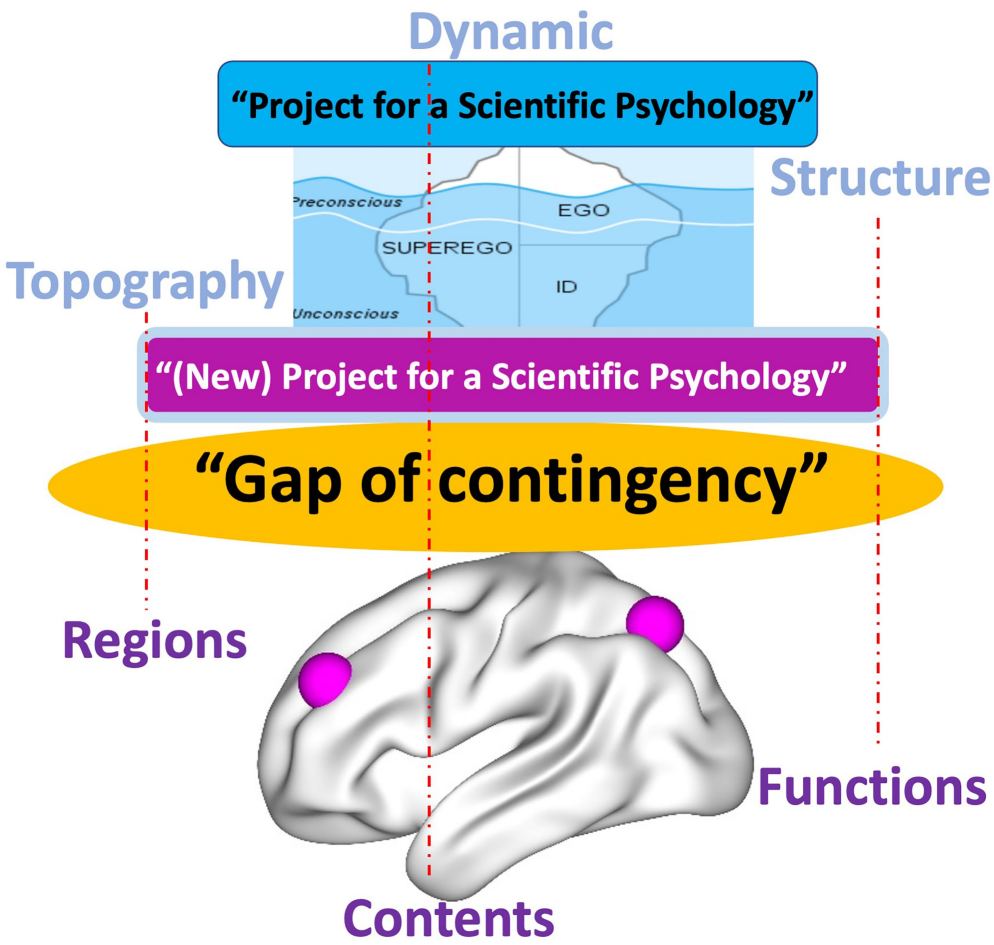

FIGURE 8 | Freud's "Project for a Scientific Psychology" and Solms' "(New) Project for a Scientific Psychology" leave open the "Gap of contingency" (red dotted lines indicating insufficient, i.e., contingent connection) due to discrepant models of brain and psyche.

spatial topographic and temporal dynamic means: the therapist needs to connect (virtually or symbolically) her/his larger (spatial topographic and temporal dynamic) scales of her/his own exteroceptive and/or mental self to the more restricted of his client's interoceptive self. Pragmatically, this means that operating in the dual relational field, the therapist must operate in the transferential-contertransferential matrix using the "common currency" of time and space as the cardinal points to note and *work through* the moments of rupture of the sense of self and its intrinsic features.

This analytical dance in the transitional space and time of the real and the virtual relationship between the two subjects made by continuous "ruptures and repairs" provides the client with the opportunity to integrate and nest her/his own more restricted spatiotemporal scales of her/his interoceptive self in a virtual, that is, interpersonal way into the larger ones of her/his therapist. That, in turn, will allow the client to process the traumatic input relationships in a non-threatening and non-disrupting way for her/his own self without becoming fragmented and loosing the access to one's interoceptive self. The traumatic input relationships associated with the own interoceptive self are now integrated and nested virtually (or symbolically) within the therapists' larger spatiotemporal scales (of the therapist's exteroceptive and mental self).

Accordingly, the therapeutic aim here is to spatially and temporally re-integrate the different layers of self: that serves the purpose to connect the different layers of self such that they can become conscious together rather than being split off and isolated into the dynamic unconscious (as in dissociation). Dissociation here operates in terms of lack of integration between the different layers of the self and seems to be mediated by the lack of connectivity (thus integrative function) in the right anterior insula with the rest of the brain at different spatiotemporal scales (Scalabrini et al., 2020b) accompanied by the loss of first-person perspective. Consequently, healing the self means to re-establish the sense of self-continuity beyond the dissociation of its trauma. This is possible by re-stablishing and/or re-organizing the topography and dynamic of the nested hierarchy of both self and its brain through spatial and temporal means – this amounts to what we here describe as "Spatiotemporal Psychotherapy."

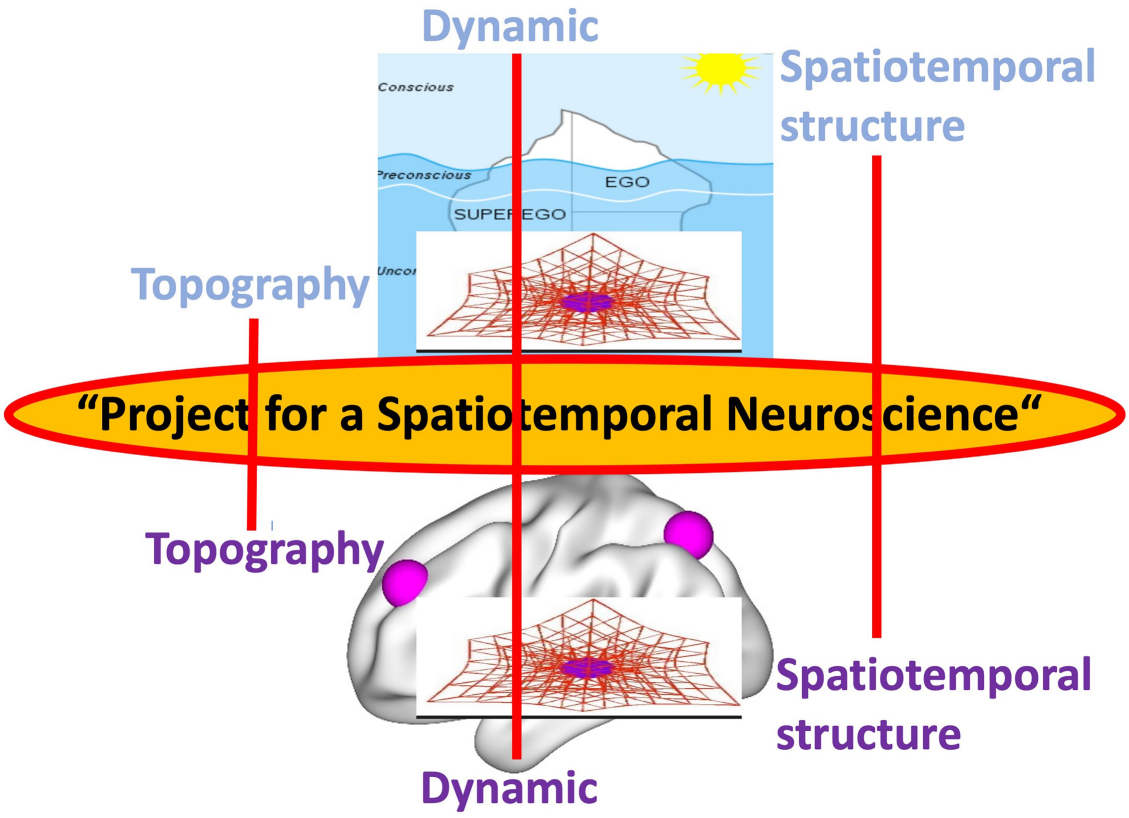

FIGURE 9 | Shared features as "common currency" (middle) of brain and (lower) and psyche (upper).

Spatiotemporal Psychotherapy II – Timing, Spatialness, Dynamic, and Shared Time–Space

What is Spatiotemporal Psychotherapy? Spatiotemporal psychotherapy consists in modulating the individual's subjectively perceived (consciously and unconsciously) time-scale and space-scale on both neural and psychological levels. This process calls into account the role of the therapist that here works at the edges of different affectives and self-states characterized by their respective time-scale and space-scale. The primary purpose of the therapist is to reach and integrate their clients' dissociated spatiotemporal layers of self with their respective affects and thoughts (this is consistent with the work on different traumatic levels that has been clinically described by Mucci, 2013, 2018; Mucci and Scalabrini, 2021).

The primary means of such spatiotemporal psychotherapy are thus spatial and temporal in both intra-personal experience/perception and interpersonal transference. This targets the most basic and fundamental layers of existence (Scalabrini et al., 2020c), the spatiotemporal coordinates that tie together different people like therapist and client while, at the same time, being most vulnerable to traumatic events and influences. Importantly, the main therapeutic direction of client-therapist interaction is from their shared inter-personal space and time to the intra-personal experiences/perceptions of the client (and those of the therapist).

How does Spatiotemporal Psychotherapy work? For instance, the therapist may provide more stable, regular, and continuous mixture of slow and fast timescales trying to be "sufficiently" aligned with the patient in the analytic dance. This process aim to regularize, stabilize, and make the temporal dynamic flow of the client's neural and psychic activity more continuous. While at the same time, this will allow integrating temporal discontinuity and change as related to traumata. This, as we hypothesize, should complement and mirror the client's self-state increasing these subjects' arousal level modulating their affect and emotion as well as their thought dynamic (Rostami et al., 2021). Hence, timing, spatialness, and temporal dynamic within the interaction of client and therapist will be key in such psychotherapeutic regulatory approach.

A psychotherapy that is interpersonally attuned in time and aligned in space might provide a more comprehensive, basic, and extensive operating field that also embed and contains affective, social, cognitive functions within a larger more comprehensive context. Here, we suggest the therapists to work using these spatiotemporal coordinates beyond the contents and the narratives of the patients. The shared time and space between therapist and client might here be seen as an operating commonly shared interpersonal spatiotemporal field, which makes possible the re-organization and transformation of the client's intra-personal nested hierarchy of self through its

spatiotemporal manifestation within her/his brain (See Spagnolo and Northoff, 2021).

In case of very severe psychiatric patients, one could also complement such temporo-spatial psychotherapy by brain-based intervention operating on the basis of the brain's spatiotemporal features. For instance, transcranial magnetic stimulation may, if stimulating in the "right" frequency, can foster and facilitate slow-fast temporal integration on the neuronal level of, for instance, the default-mode network (DMN) in order to help the client to remit from dissociating her/his own mental self and to enlarge its spatial and temporal scales beyond those related to its "traumatic shrinking." That, in turn, provides the ground for the more virtual or symbolic work with the therapist to re-order, re-integrate, and re-nest the client's mental self within her/his own intero- and exteroceptive self (**Figure 10**).

