

Mentalization in the psychosis continuum: Current knowledge and new directions for research and clinical practice

Edited by

George Salaminios, Martin Debbané, Neus Barrantes-Vidal
and Patrick Luyten

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Mentalization in the psychosis continuum: Current knowledge and new directions for research and clinical practice

Topic editors

George Salaminios — University College London, United Kingdom
Martin Debbané — University of Geneva, Switzerland
Neus Barrantes-Vidal — Autonomous University of Barcelona, Spain
Patrick Luyten — KU Leuven, Belgium

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Ingrid Melle,
University of Oslo, Norway

*CORRESPONDENCE
George Salaminios
✉ g.salaminios@ucl.ac.uk

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Editorial: Mentalization in the psychosis continuum: current knowledge and new directions for research and clinical practice

George Salaminios^{1,2*}, Neus Barrantes-Vidal^{3,4},
Patrick Luyten^{1,5} and Martin Debbané^{1,6}

¹Research Department of Clinical, Educational and Health Psychology, University College London, London, United Kingdom, ²Research Department, British Association for Counselling and Psychotherapy, Lutterworth, United Kingdom, ³Department of Clinical and Health Psychology, Autonomous University of Barcelona, Barcelona, Spain, ⁴CIBER de Salud Mental, Instituto de Salud Carlos III, Madrid, Spain, ⁵Faculty of Psychology and Educational Sciences, KU Leuven, Leuven, Belgium, ⁶Developmental Clinical Psychology Research Unit, Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland

KEYWORDS

mentalizing, psychosis, clinical high risk (CHR) for psychosis, mentalization based treatment, schizotypy, schizophrenia, early intervention psychosis, psychotherapy

Editorial on the Research Topic

[Mentalization in the psychosis continuum: current knowledge and new directions for research and clinical practice](#)

Imbalances in mentalizing – the capacity to envisage mental states in oneself and others – have consistently been associated with symptomatic and functional outcomes in people with psychosis (1), as well as with the transition to clinical psychosis among those who are at increased risk (2). Recently, applications of mentalization-based therapy (MBT) for individuals in the psychosis spectrum have been developed and empirically evaluated (3, 4). Given the increasing interest in mentalizing as a treatment target in psychosis, the aim of this research topic is to provide a synthesis of current knowledge and new perspectives concerning the potential role of mentalizing across the psychosis spectrum.

The first group of papers in this research topic present new conceptual approaches and empirical studies exploring the role of mentalizing dysfunction and the application of MBT in individuals diagnosed with clinical psychosis. Weijers et al. compared the effectiveness of MBT in improving mentalizing abilities between patients with schizophrenia and patients with a diagnosis of borderline personality disorder (BPD). Their findings show that patients with BPD reported significantly more improvement across a range of mentalizing facets following MBT compared to patients with schizophrenia who also received MBT. Interestingly, patients with schizophrenia who received MBT showed significantly more improvement only on one mentalizing dimension compared to patients with schizophrenia who received treatment as usual. In accordance with findings from a previous RCT (4), these findings illustrate the relevance of MBT to the treatment of psychosis, but also stress the importance of tailoring MBT interventions to better meet the needs of this patient group.

Indeed, a series of conceptual papers in this research topic propose technical adaptations to MBT, with a particular emphasis on the patient-therapist relationship, to address some of the unique challenges that people with psychosis face. Bröcker et al., draw on the psychoanalytic work of Stavros Mentzos (5) to highlight the importance of utilizing “implicit” techniques during the early phases of MBT to sustain a tolerable therapeutic relationship that may better support patients with psychosis to contain unrepresented anxieties pertaining to interpersonal closeness and distance. The authors argue that when working with psychotic patients, an implicit focus on regulating interpersonal contact within the therapeutic relationship should always underpin more explicit or “reflective” MBT techniques. In a similar vein, but this time drawing on Friston’s “free energy” theory (6) and Gergely’s theory on self-agency development (7) Sanz et al. propose a modified MBT approach to support people suffering with enduring forms of psychosis. Their approach also shifts the therapeutic focus away from reflective processes and towards sustaining a “predictable” (in Friston’s terms) dyadic relationship aiming to foster epistemic trust and strengthen the patient’s sense of agency. In their perspective article, Parkinson et al. discuss how combining a group MBT and art therapy approach may support individuals diagnosed with first-episode psychosis to reflect on experiences and emotions that may otherwise be subject to avoidance. Their paper documents this approach based on their experiences with a combined art therapy and mentalization-based psychoeducation group course for people with first-episode psychosis delivered within an Early Intervention for Psychosis service in the UK.

The next two papers focus on metacognition, a construct that conceptually overlaps with mentalizing and captures the ability to synthesize mental knowledge into complex narratives of self and others (8). Salvatore et al. present a case report illustrating the role of clinical supervision in supporting a therapist’s understanding of aspects of her own personal history and how these were enacted in her work with a young woman with psychosis. The authors discuss how supervision strengthened the therapist’s metacognitive capacities, enabling her to tune in to her patient’s painful emotional experiences, and how these may have fostered therapeutic change. A study by Montemagni et al. explores the complex relationships between conceptual disorganization and metacognition in a sample of outpatients with schizophrenia. Their findings show that conceptual disorganization differentially impacts different metacognitive domains and mediates the effects of neurocognitive difficulties on metacognition.

The second group of papers in this research topic focus on the role of mentalizing and the application of MBT in the early stages of the psychosis continuum, that is, among people who are at increased risk for psychosis. Nonweiler et al. explore the complex associations between childhood adversity, mentalizing and psychotic features (i.e. schizotypal traits and psychotic-like experiences) in a large non-clinical adult sample. The authors show that dysfunctions in understanding one’s own mental states (i.e., mentalizing with regard to the self) mediated the association between childhood adversity and non-clinical psychotic features. Moving further along the psychosis continuum, a study by Salaminiot et al. explored the associations between schizotypal personality traits, self-reported mentalizing and clinical high risk for

psychosis (CHR-P) as assessed in terms of perceptive and cognitive symptoms. Their study showed that schizotypal traits and mentalizing impairments during adolescence and young adulthood were associated, both independently and through their interactions, with early symptomatic signs of CHR-P. The findings from these two latter studies provide further evidence for the assumption that mentalizing may play an important role in determining early trajectories of psychosis expression, thus highlighting its relevance for early prevention and intervention.

Consistent with these assumptions, Dangerfield and Brotnow Decker focus on early intervention in the domain of psychosis and present outcome results from an innovative MBT-based home-treatment program for high-risk youths on the psychosis spectrum that have experienced difficulties in engaging with other forms of psychotherapeutic treatment. Their findings suggest that mentalization-based interventions may foster engagement with treatment resulting in clinically meaningful changes and functional recovery in young people at high risk for psychosis. In the last paper focusing on the pre-clinical stages of psychosis, De Salve et al. present a systematic review of previous research exploring how Theory of Mind (ToM), reflective functioning and metacognitive beliefs relate to state and trait risk for psychosis. Their review suggests that low reflective functioning and the presence of maladaptive metacognitive beliefs are associated with CHR-P symptoms and schizotypal traits in non-clinical individuals, while evidence concerning the association between ToM and psychotic symptoms in non-clinical samples appears to be more mixed.

The final group of papers in this research topic reflect on the future of interventions with a mentalizing focus for individuals with psychosis and related conditions. Gussmann et al. present an empirically-based systematic approach (i.e. intervention mapping) for the development of a clinical intervention that specifically addresses the needs of inpatients during the acute phase of psychosis by targeting metacognitive deficits. Finally, Costa-Cordella et al., discuss how MBT approaches to psychosis (1) may also be applied to the understanding of autism-spectrum disorders.

In sum, the innovative papers that are part of this research topic capture a broad range of contemporary approaches that open up promising directions for basic research in the area and have the potential to inform clinical practice to support meaningful therapeutic outcomes for people suffering with psychosis and those at increased risk. As a next step, we want to encourage research that will empirically evaluate the efficacy and effectiveness of adapted MBT interventions for psychosis, as well as process-outcome research that will test assumptions about potential mechanisms of change in MBT. Finally, to support early intervention, there is a need for longitudinal studies that will explore the associations of mentalizing with other psychosocial and neurobiological risk factors for psychosis during the critical developmental period spanning from adolescence to young adulthood.

Author contributions

GS: Conceptualization, Writing – original draft, Writing – review & editing. NB-V: Conceptualization, Writing – review &

editing. PL: Conceptualization, Writing – review & editing. MD: Conceptualization, Writing – review & editing.

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

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EDITED BY

Padmavati Ramachandran,
Schizophrenia Research Foundation, India

REVIEWED BY

Warren Mansell,
The University of Manchester, United Kingdom
Ramesh Kumar,
Schizophrenia Research Foundation, India
M. Suresh Kumar,
Schizophrenia Research Foundation, India

*CORRESPONDENCE

Eva Gussmann
✉ eva_gussmann@psych.mpg.de

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Developing a mechanism-based therapy for acute psychiatric inpatients with psychotic symptoms: an Intervention Mapping approach

Eva Gussmann^{1*}, Susanne Lucae^{1,2}, Peter Falkai^{1,2},
Frank Padberg², Samy Egli¹ and Johannes Kopf-Beck^{1,3}

¹Max Planck Institute of Psychiatry, Munich, Germany, ²Department of Psychiatry and Psychotherapy, LMU University Hospital Munich, Munich, Germany, ³Department of Psychology, LMU Munich, Munich, Germany

Background: Treatment guidelines for psychosis recommend offering psychotherapy already in the acute illness phase. However, there is a lack of available interventions adapted to the specific needs and key change mechanisms of inpatients experiencing severe symptoms and crisis. In this article we outline the scientific development process of a needs-oriented and mechanism-based group intervention for acute psychiatric inpatients with psychosis (MEBASp).

Methods: To guide our intervention design, we used Intervention Mapping (IM), a six-step framework for developing evidence-based health interventions that consisted of an extensive literature review, an in-depth problem definition and needs analysis, the modeling of change mechanisms and outcomes and the production of an intervention prototype.

Results: Our low-threshold modularized group intervention consists of nine stand-alone sessions (two per week) within three modules and targets different aspects of metacognitive and social change mechanisms. Module I and II aim to reduce acute symptoms by fostering cognitive insight, Module III focuses on reducing distress via cognitive defusion. Therapy contents are adapted from existing metacognitive treatments such as the Metacognitive Training and presented in a destigmatizing, simply understandable and experience-oriented way.

Conclusion: MEBASp is currently evaluated in a single-arm feasibility trial. Using a systematic and rigorous development methodology and providing a detailed description of the development steps demonstrated to be invaluable in improving the intervention's scientific foundation, validity, and replicability for similar research.

KEYWORDS

intervention mapping, intervention development, mechanism-based, acute inpatients, psychosis, metacognition, group therapy

1. Introduction

Psychological therapies have demonstrated to be effective for patients experiencing psychotic symptoms (1, 2) and are recommended by treatment guidelines already in the acute illness and treatment phase (3, 4). However, recent systematic reviews and meta-analyses investigating treatment effects for acute psychiatric inpatients with psychosis revealed an outcome superiority of third-wave therapies (5–7) over guideline-recommended second-wave cognitive behavioral therapy for psychosis (CBTp) (3, 4). In contrast to disorder-specific CBTp protocols that aim to alter the occurrence and form of psychotic symptoms such as delusional thoughts and hallucinations (8), third-wave therapies often focus on the behavioral function of internal experiences rather than their content per se (9). Instead of examining and disputing the content of voices and thus giving them increased attention and importance for example, third-wave therapies train patients to mindfully experience auditory hallucinations in order to reduce their negative impact on behavior (10). They also emphasize the therapeutic importance of targeting evidence-based change mechanisms, which are the underlying (psychological) processes responsible for positive treatment outcomes, instead of solely focusing on changing symptoms (11). Third-wave interventions e.g., aim at changing impaired reasoning processes behind delusional thoughts and not necessarily the content of the specific delusion (9). Change mechanisms thereby draw on impaired processes believed to contribute to the maintenance and onset of various mental health problems and thus often operate as transdiagnostic change factors (11). Cognitive distortions associated with depressive disorders for instance can also be improved through interventions targeting general reasoning abilities (12). Understanding what leads to change and tailoring therapy to directly address those change mechanisms hence seems to be important to generally optimize therapeutic strategies and thus to improve overall treatment outcomes for patients (9, 13).

Given the urgent need for effective inpatient care (14, 15), prioritizing change mechanisms in therapy therefore might hold a great potential to positively impact disease progression and prognosis of patients with acute psychosis (16). Major third-wave therapies that explicitly focus on potential change mechanisms in psychosis are the Acceptance and Commitment (ACT) and the Metacognitive Training (MCT) (9). ACT for instance fosters acceptance and cognitive distancing from delusions and hallucinations (17) and has shown to reduce general psychopathology and rehospitalization rates in acute inpatients with psychosis (18–20). MCT on the other hand aims to promote patients' cognitive flexibility by raising metacognitive awareness and knowledge for cognitive biases (21) and showed significant effects on reducing positive symptoms (8, 22, 23). Although the mechanism-based principles of these approaches seem promising in the treatment of acute inpatients with psychosis, existing evidence has to be treated with caution (5). Until now, evidence is based on a small number of randomized controlled trials (RCTs) with relatively heterogeneous study conditions and methodological shortcomings (5–7). On top of that, ACT and MCT were developed for outpatient settings where patients' symptom

severity and hence key change mechanisms and needs can be assumed to differ from those of patients experiencing acute crises (24). Change mechanisms in acute inpatient environments for example mainly comprise of mechanisms associated with distress and risk reduction (16), while outpatient therapy focuses on processes like value commitment that support long term recovery goals (1). In addition, acute psychiatric settings by themselves represent challenging environments to deliver psychotherapy, counting involuntary admissions, brief inpatient stays and staff shortage as major obstacles (25). Researchers therefore argue that further intervention development is needed that (a) identifies and adapts to specific inpatient change mechanisms and (b) reflects the complex requirements of acute psychiatric ward (25–28).

However, the actual development process of interventions in psychotherapy is often kept short and under-reported (29). Neglecting the actual development phase can be problematic, as a poor problem definition, insufficient attention to existing evidence and context needs, a missing model underlying the intervention, and an unsound selection of hypothesized change mechanisms can lead to inefficient treatments (30–32). An “intervention black box” then makes it difficult to understand why specific therapy components didn't work in a clinical trial (31). Furthermore, a published, in-depth description of the development process is necessary for other researchers to replicate findings and for clinicians to understand how to implement the intervention (33).