CONCLUSION – "PROJECT FOR A SPATIOTEMPORAL NEUROSCIENCE"

Mismatch of Brain and Psyche – Adapting the Model of Brain

Freud searched for the scientific basis of the psyche in the brain. He deemed his "Project for a Scientific Psychology" a failure, though, as he was not able to intimately the psyche's topography, dynamic, and spatiotemporal features to corresponding features in the brain. Having more insight in our times, current neuropsychoanalysis aims to trace the psyche's topography, dynamic, and spatiotemporality to the brain's affective and cognitive (and social and cultural) functions including their predictive coding and free energy. However, we argue that, despite all progress, such approach does not yet fully complete the Freudian' quest: It does not provide the kind of intimate, that is, necessary connection of brain and psyche that allows closing their "gap of contingency" which Freud deemed necessary to complete his project.

Specifically, the current neuropsychoanalytic approach suffers from a mismatch in its presupposed models of brain and psyche. Following Freud and others, the psyche is characterized by dynamic, topography, and spatiotemporality. That is related to a model of the brain in Cognitive, Social and Affective Neuroscience where the brain is conceived as static (rather than dynamic), modular (rather than topographic), and non-spatiotemporal (rather than spatiotemporal). This amounts to a mismatch between the models of psyche and brain, though. That, in turn, prevents us from taking into view the intimate or necessary brain-psyche connection one requires to properly complete Freud's "Project for a Scientific Psychology."

How can we adapt our model of brain to the model of psyche Freud and others envision in psychoanalysis? For that, we have to take into view the brain's intrinsic spatial topography

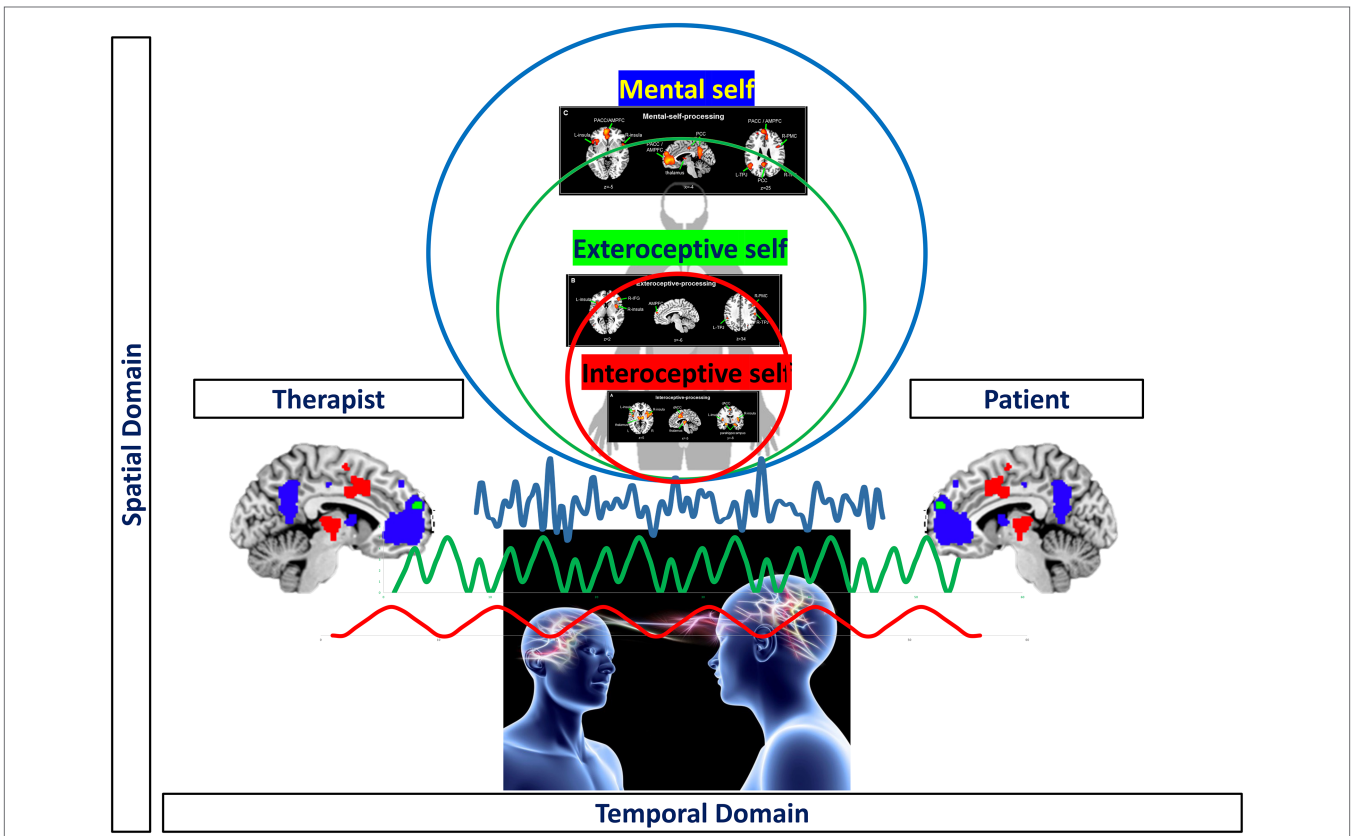

FIGURE 10 | Visual representation of spatiotemporal psychotherapy.

and temporal dynamics. This leads us to Spatiotemporal Neuroscience (Northoff et al., 2020a,b). Unlike its cognitive, affective, and social siblings, Spatiotemporal Neuroscience conceives the brain's neural activity primarily in terms of topography, dynamic, and spatiotemporality which, in turn, structure and organize various functions including their predictive coding and free energy. Accordingly, conceiving brain and psyche in analogous ways, Spatiotemporal Neuroscience allows to take into view their intimate or necessary connection through shared features ("common currency"), that is, topography, dynamic, and spatiotemporality.

"Project for a Spatiotemporal Neuroscience" – Complementing Freud and Solms

The introduction of such spatiotemporal model of the brain by Spatiotemporal neuroscience carries major implications for neuropsychoanalysis. Freud characterized the psyche by dynamic, topography, and spatiotemporality but was missing a corresponding model of the brain – his "Project for a Scientific Psychology" was thus doomed to failure. In a more recent brave attempt, Mark Solms aims to provide the missing pieces by proposing a "(New) Project for a Scientific Psychology" (Solms, 2020, 2021). By reverting to predictive coding and free energy, he provides some of the missing pieces of the puzzle but nevertheless leaves open the intimate or necessary connection of brain and psyche as he still relies largely on (the model of the brain provided by) Affective, Cognitive, and Social Neuroscience.

This is the moment where our proposed "Project for a Spatiotemporal Neuroscience" comes in. Spatiotemporal Neuroscience provides a model of the brain that is more or less analogous to Freud's view of the psyche. That, in turn, makes it possible to take into view topography, dynamic, and spatiotemporality as the shared features of brain and psyche, their "common currency" (Northoff et al., 2020a,b). This closes the theoretical, conceptual, and empirical gap between brain and psyche, the "gap of contingency," which both Freud and Solms did not overcome.

In conclusion, the "Project for a Spatiotemporal Neuroscience" complements Freud's "Project for a Scientific Psychology" on theoretical grounds. At the same time, it converges empirically with and extends conceptually beyond Solms' "(New) Project for a Scientific Psychology." While practically, the "Project for a Spatiotemporal Neuroscience" lays the groundwork for a novel form of neuroscientific informed psychotherapy, namely Spatiotemporal Psychotherapy.

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GN and AS wrote the article together. All authors contributed to the article and approved the submitted version.

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The Clinical Relevance of Interdisciplinary Research on Affect Regulation in the Analytic Relationship

Carolina Altimir[1,2] *and Juan Pablo Jiménez*[2,3]*

[1] *Faculty of Psychology, Universidad Alberto Hurtado, Santiago, Chile,* [2] *Millennium Institute for Research in Depression and Personality (MIDAP), Santiago, Chile,* [3] *Psychiatry Department, Universidad de Chile, Santiago, Chile*

After more than a century of existence, theoretical development, research, and clinical practice within the psychoanalytic movement have consistently demonstrated that psychoanalysis is not a unitary and autonomous discipline. This has been evidenced by the various ways in which psychoanalytic thought and practice have been informed by and have established a dialogue—more or less fruitful—with related disciplines (neurosciences, developmental psychology, psychotherapy research, attachment theory and research, feminism, philosophy). This dialogue has contributed to a better understanding of the functioning of the human psyche, and therefore of the analytic process, informing clinical interventions. In turn, it has enriched research on psychoanalytic practice and process, underlining the fact that research in psychoanalysis is fundamentally about clinical practice. Since its origins, psychoanalysis has made explicit the work on the patient-analyst relationship as the terrain in which the analytic process unfolds. For its part, research in psychotherapy has demonstrated the relevance of the therapeutic relationship for the good development and outcome of any psychotherapeutic process. This supports the argument that research in clinical psychoanalysis should be research on the impact of the analyst interventions on the analyst-patient relationship. In this context, a central element of what happens in the analytic relationship refers to affect communication and therefore, affect regulation, which is manifested in the transferential and counter-transferential processes, as well as in the therapeutic bond. On the other hand, affective regulation is found at the crossroads of etiopathogenesis, complex personality models and psychopathology, allowing the understanding of human functioning and the staging of these configurations in the patient-analyst relationship. In this way, research on affective regulation in the analytic process is proposed as a path that exemplifies interdisciplinary research and scientific pluralism from which psychoanalysis enriches and progresses as a discipline. The case of a line of research on affective regulation in psychoanalytic psychotherapy is illustrated. The need to resort to other disciplines, as well as the translational value of our research and its clinical usefulness, is discussed.

Keywords: epistemology, psychoanalytic research, therapeutic relationship, affect regulation, interdisciplinarity, clinical relevance

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***Correspondence:**
Juan Pablo Jiménez
jpablojimenezdela@gmail.com

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INTRODUCTION: PSYCHOANALYSIS IS NEITHER AN AUTONOMOUS NOR A UNIFIED DISCIPLINE

In this paper we propose a shift in psychoanalytic research from meta-theory to focus on the immediacy of the psychoanalytic encounter. In this, we follow the scientific program proposed by Joe Sandler (1983) to investigate "what analysts do" in their clinical practice. We formulate this program more precisely by stating that our research should seek to capture "the practice of psychoanalysts on its own merits" (Jiménez, 2009). However, this goal requires the application of methodologies that go beyond the traditional clinical method and that integrate clinical/hermeneutic exploration, systematic empirical research, and interdisciplinary findings from other mind/brain disciplines. Our line of research intends, precisely, to present a novel methodology that allows us to approach the immediacy of the encounter between analyst and patient. By the way, our method does not pretend to be the only possible method, but we hope that throughout this paper its advantages will become clear.

The paper begins by describing the shortcomings of psychoanalysis as a scientific discipline, as a result of its secular isolation from other disciplines of the mind. Then, even if it seems contradictory, we argue that since Freud's time, the findings of the other disciplines of the mind have inadvertently "infiltrated" the theoretical construction of psychoanalysis. Since its very inception, interdisciplinary findings have played a role in psychoanalytic knowledge. Indeed, a fundamental contemporary influence on psychoanalytic thinking is the shift toward the relational perspective. However, the challenge for research is to develop methodologies that can capture the relational and intersubjective character of the analytic dyad. In the following we suggest that the study of affect self-and dyadic regulation within the therapeutic relationship is a window to study emergent phenomena in the interactive "in-between" of the interaction. Finally, we present our approach by illustrating some pieces of research where patient and therapist facial-affective behavior and its regulatory function within ruptures and repairs of the relationship are examined. We propose this observational approach to study the patient-analyst interaction as one possible pathway that may contribute to the systematic research on analytic process.

The epistemological status of the psychoanalytic discipline, as a natural science or as a social science, as both or in between, is still a matter of controversy after more than 100 years. Freud always considered the possibility of a unified psychoanalytic science; for decades, the building of a psychoanalytic theory was dominated by the assumption that the accumulation of clinical knowledge, the third pillar of the Freudian definition of psychoanalysis, would lead to the construction of a unified scientific discipline (Freud, 1923). From a current perspective, however, the possibility of that becoming a reality was never real; from its birth, psychoanalysis evidenced divergent theoretical and practical points of view (Makari, 2008).

In the last decades, a consensus has been reached that psychoanalysis is not a unified clinical or theoretical discipline. We argue that one of the main reasons for this is the use of the psychoanalytic clinical method as the sole source of psychoanalytic knowledge (Jiménez, 2015). This has favored a tendency toward fragmentation and the development of multiple and ramified theories that do not converse among one another. Accordingly, practical and theoretical diversity constitutes an inevitable fact in psychoanalysis. For a century this diversity was constrained by referring to authority as a means to place the inherent tendency to diversification into a straightjacket. However, sharp questions emerge: What can we do in the face of the growing plurality of orientations and positions in psychoanalysis? Is psychoanalytic knowledge doomed to an endless fragmentation? In more than 100 years, experts have been unable to agree on how to define core concepts such as "psychoanalytic process" or even the very concept of "psychoanalysis." What are the tasks involved in the construction of psychoanalytic pluralism? Is psychoanalysis doomed to disappear as a discipline, i.e., as a unified "branch of knowledge, typically one studied in higher education," as The Oxford English Dictionary defines "discipline"? In the university tradition an academic discipline supposes some central elements like the presence of a community of scholars; a tradition or history of inquiry; a mode of inquiry that defines how data is collected and interpreted, as well as a definition of the requirements for what constitutes new knowledge; and the existence of a communication network. But, to what extent does contemporary psychoanalysis meet these requirements? Precisely, the contemporary controversy in psychoanalysis centers around the mode of inquiry, hermeneutic or scientific, or both, that defines how data is collected and interpreted, and the requirements for what constitutes new knowledge in psychoanalysis; in short, the validity of knowledge that is based solely on clinical method. All these are questions that continue without definitive answers.

Over the past 20 years, however, a growing consensus about the nature of the epistemological and professional crisis in psychoanalysis has emerged. Even though in the past two decades many experts (see Kandel, 1998, 1999; Kernberg, 2012; Thomä, 2015; Kernberg and Michels, 2016; Schachter and Kächele, 2017) have advocated for the insertion of psychoanalysis within universities, to bring innovation into psychoanalytic education, to broaden the conception of psychoanalysis in order to include the diversity of psychoanalytic psychotherapies, to establish theoretical bridges with cognitive psychology and the neurosciences, to widen the basis of the theory beyond the clinical method toward the social and natural sciences research methods, to name but a few; the most psychoanalysts, who work in the isolation of their private practice, have not been persuaded.

Faced with this situation of paradigmatic crisis, Joe Sandler proposed that "psychoanalysis is what psychoanalysts practice" (Sandler, 1982, p. 44). This statement seems tautological, because certainly, not everything a psychoanalyst practices is, by that fact alone, psychoanalysis. We believe that this statement is rather a research program of clinical practice, a call to explore "the practice of psychoanalysts on its own merits" (Jiménez, 2009), that is, in a valid way. This responds to what empirical research in psychotherapy and psychoanalysis has evidenced: that

what psychoanalysts do is different from what they say they do. Nevertheless, the latter is what is discussed and exchanged in clinical and scientific meetings. The gap that is thus constituted, between actual practice and an idealized psychoanalytic practice, is what prevents the controversy about what psychoanalysis is from ever coming to consensual terms.

PSYCHOANALYTIC HERMENEUTICS AND PSYCHOANALYTIC SCIENCE: THE ROLE OF INTERDISCIPLINARY KNOWLEDGE

It seems that within psychoanalysis, a dichotomy between hermeneutics and science still strongly prevails. This is partly due to the fact that scientific inquiry is assumed to be reduced to a pure positivist, quasi-experimental empiricism. This notion of science and the consequent criticism to its value for psychoanalysis, is in part consequence of the proliferation of randomized clinical trials (RCT) as a method for testing the effectiveness of psychotherapies, as well as the underlying evidence-based practice model promoted by healthcare providers and funders (Safran, 2012). Inasmuch as some of the criticisms toward the limitations of this approach to psychotherapy research can be shared, the rejection toward this particular method has penetrated the entire notion of systematic empirical research. Thus, to talk about psychotherapy research is equivalent to "desiccate human experience," as RCT models would not recognize the uniqueness of every analytic dyad (Safran, 2012). Indeed, claims from the same psychoanalytic community that advocate for the incorporation of rigorous and systematic research procedures, in addition to the clinical case study method, for the generation of psychoanalytic knowledge (Wallerstein, 1993), have been criticized as reductionist, empiricist, and positivist. As McWilliams (2011) argues, the "self-defeating political legacy of many analysts' contempt for research on the analytic process" (p. 9) remains despite empirical work that has shown the effectiveness of analytic treatments. According to McWilliams, "Many scholars prefer to place psychoanalysis within the hermeneutic rather than the scientific tradition, partly because of this resistance of much of the subject matter to investigation by the scientific method as it has come to be defined by many contemporary academic psychologists" (McWilliams, 2011, p. 23).

The criticism of the legitimacy of empirical process and outcome research is shared by both classical and postmodern psychoanalysts (Jimenez and Altimir, 2019). In fact, several postmodern authors have argued that systematic empirical research has little to contribute to the practice of psychoanalysis (Hoffman, 2009, 2012; Stern, 2013), and that it can poorly capture what takes place in the intersubjective encounter of the analytic situation (Orange et al., 1997), thus rejecting extra-clinical research as a legitimate source of psychoanalytic knowledge.

Several important researchers who are also psychoanalysts have made efforts to broaden the perspective and definition of what constitutes systematic research in psychotherapy and psychoanalysis, advocating for a constructive dialogue between hermeneutics and scientific research (Safran, 2012; Fonagy, 2013; Strenger, 2013), and thus avoiding what Safran (2012) has called the "tendency toward insularity" that dominates psychoanalysis. These authors have described several forms of research, alternative to the RCT, to describe and understand psychotherapy and psychotherapy process. These include qualitative research, research on the mechanisms of change, the study of specific therapy events that involve change or are associated to relevant aspects of therapy, and systematic and rigorous approaches to single case studies (Fonagy and Moran, 1993; Messer, 2007; Szecsödy, 2008; Safran, 2012). This broader understanding of what the scientific endeavor involves, includes not only confirmation or refutation of assumptions regarding psychotherapy process and outcome, but also, and perhaps most importantly, the process of meaning-making in the interpretation of research findings (Fonagy, 2013). As Safran (2012) suggests, this can contribute to a broader understanding of the way in which science actually works, which is nurtured by a dialogue among members of a scientific community.

Along with many, we have come to the conviction that, in order to develop as an academic discipline and as a recognized and legitimated profession, psychoanalysis must cultivate not only its hermeneutic aspect, but also its scientific side. This means a simultaneous emphasis on examining analytic process and outcome, as well as the incorporation of the interdisciplinary study of the mind/brain relationship, and its interplay with development, personality, and psychopathology in the understanding of our patients. It is our contention that only the interdisciplinary scientific study of psychoanalytic insights may contain within limits the tendency to fragmentation inherent in the interpretive psychoanalytic method. Here, we agree with Carlo Strenger (1991) when he argues that theoretical propositions must not only be coherent, but they should also be consistent with a body of knowledge that is generally accepted and incorporated to related disciplines.

As stated in the introduction, practical and theoretical diversity constitutes an inevitable fact in psychoanalysis since is a complex field, where there is no room for linear or simple understandings. Thus, one of the basic assumptions of complex phenomena is that their study should be interdisciplinary in nature (Kendler, 2005; Morin, 2008). In two books that had a strong impact at the time, Henri Ellenberger (1970) and Frank Sulloway (1979) demonstrated that beyond the Freudian legend, since Freud interdisciplinary dialogue has never been foreign to the formation of theory in psychoanalysis. In contemporary times, and as we showed in a recent review dedicated to the subject (Jimenez and Altimir, 2019), this has been evidenced by the various ways in which psychoanalytic thought and practice have been informed by and have established a dialogue—more or less fruitful—with related disciplines (neurosciences, developmental psychology, psychotherapy research, attachment theory and research, feminism, philosophy). All these disciplines have emphasized the interactive and relational character of human development. Increasingly, psychoanalytic theory and practice have incorporated the findings of related disciplines into their

conceptualization of human development and psychopathology, of the mind/brain relationship and of the relational processes involved in psychotherapy. The "contamination" of clinical knowledge with findings from related disciplines of the mind has been a slow and surreptitious, but a very effective process. Thus, Canestri notes that the field is coming to "a redefinition of the object of (psychoanalytic) study; that is, the particular intersubjective figure constituted by the analyst-patient relationship" (Canestri, 1994, p. 1079). Nevertheless, empirical research in psychoanalytic therapy has not done justice to the "dyadic nature of the construction of experience" during therapy. Although the idea of defining empirical variables based on relational concepts may seem obvious, in practice a great amount of research efforts interested in the therapeutic relationship do not fully account for the relational essence of this phenomenon.

THE RELATIONAL AND INTERSUBJECTIVE CHARACTER OF THE ANALYTIC DYAD

Since the 1980s, the field of psychotherapy has experienced a major shift toward a relational perspective (Aron, 1996; Muran and Samstag, 2008), from which psychoanalysis has not been exempt. Amidst the theoretical and technical diversity of contemporary psychoanalysis, a prolific discussion has developed around the intersubjective nature of analytic work. Several theoretical orientations within the umbrella of contemporary psychoanalysis have developed or emphasized concepts that account for the interest in what happens in the interaction between patient and analyst (Foehl, 2010; Bohleber, 2013). Thus, Lewis Aron (1996) refers to "relational psychoanalysis" or "relationally oriented therapies" to refer to the group of theories within psychoanalysis whose main focus of interest is relationships, emphasizing both intrapersonal and interpersonal relationships.

Within the wave of the relational movement, contemporary psychoanalysis has been influenced by the postmodern turn toward constructivist and intersubjective thinking (Aron, 1996; Bohleber, 2013). From the postmodern viewpoint, the world is uncertain, so that no general principles about human nature can be established. Thus, "reality" or "truth" is not one and unique but depends on who experiences/observes it (Wachtel and Messer, 1997). From this perspective, the object of experience is never separate from the subject who experiences it. Thus, the aspiration to separate the knowing subject from the knowing object is replaced by the idea of a subject-subject relationship, in which intersubjective reciprocity is inevitable (Foehl, 2010; Bohleber, 2013). Gadamer's (1966) hermeneutic perspective in turn has been incorporated by relational thinking by emphasizing that the subject's perception of reality is always influenced and thus constrained by his/her preconceived ideas and prejudices (hermeneutic circle). As Foehl (2010) argues, the implication of this perspective is that we humans experience one another from a position that shifts and changes as we engage.