In order to overcome these shortcomings, Bleijenbergh et al. (31) suggest using structured methodological frameworks such as the Intervention Mapping (IM) that fulfills the Medical Research Council's (MRC) quality criteria on intervention development (31, 32). Although the use and reporting of IM approaches is prevalent in health and prevention research (34–39), there are only a limited number of comparable academic articles published in the field of (clinical) psychology (40, 41). The current article's objectives are therefore twofold: We aim to describe the development and theoretical underpinnings of a mechanism-based and needs-oriented intervention for inpatients with psychosis (MEBASp) treated in an acute psychiatric setting. By using Intervention Mapping in doing so, we also hope to provide an example and highlight the benefits of how existing rigorous development frameworks can be used to enhance the design and reporting standards for psychological therapies in psychiatric research.

2. Materials and methods

We chose IM as our conceptual development framework due to its systematic and detailed protocol allowing an effective selection of treatment mechanisms and procedures in six consecutive steps (42). In the practical application of those steps, we were guided by the approach of van Agteren et al. (40), who adapted the IM method for mental health research. Next to following IM principles, we made sure to adhere to relevant reporting guidelines (e.g., Template for Intervention Description and Replication) when describing and explaining our development milestones (33). **Figure 1** provides an overview of the development steps undertaken to design our intervention that are described in detail in the sections below.

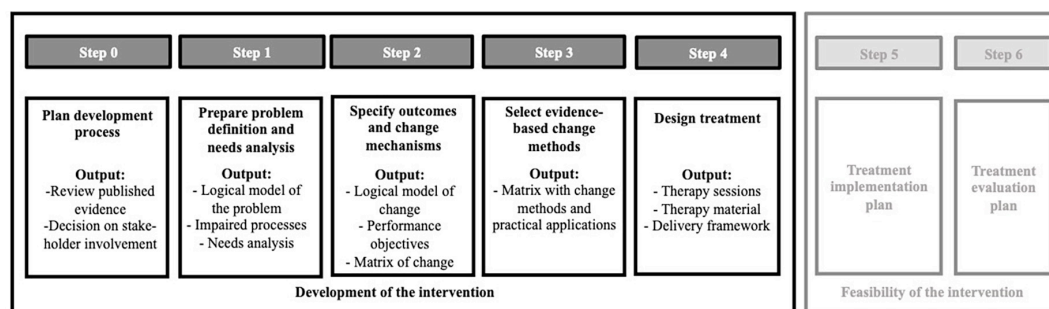


FIGURE 1

Illustration of the IM intervention development process and selected steps undertaken in the MEBASp project.

2.1. Step 0: planning process and decision on stakeholder involvement

Next to theory and evidence-based development principles, the IM approach emphasizes participatory research activities e.g., involving the target population in all planning phases through qualitative research (43). Collaborative care planning approaches, such as codesign and coproduction, have thereby become increasingly important in mental health intervention design and delivery, and have been shown to improve service quality (44–47). Nevertheless, the implementation of codesign in psychiatric research settings can be challenging due to the significant time and cost involved (48), as well as the ethical challenges that arise when conducting qualitative research with severely burdened and highly vulnerable patient groups (49, 50). To address this challenge, Locock et al. developed an accelerated codesign approach that drew on pre-existing qualitative patient data and that proved to be acceptable to patients and staff (48). Building on this approach, we first of all reviewed pre-existing qualitative research involving acute inpatients with psychosis (for an overview see [Supplementary Table 1](#)). Published studies were primarily conducted in a psychiatric context in the UK, which was found to be very similar to the German system (51), thus making available data transferable to our current research context. By deciding to draw on secondary data for our project instead of conducting primary research, we aimed to take advantage of synergistic effects by implementing patients perspective from prior research, while also considering the constraints of time and resources discussed above. However, we included various codesign activities in our subsequent feasibility study such as feedback rounds and questionnaires, and interviews with both participants and staff (see future directions) to ensure that the intervention prototype will be refined according to the needs and preferences of our target population (52).

2.2. Step 1: logical model of the problem and needs analysis

The first step of IM involved an exact description of our development context including our target population and setting. We moreover conducted an extensive literature study to create a logical model (theory) of our problem (see [Figure 2](#)) from

which we derived the theoretical underpinnings, the requirements for and the scope of the intervention (43). To structure the literature research behind the problem determination and resulting needs analysis, IM suggests using the PRECEDE-framework (an acronym for Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation), which is an established research method to assess health issues on the basis of four predefined assessment phases (53). Going through the different phases, research teams ask themselves the following questions: What is the problem and who has it (epidemiological assessment)? How does it affect patients (social assessment)? What may be its causes (ecological assessment)? How do policies contribute to the problem (policy assessment)? (54). Following the framework's phases, we covered information on (1) mental health problems of acute inpatients with psychotic symptoms, (2) their effects on quality of life (QoL), (3) potentially associated pathogenetic psychological and environmental processes causing the problem and 4) characteristics (policies) of acute psychiatric wards. Our sources of information included systematic reviews and meta-analyses (5–7, 55), qualitative interview studies (16, 25, 28, 56, 57), core competency frameworks and existing mechanism-based therapies for working with acute inpatients with psychosis (8, 18, 20, 22, 23, 26, 58, 59).

Impaired psychological processes e.g., cognitive distortions found to be relevant in psychosis (60) were grouped into different overarching process domains such as cognition (see [Supplementary Table 2](#)). A psychological process thereby refers to an aspect of human cognition, affect, behavior or physical sensation that may be involved in the predisposing, etiology or maintenance of a disorder (61). As impaired processes are believed to causally interrelate with several mental disorders (62), we made sure to include transdiagnostic findings in our overview. To organize the overview, we utilized the available subdivisions found in the transdiagnostic process collection by Harvey et al. (61) which summarizes research results on cross-diagnostic altered processes in five different domains. Using existing process-oriented etiological models for psychosis (63–67), we then identified the most important environmental and psychological processes for our problem model. Existing intervention concepts focusing on identified processes as mechanisms of change were then extensively studied to estimate common practices, their effectiveness and potential barriers (31) (see [Supplementary Table 3](#)).

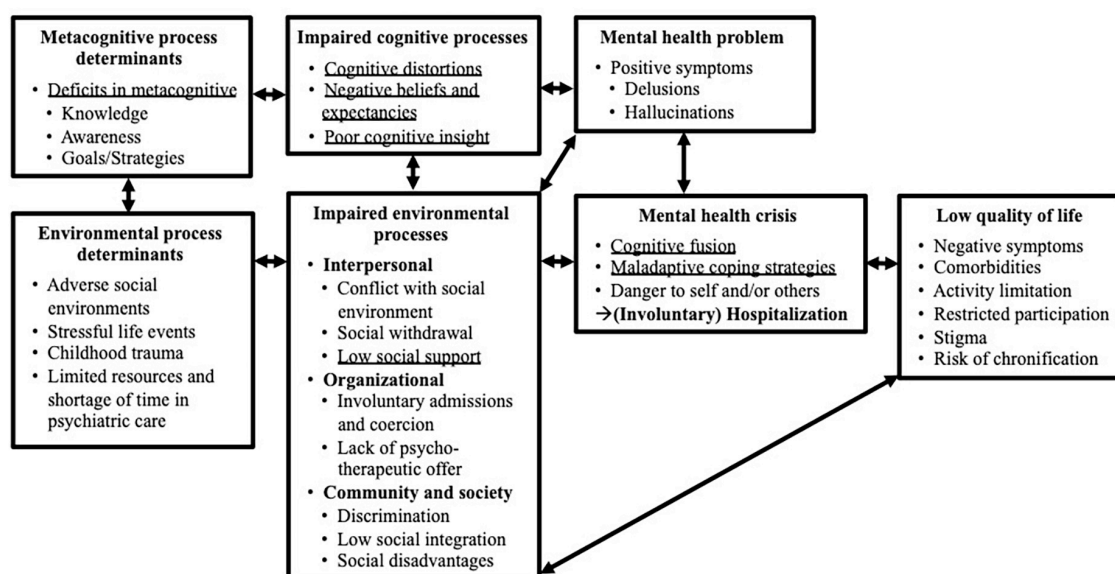


FIGURE 2

Logical model of the problem of severe psychotic symptoms, danger to self and others, (involuntary) hospitalization and a resulting low quality of life (Step 1). The model has a focus on psychological and social factors in the development of psychosis and does not consider biological factors e.g., genetics. It moreover does not map the moderating or mediating relationships between variables, but rather aims to visualize the variability of factors and impaired processes that contribute to these main health problems (40). Impaired processes that were identified as target areas for the logical model of change are underlined.

2.3. Step 2: intervention outcomes, change mechanisms and logical model of change

In a second step, we used our logical problem model and needs analysis (Step 1) to define desired cognitive, behavioral and environmental intervention outcomes necessary to prevent or reduce our health problems (e.g., patient critically reflects on internal experiences) and thus positively influence quality of life effects. Following the IM framework, we then addressed the question of *why* patients would make these changes by selecting impaired processes from our problem theory (e.g., poor cognitive insight) and rewriting them into hypothesized change mechanisms (e.g., higher cognitive insight) (43). Overarching change domains were chosen from the Theoretical Domains Framework (TDF) (68), an integrative framework that provides intervention developers with a possible selection of 14 change domains e.g., behavioral regulation and 84 change mechanisms e.g., self-monitoring from evidence-based behavior change theories. We summarized our overall findings in a graphical logical model (theory) of change (43) (see Figure 3).

Our intervention outcomes were further divided into so-called performance objectives (e.g., Patient understands the cognitive model of CBT) (see Table 1). These objectives describe specific behaviors that need to be pursued in order to reach the desired treatment outcome (43). By linking performance objectives with selected change mechanisms from above, we were able to phrase specific change objectives. Simply put, change objectives concretely verbalize what occurs through a change mechanism (e.g., The patient demonstrates increased knowledge about the impact of

internal experiences on behavior) (40). As a result, all change objectives were organized in a matrix of change (43) (see Table 2).

2.4. Step 3: evidence-based change methods

In Step 3 of IM, we used our matrix of change to link our change objectives to so called change methods. Change methods describe theory-based behavior change techniques (BCTs) (69) that are believed to influence change objectives (e.g., knowledge increase may be achieved through the change method psychoeducation) (69). Instead of asking *Why does change occur?* we were now concerned with the question *How does change occur?* (43). We selected our evidence-based change methods from various literature resources (70, 71) including IM's comprehensive taxonomy of BCTs (43, 69) and translated them into practical applications. A practical application refers to a therapeutic strategy derived from the change technique that can be implemented in a real-world setting (40). For example, to achieve our change objective of increasing knowledge about the impact of internal experiences on behavior, the intervention utilizes psychoeducation as a change technique. This is practically done by providing an everyday example (such as "Imagine your best friend doesn't call on your birthday") (72) (p. 104) to the patients and asking them how they might feel, think, and react (73). Practical applications were informed by existing mechanism-based intervention practices for (acute) settings as identified in Step 1 (8, 18, 20, 22, 23, 59). The final output for Step 3 comprised of a matrix of change methods containing all procedures planned to be incorporated into our intervention (43) (see Table 3).

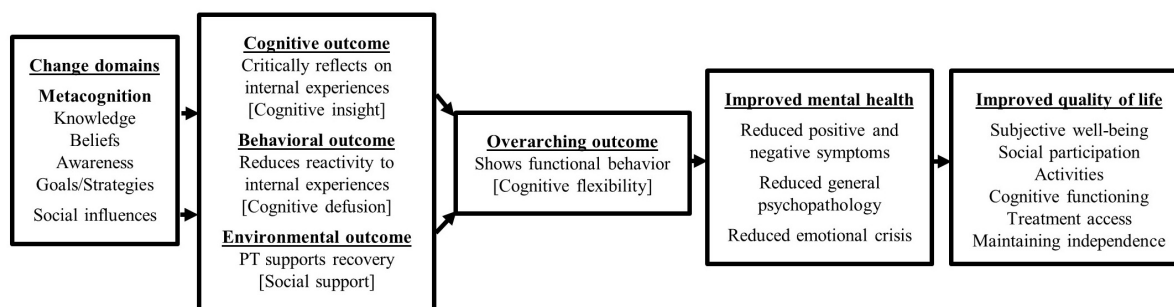


FIGURE 3

Logical model of change showing what change is needed to manage the main health problems of severe psychotic symptoms and danger to self and others (Step 2). It points out the change domains and belonging change mechanisms expected to influence the cognitive, behavioral and environmental outcomes that are in turn believed to improve mental health and quality of life. Hypothesized underlying target change mechanisms are put into square brackets.

2.5. Step 4: intervention outline

In line with our intervention draft of Step 3, we designed treatment modules, the associated sessions (see Table 4), produced therapy materials and decided on our delivery format outlining therapy frequency and duration of sessions. Next to creating completely new materials, we made sure to thoroughly examine existing therapy manuals for usable parts. If some materials of an intervention were suitable, we made adjustments before integrating them into our intervention. During the development process, project team members and independent clinical fellows constantly reviewed materials and session outlines. We also made sure to carry out some informal test-runs with patients whose verbal feedback was used to revise session contents for the final intervention that is currently tested in a feasibility study.

2.6. Step 5 and 6: implementation and evaluation plan

After completing step 1–4, IM includes two additional steps consisting of setting up an implementation and evaluation plan (43). However, we decided to follow van Agteren and colleague's decision to exclude these steps in our current research (40) as this allowed us to provide a more detailed insight into our intervention development process. Nevertheless, the evaluation of the intervention is covered by the above mentioned feasibility study (clinicalTrials.gov identifier: NCT04874974) (74). We will give a brief overview of our ongoing pilot study in the future directions part of the discussion section.

3. Results

3.1. Step 1: logical model of the problem and needs analysis

To facilitate a deeper understanding of our initial project phase and literature research, we present the results of Step 1 in a narrative format that begins with a brief description of our development

context and population and progresses to the problem definition and the derivation of needs.