From this point of view, the Freudian aspiration to eliminate the subjective factor from the analytic process is questioned and reformulated, toward the idea of being able to study and recognize the subjective factor *within* the analytic encounter (Aron, 1996). The questioning of clinical neutrality and abstinence has also been significantly influenced by the empirical findings from attachment, developmental, and neuroscientific research over the past five decades. These fields have gathered substantial evidence indicating the interactive nature of the development of the mind and brain (Allen, 2013; Schore, 2013). Furthermore, developmental neuroscience supports the notion that the infant brain is designed to be shaped by the social environment in which it develops (Thomas et al., 1997), and in that sense, it is considered to be a "social brain" (Brothers, 1990). The main implication derived from this conception of human development is that just as infant and caregiver co-construct their subjective experience of the world, of self and other, patient and therapist also co-construct their experience of the therapeutic relationship and of the emotional exchange involved in transference and countertransference processes (Aron, 1996; Schore, 2016). Thus, the patient-therapist relationship is the object of study, and the therapist is considered a co-participant, rather than someone who can stand outside the interpersonal field and observe from there (Aron, 1996).

At the same time, decades of research in affective neuroscience have questioned the supremacy of cognition in human information processing and development, and have emphasized the importance of affect, implicit memory and procedural phenomena in mental functioning (Damasio, 2005; Panksepp, 2005). This implies a recognition and acceptance of subjectivity in neurobiological research (Schuessler, 2003). Kendler (2005) proposes that subjective or "first-person" experiences have causal efficacy in the body and can be understood as highly elaborate forms of intentional processes that eventually lead to action and result in achievements such as language, customs, technology, and culture. Mental disorders emerge from the failure of these intentional states to exert effective action in the world (Spence, 1996). In this regard, Fonagy (2003, p. 108; italics in original) argues that "*Intrapsychic representational processes are not just consequences of environmental and genetic effects—they may be critical moderators*. [. . .] The primary evolutionary function of attachment may be the contribution it makes to the creation in the individual of a mental mechanism that could serve to moderate psychosocial experiences relevant to gene expression." In other words, he states that the *interpretation* of the social environment and not the mere "objective," physical environment acts on genetic expression. The subjective perception of the social environment (e.g., perception of isolation or social anxiety) can generate changes in several levels of the body's response systems, such as the central nervous system, hypothalamic pituitary adrenal axis, intracellular signals, and finally transcription factors and genetic expression (Slavich and Cole, 2013).

Considering the abovementioned developments, the analytic process and the patient-analyst relationship becomes the focus of clinical interest and, following our proposal, of research inquiry. Given that there is no consensual definition of what a psychoanalytic process is essentially, and both the traditional inquiry based on the clinical case, as well as empirical approaches have reached a stalemate (Altimir and Jiménez, 2020), in our

proposal we adopt an observational stance. We understand the analytic process as that which transpires in the interaction between patient and analyst throughout time. With this respect, we agree with Schachter and Kächele's (2017) conclusion that since it is not possible to define or measure the traditional concept of psychoanalytic process, research must change strategies and focus instead on the detailed observation and description of this interaction. Based on this perspective, we ask ourselves which interactions and the mechanisms involved in them relate to patient change and which do not. This approach also takes into consideration, precisely, the perspective underscored by the relational turn, where this interaction cannot be understood without the influence of the person of the analyst.

Foehl (2010) argues that this perspective has meant a shift from meta-theory to a focus on the immediacy of the analytic encounter, suggesting that it is time for psychoanalytic inquiry—and we would also add systematic investigation of the analytic process—to move from a prescription of what the content of the analytic process should be, toward a focus on describing the structure of the process from a stance close to experience. This means looking at the performative dimension of clinical practice. In the same vein, Schachter and Kächele (2017), in a critical review of psychoanalytic training and theorizing, conclude that it is not possible to define and measure the concept of psychoanalytic process from a top-down (i.e., prescriptive) perspective, but that it is necessary to shift the strategy toward a focus on detailed and systematic observation and description of the patient-therapist interaction. This includes the ways in which subtle or implicit (unconscious) interactions and enactments may dominate the clinical situation, and how the subjective experiences of patient and therapist are influenced by the implicit actions and gestures of the other (Aron, 1996). This includes the affective processes involved in the development, maintenance, and regulation of the therapeutic relationship (Benecke et al., 2005).

PSYCHOTHERAPY RESEARCH SUPPORTS THE RELEVANCE OF THE ANALYTIC RELATIONSHIP

Following Strenger's (1991) argument, we consider that any conceptual proposition as well as systematic inquiry of the analytic process and the patient-therapist relationship must be consistent with the cumulative body of knowledge generated by nearly 50 years of psychotherapy research. After decades of the so called "legitimacy studies," the field has come to the conclusion that psychotherapy is effective, and that, on average, there are no significant differences in effectiveness between different types of psychotherapy. This has been called the "paradox of equivalence," leading to further studies that attempted to identify the different therapy factors that explain outcome and client change (Wampold and Imel, 2015). The findings from the numerous effectiveness studies have indicated that there is a significant proportion of the variance explaining therapy outcomes that is due to common or non-specific factors, that is, to elements that are involved in the therapist's contributions to the treatment and above all, relationship factors (Wampold, 2001; Lambert, 2013). Lambert (2013) estimated that the therapeutic relationship and patient expectations (both non-specific placebo effects) were responsible for 45% of that of improvement.

In the attempt to specify what are the active ingredients that make up the realm of the unspecific therapy factors, psychotherapy research has since examined the elements of the therapeutic relationship that contribute to change and outcome. After four decades of prolific research, findings indicate that the most important generic factor of change is the therapeutic alliance (Wampold and Imel, 2015). What is perhaps the most relevant aspect of these findings is the consistency of the alliance-outcome relationship (i.e., alliance as a robust predictor of outcome) across treatment orientations, patient disorders, rating methods for both alliance and outcome (i.e., client and therapist self-reports and observational measures), and across contexts in which the treatment is delivered (i.e., naturalistic settings as well as manualized treatments) (Martin et al., 2000; Horvath and Bedi, 2002; Horvath et al., 2011; Flückiger et al., 2018; Del Re et al., 2021). This can only confirm that the elements that compose the alliance, as it has been measured throughout these studies, constitute a significant portion of what transpires in the therapeutic exchange. These elements include the mutual agreement between patient and therapist on the tasks and goals of treatment, as well as an affective bond between them (Bordin, 1979), generating a collaborative relationship. Thus, the relevance of the therapeutic relationship for therapy process, and specifically for the analytic process that is our focus of interest, becomes unquestionable. This comes to confirm, through extra-clinical systematic research, the primacy psychoanalysis has given since its birth to the patient-analyst relationship as the via regia for the psychoanalytic process to unfold.

In an attempt to address the question of what specific elements are involved in this relational process, prominent exponents of the so-called "second generation" of alliance research, have redefined the alliance, suggesting "an inextricable relationship between the technical and the relational—that every intervention has relational meaning. It also suggested a more mutual and dynamic process of ongoing negotiation, which stands in contrast to previous conceptualizations that emphasized the therapist's support or the patient's identification with the therapist and acceptance of the therapist's values for the psychotherapy process" (Muran et al., 2010, p. 321). These researchers and clinicians have been interested in studying rupture-repair processes within this ongoing negotiation, based on which they have developed a therapeutic model focused on the alliance (Muran et al., 2021). Thus, they have managed to combine research with clinical practice, facilitating interdisciplinary dialogue. They not only base their clinical principles on relational thinking, but they have also been informed by mother-infant research on affect regulation and interpersonal complementarity. Although they adopt Bordin's definition of the alliance, Safran and Muran (2006) have questioned the use of the concept in the terms in which it has been studied, as it would over-emphasize the role of conscious collaboration, and in turn underestimate the pervasive role of unconscious factors in patient and therapist co-participation in the therapeutic exchange. They argue that there

is no longer a need to use the concept of alliance to distinguish it from transferential and counter-transferential components of the relationship, as it was originally regarded by Freud, since any attempt to disentangle the technical from the relational dimensions of therapy would be conceptually problematic (Safran and Muran, 2006). Instead, they propose the notion of negotiation to suggest "that the alliance concept can include a view of the psychotherapy process as involving an ongoing push and pull of various patient and therapist affective states, underlying needs, and interpersonal behaviors" (Muran et al., 2010, p. 321). Along this dialectic play between the patient's and the therapist's positions, accommodations, and hostilities, as well as contradicting needs of both participants are being exchanged. This conveys the fact that the world consists of others with separate subjectivities and that these subjectivities are potentially negotiable, without the need to deny the other's or one's own. In this regard psychotherapy involves an intersubjective negotiation in which both participants are engaged in a struggle for mutual recognition of their respective subjectivities (Muran et al., 2010). During this process affective states play a central role (Muran and Samstag, 2008), as they have been observed to be highly relevant in establishing and shaping the therapeutic relationship, serving a regulatory function (Benecke et al., 2005).

THE ROLE OF AFFECT REGULATION IN THE ANALYTIC RELATIONSHIP

We propose that affect regulation between patient and therapist constitutes a phenomenon of particular interest for the research of the analytic process, since it is inextricably involved in the intersubjective negotiation of the therapeutic relationship. In the relational psychoanalytic literature, the notion of intersubjective negotiation contains the idea that patient and therapist mutually negotiate affective states (Muran and Samstag, 2008). Affective processes are inherent to the exchanges that constitute and configurate the therapeutic relationship (Benecke et al., 2005). Thus, we assume that in the analytic exchange, affect regulation involves a process through which both patient and analyst experience and regulate internal affective states, while they express them through verbal and non-verbal channels. In doing so, they adopt a communicative value within that specific relational context, serving as information about the interactive partner's experience and therefore influencing the concomitant affective response. These responses maybe more or less accurate in apprehending the partner's subjective experience, and thus the relationship can oscillate across different levels of affective coordination and subsequent reparation of miscoordinations (Tronick, 2007; Fonagy, 2015). Nevertheless, affect regulation has been scarcely targeted as a process susceptible of being systematically examined from a research perspective as it unfolds in the analytic process.

We believe this responds to a characteristic that makes affect regulation a challenge as well as an opportunity for interdisciplinarity in psychoanalytic research. Affect regulation is situated at the crossroads of cognitive sciences (Gross, 2014), neuroscience (Schuessler, 2003; Schore, 2012; Gyurak and Etkin, 2014), developmental psychology and attachment (Bowlby, 1969; Beebe and Lachmann, 2002; Fonagy et al., 2002; Tronick, 2007), etiopathogenesis and personality (Blatt, 2008; Blatt and Luyten, 2009), psychopathology, psychiatry, and psychotherapy (Fonagy et al., 2002; Schore, 2012). The interest of these variety of disciplines in affect regulation responds to the increasing acknowledgment of its central relevance for the operation of the human mind and its relationship to the environment (Fonagy et al., 2002; Schore, 2012; Gross, 2014; Taipale, 2016), and to the development of adaptive as well as maladaptive mental functioning (Berenbaum et al., 2003; Berking et al., 2019). At the same time, this has implied a conceptual diversity that challenges the possibility of a unitary or simple definition.

Nevertheless, this diversity may be an opportunity of interdisciplinary dialogue as well. Here, we propose that the attempt to examine and understand the analytic relationship from the perspective of affect regulation, opens a field of inquiry that can contribute to deepening the understanding of how implicit and unconscious mental states can acquire complex meaning by means of an intersubjective exchange. To the extent that contemporary psychoanalysis has been emphasizing the importance of focusing on the immediacy of the experience of and with the patient (experiential turn), it has become more important to pay attention to the emotions that flow in and in between patient and analyst. This inevitably has the technical consequence of accentuating an observational attitude on the part of the therapist, before giving way to interpretative actions (phenomenological turn). It is precisely this tendency that makes self- and dyadic affect regulation a particularly important point in contemporary psychoanalysis (Jiménez, 2007). This is in agreement with interdisciplinary findings. In line with this, from our perspective, affect regulation is relevant both form a clinical as well as an investigative stance, to understand analytic process and the therapeutic relationship by way of different connecting pathways.

First, as developmental psychology and attachment research have indicated, affect regulation is an essential element in the process of the development of the self during early infancy. Thus, affect regulation contributes to clinical formulation by providing a comprehensive paradigm based on the "observed infant" that informs clinical work with the "clinical infant" (Stern, 1985). Several models within the developmental and attachment fields of research indicate that affect regulation constitutes a central process involved in the innate motivational attachment system (Beebe and Lachmann, 2002; Fonagy et al., 2002; Schore, 2012; Allen, 2013; Taipale, 2016). The infant-caregiver relationship is characterized by a highly efficient and essentially non-verbal system of emotional communication through which affect is transacted, whose function is to regulate the changing levels of the infant's arousal and emotional states (Beebe et al., 2005; Allen, 2013; Schore, 2016). Early affect regulation is carried out by the primary caregiver, who reads the baby's automatic emotional expressions and reacts with an affective mirroring, that allows the child to correctly attribute these states to him/herself and distinguish them from the caregiver's, fostering the capacity for affect self-regulation (Gergely and Watson, 1999; Watson, 2001;

Gergely, 2007). The quality of how affect is reflected impacts the development of the processes of emotional regulation and self-control, including mechanisms of attention and voluntary control. Along these progressive exchanges between infant and caregiver, the infant moves from a state of co-regulation, depending on the caregiver's ability to contain and mirror the child's affective states, to self-regulation, and therefore the regulation of the interactions with others (Fonagy et al., 2002; Beebe et al., 2005; Taipale, 2016). This continuous process enables the infant to develop a second order system of representation for mental states (Fonagy and Target, 2002). This will largely determine the child's ability to develop representations of self and others as separate entities with different intentions, desires, and feelings (Gergely and Watson, 1999; Watson, 2001; Fonagy et al., 2002; Gergely, 2007), This intersubjective process results in a gradual organization of emerging self-states in configurations of actions and responses that will result in the individual's sense of self and others (Allen, 2013). This process is the basis for intersubjectivity and therefore for the capacity for mentalizing (Fonagy et al., 2002; Bateman and Fonagy, 2006). Mentalization is defined as the achieved ability to conceive of oneself and others as possessing beliefs, feelings, attitudes, desires and intentions and therefore to give meaning and predictability to the behavior of others (Allen et al., 2008). Thus, the child's ability to develop representations of themselves and others as separate entities with different intentions, desires and feelings will translate into particular configurations of psychological functioning throughout the lifespan (Fonagy et al., 2002; Mikulincer and Shaver, 2007), which will include specific modalities of self and mutual affect regulation. This supports the notion that in infancy and along the human lifespan, the regulation of affect is a central organizing principle of human development and motivation (Schore, 2003).

Second, the result of the developmental pathways to adulthood manifest in relatively stable representations of self and others, are considered by several authors as the foundations of the development and functioning of the personality (Meyer and Pilkonis, 2005; Pietromonaco et al., 2006; Luyten and Blatt, 2015). Specifically, they constitute cognitive-affective interpersonal schemas of self and others, that can range from relatively broad representations applicable to various situations, to more relationship-specific representations (Luyten and Blatt, 2011). In turn, they constitute the building blocks of the individual's capacity to establish and maintain reciprocal, meaningful, and personally satisfying interpersonal relationships with others; and to establish a coherent, realistic, differentiated, and essentially positive sense of identity (Luyten and Blatt, 2011), that it, between interpersonal relatedness and self-definition (Allen, 2013).

The aforementioned concepts have in turn permeated the development of complex dimensional models of personality and etiopathogenesis, that have emphasized the importance of contemplating developmental processes, and of integrating findings from epigenetics and developmental psychology (Jiménez et al., 2018), in response to the limitations posed by categorical and disorder-centered proposals (Widiger and Samuel, 2005; Krueger and Markon, 2006; Clark, 2007; Blatt and Luyten, 2010). From this perspective, emphasis is placed on the consideration of the various developmental pathways of psychopathology that include genetic, temperamental and personality dimensions, and their interaction with the environment, in the shaping and consolidation of altered cognitive-affective schemas of the self and others throughout the lifespan (Blatt and Luyten, 2009, 2010). This approach implies a fundamental change of perspective, by considering an understanding based on the expression of subjectivity and not only of symptomatology, and which understands this expression as a complex psychological process resulting from a specific trajectory (Allen, 2013; Luyten and Fonagy, 2019).

These complex dimensional models of personality propose, in different ways, that the relatedness and self-definition dimensions are the key psychological coordinates of human functioning as well as of normal and disrupted personality development (Luyten and Blatt, 2011, 2013; Skodol et al., 2011). Furthermore, following Allen (2013), the dialectic among these dimensions intimately relates with the interactive processes involved in early attachment relationships and that consolidate differing levels of the development and regulation of the self. Specifically, the adult personality configuration will be characterized by certain affective regulatory strategies put forward in the context of close relationships (Meyer and Pilkonis, 2005; Pietromonaco et al., 2006; Mikulincer and Shaver, 2007).

Third, inasmuch as affects and their regulation constitute a fundamental process for the development of the self and of the emotional interactive repertoires employed to negotiate relationships throughout the lifespan, the therapeutic relationship will constitute a new scenario where these processes will necessarily unfold. The negotiation of the needs for agency and relatedness will be manifested through specific affective regulatory strategies, which may include self-regulation as well as hetero-regulation, that is, an invitation for the interactive partner to help regulate emotional arousal and dysregulation. Again, this will be shaped by the distinctive configurations of each participant's sense of self and others and the levels of anxiety involved in the interpersonal connection. In the face of particular patient-therapist transactions that generate some level of dysregulation on the patient, predominant attachment patterns (and therefore attempts to regulate the concomitant affective states) will be experienced and reenacted in the therapeutic relationship (Diamond et al., 2003; Allen, 2013), constituting an important component for the transferential and counter-transferential process. At the same time, these patterns will influence both patient's and therapist's capacities to tolerate frustration and anxiety in the analytic relationship as well as to explore ruptures of the alliance (Eames and Roth, 2000; Allen, 2013). In fact, evidence indicates that therapists' capacity to regulate their own affect during ruptures of the alliance is crucial in the ability to address and repair alliance ruptures (Muran et al., 2010; Allen, 2013; Eubanks et al., 2018). These affect regulatory capacities are in turn intrinsically related to the process of mentalizing in the analytic relationship. According to Allen (2013), psychotherapeutic process, by means of the patient therapist relationship, favors improved mentalizing, a capacity that emerges from the repeated process of understanding and being understood. In his view, psychotherapists "are mentalizing

and engaging their patients in the process of mentalizing while endeavoring to provide their patients with a safe relationship that bears the hallmarks of secure attachment. Moreover, to the extent that the therapy addresses problems in close relationships—including ways of relating to oneself—the content of the therapy process pertains to attachment" (p. 163). Inasmuch as mentalizing involves having the other's mental states in mind, it contributes to the process of mutual affect regulation within the analytic dyad.

In this section we have argued about the centrality of affective (self-) regulation in intimate relationships, the paradigm of which is the early mother-infant relationship, bringing together arguments from different disciplines of the mind. One of the basic intuitions of psychoanalysis has been that the analytic relationship reproduces, in some way, the early relationship that the patient had with her/his mother (transferential patterns). However, Daniel Stern emphasized that the representation of the "clinical baby" on which the analyst focuses his therapeutic work should not be confused with the "observed baby," there being crucial differences between the two configurations. In the same vein, empirical research, which has been prodigal in comparisons between the clinical baby and the observed baby, has not achieved the same development in the investigation of the therapeutic relationship "on its own merits" (Jiménez, 2009). Our proposal, therefore, suggests that the focus of the empirical study of the psychoanalytic relationship should be on the mutual (self-) regulation between patient and analyst, which constitutes a privileged window for its study.

HOW TO INVESTIGATE AFFECT REGULATION IN THE ANALYTIC DYAD: AN ILLUSTRATION

In the attempt to make a case for the contribution of interdisciplinary research on affect regulation in the analytical relationship, we will describe a line of research developed by the first author. Based on the arguments posed above, this line of research is interested in studying mutual and self-affect regulation within the therapeutic dyad during particular relational events that deem relevant for the negotiation of the relationship and therefore for the therapeutic process. Therefore, we have drawn on the Rupture Resolution Model developed by Safran and Muran (2000), which comprises a combination between psychotherapeutic process research on ruptures and resolutions as well as a relationally sound and empirically informed model for therapy centered on working on the therapeutic relationship. We have already described the relational background that also informs this model. Nevertheless, we want to stress that the rationale behind the selection of these relational events within therapy responds to the fact that they are relevant and discrete instances or "windows" to the intersubjective negotiation process in its fullest manifestation.

Alliance ruptures have been defined as temporary deterioration in the alliance manifested by a disagreement between patient and therapist on the goals of therapy, lack of collaboration on therapy tasks or a strain in the emotional bond (Eubanks et al., 2018). At a simultaneous level, that have been defined as breakdowns in the continuous -conscious and unconscious- process of negotiation of patient and therapist's respective needs, desires, and subjectivities (Muran and Eubanks, 2020). Therefore, ruptures involve the activation of dysfunctional relational patterns commanded by the participants' relational schemes (Safran and Kraus, 2014). These relational schemes are manifest in the display of idiosyncratic affective repertoires, in an attempt to manage the emotional dysregulation caused by the relational impasse, expressed both verbally and non-verbally (Schore, 2011). During these relational events, it is possible to assume that each participant enacts their learned affective and relational repertoires founded on their representations of self and others, and of how relationships unfold (Safran and Muran, 2001; Beebe and Lachmann, 2002). These repertoires contain learned patterns that regulate affect and also determine expectations regarding the roles each member of the dyad must adopt in the interaction in order to respond to the specific needs for regulation (Bänninger-Huber and Widmer, 1999; Beebe and Lachmann, 2002).