3.1.1. Development context and target population

MEBASp is part of a research initiative at the Max Planck Institute of Psychiatry in Munich, Germany, which aims to implement a clinic-wide mechanism-based treatment concept containing different group modules each focusing on a specific change mechanisms like emotion regulation or behavioral activation. By identifying individually relevant psychological processes and personal preferences of each patient on admission, the clinical team ensures a targeted treatment selection by combining indicated therapy modules (9, 75–77). In this context, our IM approach focused on the development of an intervention targeting change mechanisms found to be relevant in acute inpatients with positive and/or negative psychotic symptoms (according to ICD-10 criteria) treated in an (locked) acute psychiatric ward (78) (for a detailed research background on the concept see Supplementary Methods and Supplementary Figure 1). Based on the assumption of psychosis as an independent clinical trait (79), our target inpatient group covered the entire psychosis-spectrum as well as psychotic depression and psychotic bipolar disorder.

3.1.2. Defining the problem of acute inpatients with psychotic symptoms

In the course of our epidemiological assessment, we specified two main mental health problems for acute inpatients with psychosis (16, 25): (1) severe positive symptoms such as hallucinations and delusions and (2) resulting dangerous behaviors toward themselves and others making immediate (compulsory) hospitalization necessary. Our social assessment in turn revealed a tremendous negative impact of the severity of positive symptoms and crisis-associated hospitalization on patients' QoL (27, 80–82). Both are believed to contribute to the secondary activation of negative symptoms such as poor rapport (83) and comorbid disorders like mood and anxiety disorders (84) resulting in an increased chronification risk (85). Relevant contributing psychological processes in the development of negative symptoms thereby seem to be a demoralization due to patients' low expectancies for pleasure or success (64, 86),

TABLE 1 Expected cognitive, behavioral and environmental outcomes and performance objectives (PO) for MEBASp (Step 2).

Cognitive outcome 1: critically reflects on internal experiences	
PO 1.1.	Understands the cognitive model of CBT
PO 1.2.	Understands the negative consequences of cognitive biases on mental health
PO 1.3.	Considers multicausal explanations for situations and internal experiences
PO 1.4.	Gathers sufficient information before drawing decisions
PO 1.5.	Considers a variety of information when assessing someone
PO 1.6.	Formulates helpful alternatives for depression-inducing thought patterns
PO 1.7.	Knows positive activities to counteract depressed mood and low self-esteem
Behavioral outcome 2: reduces reactivity to internal experiences	
PO 2.1.	Understands the negative consequences of fusing with internal experiences (thoughts, delusions and hallucinations)
PO 2.2.	Understands that most internal experiences are produced by the mind and learned in the past
PO 2.3.	Actively perceives internal experiences without directly reacting to them
PO 2.4.	Differentiates between helpful and unhelpful internal experiences
PO 2.5.	Deploys various functional coping strategies in dealing with internal experiences
Environmental outcome 3: psychological therapy (PT) supports recovery of individual	
PO 3.1.	PT is accessible for acute patients with psychotic symptoms
PO 3.2.	PT is adapted in scope and complexity for acute patients
PO 3.3.	PT provides social support and enables exchange with fellow patients
PO 3.4.	PT normalizes and destigmatizes mental health problems
PO 3.5.	PT supports patients to apply functional coping strategies in everyday life

internalized stigma (87), a lack of participation and activities (88), and maladaptive coping responses such as social anhedonia and substance abuse to deal with aversive internal and external experiences (89).

Furthermore, our ecological assessment (see [Supplementary Table 2](#)) identified metacognitive deficits (90) to be the main determinant for pathogenetic cognitive processes associated with positive symptoms (first health problem). We also found associations of metacognitive deficits with negative symptoms and impaired processes discussed above (91). While metacognition is being broadly defined as “knowledge about knowledge” (92), it can be further distinguished into a knowledge (knowledge and beliefs about cognition), an awareness (conscious experience of and reflection about cognitive processes), a goal (setting goals on a

meta-level), and a strategy part (conscious application of functional strategies for goal achievement) (93). Patients with psychotic symptoms thereby seem to show deficits in all four components (94). Deficits in metacognitive knowledge and awareness moreover are believed to lead to cognitive distortions (e.g., jumping to conclusions, attributional biases, theory of mind deficits) (60), dysfunctional beliefs and expectancies (associated with a low self-esteem and negative symptoms) (10, 95) and a lack of cognitive insight into those cognitive biases (96). For instance, a lack of knowledge about common human cognitive biases, poor awareness of one’s own thoughts, and the inability to recognize distortions in conclusions could lead to misinterpreting a crackling sound on a phone line as proof of being watched (21). Delusional thoughts and hallucinations alone however, do not automatically result in distress and dysfunctional behavior making compulsory hospitalization necessary (second health problem). It seems to be the appraisal and behavioral reactivity toward the thought and voice contents that increases the probability of danger to self and others (97). Psychological processes linked with this problem are cognitive fusion with internal experiences and maladaptive coping strategies such as experiential avoidance, thought suppression and worry (66, 98–100). Explained in highly simplified terms, cognitive fusion describes a cognitive process in which a person is fully entangled with the verbal content of internal experiences, beliefs it to be true and reacts to the content (101). Consistent with metacognitive process models, cognitive fusion can be associated with a deficit in metacognitive goal setting and strategies leading to the increased reactivity to dysfunctional thought content (102). The idea of being surveilled may e.g., take on great importance due to dysfunctional metacognitive beliefs, such as that one’s thoughts are true and need to be acted on. Without being aware of own goals and values, one may turn to dysfunctional coping strategies like aggression, social withdrawal or excessive worrying, which in turn can escalate into mental crisis followed by a decrease in functioning (103). In summary, there is convincing evidence for the contribution of metacognitive deficits to both severe psychotic symptoms and subsequent crisis development (104).

Lastly, our policy assessment identified bio-social vulnerabilities and structural (health) system barriers that lead to environmental risk factors such as social conflicts (interpersonal), a general shortfall of psychosocial treatments (organizational), stigma and societal disadvantages (society) that all seem to additionally contribute to our overall problem (105–107). For a visualization of our problem theory see [Figure 2](#).

3.1.3. Determining the needs for development and implementation

Having a better understanding of our problem and the underlying impaired processes, we were now able to draw general implications for the implementation of the intervention itself.

Considering the severity of mental health problems and low QoL, we first of all determined a great need to generally expand and improve the psychotherapeutic offer for acute inpatients with psychosis. Although guidelines recommend psychological care already in the acute illness phase (3, 4), implementation rates on acute ward are still extremely low (28, 108, 109) resulting in a dissatisfaction among patients who criticize the predominant pharmacological and risk-focused treatment (27, 110). The demand

TABLE 2 Matrix of change for cognitive, behavioral and environmental outcomes showing the change objectives for each performance objective and change domain (Step 2).

	Key change domains			
	Increases knowledge about ...	Raises awareness of ...	Builds up skills to ...	Changes beliefs to ...
	[Metacognitive and cognitive knowledge]	[Metacognitive awareness and cognitive attention]	[Behavioral and (meta-) cognitive strategies]	[Metacognitive beliefs]
Cognitive outcome 1: critically reflects on internal experiences [Cognitive insight]				
PO 1.1.	K1.1 Influence of thoughts on feelings and behavior	A1.1 Internal experiences	S1.1 Report on internal experiences [Introspection]	B1.1 Behavior is controllable
PO 1.2.	K1.2 Nature of cognitive distortions and their impact on mental health problems	A1.2 Selective attention/Attentional biases	S1.2 Anticipate consequences of internal experiences on behavior [Expectancy reasoning]	B1.2 Thoughts are prone to error
PO 1.3.	K1.3a Attribution types (internal, external, control possibility)	A1.3 Attributional biases (Self-serving bias/Pessimistic attributional style)	S1.3 Rationally analyze events [Attributional reasoning]	B1.3 Events are always multicausal
	K1.3b Dysfunctional attributional styles and their effect on mental health			
PO 1.4.	K1.4a Rationale behind premature decisions	A1.4 Jumping to conclusions (Arbitrary inference/Belief bias)	S1.4a Gather and process information	B1.4 Sufficient information is necessary for reasonable conclusions
	K1.4b Effect of JTC on mental health		S1.4b Actively challenge own conclusions and adjust if necessary [Information processing/ Interpretative reasoning/ Self-reflection]	
PO 1.5.	K1.5a Rationale behind theory of mind	A1.5 Hasty first impressions (Selective abstraction/Biased expectancy/Availability heuristic)	S1.5a Consider contextual information in social interactions	B1.5 Sufficient information is necessary to assess my opposite
	K1.5b Effect of distorted mentalizing on mental health		S1.5b Take different perspectives S1.5c Tolerate ambiguity [Cognitive shifting/ Interpretative reasoning/ Social reasoning]	
PO 1.6.	K1.6a Dysfunctional cognitive patterns	A1.6 Depressive-inducing thinking patterns (Catastrophizing/ Personalization/ Over-generalization)	S1.6 Come up with functional thoughts [Cognitive reappraisal]	B1.6 Depression and low self-esteem are influenceable
	K1.6b Effect of negative cognitive styles on mood and self-esteem			
PO 1.7.	K1.7 Importance of positive activities		S1.7 Pursue positive activities [Behavioral activation/Commitment]	B1.7 Positive activation is indispensable for my mental health

(Continued)

TABLE 2 (Continued)

	Key change domains			
	Increases knowledge about ...	Raises awareness of ...	Builds up skills to ...	Changes beliefs to ...
	[Metacognitive and cognitive knowledge]	[Metacognitive awareness and cognitive attention]	[Behavioral and (meta-) cognitive strategies]	[Metacognitive beliefs]
Behavioral outcome 2: reduces reactivity to internal experiences [Cognitive defusion]				
PO 2.1.	K2.1 Effects of maladaptive coping strategies (submission, control or avoidance) on thoughts		S2.1 Anticipate consequences [Expectancy reasoning]	B2.1 The problem is not the symptom, but how I react to it
PO 2.2.	K2.2a Biographical influences on thinking patterns		S2.2 To understand connections and concepts of psychological constructs [Information processing]	B2.2 Thoughts, delusions and hallucinations are merely words and pictures inside my head
	K2.2b Conceptualization of hallucinations as externalized loud thoughts			
PO 2.3.	K2.3a Rational behind mindfulness	A2.3 Internal and external stimuli in the present moment	S2.3 Allow distressing internal experiences to come and go [Mindfulness/ Acceptance]	B2.3a I can accept the presence of difficult internal experiences
	K2.3b Steps to mindfulness			B2.3b Internal experiences come and go
PO 2.4.	K2.4a Features and effect of helpful vs unhelpful internal experiences	A2.4a Internal experiences	S2.4 Select helpful internal experiences against the background of own goals [Goal-orientated action planning]	B2.4a The mind is not always my friend
PO 2.5.	K2.5a Difference between fusion and defusion	A2.4b Goals and values [Goal setting] A2.5a Internal experiences	S2.5 Decenter from internal experiences [Self-regulation/Deliteralization/ Disidentification]	B2.4b I have the choice between reacting and not reacting to internal experiences B2.5 Internal experiences don't have the power to control my life
	K2.5b Defusion strategies	A2.5b Maladaptive coping strategies (Experiential avoidance/Thought suppression/Self-focused attention)		
	K2.5c Steps of defusion			

(Continued)

TABLE 2 (Continued)

	Key change domains			
	Increases knowledge about ...	Raises awareness of ...	Builds up skills to ...	Changes beliefs to ...
	[Metacognitive and cognitive knowledge]	[Metacognitive awareness and cognitive attention]	[Behavioral and (meta-) cognitive strategies]	[Metacognitive beliefs]
Environmental outcome 3: psychological therapy (PT) supports recovery of individual [Social support]				
PO 3.1.	K3.1a Importance of PT in the treatment of mental health problems	I3.1 Socially supported by psychotherapeutic relationship [Therapeutic alliance]	S3.1 Engage in therapy [Motivation]	B3.1 PT is important for my recovery process
	K3.1b Possibilities to access PT			
PO 3.2.	K3.2 Simple disturbance models and coping strategies		S3.2a Follow cognitively in psychotherapy sessions [Perceived competence]	B3.2 PT is comprehensible, helpful and even fun
			S3.2b Overcome difficulties encountered in therapy [Self-efficacy]	
PO 3.3.	K3.3 Possibilities to seek social support	I3.3 Comfortable within the group [Group conformity, Group identity, Group norms]	S3.3 Interact positively with fellow patients [Sense of belonging/ Collaborative problem solving]	B3.3 I am not alone with problems
PO 3.4.	K3.4 Recovery based model of illness	I3.4 Positive about self [Self-acceptance]	S3.4 Speak confidently about own illness [Self-confidence/Self-esteem]	B3.4 Having mental problems doesn't mean I am worthless
PO 3.5.	K3.5a Personal set of coping strategies to manage everyday life challenges	I3.5 Inspired by therapist model and fellow patients [Modeling]	S3.5 Practice new behavior outside of therapy session [Motivation/ Perceived competence/ Self-management]	B3.5 Behavior change is possible
	K3.5b Importance of practicing new behaviors			

PO, performance objectives (see Table 1). Change objectives are coded according to change dimensions: Knowledge (K), Awareness (A), Skills (S), Beliefs (B), Social influences (I). If suitable, change objectives were labeled with the appropriate change mechanism that can be found in the square brackets.

TABLE 3 Matrix with change methods/techniques and practical applications (Step 3).

Change objectives	Behavioral change techniques	Practical applications
Increase knowledge	Conscious raising; Persuasive communication; Discussion; Elaborating; Scenario-based risk information; Psychoeducation	Therapist-led information input (verbal; written; visual) e.g., on cognitive biases; group brainstorming and discussions
Raise awareness	Self-monitoring; Thought-monitoring; Introspective training; Using imagery/analogy; Behavioral experiments; Directing attention; Mindfulness training	Therapist-asked prompted questions (e.g., “Image a friend doesn’t call on your birthday; how would you feel?”); thought records; guided mindfulness exercises e.g., Leaves-on-a-river meditation; using metaphors to explain selective attention e.g., attention like a spotlight just focused on one information
Change beliefs	Belief selection; Persuasive communication; Active learning; Cognitive restructuring	Therapist-led summary at the end of each session (e.g., learning objective: “Always think through several possibilities that could contribute to a situation or event!”); Take-home rounds (“What was important for you today?”)
Improve skills		
– S1.1 Report internal experiences	Introspective training	Therapist-asked explorative questions (e.g., “What came into your mind when you saw this picture? How would you feel if your opposite doesn’t greet you?”); Entrance rounds (“On a scale of 1 to 10; how are you feeling today?”); mindfulness exercises
– S1.1/S2.1 Anticipate consequences	Conscious raising; Self-reevaluation	Therapist-led information input (verbal; written; visual); group brainstorming and discussions; therapy cards with prompting questions (e.g., “Even if I am right, Am I overreacting?”)
– S1.3 Rationally analyze	Arguments; Shifting perspective; Direct experience; Reattribution training; Cognitive restructuring; Critical reasoning	Therapist-led group exercises to contemplate on different causes of events (e.g., “People are laughing while you are talking. What might be the reason?”); sharing of personal examples in group
– S1.4a Gather information – S1.4b Challenge conclusions	Arguments; Shifting perspective; Direct experience; Decision making; Critical reasoning	Therapist-led group exercises to gather enough information before drawing conclusions (e.g., “A fellow patient doesn’t acknowledge you when you walk past each other. Did she ignore you on purpose?”); sharing of personal examples in group
– S1.5a Consider context – S1.5b Take perspectives – S1.5c Tolerate ambiguity	Environmental reevaluation; Arguments; Shifting perspective; Direct experience; Empathy training; Critical reasoning; Social cognitive training	Therapist-led group discussion on social cues for social reasoning; group exercises to gather enough information before drawing conclusions (e.g., “During an appointment; the doctor has a serious expression and an intense stare. Why?”); sharing of personal examples in group
– S1.6 Come up with functional thoughts	Deconditioning; Reframing	Therapist-led group exercises to come up with more helpful thoughts for different events (e.g., “You fail an exam and your mind immediately tells you that you are a failure. What would be a more helpful appraisal?”); sharing of personal examples in group
– S1.7 Pursue positive activities	Behavioral planning; Activity scheduling	Therapist-led group brainstorming on positive activities; participants choose one activity and schedule it for the upcoming week
– S2.2 Understand psychological constructs	Elaboration	Therapist-led information input on psychological formulation of psychotic symptoms and group discussion
– S2.3 Allow distressing internal experiences	Acceptance training; Mindfulness training	Therapist-led behavioral experiments to demonstrate counterproductive effect of thought avoidance e.g., Don’t-think-of-the-pink-elephant; mindfulness training e.g., mindfully-eating-a-raisin
– S2.4 Select internal experiences	Using imagery; Self-affirmation; Goal setting; Disputation	Therapist-led practical exercises and metaphors e.g., Bad-cup/Taking-your-mind-for-a-walk; functional disputation e.g., “Is this thought helpful?” and goal clarification (e.g., “What is important for you in this situation?”)
– S2.5 Decenter from internal experiences	Active learning; Using imagery; Counterconditioning; Planning coping resources; Training executive functions; Guided practice; Self-monitoring; Attentional training; Self-Instruction Training	Therapist-led practical defusion exercises e.g., Labeling-your-thoughts; group discussion and selection of individual techniques
– S3.1 Engage in therapy	Motivational interviewing; Participating problem solving	Therapist directly approaches new patients; explains advantages/disadvantages of PT; develops joint therapy goals
– S3.2a Follow cognitively – S3.2b Overcome difficulties	Cognitive training	Therapist ensures that contents are in a simple and comprehensive form; adapts each session according to cognitive level; challenges participants with exercises; includes fun activities
– S3.3 Interact with fellows	Interpersonal contact	Therapist ensures secure group framework (group rules and mediation in the case of problems); Therapist-led group discussions and reflections; encouragement of personal group exchange

(Continued)

TABLE 3 (Continued)

Change objectives	Behavioral change techniques	Practical applications
– S3.4 Speak about own illness	Interpersonal contact; Shifting perspectives; Reframing; Cooperative learning	Therapist holds and attitude of destigmatization; normalizes psychotic experiences; encourages sharing of personal experiences
– S3.5 Practice behavior	Behavioral rehearsal; Set homework tasks; Self-help	Therapist suggests homework assignments and gives space for debriefing
Encourage positive social influences		
– I3.1 Socially supported	Mobilizing social support/networks; Social support theory; Increasing stakeholder influence; Social skills training	Therapist shows empathy and understanding, regardless of dysfunctional behavior; repeatedly offers relationship despite initial rejection
– I3.3 Comfortable in group	Interpersonal contact; Participatory problem solving; Entertainment education; Forming coalitions,	Therapist ensures secure group framework; reinforces participation and group exchange
– I3.4 Positive about self	Verbal persuasion; Stereotype-inconsistent information; Reducing inequalities of class/race/gender and sexuality; Provide contingent rewards	Therapist praises participation; is open to different points of view and does not judge participant's internal experiences
– I3.5 Inspired by therapist and fellows	Modeling; Cooperative learning	Therapist encourages sharing of personal experiences; gets involved with personal examples e.g., “I know that feeling. My mind always tells me that I am not good enough.”

Each change objectives can be found in the matrix of change (Table 2). Change objectives from the domains knowledge, awareness and beliefs were each combined into one major change objective due to overlap. Change objectives found in the dimension skills and social influences on the other hand were all treated separately. Behavioral change techniques are taken from IM's comprehensive taxonomy of BCTs (43, 69).

for psychosocial treatments that do not involve medication but aim to assist with recovery, on the other hand, is high (25).

The second need we derived was the necessity to adapt existing mechanism-based interventions to the specific characteristics of acute ward and inpatients with psychotic symptoms (25). Available concepts are often lengthy and quite complex in content and it has to be doubted if they can actually work efficiently in acute settings (6, 16, 28). Main limitations consist of short hospital stays (111) and patients' general difficulties to engage with traditional psychotherapy concepts due to treatment resistance (112, 113), high distrust levels toward the entire environment (114), emotional distress (115), severe cognitive deficits (116), and dual diagnoses (117). Despite the demanding patient clientele, therapists in acute settings are moreover challenged to provide psychological therapies with minimal resources (16). Staff shortage, economic pressure and administrative duties leave little room to offer individual therapy to each patient making group-based formats a cost-effective alternative to reach a large number of patients (118). Moreover, group interventions offer valuable opportunities for interpersonal skill development and peer support (26). Due to high patient turnovers, group therapies should be delivered in standalone formats with patients being able to already benefit when attending only one session or one module (118). Despite the economic and social benefits of group concepts, it is advisable to offer at least a minimum number of individual sessions to provide additional space for addressing personal needs and topics (119).

Thirdly, we formulated the need to consider both staff and patients' needs when planning the content of the intervention. While care taker priorities often focus on symptom and risk management, patients themselves name social circumstances and intra- and interpersonal symptom distress (e.g., unwanted internal states, sleep difficulties, lost sense of identity, social isolation, and stigma) as their main concerns (16, 25, 28, 120).

In summary, our findings suggest that an effective and feasible intervention for acute psychiatric inpatients should focus on key

mechanisms associated with changes in symptom severity and patients' symptom distress. A group concept is favored over individual sessions due to economic and social reasons, although additional individual sessions should be offered based on individual needs or demand. Therapy sessions should be simple, brief, flexible, low key, and able to be delivered stand-alone.

3.1.4. Examining existing practice

Beside Metacognitive Training (MCT), we identified two more mechanism-based therapies for psychosis focusing explicitly on impaired metacognitive processes linked to our first health problem (positive symptoms) (36): Metacognitive insight and reflection therapy (MERIT) and Metacognitive interpersonal therapy for psychosis (MIT-P). However, sufficient evidence was only available for Metacognitive Training (37–40) that furthermore recently provided an open-source transdiagnostic group format suitable for acute inpatients and acute settings (121). The concept of MCT by Moritz and Woodward was originally inspired by research on cognitive biases in psychosis (65) and aims to convey metacognitive knowledge and raise metacognitive awareness for dysfunctional thought patterns (60, 122). Compared to Metacognitive Therapy by Wells and Matthews, MCT not only focuses on general thinking mechanisms from a metacognitive perspective, but also on specific thoughts from a cognitive one by directly addressing thought contents (60). MCT's goals are implemented in a group therapy format that works with non-confrontational, educative and delusional-neutral material (21). Although MCT was originally developed for psychosis, it has been adapted for use in treating other disorders such as depression and personality disorders and can be applied in a transdiagnostic manner (60).

Our target processes cognitive fusion and maladaptive coping strategies related to our second health problem (dangerous behaviors and hospitalization) on the other hand are the main subject in the Acceptance and Commitment Therapy by Hayes (101) and the Metacognitive Therapy by Wells and Matthews

TABLE 4 Table giving an overview of the objective and core exercises for each session of MEBASp (Step 4).

Session	Title, main objective and target change mechanism	Core exercises and metaphors
1.	Psychoeducation Objective: Understanding the cognitive model, awareness of problematic cognitive biases and over identification/reaction to them Target mechanism: Knowledge increase	Developing theory based on an everyday example (“Imagine your friend doesn’t call on your birthday”) and interactive group discussion Source: MCT for depression (72)
Module cognitive insight [Metacognitive knowledge and awareness]		
2.	Finding explanations Objective: Changing dysfunctional attributional patterns by understanding that multiple factors can lead to a scenario Target mechanism: Attributional reasoning	Contemplating different causes for everyday examples and discussing negative consequences of monocausal attributions Source: MCT for psychosis and MCT-acute (21, 121)
3.	Jumping to conclusions Objective: Avoiding premature first impressions, adjusting conclusion when new information emerges Target mechanism: Interpretative reasoning	Holding back and revising premature decisions with the help of various fragmented picture tasks where patients have to guess the object behind it Source: MCT for psychosis and MCT-acute (21, 121)
4.	To empathize Objective: Understanding that facial expressions can easily be misinterpreted, considering various information sources when assessing your opposite Target mechanism: Social reasoning	Trying to guess what a person may feel or intends to do by judging pictures of their faces and discussing everyday examples Source: MCT for psychosis and MCT-acute (21, 121)
5.	Mood and self-esteem Objective: Recognizing dysfunctional thinking styles, finding alternative views and engaging in positive actions Target mechanism: Cognitive reappraisal	Gathering symptoms of depression, finding more helpful thoughts for negative cognitive schemas in various everyday examples, collecting positive activities to counteract depressive mood and low self-esteem Source: MCT for psychosis and MCT-acute (21, 121)
Module cognitive defusion [Metacognitive goals and strategies]		
6.	Noticing thoughts Objective: Being more present in the moment, noticing inner and outer sensations and responding more consciously to them Target mechanism: Mindfulness	Practicing mindfulness for external (mindfully eating chocolate) and internal (observing thoughts) experiences, metaphors: “life on autopilot,” being a “distant observer” Source: ACT for psychosis (158)
7.	How our mind works Objective: Developing a different relationship toward thoughts by understanding that they mostly consist of automatic rules and judgments learned in our past, giving thoughts less power dictating our behavior Target mechanism: Goal-orientated action planning	Debunking thoughts by distinguishing between facts and appraisals (Bad Cup), noticing automaticity and uncontrollability of thoughts (“Mary had a little lamb” and “Don’t think of a pink elephant”) and acting contrary to thoughts (“Don’t do what your mind says”), metaphors: mind as a “production machinery” and “hard drive” with “data garbage” Source: ACT metaphors (159) and ACT for life (160)
8.	Helpful vs. unhelpful thoughts Objective: Distinguishing between helpful and unhelpful internal experiences and learning to act contrary to them without trying to avoid or control them Target mechanism: Disidentification	Classifying everyday thoughts in unhelpful and helpful thoughts, actively executing defusion in “Taking your mind for a walk,” metaphors: thoughts as “ankle cuffs” vs. “tools” Source: ACT for psychosis (158)
9.	Defusion techniques Objective: Learning to actively distance from internal experiences by using cognitive and behavioral strategies Target mechanism: Self-regulation	Trying out different defusion and detached mindfulness techniques e.g., “labeling thoughts,” “floating leaves on a stream” and “Attention training technique” and choosing one for the “instruction manual for the mind,” metaphors: mind as “parrot” always telling the same story, the little “mind monster” Source: ACT metaphors (159), ACT for psychosis (158), Metacognitive Therapy for anxiety and depression (122)

(122). In contrast to traditional CBT principles of disputation and restructuring, ACT focuses on transdiagnostic change mechanisms such as acceptance and cognitive defusion to modify patients’ relationship toward internal experiences changing their function on behavior (19). Defusion thereby refers to a decentering-related mechanism that operates through metacognitive goal clarification (e.g., asking yourself if this thought is helpful for your broader goals and values) and the use of mindfulness-based distancing strategies (123). Similar to defusion techniques, Well’s Metacognitive Therapy aims to reduce toxic thinking styles such as worry and threat monitoring believed to maintain

paranoid thoughts and hallucinations by changing dysfunctional metacognitive beliefs and practicing metacognitive strategies like detached mindfulness (124). Both ACT and Metacognitive Therapy share their transdiagnostic orientation and focus on metacognitive strategies and have demonstrated effectiveness in working with psychosis in smaller studies (18, 19, 59, 103, 124, 125). However, most studies were either conceptualized for individual therapy and/or outpatients (5–7) with most available concepts still rather unsuitable and demanding for group inpatient settings. For an overview and further description of differences between treatments and key change mechanisms see [Supplementary Table 3](#).

3.2. Step 2: intervention outcomes, change mechanisms, and logical model of change

Looking at each target area of our problem model, we formulated desired intervention outcomes and constructed a logical model of change (see [Figure 3](#)) linking outcomes and hypothesized mechanisms of change. As we were challenged to address the very diverse needs of our target population in one intervention, we made sure to come up with treatment goals applicable to a wide range of mental health problems. Following the ACT nomenclature, we therefore no longer speak of specific symptoms such as delusional thoughts or hallucinations, but group them together under the term distressing internal experiences (97).

Our overarching treatment goal was to encourage functional behavior and coping via improving *cognitive flexibility*. Cognitive flexibility thereby can be understood as the capacity to switch between cognitive processes in order to generate effective behavioral regulation and is determined by general metacognitive abilities (126). To achieve this objective, we aimed to raise patients' *cognitive insight* on cognitive distortions and hence the patients' capability to reflect on internal experiences on a meta-level (127, 128). Cognitive insight is linked to functional *metacognitive knowledge and awareness* and has been identified as a potential promising candidate mechanism for a decline of positive symptoms in psychosis and favorable treatment outcome in other disorders (127).