According to the patient's particular relational scheme activated, Safran and Muran (2000) have observed that ruptures can be expressed either as a withdrawal or emotional disengagement from the therapist, or the therapy process; or as a confrontation, where the patient expresses dissatisfaction in a non-collaborative way or attempts to control the therapist. It is relevant to note that ruptures are the results of both patient and therapist contributions, although their relative contribution may vary from case to case (Safran and Kraus, 2014). Therefore, they are co-constructed in this intersubjective process. At the same time, it is expected that each rupture, will adopt different forms depending on the particular characteristics of each participant in relation to their capacity to establish relationships (relatedness) and their capacity for self-definition (Safran and Kraus, 2014). This underscores the adequacy of the study of these events for the examination of the affect regulation process embedded in ruptures, as the participants' strategies employed to address affective states within the therapeutic relationship will respond to these styles of functioning. In response to ruptures, the therapist may recognize and address them by implementing resolution strategies, which include direct (explicit acknowledgment) or indirect (implicitly resolving) attempts, as well as immediately focusing on the expeditious repair of the rupture in order to return to the original exchange, or expressive attempts that aim to shift the focus of the session to exploring the rupture and patient's underlying needs or concerns (Eubanks et al., 2018).

These events are a prevalent phenomenon within therapy sessions (Eubanks et al., 2018; Muran et al., 2021), and can be considered interpersonal stressful events that challenge the stability of the relationship and the quality and progress of psychotherapy (Coutinho et al., 2011, 2014). Adequate management and positive resolution of ruptures is associated with greater benefits to patients, while a poor management of these events has been related to premature dropout (Tryon and Kane, 1995; Coutinho et al., 2011, 2014) and reiteration of ineffective interventions by the therapist (Castonguay et al., 1996).

The methodological challenge for the study of affect regulation within the analytic dyad is posed by the core elements that characterize affect and regulatory repertoires. As we have already reviewed in the previous sections, affect regulation is a process that initiates with birth and develops within the framework of the innate motivational system of attachment. The transactions involved in affect regulation are manifested through multiple channels of interaction (non-verbal, verbal, verbal, vocal, neuroendocrine, kinesthetic), resulting in multiple qualities of experience between baby and caregiver, and are organized into configurations of actions and regulatory responses (Tronick, 1989; Fonagy et al., 2002; Schore, 2005; Beebe, 2006). These transactions are initially organized in an implicit, procedural domain of experience, before the acquisition of language. This domain, sometimes called sub-symbolic (Bucci, 1997), encodes much of the procedural and emotional knowledge, which relates to the habitual way of establishing and negotiating interpersonal relationships. The sub-symbolic domain of experience is predominantly manifested through automatic non-verbal behavior. At the procedural level social behavior is regulated and coordinated moment-to-moment at the split-second level, largely outside of consciousness. The speed and density of information exchanged at this level does not allow for central control of cognition (Beebe and Lachmann, 2002). Most relational transactions rely heavily on a substrate of affective cues or signals that give an evaluative valence or direction to each relational communication. These communications are conducted at an implicit level of rapid signaling and response, occurring too quickly for simultaneous verbal translation and conscious reflection (Lyons-Ruth, 2000). However, the phenomena of transference and countertransference occur in response to these signals, and much of the pull and push of the relational negotiation will be manifest in this way (Schore, 2003).

Therefore, to access a relevant proportion of implicit affective states and their regulation, this line of research proposes to study patient and analyst's facial affective behavior. Affects and affective states are mainly communicated through non-verbal behavior in human interactions and facial-affective behavior constitutes one of the primary channels for emotional communication. Facial-affective behavior constitutes an observable component of emotional processes (Bänninger-Huber and Widmer, 1999). Thus, it serves several functions for the regulation of the relationship, such as conveying information of the participant's internal emotional states, and in that sense, they are a window for accessing unconscious and spontaneous affective states (Merten, 2005). They also communicate expectations about the interactive partner and about the relationship (including expectations regarding affect regulation), they serve the function of assessing and regulating the state of the relationship, of communicating emotional involvement, indicating how the individual copes with negative affect, and of attenuating, amplifying, simulating, emphasizing and enriching both verbal and non-verbal content of communication (Anstadt et al., 1997; Bänninger-Huber and Widmer, 1999; Dreher et al., 2001; Merten, 2005). Although a great portion of facial-affective cues occur too quickly for simultaneous verbal translation and conscious reflection to occur (Lyons-Ruth, 2000), the interactive partners are continuously reacting to the implicit as well as cognitive interpretations of these signals.

Although the study of facial affective behavior is transversal to several sub-disciplines of psychology, research on facial-affective behavior in psychotherapy suggests that relevant instances of the therapeutic exchange trigger varying degrees of emotional dysregulation in the therapy participants, with their concomitant attempts to self- and mutual regulation of these affective states. These attempts may be expressed both verbally and non-verbally (Bänninger-Huber, 1992; Bänninger-Huber and Widmer, 1999; Benecke and Krause, 2005). Specifically, non-verbal facial affective behaviors would involve a specific desire of regulation, as well as communicate certain attitudes toward the interactive partner or toward the state of the relationship, which include expectations about the interaction, and the interactive partner (Anstadt et al., 1997; Merten, 1997; Benecke and Krause, 2005; Rasting and Beutel, 2005). Inasmuch as the facial affective behavior or therapist and patient allows for the observation of affective regulatory processes that take place in the moment-by-moment exchange, this line of study stresses the interaction as a study unit.

The implementation of this research line initially involved the systematic study of cumulative single cases of psychotherapeutic processes of different theoretical orientations (see Barros et al., 2016; Altimir and Valdés-Sánchez, 2020); and more recently has broadened to a greater sample of therapies. It is relevant to note that although this research line is informed by relational psychoanalytic thinking, and it is particularly interested in accessing the implicit and unconscious portion of dyadic affective processes, so far it has been implemented on therapies of different theoretical orientations, including predominantly psychodynamic therapies. The rationale for this has been the consideration that both ruptures (Eubanks et al., 2018; Muran et al., 2021) as well as facial-affective behavior are a generic phenomenon that is present in all kinds of therapies. Although this may be considered a limitation of these studies, since these therapies are not based on manualized procedures, but instead are selected from naturalistic settings, it seeks to grasp what therapists and patients "actually do in ordinary therapies." This is based on the fact that this research line is in the stage of opening a field of inquiry by progressively accumulating data from the "bottom-up," placing a particular focus on the notion of affect regulation and implicit interactions. We expect these findings to generate new research questions and hypothesis about affect regulation that can further be examined within psychodynamic therapies, under the idea of systematically observing what psychoanalytic therapists and their patients do.

Psychotherapeutic dyads have been recruited through mental health care services and university based or psychotherapy training contexts, implying that most therapies have been brief and time-limited. All participants have been informed of the aims of the studies and have signed informed consents allowing the entire therapy to be videotaped, involving the installation of cameras in the room directed simultaneously toward therapist and patient. All videotaped therapy sessions have been observed by trained raters who code the presence of rupture and resolution strategy markers based on the Rupture Resolution Rating System

(3RS) (Eubanks et al., 2015). Trained coders observed each therapy session and identified markers of both ruptures and resolution strategies according to the definition of the manual. This process yields a sample of ruptures and resolution strategy events along the total number of sessions of each therapy studied. These events last between two to several speaking turns (between seconds and 5 min long). It is important to note that not all therapy sessions contain rupture or resolution strategies, so the distribution of these events along the therapy process is not homogeneous. Thus, some sessions may contain two or three ruptures and one or no resolution strategy (which may address one of the ruptures or the sequence of ruptures in that session or even in previous sessions), while other sessions seem to focus on therapeutic work and no ruptures o resolution attempts are observed. Throughout this process, inter-rater reliability is estimated to assure adequate levels of observational validity.

From a process research perspective, these events constitute windows that allow an observational access into relevant interactions within psychotherapy, based on the significant events paradigm. This approach proposes to examine the specific moments of therapy that are considered relevant for change, as well as their components and the mechanisms that facilitate their occurrence (Greenberg, 1986; Safran, 2003). Thus, the psychotherapeutic process would be understood as a sequence of recurrent states and transitions between them, revealed in identifiable patterns of action. These events thus constitute "thick" experiential instances that provide significant information about the processes and mechanisms that form the foundations of psychotherapy (Safran, 2003). In a second moment, patient and therapist's facial affective behavior within the previously identified rupture and resolution strategy events is coded by judges trained in the Facial Action Coding System (FACS) (Ekman and Friesen, 1978), an observational system that allows the objective coding of facial behavior. This behavior includes facial movements associated to the presence of basic emotions (happiness, anger, contempt, disgust, fear, sadness, and surprise), as well as behavioral indicators of emotional arousal and attempts at regulation (Anstadt et al., 1997), such as self-touching, control/attenuation of facial expressions, and elevation of eyebrows (Ekman, 1979). Since facial movements occur very rapidly, they were coded at a micro-level (Bänninger-Huber, 1992), implying that rupture and resolution strategy events were divided into 1-s-long video-frames (with.04 s resolution). This means that a rupture event 1 min long is divided into 60 frames. The presence of any facial-affective behavior within these frames is coded. In other words, if a micro-expression lasts 1 s, it is coded within the frame it takes place, if it lasts 45 s, it is coded in each of the 45 frames it takes place. To assure reliability on the FACs coding, inter-rater agreement was also estimated. This method is appropriate to capture facial-affective cues that occur at the split-second, and therefore are too fast to and automatic to undergo conscious awareness. Among these behavior, micro-expressions (Ekman, 2007) are fast facial movements lasting less than a quarter of a second and are involuntary. They are assumed to be the result of an intentional attempt at suppressing the true emotional experience or of unconscious repression, and therefore express an emotion the subject is totally unaware of. The relational context and the content of the interaction serve to clarify the meaning of both micro as well as macro-expressions (normal facial-affective expressions). In this case, the relational context of a rupture (tension in the relationship) or a resolution attempt (metacommunication and attempt at connecting), as well as the verbal content of these specific exchanges, will help attribute meaning to this behavior, and in that sense, its affective regulatory function.

The association between the participants' facial-affective behavior within rupture and resolution strategy events were modeled by means of nested hierarchical regressions using Hierarchical Linear Modeling (HLM). A two-level model was estimated, where participants' facial behavior was defined as the dependent variable (Level 1) and type of event as the predictor variable (Level 2). Also three-level models were estimated were facial-affective behavior was defined as the dependent variable and verbal relational offers as predictor variables (Level 2), while rupture/resolutions at Level 3 predictor variables. Separate nested models were estimated for the probability of occurrence of each Level-1 dependent variable. This method responds to the nested nature of the data, which HLM controls for. That is, each participant's facial-affective behavior occurs within rupture/resolution events that in turn are nested within a same therapy and relationship, so they cannot be treated as independent variables. This quantitative approach allows for the analysis of a big number of events and frames, that can provide certain generalized conclusions about certain identified patterns. It is our aim to subsequently examine examples of these patterns in a more qualitative, process-descriptive manner.

Findings until now support the assumption that by studying facial-affective behavior, we can access the process of affect regulation involved in the intersubjective negotiation reflected in ruptures of the alliance and resolution attempts. Results of a sample of five psychotherapies, indicate that during withdrawal ruptures, patients displayed significantly more expression of positive emotions, mainly through the expression of social smile (Barros et al., 2016). In contrast to the expression of joy, which indicates felt happiness, social smile is not felt, but serves the function of maintaining a basic sense of security within the relationship and ensures a state of emotional resonance with the interactive partner (Bänninger-Huber, 1992; Benecke et al., 2005). It seems patients may have favored attempts to secure the bond that may have felt temporarily threatened by the rupture, prioritizing their needs for relatedness over their need for self-definition. Meanwhile, confrontation ruptures were characterized by an absence of + patients' facial emotional correlate for the emotional experience of a confrontation rupture, perhaps indicating some kind of suppression, favoring their sense of agency over their need for relatedness.