Furthermore, we aimed to reduce patients' reactivity to aversive internal experiences via promoting *cognitive defusion*, which is determined by functional *metacognitive goals and strategies*. Cognitive defusion has been found to generally improve functioning, reduce dysfunctional attitudes, anxiety, negative affect (102) and also post-traumatic-like symptoms (129) and sleep difficulties (130). It has also been found to mediate symptom distress in psychosis via reduced believability of thought and voice content (131), and changes in *metacognitive beliefs* and *coping skills* (18).

Lastly, our intervention was supposed to support patients' recovery by providing positive *social support* and with this foster peer group relationships, and a strong therapeutic alliance found to be essential ingredients for treatment success (132, 133). Overall, we hoped that our identified transdiagnostic change mechanisms and outcomes would support patients in a wide range of needs and topics, thus improving their mental health and QoL in the long term and prevent or at least mitigate further relapses.

We then divided all intervention outcomes into performance objectives (PO) (see [Table 1](#)), which we subsequently linked to our overarching change dimension via change objectives in our change matrix (see [Table 2](#)).

3.3. Step 3: evidence-based change methods

All change objectives were assigned to change techniques and practical applications in our matrix of change methods (see [Table 3](#)). The main change methods in our intervention blueprint consisted of therapeutic techniques fostering knowledge increase,

introspection, perspective-taking and cognitive/behavioral regulation (69). As we faced the challenge to translate a complex set of change objectives and methods into very simple and comprehensible end applications for a group format, we made sure to come up with lots of interactive information sharing and fun exercises inspired by techniques used in existing mechanism-based interventions such as MCT, ACT and Metacognitive Therapy (see Step 1). For the change objective "Patient is able to allow distressing internal experiences" we for example planned to integrate a mindfulness training by performing simple guided exercises such as the "Leaves-on-a-river" from the ACT for psychosis manual (134).

3.4. Step 4: intervention outline

3.4.1. Transdiagnostic conceptualization

Although our intervention development aims to target mainly change mechanisms behind psychotic symptoms and crisis development through symptom distress, the identified underlying impaired processes are interrelated with several other disorders (see [Supplementary Table 2](#)). Metacognitive deficits (135), cognitive distortions (61), a lack of cognitive insight (136), and cognitive fusion (137) for example play an important explanatory role among others in anxiety, mood, personality disorders, and substance abuse (138). Cognitive insight, cognitive defusion, social support, cognitive flexibility, and in turn improved metacognitive skills are considered to function as transdiagnostic mechanisms of change in therapy (123, 139–141). Hence, our transdiagnostic concept allows us to address not only the different needs of our patients with psychotic and comorbid diagnosis, but also patients with diagnoses other than psychosis. Given the heterogeneous patient composition of acute ward, a transdiagnostic mindset and approach might be an especially valuable treatment component (24).

3.4.2. Modules and sessions

Our final intervention comprised a 5-week group therapy program consisting of three short treatment modules and a total of nine sessions.

Module I (Psychoeducation) gives a brief introduction into the rationale of the therapy and the targeted change mechanisms. The terms cognitive distortions and cognitive fusion and their role in the development of general psychological problems are explained in a simple language and with the help of examples and small exercises. The importance of cognitive insight and cognitive defusion for mental health is made clear.

Module II (Cognitive Insight) consists of four sessions and aims to raise cognitive insight by explaining and illustrating different cognitive biases and demonstrating their negative consequences on mental health. The treatment module includes materials and interventions adapted from the MCT for psychosis, MCT for depression and MCT for acute psychiatric settings (MCT-acute) and focuses on the change domains metacognitive knowledge and awareness.

Module III (Cognitive Defusion) with another four sessions aims to change the function internal experiences have on the patient's behavior by strengthening adaptive coping strategies. Exercises are assembled from various ACT and Metacognitive

therapy manuals and cover the change domains metacognitive goals and strategies. An overview of the intervention's contents and sources for used materials can be found in [Table 4](#).

All sessions follow the same general procedure: entrance round with mood poll, brief introduction to the program and group rules, experience-based exercises and group discussions, linking therapy content to mental health problems, transferring knowledge into every-day life, take-home message and closing round.

3.4.3. Delivery format and framework

We propose group therapy takes place twice a week with each session lasting between 40 and 60 minutes depending on the group's cognitive capacity. To ensure a maximum of flexibility for patients with brief treatment duration and attendance preferences, all modules are independent from each other and each session can be delivered stand-alone. Information is presented on simple PowerPoint slides with plain language, short inputs and illustrating imagery makes participation possible even for patients with pronounced cognitive impairments. Simple metaphors, concrete and personally relevant experience-based exercises and "touchable" therapy material (e.g., bringing dark sunglasses to demonstrate the information filter of our mind) make contents additionally easy to understand and create a relaxed atmosphere (97). All patients receive a patient workbook with short session summaries, exercises and optional homework assignments. Two therapy-cards in pocket size summarize the most important points of each module. See [Figure 4](#) for therapy content examples. Due to high levels of distress and occasionally hostile and suspicious behaviors, group sizes are kept small with a maximum of seven participants. Group sessions can be carried out by a clinical psychologist, psychiatrist, trained nurse or an occupational therapist, as little prior knowledge is required because of its simple conceptualization and available therapy manual. Next to group therapy, we advise all patients receive psychosocial treatment-as-usual (see Supplementary Methods) and additional individual psychotherapy sessions.

3.4.4. Therapeutic attitude

The therapists general therapeutic attitude should be empowering trying to support patients to pursue their valued goals despite symptoms of serious mental illness (28, 97). They should moreover try to create an open, acceptance-based and destigmatizing atmosphere (142). The therapists' process-oriented stance, which sees psychotic symptoms as extreme manifestations of normal human cognitive distortions and dysfunctional strategies, can thereby foster rapid alliance building (21). Self-disclosure by therapists is strongly recommended at this point, as it allows them to convey to patients that they too are often "victims" of their own cognitive biases (97). Thereby, they work in accordance to key features of third-wave therapies that place therapists on an equal level to patients in the sense of "you cannot teach what you cannot do" (9) (p. 369). A focus on mechanisms of change rather than symptom disputation moreover reveals room for change and returns a sense of control to patients (10).

Group attendance is voluntary, however, participants should be personally approached before each session to encourage participation (28). During sessions, patients have the possibility to leave the group if they feel uncomfortable as well as the

option to return. Contents of psychotic thoughts and experiences can be talked about openly without being judged as wrong, right or even pathological (142). Therapy sessions should not be rushed and therapists should give enough time for discussion and exchange between the participants. They can promote involvement by directly approaching patients with simple questions and thus encouraging socially anxious participants. Following the transdiagnostic concept of the intervention, disease-related language is rarely used (143).

4. Discussion

The current research aimed to develop a novel mechanism-based therapy for acute inpatients with psychotic symptoms using Intervention Mapping as a structured development framework to improve the intervention's scientific foundation, reporting standards and potential reproducibility. To our knowledge, this is the first research for this specific setting and patient group, which has attempted to do so.

MEBASp is a low-threshold transdiagnostic and modularized group therapy that focuses on symptom and distress reduction and responds to a central priority of health care services to develop, test and offer effective and needs-oriented care for acute inpatients with psychosis (5–7). We believe that our underlying intervention model and format will be able to meet the complex needs of those patients and the settings they are treated in due to several reasons.

Firstly, our intervention directly targets hypothesized change mechanisms instead of specific symptom content and hence follows a current promising paradigm shift in intervention science toward process-based treatments (13, 75, 144). We believe that our mechanism focus will not only allow us to optimize patients' treatment outcomes (13), but will be especially helpful when working with acute (involuntary) inpatients. As suggested by Moritz and Woodward (21), MEBA Sp operates through a non-confrontational and symptom-neutral "backdoor" approach (p. 623) that could be beneficial to address a transdiagnostic spectrum of patients and diverse needs, foster rapid alliance building, motivate resistant patients, lower drop-out rates, and enhance recovery rather than illness elimination (6, 16, 19, 145). By combining evidence-based mechanisms and procedures from various theories and therapy schools into one approach, we moreover refocus on key questions of why and how interventions work best for patients instead of if they align or differ from specific therapy approaches (75).

Our intervention's overarching emphasis on transdiagnostic metacognitive change mechanisms (cognitive insight and cognitive defusion) furthermore fits in a new generation of treatments promoting recovery from serious mental illnesses including psychosis (104, 138). The concept of metacognition thereby is believed to serve as a valid candidate for filling the gap between simplistic biological treatment models and psychosocial ones (104). A main benefit of metacognitive treatment models is the promotion of overall wellbeing beyond the positive symptom reduction achieved through psychopharmaceuticals, an aspect considered to be essential when working in psychiatric inpatient care (27). However, authors criticize that existing

One event – many possible thoughts ...

A good friend doesn't call on your birthday...

angry
Writing a nasty Whatsapp

relaxed
Party hard

anxious
Worry all day

sad
Cry and lie in bed

What is this person feeling or doing?
How sure are you about your guess?

1. A union leader gives a speech to his colleagues (1920s)
2. Fight at the market
3. A musician sings a love song

Helpful or non-helpful?

Thought	Helpful?	Situation
Oh, I messed up.	Yes	If I realize I made a mistake, I can make up for it.
I always do things wrong.	No	
I'm not good at that yet.	Yes	I can try to learn it or have someone help me.
It's no use anyway.	No	

Noticing and naming thoughts

- Instead of „It's never going to get better!“
- I have the thought, that it's never going to get better!

Try it out with own thought!
What's the difference?

FIGURE 4

Example slides from each module. **Top left:** Slide from the module “Psychoeducation”. Patients learn to understand that different thoughts can lead to different feelings and behaviors (slight adapted from the MCT manual for depression) (72) (p. 105). **Top right:** Slide from the module “Cognitive Insight” and session “To empathize”. Patients learn to understand that facial expressions can easily be misinterpreted (slide used from the MCT-acute concept, open source on the MCT website, https://clinical-neuropsychology.de/metacognitive_training/). **Bottom left:** Slide from the module “Cognitive Defusion” and session “Helpful vs. unhelpful thoughts”. Patients learn to distinguish between helpful and unhelpful internal experiences. **Bottom right:** Slide from the module “Cognitive Defusion” and session “Defusion techniques”. Patients learn to notice and name thoughts in order to create distance to them instead of getting entangled in thought contents and automatic reactions.

treatments only cover certain aspects of the larger construct of metacognition (see **Supplementary Table 3**) (93) and call for intervention development that incorporate all four metacognitive domains into hybrid approaches (104). Due to our modularized treatment concept, MEBASp is actually able to enclose the whole spectrum of metacognitive mechanisms into one intervention. Patients therefore not only benefit from a broad range of hypothesized positive treatment effects when attending all three modules, but already profit when attending only one or two (76).

Despite an underlying change theory seeming complex at first sight, we moreover believe that we managed to adapt the intervention for the inpatient context. MEBASp is brief, flexible, experience oriented, low-key and easy to learn for therapists and thus takes into account key treatment elements proposed by competence frameworks in working with acute patients (26, 58). The modularized approach moreover allows to combine and integrate different independent treatment modules and therewith ensures high flexibility and goodness-of-fit to patient needs and preferences (146). All procedures taken from in- and outpatient concepts are simplified and adapted for a crisis-focused setting addressing both priorities of symptom (cognitive insight) and distress reduction (cognitive defusion) (25). On top of that, the group-based design permits high therapy frequency and dose, is cost-effective, resource saving and offers opportunities for peer social support and interpersonal skill development (147).

4.1. Advantages to the IM approach

Although the research base on process-oriented care is growing, authors do not yet provide a standardized method on how to construct evidence-based problem models, choose adequate sets of change mechanisms, procedures and change measures (13, 148). In this context, IM offers different structured elements to overcome those challenges. The PRECEDE-model allowed us the synthetization of multi-level data and an in-depth understanding of our situation necessary for identifying evidence-based change mechanisms (31). Building matrices of change and change procedures represented a valuable method to ensure our change mechanisms were precisely defined (148) and got effectively linked to therapeutic applications (75). In doing so, we could refer back to IM-associated extensive frameworks such as the Theoretical Domains Framework (68) and the taxonomy of behavior change methods (69) that clearly close the gap of comparable compositions in the literature (144). Thereby, IM per se works according to principles of mechanism-based therapies by being “theory agnostic,” flexibly combining evidence-based concepts from across paradigms and thus creating synergistic effects between different approaches (149). Lastly, the detailed mapping of all change mechanisms and procedures in an intervention blueprint reflects the underlying complexity of our intervention and allows the derivation of matching outcome measures to monitor change in future studies (as described in the future direction sections) (148).

4.2. Limitations

There are several limitations to the current research. First, the mechanism and procedure selection were based on considerations and decisions made by our development team in each step of the IM framework. A different working group could have created a different needs analysis and chosen a different treatment focus, change methods and practical applications (see for example the CRISIS-, the WIT- or the OASIS-study) (150–152). Nevertheless, thanks to our detailed documentation of each decision step, potential differences become transparent and are made objectifiable.

Second, we encountered an excessive concept overlap in the literature (148). Cognitive defusion for example shares significant variance with constructs such as deliteralization, decentering, distancing and detached mindfulness (102). Moreover, the concept of metacognition is also somewhat “blurry” making it difficult to separate accurately what is a metacognitive and what a purely cognitive change mechanism (153). A central source integrating processes, mechanisms and procedures and using a common language and conceptualization would have made our selection much easier and the final intervention potentially more comparable with other mechanism-based treatments.

Thirdly, the complex set of mechanisms underlying the intervention could be seen as a challenge. From a clinical perspective, an intervention focusing on trying to change such a variety of mechanisms might be an overload for acute inpatients. Along with this, our mechanism-based group will naturally not provide the appropriate content and format for all patients due to varying needs and preferences. In addition to alternative therapy options (see [Supplementary Figure 1](#)), further research should investigate which patients can particularly benefit to make appropriate therapy offers.

Fourthly, due to time and resource constraints and in consideration of protecting the wellbeing of our vulnerable target population, we did not conduct codesign activities during the first development stage. This decision may have limited the intervention prototype’s suitability and acceptability for patients. Although we relied on pre-existing qualitative data and plan to integrate codesign activities in the second stage of the development process (feasibility study), future research should explore appropriate and sensitive ways to involve patients already in the first development stage.

Finally, although we found the detailed approach of IM helpful in creating our intervention and followed most of its steps, the overall development process was time consuming and took up a lot of resources. If teams thus require rapid intervention development, a more pragmatic approach such as the 6SQuID (“Six steps in quality intervention development”) (154) might be favored over IM.

4.3. Implications and future directions

Our mechanistic treatment design enables us to conduct necessary research to determine whether our proposed mechanisms are capable of producing therapeutic change (13). A single-arm feasibility study investigating the impact of MEBASp is

currently in progress ([clinicalTrials.gov](https://clinicaltrials.gov) identifier: NCT04874974) (74). The study includes a mixed methods evaluation to assess the feasibility and test key change mechanisms of our logical model of change. Next to primary outcome measures such as trial entry rate, patient engagement and satisfaction, the study includes metacognitive measures e.g., the Beck Cognitive Insight Scale (155) and the Cognitive Fusion Questionnaire (156). Intensive involvement of participants through codesign activities such as feedback questionnaires, feedback rounds and interviews moreover ensures the revision of the intervention prototype will be in accordance to patients’ needs and preferences (157). If feasible and acceptable, future research will further investigate on the effects of change mechanisms by involving a control condition and performing mediation analyses in a larger scale study. Our ultimate goal is to individualize treatment allocation by matching patients to the treatment module most likely to produce change and fit with personal preferences (see [Supplementary Figure 1](#)). The allocation process could in the long term involve e.g., moderation studies, complex network approaches and ecological momentary assessments (75).

4.4. Conclusion

Our research demonstrates the importance of a) developing needs-oriented and mechanism-based interventions for acute inpatients with psychotic symptoms and b) using a structured development methodology to ensure their scientific foundation and replicability. Our rigorous and evidence-based intervention design focuses on addressing metacognitive change mechanisms associated with both acute symptoms and crisis development and adapts to key components required to deliver psychotherapy in psychiatric inpatient settings. It therefore has the potential to positively impact a neglected patient group. However, a pilot study is required to assess the intervention for safety, feasibility and preliminary effectiveness.

Data availability statement

The original contributions presented in this study are included in the article/[Supplementary material](#), further inquiries can be directed to the corresponding author.

Author contributions

EG, SL, PF, FP, SE, and JK-B: research objectives, project methodology, needs-analysis, guidance of process and clinical input, review intervention prototype, and manuscript write-up. EG: theoretical framework for intervention, material development and beta testing with patients. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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

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Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fpsy.2023.1160075/full#supplementary-material>

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Joe Druce,
Central and North West
London NHS Foundation Trust,
United Kingdom
Katja Simoncelli,
South London and Maudsley NHS Foundation
Trust, United Kingdom

*CORRESPONDENCE

Gianpaolo Salvatore
✉ gianpaolo.salvatore@unifg.it

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Improving the therapist's metacognition and capacity to intersubjectively attune with a patient with psychosis through the exploration of the therapist's developmental history: a case report

Gianpaolo Salvatore^{1,2*}, Tania Di Somma², Luisa Buonocore²,
Maria Conza², Nadia Di Sturco², Gerardina Fimiani²,
Nicoletta Manfredi², Raffaella Marciano², Antonella Pallotta²,
Maria Grazia Proto² and Anna Sateriale²

¹Department of Humanities, Letters, Cultural Heritage, Education Sciences, University of Foggia, Foggia, Italy, ²Studio Maya, Psychiatry, Psychotherapy, Criminology, Research, Training, Salerno, Italy

Clinical literature emphasizes how symptoms of psychosis can be efficiently targeted by psychological treatments. The most well-known approach to these symptoms is cognitive-behavioral therapy; but in the last few decades also other approaches are enriching the landscape, focusing on the dysfunctions in mentalization or metacognition, a spectrum of mental activities involving thinking about one's own and others' mental states. This huge amount of theoretical reflection and empirical research focused on the implementation of treatments does not seem to be associated with an attention to the inner world of the therapist who relates to the patient with psychosis; for example, to the impact of the therapist's developmental history on the therapeutic relationship. In this paper the authors are inspired by an intersubjective perspective, according to which although the treatment is for the patient's benefit, both the patient's and the therapist's developmental history and psychological organization are equally relevant for understanding the clinical exchange. On this basis, the authors make a "parallel" analysis of the clinical case of a young woman with symptoms of psychosis (i.e., persecutory delusions, auditory verbal hallucinations, social withdrawal) and its supervision process. They show how the therapeutic relationship can be significantly conditioned by the therapist's developmental history; and how a process of supervision focused on the exploration of the traumatic elements of this history can effectively promote the therapist's metacognitive capabilities, a functional patient-therapist intersubjective attunement, and a good clinical outcome.

KEYWORDS

psychosis, developmental trauma, clinical supervision, intersubjective attunement, therapeutic relationship, metacognition, mentalization

1. Introduction

Although effective pharmacological interventions for patients with psychosis have been developed in the last few decades, 20%–40% of patients are drug-resistant or residually symptomatic in the long-term treatment (1), or experience side effects like weight gain, which is associated with low self-esteem, social isolation, medication non-compliance (2), and an alteration of the body self-image that can exacerbate symptoms (3). This has increased the need for efficient psychotherapeutic approaches to psychosis over the years. The most well-known psychotherapeutic intervention is cognitive behavioral therapy (CBT) (4), primarily focused on helping clients to regulate negative emotions correlated to symptoms, question the cognitions boosting them, and reducing stigma. More recent—“third wave”—CBT focuses on symptom sustaining factors, such as repetitive thinking or intolerance of uncertainty (5) and cognitive biases (6). Many people with psychosis, however, do not respond positively to these approaches predominantly focused on symptoms, and end treatment with significant residual symptomatology (7). This has contributed to give impetus to new therapeutic models that focus on the causal factors of symptoms, such as the impairment of patient's sense of self (8) and—more specifically—dysfunctions in processes through which patients make meaning of their own and others' mental states, namely mentalization (9) or metacognition¹ (10, 11). A core tenet of these approaches is the idea that dysfunctions in mentalization/metacognition can be improved in the context of a therapeutic relationship seen as “an intersubjective process occasioned by the meeting of two minds” [(12), p. 87; see also (13)]. In line with some psychoanalytic authors, it is possible to radicalize this intersubjective perspective, postulating that everything happening in the clinical encounter could be considered the expression of an intersubjective field in which each participant brings a relevant contribution (14, 15). From this perspective, the intersubjective process that takes form in the clinical encounter may result not only in an increase in the patient's mentalization/metacognition capacity, but also in negative fluctuations, which may be associated with similar fluctuations on the part of the therapist; for example, when the patient's poor metacognitive ability manifests itself in overly concrete or “black and white” thinking, the therapist may tend to show a

complementary tendency to argue competitively with the patient and/or impose his or her own view of reality (16).

The radically intersubjective perspective summarized so far implies an overcoming of the medical paradigm whereby a therapist objectively analyzes the patient's disease, remaining completely extraneous to the object of exploration, and then cures that disease according to a specific protocol; on the contrary, the therapist, with her/his psychological organization, is deeply involved in the events she/he is trying to decipher and deal with: although the treatment is for the patient's benefit, both the patient's and the therapist's developmental story, psychological organization, and processes of making sense of their own and the patient's experience are equally relevant for understanding the clinical exchange. The application of this perspective to the argumentative context of this paper implies that in order to deeply understand the patient with schizophrenia, the therapist is called to remember that therapist and patient may share some nuclear affective elements; for example, the difficulty to tolerate both proximity and loneliness in relationships with others (17, 18). In this perspective, client and therapist can both be considered wounded human beings involved in a process aimed at helping the client (19). Psychosis seems correlated with traumatic experiences (20); so current psychotherapeutic approaches are enriched with the prospect of fostering patients' ability to make sense of the mental states (e.g., feeling of being persecuted) correlated to trauma (21). This seems also to concern the other part of the “wounded dyad”: various studies show that developmental trauma (DT) seems particularly present in the therapists' experiential baggage (22, 23).

Despite this data, there is a general lack of attention to the way the therapist's traumatic suffering impacts the therapeutic relationship, least of all with a patient with psychosis. This seems also reflected in the limited attention paid to these aspects in the context of clinical supervision in general. Several authors emphasize the role of the supervisory relationship as a kind of attachment relationship (24, 25) that can be internalized in the therapist's work as a means of self-support and self-review (26–28). However, this kind of support from the supervisor seems conceived as a resource to deal with the technical and transference issues posed by the patient. Not much emphasis seems to be placed, for example, on how exactly the supervision should tackle therapists' developmental trauma (DT) and its potential negative impact on the therapeutic relationship and the clinical process.

Based on the above, there is room for improvement of therapeutic interventions inspired by an intersubjective paradigm and focused on dysfunction in metacognition/mentalization, paying due attention to the internal world of the therapist engaged with a person with psychosis. Some authors seem to go in this direction, deepening the theoretical exploration of countertransference processes in the therapy of patients with psychosis [see (12, 29, 30)]. It seems possible, however, to go further, focusing on the therapist's DT—which is a substantial element underlying countertransference—and its impact on the therapist's metacognitive capabilities and disposition to intersubjectively attune with patients. This aim seems coherent with what Winnicott (31) observed: “If we are able to be the analysts of psychotic patients, we must have reached down to very primitive things in ourselves” (p. 61); and with what more recently Horowitz (29) observed: “we must reach deep down inside to touch the parts of ourselves that have been wounded, endeavoring to move freely in those aspects of experience that most closely mirror the closed

¹ Even if partially overlapping, the concepts of mentalization and metacognition present a major difference. Metacognition is a conceptual construct framed in a constructivist-oriented background; it consists of a spectrum of mental activities that involve thinking about thinking. It refers to mental activities ranging from discrete acts in which people recognize specific thoughts and feelings to more synthetic acts in which an array of intentions, thoughts, feelings, and connections between events are integrated into a larger complex representation; metacognition also includes “mastery,” namely the ability to use metacognitive knowledge to solve the psychologically or emotionally challenging events and social problems occurring in daily life (10). The construct of mentalization is framed in a psychoanalytic background and, in particular, in the development of psychodynamic approaches for adults diagnosed with borderline personality disorder. According to this background, mentalization would develop in the context of secure attachment from the early phases of interaction with caregivers (8). Since the authors are engaged in the field of metacognition, in this paper this construct will be preferred.

universe of sorrow and loss that envelops many afflicted with schizophrenia” (p. 241).

In this paper, through a clinical case study, we show how the therapist’s psychological organization related to DT predisposes her to a contingent impairment of her metacognitive functions in contingent problematic phases of the therapeutic relationship; and prevents the therapist from intersubjectively attuning with the patient. Moreover, we show how a process of supervision specifically focused on fostering the therapist’s metacognitive ability to make sense of her own traumatic suffering and its impact on the therapeutic relationship can effectively promote a change of the therapist’s emotional disposition toward the patient, unlock the therapist’s ability to intersubjectively attune with the patient’s suffering, guide the therapist’s line of intervention, and most likely contribute to a good clinical outcome.

2. The case of Patricia

Patricia was in her early 20s when her parents brought her for therapy. She was an only child, and lived with her parents. Her father was a 56-year-old professional; she described him as severe and judgmental. Her mother was a 50-year-old housewife, described as cold, perfectionist, and controlling. Patricia grew up with a constant fear of mistakes and of disappointing her parents’ expectations. Simultaneously, in line with the standards set by her mother, Patricia displayed perfectionistic tendencies and neglected social relations, dedicating herself body and soul to studying. She was studying for her first exam session at the university when she began to manifest an initial psychotic breakdown, in the form of mental confusion, persecutory delusions and auditory verbal hallucinations. She was convinced that during the lessons the teachers told the whole class, through “a secret communication code,” that Patricia was “unreliable and unable to be in the world,” and she heard whispering voices insulting her. This prompted her to abandon lessons. She gradually lost the ability to concentrate on her studies, and had fallen into severe social withdrawal and apathy. At first, her parents criticized Patricia for neglecting her studies and for the absurdity of her delusional thoughts. When they witnessed the worsening of her condition, they asked for therapeutic help. Patricia started a pharmacological treatment with a public health psychiatrist (Olanzapine, 10 mg). This treatment drastically reduced hallucinations and partially regulated persecutory delusions: even though the patient no longer showed a structured delusion, a recurring doubt that her colleagues and neighbors had malicious intentions toward her persisted. Patricia also started individual psychotherapy, delivered in a private outpatient clinic. Individual sessions were weekly and lasted about 45 min. Patricia attended more than 90% of the scheduled weekly appointments. The psychotherapist, Judy,² was in her early 40s, she had a cognitive behavioral background, a thorough knowledge of the literature on the relationship between metacognition and psychopathology and about 10 years of clinical experience working with persons with severe mental illnesses. During her training, she had undergone 2 years of cognitive-analytic therapy.

² Both the name of the patient and therapist are fictitious.

3. The supervision

Immediately after the end of each therapy session, Judy took written notes on the highlights of the meeting and her own impressions and emotions. During the first 2 months of therapy, she had the overall impression of a cooperative atmosphere in the therapeutic relationship. Then, in a session of the third month, Judy tried to help Patricia to understand that the negative judgment she placed on her professors and colleagues reproduced the severity with which she tended to judge herself. Patricia left the session with a perplexed expression, and after a few hours she texted Judy that she intended to suspend the therapy, because she thought that Judy had badmouthed her to her university professors. Judy called her and struggled to persuade her to discuss the matter in the next session, and Patricia listlessly agreed to return. What happened in the following session made Judy feel confused and prompted her to ask one of the authors for a clinical supervision. The following excerpt is taken from the transcription of the audio-registration of this supervision:

Supervisor (S): can we focus on that specific scene? She is sitting in front of you and you want to discuss what had happened...do you remember what you said, and what happened?

Judy (J): yes... I wanted to reassure her that her suspicions did not correspond to reality...I said something like “Patricia, I’m sorry if I may have somehow led you to think this, but I assure you that I have had no contact with your professors, I could never do this to you. Rather, maybe we could talk about how it makes you feel not being able to have full confidence in me just now”...but it seemed like I was making things worse...she looked at me with a suspicious expression, she did not talk, she hardly answered my questions...

S: ...uhm...how did you feel?

J: well, she keeps her head down while I speak...and I feel, you know, kind of...under scrutiny...then when I finish the sentence, she looks at me...(pause).

S: how is she looking at you?

J: uhm...with a kind of detached expression...and disapproving, too...

S: uhm...was there this sense of her detachment and disapproval?!

J: yes...

S: please, try to recall in yourself this feeling you had when you faced her detachment...can you?

J: I think so...