A second single-case study which examined participants' facial-affective communication in association to their verbal relational offers during ruptures and resolution strategies (Altimir and Valdés-Sánchez, 2020), indicates that the patient displayed significantly more negative emotions during ruptures, predominantly anger. Meanwhile, fear and indicators of regulatory behaviors attempting to control facial expression were more predominant during ruptures where the therapist's

relational offer was that of proposing a new perspective. At the same time, the patient avoided gazing at the therapist during ruptures, while verbally offering a receptive stance, and while therapist verbally offered a questioning and conciliatory stance, the patient displayed self-soothing behavior indicating emotional deregulation. These behaviors may indicate patient's attempts to regulate emotional distance with the therapist. Meanwhile, patient's facial-affective behavior during resolution strategy events indicates a consistent likelihood of patient gazing at him and of displaying markers of emotional deregulation. The therapist exhibited a sustained gaze at the patient, as well as emotional deregulation and attempts at controlling facial expression during rupture events. During resolution strategy events instead, therapist was more likely to display indicators of either making emphasis on his verbal/non-verbal communication or showing an interrogative stance.

Finally, a study by Altimir et al. (2017) based on a sample of five therapies of different theoretical approaches, indicate that ruptures are characterized by affect deregulation, emotional arousal markers and negative emotions in both patients and therapists, which in turn activate self-regulatory behaviors. Nevertheless, during these events, therapists sustain contact and emotional involvement with the patient through gazing at the interactive partner, while patients avoid contact through gaze. However, patients show more gazing toward their therapist during withdrawal ruptures compared to confrontation ruptures (Altimir et al., 2017). As facial affective research has specified, gaze behavior is a primary affective regulatory behavior in human emotional communication (Anstadt et al., 1997; Bänninger-Huber and Widmer, 1999; Dreher et al., 2001). Therefore, these findings indicate that gaze has an important function in regulating contact within relational tense events. Specifically, it seems that patient affect deregulation involves withdrawing from emotional involvement with the therapist during instances in which negotiation of the relationship triggers the unfulfillment or frustration of specific relational needs. On the other hand, the fact that therapists tend to sustain their gaze and therefore their involvement in the interaction, may indicate their ability to, at some extent, regulate their own emotional arousal and stay connected during the relational exchange, in spite that he/she may show other signs of emotional deregulation. This is coherent with the therapeutic model for addressing ruptures in the alliance developed by Safran and Muran (2000) and Muran et al. (2010), which suggests the relevance of the therapist affect regulation to allow the exploration of these events. Another relevant finding is that patients display more positive emotions, manifested in happiness/joy or through social smiles, during withdrawal ruptures compared to confrontation ruptures, specifically during withdrawal ruptures characterized by a content-affect split. This means the patient withdraws from the therapist and/or the work of therapy by exhibiting affect that does not match the content of his/her narrative (Altimir et al., 2017).

Although these results are based in a small number of cases, they indicate that it is possible to access observable indicators of participants' attempts to regulate affective disturbance and deregulation within the therapeutic dyad. At the same time, alliance ruptures and resolution strategies constitute windows that provide a relational context to these self and mutual affective regulation processes, that allow making sense of these automatic and implicit behaviors. We have evidenced that ruptures trigger affective dysregulation, negative emotions and self-regulatory behaviors in both members of the therapeutic dyad and require therapist self-regulation to sustain relational involvement. In turn, resolution strategies are laborious processes of recognizing the difficult emotions triggered by the ruptures, involving an affective reflection of the patient's internal experience and the therapist openness to explore patient's underlying difficult affects. The future directions of this line of research are to confirm these findings examining a larger number of therapies, to progressively derive affective interactive patterns that characterize alliance ruptures and resolutions. At the same time, the aim is to achieve a greater specificity in the description of the affective regulatory processes across the different types of ruptures (withdrawal and confrontation), as they involve different relational movement in their attempt to negotiate the needs for relatedness and self-definition. Ongoing research in this line is currently attempting that endeavor.

CLINICAL IMPLICATIONS OF RESEARCH ON AFFECT REGULATION IN THE ANALYTIC PRACTICE

The clinical contribution of this line of research is that it provides systematic and empirical support to the relevance not only of the analytic relationship, but also of the clinical work that is focused on that relationship. Given that ruptures constitute a prevalent phenomenon within the therapeutic relationship (Eubanks et al., 2018; Muran et al., 2021), challenging its stability and the progress of therapy (Coutinho et al., 2011, 2014), it is relevant that therapists develop abilities to detect and address them in a timely manner. The model developed by Safran and Muran (2000), Muran et al. (2010) to identify and address them therapeutically already constitutes an important contribution for clinicians, by describing and systematizing a relational experience that is relevant to the analytic process. The fact that clinicians can count with specific tools to identify stressful relational events such as ruptures, favors an open attitude focused on the here and now of the relationship that allows working in an immediate and contingent manner. It also favors clinicians who privilege the relational approach to have concrete elements of their own and the patient's internal states that allow focusing on the emergence of the immediate relational transactions that attempt to deal with those states, both at an explicit as well as implicit level.

Specifically in relation to the contribution of investigating affect self- and mutual regulation within rupture and resolution processes, we consider that the accumulation of systematic knowledge in this regard may imply a direct contribution to inform clinical practice as well as training. By incorporating a specific perspective on affect regulation to the description and understanding of the rupture-resolution process by means of facial-affective behavior highlights the relevant role of the affective processes in the analytic interaction. Clinical supervision and training can be informed by detailed observations of

these interactions, for example, through videotaped therapies. The possibility of observing how verbal and facial-affective non-verbal dimensions of the patient-therapist intersubjective negotiation within ruptures and resolutions may help clinicians grasp the intertwined aspects of these dimensions. At the same time, it can help "train the clinical eye" to specific facial-affective and non-verbal cues that accompany these difficult relational events, to improve their identification and a timely approach to working on them.

The recognition that ruptures and resolution processes involve the activation of certain affective responses in both participants, indicates the importance of the therapist's self-regulation process in tolerating and sustaining challenging relational events while being able to be open to what emerges from the emotional reactions of both participants and the possibility of regulating that experience. To the extent that the therapist is in charge of self-regulating his or her negative affective states and the disturbance aroused by the rupture, he or she is able to sustain the bond, in a connected way, and explore the course of the patient's underlying experiences. This self-regulation is expressed in an accepting, flexible and responsive attitude toward the emergent aspects of the interaction, the new information and possibilities the ongoing interaction entails for the dyad (Safran and Muran, 2000). In turn, through facial-affective responses as well as verbal content, the therapist can offer the patient an alternative and more adaptive way of establishing close relationships (Benecke et al., 2005).

In this way, this capacity of the therapist acts as an interactive regulation of the patient's dysregulation, opening up new areas of inquiry and new ways of relating to the patient. The therapist's capacity to self-regulate his own internal affective states in order to explore the patient's mind is the basis of any mentalizing process. The exploration of the affects triggered by the rupture allows the dyad to mentalize the experience of the patient and of the interaction, thus, the negotiation of each other's needs for relatedness and self-definition.

At the same time, the possibility of counting with facial indicators that characterize rupture events and resolution attempts, and eventually being able to distinguish particular and distinctive indicators for the different types of rupture, can help the clinician to be more attentive to the patient's dysregulation processes as well as to orient his/her exploration toward more specific contents associate to the experience of disturbance. This responds to the assumption that different withdrawal and confrontation ruptures express particular ways of dealing with the disturbance in the intersubjective negotiation process, and therefore, may be expressed differently though facial-affective behavior. In that sense, this line of research may contribute to better describe ruptures that may often go unnoticed by patient and therapist (Safran et al., 2011), such as withdrawals, and help clinicians be more attentive to specific markers of such processes. In similar vein, the possibility of describing the therapist's emotional reactions can contribute to foster greater self-awareness and attention to the therapist's own reactivity an internal state, and therefore to countertransferential processes. This is in line with a mindful attitude toward the present experience, particularly to the which is embodied, by incorporating one's own facial expression as a source of information on these internal states. This in turn favors therapist self-regulation and therefore the process of relational understanding of the emerging interaction. Having observable facial markers in the patient, as well as self-perceived in the therapist's own facial expression can thus favor clinicians to be attentive to the oscillations experienced in the therapeutic relationship, and to address them more effectively. This is relevant inasmuch as ruptures require an adequate therapeutic approach and the possibility of addressing them for their positive resolution, which is fundamental for the continuity of the therapy and a fruitful therapeutic work (Coutinho et al., 2011, 2014).

DISCUSSION

Psychoanalysis marked the birth of psychotherapy as a discipline. However, the history of its relationship with academia and to the scientific method of acquiring knowledge remains controversial. In recent decades, however, a growing consensus has emerged that psychoanalysis is a discipline that should draw on both hermeneutic *and* scientific disciplines (Strenger, 1991). After decades in which the focus of clinical research was on the unconscious manifestations of the patient in the transference to the analyst, attention has turned to the intersubjective relationship between patient and therapist. Psychoanalysis has thus undergone a relational and phenomenological turn, where what is relevant is the immediacy of the analyst-patient interaction. Traditional clinical studies do not do justice to the complexity of the analytic relationship, as they are based on verbal reports reconstructed from memory and therefore cannot capture the immediacy of the relationship. In doing so, they leave out the possibility of grasping the moment-to-moment unfolding of the interpersonal exchange, and therefore to access what "psychoanalysts actually do." This also includes the possibility of accessing the non-verbal, implicit, and procedural realm of the intersubjective process. Thus, the Freudian metaphor of telephone communication as a representation of unconscious-to-unconscious communication is left out of clinical and scientific exploration. Yet, there is no distinct or direct method to study unconscious and implicit phenomena, since it is always subject to interpretation. Our proposal to study participants' facial-affective behavior is assumed to be an innovative method to access affective regulation of the analytic interaction, as it attempts to relate unconscious phenomena with symbolic and complex meaning making, that is, the "in-between" processes. We believe that by simultaneously examining verbal intentional affective states and linking them with non-verbal affective cues, we may contribute to grasp and perhaps do justice to the central idea of psychoanalytic process, that is, the relevance of the unconscious in therapeutic work.

Therefore, an innovative research program should address the empirical study of the processes that take place between patient and therapist, paying special attention to the manifestations of the implicit domain of the relational experience, as it can shed light into unconscious phenomena. In this paper we have described that one of the most relevant findings of contemporary

neuroscience are the implicit phenomena, i.e., those that are out of consciousness, and account for more than 90% of mental life. Implicit phenomena play a relevant role in the patient–therapist affective communication. Most relational exchanges are strongly based on affective cues that contain specific information about emotional states and cognitive appraisal processes, which are captured and utilized by both participants at the instant. Within this communication, affective signals take place in fragments of seconds, so that the speed and density of the information that is being exchanged does not allow the central control of cognition, that is, a verbal translation and conscious reflection. An innovative research program must be able to capture the implicit level, the moment-by-moment exchange, the interactive emotional patterns of facial behavior, gaze, vocalization, and orientation of the participant simultaneously.