S: are you feeling it right now?

J: I think so...well...I think it is unfair, that I am trying so hard and she does not help me to help her...

S: you look angry while you say this...are you feeling angry while Patricia has this expression of disapproving detachment?

J: yes... I guess I think she is ungrateful and unjust to me

(pause)

S: I think this is understandable...but...listen, I am trying to put myself in your shoes in front of that gaze of Patricia, and I can experience your own angry sense of injustice ... but if I look inside, I see in myself something that precedes this anger, something more painful ... that could make me react with anger...I wonder if something similar may have happened to you, too...

J: (sad expression).

S: your expression has changed. What are you feeling now while Patricia is looking at you with that gaze?

J: (pause)...it's a sort of weakness...sadness...

S: uhm...is there any image that comes to your mind right now?

(long pause)

J: yes...it is very difficult for me to say this...I see my mother's face looking at me with no expression, it's empty (moved)... it was an expression that could suddenly change and become angry at me, even if I had done nothing wrong...

In the following part of the supervision, Judy was able to tell the supervisor that growing up she had suffered the consequences of her mother's severe dysphoric depression, and her father's physical and emotional detachment. The supervisor helped Judy to see that perhaps her urge to reassure the patient about the purity of her intentions reenacted the child part of Judy's identity who had tried countless times to "apologize" to her mother for being wrong, in an attempt to get a signal of love from her or to avoid her anger. It was as if in front of the patient's apparent "detachment" and "disapproval," Judy was again—at a procedural level—in front of her mother and was saying "please forgive me for not being the daughter you want, a daughter capable of making you happy." The supervisor also helped Judy to see that, as had happened with her mother, also in the interaction with Patricia the failure of this attempt generated a state of "switching off" (weakness) and psychological pain: a state of psychological collapse, slowing down of vital functions (32). Judy also recognized that this tendency to fear detachment and disapproval had also occurred with other patients. Moreover, she recognized that she had addressed these issues of her developmental history during her personal psychotherapy, but she had never realized how these traumatic contents were implicitly reactivated in interactions with patients. Finally, on this basis Judy and the supervisor came to understand that there was a sort of symmetry in the internal traumatic dynamics of the members of the therapeutic dyad: in Patricia, an identity part guided by suspiciousness (at times delusional), detachment and withdrawal from the relationship constituted a sort of strategy to protect a traumatized and painful identity part; similarly, in Judy, a relational strategy based on "apologizing" and trying to conform to how she imagined the other wanted her to be, protected a traumatized part related to the repeated experience of her mother's detachment and anger.³

At the end of the supervision, Judy told the supervisor that she felt relieved and that she could really "see" Patricia's suffering now.

4. The impact of supervision on therapy

The therapeutic session following the supervision started with a long silence. Although Patricia had a diffident expression, Judy felt serene, and she felt no urgency to make any intervention. Thanks to the supervision, she was aware that the experience of feeling understood about her DT and becoming able to attune with Patricia's own DT could be considered the two sides of the same coin. It was this awareness that prompted her to make the following

intervention: "Listen, Patricia, I want to share with you what is going on inside of me right now. There is a part of me that feels in trouble because she feels like she is walking on eggshells out of fear that any of my words might hurt, offend or harm you, or, maybe, scare you; but then there is also another part that manages to be in touch with a need in Patricia, which is not clearly focused, which brings her here in front of me, despite the risks that this relationship may entail." Patricia changed expression, looked Judy in the eyes with a nuanced smile, nodded imperceptibly. Judy then asked her how she was feeling at that precise moment, and the patient replied that she felt "on the edge," a state that—with Judy's help—Patricia understood as of alarming uncertainty about the safety of the relationship. Judy then helped Patricia to recognize that her hypervigilant and mistrustful part protected her from her need for closeness, and then said to her: "it seems that when you seek my closeness and you obtain it, you initially feel comfort but, immediately afterwards, you fear that the connection with me is unreal and that I have the power to hurt you, and consequently this makes me very dangerous at the very moment in which I seem closest to you." Patricia nodded sadly.

This session marked a turning point. During the following weeks, breaks in the therapeutic relationship occurred on several occasions: Patricia suddenly became distrustful and withdrawn; but Judy promptly repaired these ruptures by helping Patricia to reflect on the fact that it was the fear that Judy was not really interested in her that generated the distrust and closure. In one session during the sixth month of therapy, Patricia was able to share with the therapist a traumatic scenario from her childhood: her parents who harshly scolded her when she cried as a child.

5. Outcome

After 10 months of therapy, Patricia's persecutory delusions essentially disappeared. She was able to return to university classes. Occasionally, her relational solicitations generated alarm and rumination about the possible malevolent intentions of others, but Patricia was able to interactively regulate this state of suffering with the therapist, for example by texting her, or describing her internal state in a diary, imaging she was talking with the therapist. Patricia became more and more able to see her contingent persecutory ideas as fantasies not necessarily mirroring reality, and to soothe her suffering. Patricia's awareness of her own and others' minds and awareness of herself as someone capable of mastering psychological and interpersonal challenges improved. In various situations she began to feel a sense of self-efficacy and agency. Her social withdrawal did not diminish significantly, but she seemed progressively to acquire the ability to enjoy moments of well-being alone through contact with nature, and to resort to the active search for these moments also to regulate and prevent states of suffering.

6. Discussion

In the last few decades, approaches focusing on the dysfunctions in metacognition are enriching the landscape of the psychological

³ For further information about a similar clinical conceptualization, based on the metaphor of a dialectic among identity parts, see (33, 34).

treatment of psychosis. Furthermore, some of the authors who follow a metacognitive-oriented approach to psychosis, emphasize the need to give relevance within them to countertransference and intersubjective processes. Taking this theoretical line, in this paper we focus on the impact of the therapist's developmental trauma on the therapeutic relationship. We make a "parallel" analysis of the clinical case of a young woman with symptoms of psychosis, and the supervision process of the case. It is shown that the therapeutic relationship can be significantly conditioned by the therapist's developmental history; and how a process of supervision particularly focused on the exploration of the traumatic elements of this history can effectively improve the therapist's metacognitive abilities (both the ability to understand one's own mind and that of the patient), and promote a functional patient-therapist intersubjective attunement and a good clinical outcome. Of note, the therapist presented in this case had followed a personal psychotherapy, during which she had had the possibility of elaborating the traumatic elements of her developmental history; but she never realized how significant a role such elements played in reducing her ability to attune to her patients, nor the negative impact that the re-emergence of her DT in the therapeutic relationship had on her metacognitive abilities. This sheds light on the need to consider such a process of supervision complementary to personal psychotherapy for therapists engaged in the treatment of patients with psychosis.

Our paper has a series of limitations. The first is that the successful outcome of the clinical process may be attributable to factors external to supervision, such as the short duration of illness, the patient's young age, and the patient's drug therapy. In addition, it seems that the apparent positive effect of supervision on the clinical outcome is mediated by the link that the supervision establishes between therapist's personal history and therapeutic practice; but the effect produced by this link may have been relevant only because of its character of novelty for the therapist described in our paper, with her personal developmental history and her specific training background. This character of novelty could have been less prominent with a psychodynamic/psychoanalytic therapist, since in this theoretical-clinical context therapists are regularly encouraged—as part of their training—to reflect on their emotional responses with their patients and how their own internal dynamics may impact the therapeutic relationship.

Finally, our theoretical-clinical speculation opens up several lines of research. One of these could be the exploration of the correlation between the patient's reduction of symptoms and emotional dysregulation, on the one hand, and, on the other hand, the subjective perception of being understood and internal soothing that the therapist experiences in the context of the supervisory relationship. Another interesting line of research could be the exploration of the correlation between therapist's metacognition and capacity to intersubjectively attune with a patient with psychosis.

7. Patient perspective

While we write this paper, Patricia's therapy is ongoing, with a session every 2 weeks; the therapeutic relationship is very solid. Patricia has started to go out sometimes with a university colleague who shares her passion for nature. In one of the last sessions of this phase, the therapist received explicitly positive feedback about the treatment from the patient.

Data availability statement

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

Ethics statement

Ethical review and approval were not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the participant/patient(s) for the publication of this case report.

Author contributions

GS was responsible for conceptual work, supervision, and drafting the first version of the manuscript. TS contributed to the case conceptualization and conceptualization of the supervisory process. LB, MC, NS, GE, NM, RM, AP, MP, and AS contributed to conceptual work, manuscript revision, and linguistic review. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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

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EDITED BY

George Salaminios,
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REVIEWED BY

Elfrida Hartveit Kvarstein,
Oslo University Hospital, Norway
Gerry Byrne,
University of Oxford, United Kingdom

*CORRESPONDENCE

Mark Dangerfield
✉ mdangerfield@fvb.cat

†These authors have contributed equally to this work and share first authorship

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Mentalization based treatment of youth on the psychotic spectrum: clinical profiles and outcomes for youth in the ECID

Mark Dangerfield^{1*†} and Line Brotnow Decker^{2†}

¹Vidal and Barraquer University Institute of Mental Health, Ramon Llull University, Barcelona, Spain, ²Yale Child Study Center, Yale University, New Haven, CT, United States

Introduction: Early intervention may significantly improve the prognosis associated with psychotic disorders in adulthood.

Methods: The present study examined the acceptability and effectiveness of a standalone intensive, in-home, mentalization-based treatment (MBT) for extremely high-risk, non-help-seeking youth on the psychotic spectrum [Equipo Clínico de Intervención a Domicilio (ECID), Home Intervention Clinical Team].

Results: Despite previously being unable to participate in treatment, more than 90% of youth engaged and those on the psychotic spectrum demonstrated slightly higher engagement than the general high-risk group (95% and 85%, respectively, $X_1 = 4.218$, $p = 0.049$). Generalized estimating equation (GEE) models revealed no main group effect on the likelihood of reengaging with school over the first 12 months of treatment ($X_1 = 1.015$, $p = 0.314$) when controlling for the duration of school absenteeism at intake. Overall, the percentage of school engagement rose from 12 to 55 over this period, more than 40% of the total sample experienced clinically reliable change and an additional 50% appeared clinically stable. No statistically significant difference was observed between the groups in the average change in HoNOSCA total severity score ($X_1 = 0.249$, $p = 0.618$) or the distribution of youth into categories of clinical change during the first year of treatment ($X_1 = 0.068$, $p = 0.795$).

Discussion: The present findings suggest that a mentalization based intervention may be able to engage extremely high-risk youth in treatment and have clinically meaningful impact on symptom severity and functioning after 12 months.

KEYWORDS

mentalization-based treatment, psychotic spectrum, adolescence, treatment resistant, AMBIT

Introduction

Psychotic disorders are associated with complex, crippling, and often chronic mental health issues and poor functioning (1, 2). Mounting empirical evidence has revealed that only a small subset of individuals struggling with psychotic states experience an acute onset of symptoms and that as many as 4 in 5 may present with prodromal symptoms for a year or more prior to diagnosis, sometimes labeled *at-risk mental states* (ARMS) or *clinical high risk for psychosis* (CHR-P) (3). Effectively, this period overlaps with adolescence, given that psychotic disorders usually emerge between the ages of 12 and 25 (4). Typically, youth in this group present with difficulties ranging from subtle, subjectively experienced disturbances in mental processes (labeled “Basic Symptoms,” BS) or subthreshold attenuated positive symptoms (APS) to brief limited intermittent psychotic episodes (BIP/BLIP, i.e., with a duration of symptoms of <1 week and with spontaneous remission) or primary schizotypal

personality disorder with decline in or chronically low functioning [see Catalan et al. (5)]. However, multiple empirical studies have pointed to the highly comorbid presentations of youth in this group, highlighting the transdiagnostic features associated with high clinical severity in adolescence (5–8).

Previous research has demonstrated that early intervention may significantly improve the prognosis associated with psychotic disorders in adulthood, highlighting the importance of detecting and targeting individuals at heightened risk for developing psychosis during the premorbid or prodromal stages of the assumed clinical continuum (9). Yet, remarking on the large variability in outcomes recorded across studies, recent meta-analyses have shown that only 25% of individuals presenting with ARMS transition to a psychotic disorder after 2–3 years (10). This finding suggests that although psychotic disorders are usually preceded by clinically observable premorbid states, they are not specific to the psychotic spectrum. Interestingly, a majority of the young people identified as being at very high risk and who do not transition to a psychotic disorder do nevertheless continue to struggle with debilitating psychiatric symptoms and poor functioning (11–13), highlighting the importance of preventive interventions targeting this group.

Despite substantial empirical and clinical interest over the past two decades, the evidence base concerning intervention effects with youth on the psychotic spectrum is limited. Several meta-analyses synthesizing data from internationally representative studies examining a range of treatment paradigms (including pharmacological treatment, CBT and family therapy) have found no superior effect of any intervention in the prevention of psychosis (5, 14). Perhaps reflecting this ambiguity, interventions and health care systems vary greatly in terms of their organization (free-standing, integrated into community or hospital services), modes of delivery, focus, and outcomes (15). Initial findings suggest that standalone services were associated with higher acceptability (lower treatment attrition, higher satisfaction, and lower stigmatization), higher effectiveness and higher economic savings. Successful units were also explicitly multidisciplinary, had implemented a clear training protocol and recruited heterogeneous but explicitly high-risk youth [see de Pablo et al. (15) for details].

Taken together, longitudinal studies suggest that $<1/2$ of young people at heightened risk of psychosis experience full symptom remission and even fewer regain satisfactory daily functioning and social reinsertion (10) reflecting the “symptom-disability gap” frequently observed in psychiatric research. The authors have highlighted a number of methodological and conceptual issues relating to the measurement of treatment acceptability and effectiveness for youth presenting with at-risk mental states. These include the need for real-world data, studying the impact over time of clinical and functional outcomes of well-defined, transdiagnostic interventions on help-seeking and non-help-seeking youth (i.e., those that don’t seek out or accept offers of mental health care), presenting with severe and comorbid symptoms.

Mentalization based treatment was initially developed for adults presenting with borderline personality disorder who struggled to engage in conventional psychotherapy (16). Subsequently, core difficulties with mentalizing (i.e., the ability

to make sense of ourselves and others in terms of subjective states and mental processes) have been identified in individuals struggling with mental health issues as seemingly diverse as eating disorders, autism spectrum disorder, psychosis and a range of personality disorders across ages and clinical settings, leading to its conceptualization as a transdiagnostic treatment model (17–20). Across diagnostic categories, difficulties with mentalizing are associated with greater symptom severity and poorer functioning, and mounting evidence suggests focused interventions may impact the quality and sturdiness of the individual’s mentalizing capacity as a mediating factor in symptom remission (21, 22). MBT may be particularly effective for individuals presenting with more severe clinical symptoms (23). Additional research is required to establish the precise causal mechanisms at play and the effectiveness of MBT over other treatment options in naturalistic settings (17).