Our research strategy chooses the simultaneous capture and analysis of the verbal contents and the interaction of gestures and glances, as an expression of the implicit unconscious exchange. Of course, it is possible to add other expressions, such as voice and body gestures. The progress of research in this field, as well as the systematic study of long therapies and in particular clinical populations (e.g., personality disorders) will enrich the knowledge of clinical exchange. We believe that only in this way the accumulation of clinical knowledge, in permanent dialogue with scientific findings, will lead psychoanalysis to a unified scientific discipline, as conceived by Freud in his 1923 article.

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/s.

ETHICS STATEMENT

The data referred to in the manuscript are secondary data from previous studies duly authorized by ethics committees. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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OPINION
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The Changeable Positioning of the Couch and Repositioning to Face-to-Face Arrangement in Psychoanalysis to Facilitate the Experience of Being Seen

Bariş Önen Ünsalver[1], Alper Evrensel[1], Fatma Duygu Kaya Yertutanol[1], Aslihan Dönmez[2] and Mehmet Emin Ceylan[1]*

[1] Department of Psychiatry, School of Medicine, Uskudar University, Istanbul, Turkey, [2] Department of Psychology, Bogaziçi University, Istanbul, Turkey

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INTRODUCTION

The main therapeutic relationship tools in the psychoanalytic process are transference, countertransference, and free association. Psychoanalytic space that constitutes the framework of the psychoanalytic method, the objects in the room, and especially the features such as the positioning of the couch or the chair, duration of each session, frequency of sessions, make it possible for these therapeutic tools to be activated. Although the couch or chair placement may change in different psychoanalytic schools, in classical psychoanalysis, the couch is traditionally positioned so that the analyst does not make eye contact with the analysand. This placement prevents eye-to-eye contact and facilitates free-association, and prepares the basis for the analysand to convey their free associations without feeling shame, fear, anxiety, or without the pressure of feeling these negatively valued feelings less (Adler and Bachant, 1996). However, some analysts oppose the idea of the couch as a facilitator of transference and free-association (Wolf, 1995) and some suggest using lying down and sitting up positions when necessary on a client-to-client basis (Celenza, 2005). Schachter and Kächele (2010) reported in their detailed review article that there are conflicting data regarding the necessity and validity of using the couch in psychoanalysis and that there is no empirical evidence to show that everyone from the psychoanalytic process should be seen on the couch. Current psychoanalysts and early analysts such as Erich Fromm and Harry Stuck Sullivan opposed both the psychoanalytic framework and the rigid stance on using the couch. They propose that it is possible to switch from the couch to a face-to-face sitting position with regard to the character of psychopathology, the practice of the psychoanalytic school pursued, or new situations that will arise here and now in the therapeutic process.

In this paper, the theory of change in psychoanalysis is accepted to be based on object relations approach. The goal of treatment is a change in the analysand's arrested or dysfunctional object relationship structure. It can be said that the essential and prominent component that establishes the therapeutic alliance is the mutual gaze between the client and the therapist. Eye contact sends a message to the receiver: "I am present with you." In psychoanalytical relationship the analyst is expected "to be with" the analysand rather than "do with" the analysand (Ogden, 2004). When the analyst is sitting behind the couch preventing any eye contact, the analysand might not experience this self-understanding or receive any message via eyes of the analyst of them being there together. In this article we focus on eye gaze and the experience of being seen to support the proposition about changing the positions of the analyst and analysand when necessary.

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****Correspondence:***
Bariş Önen Ünsalver
onenunsalver@gmail.com

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EYE-TO-EYE CONTACT TO FORM THE OBJECT RELATIONSHIP

Babies have a propensity to seek eye contact (Baron-Cohen, 1995). Especially in the first months, the babies monitor and manipulate the caregiver through eye movements and ensure that their needs are seen. The contrasting white of the sclera from the iris makes it easier for the mother to be alerted to this searching gaze by the baby and helps her follow the baby's gaze and become receptive and attuned to the baby's needs. There starts a proto-conversation via mutual gaze, as described by Schore (2012). In case of excessive stimulation from the caregiver, the baby regulates themselves by turning their gaze away (Stern, 1985). The first object relation is established through eye-to-eye contact and breaking of this contact, which occurs thousands of times.

The first special relationship between the mother and baby will form the template for future relationships (Schore, 2012). Therefore, it is accepted as a prototype for a therapeutic relationship (Gray, 1994). As a secure relationship develops in time, the baby is "held" and "contained" in the mother's gaze. According to Winnicott, the mother's "holding" confines both physical holding of the infant and the entire environmental provision for the infant. At first the mother holds and digests the infantile anxiety and reflects back to the infant with a modified affect that is conveyed mostly through the mother's gaze, keeping the infant from experiencing a sense of annihilation. Mother's gaze is a salient part of this holding environment (Winnicott, 2005). Bion states that the primary function of the mother in early infancy is to become a "container" for the frustration and pain of the infantile vulnerable ego (Meltzer et al., 2007). Mother's calm gaze can become a "container" of the baby's mind.

Based on this information, it seems necessary for the analysand, whose early attachment experiences surface through transference or who has regressed in a therapeutic environment such as psychoanalytic therapy, to re-establish "holding" and "containing" eye contact with the "new object" so that they will experience attunement in order to reconstruct and repair early object relations. Psychoanalysis may lay the groundwork for accelerating the recovery process with such simple interventions as coming into eye contact to help the analysand be seen and regulate themselves when the need arises. However, the analysand who does not see their analyst on the couch might miss this opportunity of reparation.

PUPIL MIMICRY AND THE EXPERIENCE OF BEING SEEN

During eye contact, pupil sizes synchronize between partners, where the pupils of one party dilate or constrict in synchrony with the dilation and constriction of the pupils of the other party (Harrison et al., 2006). This is called pupil mimicry. It has been suggested that we understand information about the inner state of the other through unconscious and involuntary pupil mimicry (Kret et al., 2015). According to pupil mimicry studies, an arousal response is recorded in the amygdala when both pupils are dilated or a decreased arousal response in the amygdala when there is pupil constriction. Therefore, it is probable that when the therapist and the client face each other unconscious and involuntary pupil mimicry may occur, and the autonomic nervous systems of the client and the therapist may resonate through the mutual gaze. If the therapist has an insight into their bodily sensations and has available personal resources to manage their autonomic responses as the sensations emerge, then the therapist might intentionally relax themselves in situations where the client has overwhelming anxiety and help the client to regulate themselves through the therapist's pupils. The same pupillary response also serves to build trust between two people, which is thought to be built via oxytocin increase during pupil mimicry (Nagasawa et al., 2015). It might also be speculated that the experience of "being seen" by the therapist in real-time through eye-to-eye contact may also evoke the experience of "being held" through increasing oxytocin. This would be touching each other without actually touching. Having said all these about pupil mimicry, it must be said that most therapists don't probably actually see the client's pupils and further research is needed to measure whether there is pupillary mimicry among people sitting across each other during psychotherapy.

Experience of being seen by someone else might elicit affect-related psychophysiological responses in the person who receives the eye gaze (Hietanen et al., 2018). Studies have suggested that the gaze of a living person only initiates the effect of eye contact on the autonomic nervous system (Prinsen and Alaerts, 2019). These psychophysiological responses arise only during mutual and direct gaze where both gazers are in a live interaction (Prinsen and Alaerts, 2019). The perception of being seen or knowing that one is seen causes electrophysiological changes that can be measured with electroencephalography (EEG) electromyography (EMG) (Pönkanen et al., 2011; Myllyneva and Hietanen, 2015; Hietanen et al., 2018; Jarick and Bencic, 2019). These changes are in the form of arousal response determined by increased sympathetic activation in the autonomic nervous system, increased left frontal activity that can be associated with the motivation to get closer to the other, and EMG response associated with positive emotions (zygomaticus major activation and corrugator supercilii muscle relaxation) (Pönkanen et al., 2011; Hietanen et al., 2018). In a neutral context, those subjects who had the experience of being exposed to direct gaze had greater zygomaticus response and lesser corrugator activity than those exposed to averted gaze in a study by Hietanen et al. (2018), suggesting that provide evidence that, in a neutral context, another individual's direct gaze is an affiliative, positive signal.

These affect-related psychophysiological responses to the experience of being seen can be likened to the prior experience of being seen by the mother or any other object relation where the experience of "being seen" and "being accepted" helps the healthy development of self rather than the "false self" as described by Winnicott (2005).

In a recent study by Hietanen et al. (2020), 32 test subjects were exposed to three interaction conditions with the same model in the direct and averted gaze: live face-to-face, live video calls, and recorded videos. Skin conductance response was used as a measure of autonomic arousal, and facial EMG was used for facial reactions. The direct gaze caused more arousal than averted

gaze, but not in the recorded video condition. On the other hand, EMG responses revealed more positive affective facial responses to direct gaze than averted gaze in all three conditions. This study suggests that knowing that someone is seen by someone in live interaction or a live video call increases autonomic arousal. The fact that direct gaze is associated with higher arousal underlines the importance of face-to-face interaction. So, when the analysand is lying down on the couch, not facing the analyst, they can still feel this autonomic arousal because they will know that the analyst is seeing them, but the arousal will be mild, which could help facilitate free association and introduction of shame-inducing thoughts.

Moving forward from the Hietanen et al. (2020) study, we suggest that it is not enough for the therapist and the client to be in the same room in order for the client to have a powerful "being seen" experience which would trigger neurobiological change but their coming into eye-contact is needed, whether in the same room or during an online therapy session. On the other hand the findings of the same study brings another point into attention: The experience of being seen increases arousal which might be experienced by the person being observed (the analysand) as anxiety provoking and might disturb the interaction between the analyst and analysand. This would then support the idea of switching back to the couch when the analysand's free-associations decrease or becomes overtly anxious when face-to-face. However, instead of switching to couch, turning the eyes away from the analysand for the rest of the session could also help the person regulate themselves.

WHEN TO REPOSITION TO FACE-TO-FACE ARRANGEMENT

Clients with paranoid and borderline personality features and overwhelming anxiety may be suitable for a face-to-face arrangement. The "container" function of the gaze of the analyst might prevent further formation of psychotic thinking as described by Bion (Meltzer et al., 2007) in these clients. The attuned gaze can become the introjected good object in clients who commonly use projective identification. Changing into the face-to-face position could be appropriate at critical points during psychoanalysis where the analysand might show prolonged resistance reactions such as being silent or talking over things irrelevant to the process or skipping more sessions than that was agreed.

CONCLUSION

Considering the essential neurobiological regulatory effects of mutual gaze between the mother and the infant on the developing baby, the experience of being seen by the therapist is expected to have significant neurobiological transformative effects on the client. We propose that, based on the neurobiological effects of mutual eye gaze, at critical points during the session or the working through of specific topics where the client needs to be seen, the analyst asks the client to transition from lying down on the couch without facing the psychoanalyst to a sitting position in a way that allows face-to-face mutual eye contact may have positive therapeutic effects.

AUTHOR CONTRIBUTIONS

BÖ formed the idea, did literature research, and wrote the manuscript. AE helped with the development of the idea and wrote the manuscript. FK did literature research and wrote the manuscript. AD helped with the development of the main idea. MC formed the idea during brainstorming sessions with BÖ. All authors contributed to the article and approved the submitted version.

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