Research into the role of mentalizing in the development of psychotic spectrum disorders is budding and some empirical findings suggest that mentalizing may be a protective factor in the context of at-risk mental states [e.g., (24, 25)]. Conversely, deficits in social cognition are common among youth presenting with at-risk mental states (26) although specific causal mechanisms linking these difficulties with the transition to psychotic disorders have yet to be established [see Debbané and Toffel (27) for a review of findings]. One study found that reflective functioning predicted specific pre-clinical psychotic symptoms as well as a heightened likelihood of transitioning to a psychotic disorder among youth presenting with ARMS (24). Mentalizing may thus appear as a protective factor at different stages of the continuum of psychotic states (28). As yet, it is unclear whether these findings are best explained by characteristics specific to the development of psychotic symptoms *per se* or due, at least in part, to the psychiatric comorbidities that frequently exist alongside them, including personality disorders (6, 8, 29). A mentalization-based approach to at-risk mental states or psychotic disorders could therefore mechanistically either target psychosis-specific phenomena or a general psychopathology factor assumed to be present across symptom clusters.

The goal of mentalization-based interventions is to facilitate the emergence or solidify the young person’s capacity for mentalizing, namely as a resource in potentially overwhelming situations. The intervention is explicitly relational, initially aiming to establish an increasingly trusting and secure relationship between the young person and the clinician which mimics the developmental context within which mentalizing usually develops (16). Specifically, recent developments in the understanding of mentalizing have highlighted the importance of *epistemic trust* in this context, meaning trust in the authenticity of interpersonally transmitted knowledge (30). Following mentalizing theory, distrust in the therapeutic relationship can be understood as an adaptive response to living in threatening and unsupportive social contexts (31), but will nonetheless hamper the intergenerational transmission of sociocultural knowledge. Consistent with this conceptual development and recent empirical findings suggesting that the impact of mentalization-based interventions may be gauged at different levels of analysis, central thinkers in the MBT tradition have highlighted the importance of examining outcomes relating to

the therapeutic relationship (reflecting changes in epistemic trust), clinical profiles, and real-life functioning (32).

MBT interventions are manualized and characterized by their focus on coherence, consistency and continuity (33). Therapeutic interactions are designed to maintain attention and emotion regulation at levels that allow for increased affective awareness and perspective taking without becoming overwhelmed [e.g., (34)]. Attention is usually focused on real-life situations or here-and-now interactions between the young person and the clinician, highlighting the intervention's explicit focus on experiential, individualized learning.

In terms of their mode of delivery, mentalization-based treatment interventions for young people usually incorporate working with caregivers and the family group as well as focusing explicitly on the youth's social and academic functioning. This is especially prominent in models such as the Adaptive Mentalization Based Integrative Treatment (AMBIT) which targets youth with particularly severe or comorbid presentations, working in multidisciplinary teams across developmental arenas to engage otherwise non-help-seeking youth (35–37). Teams working within the AMBIT model have shown positive outcomes across a range of services (38, 39).

Some initial clinical applications of mentalization-based treatment principles with youth on the psychotic spectrum have focused on its adaptation to the assumed stages of the psychotic continuum [e.g., (27)], noting particularly the relevance of targeting the young person's social functioning (40). There is empirical evidence supporting the effectiveness of Mentalization-Based Treatment for Adolescents (MBT-A) in reducing self-harm and depression (41), but empirical evidence of the feasibility and effectiveness of mentalization-based interventions with youth on the psychotic spectrum is still pending.

The Equipo Clínico de Intervención a Domicilio (ECID, Home Intervention Clinical Team) is an intensive, in-home, mentalization-based treatment program targeting extremely high-risk and non-help-seeking adolescents in Barcelona, Spain. Their risk-profile can be described on multiple levels, ranging from their typically high number of predisposing factors (e.g., transgenerational trauma, social marginalization, poverty), extremely severe and comorbid diagnostic presentations (severe anxiety and mood disorders, complex eating disorders, psychotic spectrum disorders, and personality disorders) significant functional deficits (including chronic school absenteeism and criminal justice involvement) and an explicitly non help-seeking stance excluding them from participating in other community- or inpatient treatment to which they have all previously been referred (42–44).

The fact that they have not previously been successfully engaged by mental health programs despite their clinical acuity is a unifying but highly complex trait shared by the young people in the ECID. At the diagnostic and symptomatic surface, the adolescents present with highly diverse profiles, ranging from those deeply withdrawn teenagers who have not left their room for months and years, appearing mute and disconnected, to those high-intensity youth who engage in risky behaviors with and without peers outside of the home and school environments.

This notwithstanding, our clinical experience, based on in-depth structured and observational assessments, tells us that the young people we work with all have had intensely painful experiences in their primary relationships, leaving them with a feeling of emotional isolation, epistemic mistrust, hopelessness and hypervigilance in the face of relational intimacy. Youth with severe and complex psychopathological symptoms and poor functioning, whose adaptive responses to experiences of relational trauma, exclusion and marginalization, have understandably left them reluctant to trust in others, especially mental health services. They present multiple and often overlapping needs, as well as significant high risk. However, accessing and using mainstream mental health services is particularly challenging. Many of the caregivers involved in the ECID have similar relational histories and expectations, which we assume relates to the disorganization, rejection and mistrust we often see impacting the family system as a whole. Many of the families involved in the ECID also belong to historically or systematically marginalized or oppressed communities with lived experiences of transgressions at the hands of “helpers” (45, 46). Our clinical experiences with the non-help-seeking stance of the young people we see paired with the growing empirical literature on epistemic trust provide a foundational conceptual framework for our approach to treatment, in line with the evolving causal model underpinning MBT (47).

The principal goal of the ECID is to engage the adolescent in the process of resuming a life project, which includes care for their mental disorders, re-engagement with school and scaffolding existing relationships, while managing the significant risks present in their relational contexts. To this end, each adolescent is assigned an individual clinician (clinical psychologist, psychiatrist, social worker, or mental health nurse) whose goal is to facilitate a relational experience that allows the development of epistemic trust that can be generalized to the wider relational and social network around the young person (44). The aim is to offer a relationship in which the young person can revisit the psychological developmental process that leads to a sense of agency and trust, which in turn facilitates mentalization (48, 49). This can only happen through highly individualized interactions, truly meeting the young person “where they are” both physically (in their room, at the park) and emotionally, focusing particularly on validating the young person's life experiences and suffering without triggering overwhelming affective states or stigmatization.

The ECID team also works closely with the primary caregivers and other important people in the young person's life, focusing on solidifying their own mentalizing capacity (curiosity, openness, perspective taking) and fostering supportive relationships inside and outside the family (50). A central principle guiding this work is an outreach approach that takes the therapeutic perspective to the young person and family's daily lives, focusing on adapting to their attachment capacities. Throughout their time with the young person, the clinician aims to model openness, not-knowing, curiosity and safety in seeking support from others. In line with the AMBIT model and the core tenet of MBT that mentalizing begets mentalizing, clinicians work in multidisciplinary teams specifically organized to provide broad clinical expertise and a supportive environment which facilitates the clinician's ability to mentalize the young person and regulate their own emotional

responses to the high-intensity therapeutic work (36, 37). The ECID offers Mentalization-Based Treatment for Adolescents (MBT-A) delivered in an AMBIT framework, which implies a mentalization based approach to support not only our work with the adolescents and their families, but also to identify and address the difficulties in mentalizing that inevitably occur when working with our teams, working with the wider network of services and professionals involved in the young person's and family's care and in the process of learning at work.

In summary, psychotic disorders are usually preceded by a hypothesized critical prodromal period of 2–5 years marked by a plethora of difficulties conceptualized as a continuum of symptoms (at risk mental states, ARMS). However, most youth presenting with ARMS do not transition to a psychotic disorder and many present with non-psychotic comorbid states and intractable functional difficulties. Despite mounting empirical interest, treatment programs explicitly targeting the prevention of psychotic disorders have demonstrated only moderate effectiveness and a majority of those presenting with ARMS in adolescence or early adulthood do not go on to experience symptomatic or functional remission. In light of this, some have argued in favor of the reconceptualization of ARMS in terms of pluripotential states for a range of disorders, requiring specialized but transdiagnostic or transsyndromal long-term care (8). Mentalization-based treatment appears among these interventions, and there is increasing evidence of its effectiveness cutting across diagnostic categories. As yet, no conclusive empirical findings have demonstrated its feasibility or effectiveness with youth presenting with at-risk mental states. The ECID is an intensive, in-home, mentalization-based treatment program targeting non-help-seeking youth with severe and complex symptoms and poor functioning.

The present study will examine the clinical profiles and treatment outcomes of youth on and off the psychotic spectrum enrolled in the ECID program. To this end, we will describe demographic and clinical differences at intake as well as differences in engagement and outcomes for youth on and off the psychotic spectrum receiving intensive, in-home, mentalization-based treatment. We expect that a meaningful proportion of the high-risk youth enrolled in the ECID will meet criteria for being on the psychotic spectrum. Clinical experiences with this group lead us to expect that youth with such high-risk mental states are able to engage in treatment at similar rates to other youth. Our expectation is that they will show similar rates of clinical improvement overall.

Materials and methods

Participants

Adolescents deemed eligible for treatment in the ECID are between 11 and 18 years old at intake, present with severe mental health symptoms and poor functioning, and have not been able to engage in previously initiated community-based or hospital treatment (labeled “non-help-seeking”). No other psychopathology exclusion criteria apply. Treatment duration varies naturally as a function of client needs and data was analyzed as a function of intention to treat, subject to availability.

Intervention

The ECID operates as a standalone mental health care unit within the Catalan health care system (CatSalut), occupying a unique position within the continuum of care. It offers a 2-year, mentalization-based intervention provided by a multidisciplinary team of clinicians all certified in mentalization-based treatment for adolescents (MBT-A) and AMBIT. In practice, the intervention consists of implementing the MBT-A manual (51) within an AMBIT framework. Clinicians interact with young people and their family members according to the interventions described in MBT-A while working in transdisciplinary teams outside of regular outpatient or inpatient settings. The ECID intervention incorporates a number of standardized elements such as structured, regular assessments (carried out by two clinicians and discussed with the multidisciplinary team), therapeutic sessions with the young person, parent and family, as well as case management, including reconnecting with appropriate medical and academic resources. The clinicians usually meet with the young person and family on a weekly basis (separate clinicians work with the young person and the family) and coordinate interactions with other relevant collaborators, including teachers. The ECID team meets weekly to discuss cases using “Thinking Together,” a structured AMBIT tool for supporting a mentalization-based approach to helping conversations, with an emphasis on attending to the mind of the clinician and supporting his own mentalizing (37), and also receives fortnightly group supervision by certified MBT-A and AMBIT supervisors.

Procedure

The present analysis is based on data collected in the context of ordinary clinical activities in the ECID. Demographic and clinical background data is gathered by the clinician within the first few weeks of treatment and summarizes information from conversations with the family and young person and available medical charts. Standardized clinical assessments of the youth (such as the HoNOSCA) are performed as early as possible in the treatment, depending on the young person's ability to interact with the clinician and thereafter repeated at 6-month intervals throughout treatment. The data is entered into a secure, digital system by the clinician upon collection and stored in accordance with Spanish government guidelines.

Measures

Psychotic Spectrum. Youth categorized on the psychotic spectrum (PS) either presented with At Risk Mental States (ARMS) or a current psychotic disorder. They are assessed upon enrollment in the ECID by a licensed clinical psychologist and/or psychiatrist who determines whether diagnostic criteria have been met for any psychiatric disorders according to the International Statistical Classification of Diseases and Related Health Problems [ICD, 11th ed., (52)]. In conjunction with this formal assessment, the clinical team—formally trained in the

use of the scale—determines whether the youth presents with current at-risk mental states, using the Spanish language version of the 15-item ERIraos Early recognition inventory Check List (53, 54). The questionnaire includes items capturing a range of subjectively experienced differences in perception or cognitive, affective, motor, somatic functioning [e.g., suspiciousness, thought disturbances (such as delusions or hallucinations), derealization, depressive mood, and novel experience of bodily functioning] and observable behaviors (e.g., self-neglect, social withdrawal, altered psychomotor tempo, and reduced performance in school or work). Previous literature has established a 12-point threshold as a clinical cut-off to distinguish those at higher risk for transitioning to a clinical diagnosis (54). The instrument has demonstrated adequate psychometric qualities (55, 56).

Treatment engagement in the ECID was defined as an adolescent explicitly accepting and following through with their commitment to meet with the ECID professional with the proposed frequency of sessions over the course of the treatment relationship. Given the inherent variability of the individualized treatment plan for each young person, this determination was made by the clinician in collaboration with the clinical team.

The Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA) is a widely implemented, brief clinician-reported measure of mental health symptoms and functioning in children and adolescents. It has demonstrated adequate psychometric properties in clinical populations across clinical settings and levels of severity. The scale comprises 15 items, each rated on a scale of 0 (“no problems”) to 4 (“severe problems”). The score is determined by the clinician based on an interview with the young person. A total severity score is computed based on 13 core items, with a possible range of 0–52.

Interpreting the total symptom score as an indicator of clinical severity requires careful consideration as it is not understood to represent a single latent construct of psychopathology. An individual can therefore be labeled clinically severe with an elevated score on only one or a few items even if their total score is low, potentially making the total score an inadequate reflection of severity. Analyzing individual item scores thus yields a more accurate picture of severity but opens the door to a high number of potential analyses. Merging the need for a single overarching measure of severity and usefulness of examining individual items, researchers have suggested tallying the rates of items receiving elevated scores [see for example (57–59)]. In line with these recommendations, the present study will categorize individuals according to the following scale: “subclinical” (no scores of 2 or higher), “mild” (one or more scores of 2), “moderately severe” (scoring 3 on any item), and “very severe” (scoring 3 or higher on two or more items). Clinical change over time on the HoNOSCA has typically been described either in terms of difference scores (“statistically significant change”), in terms of the percentage of youth whose difference in total score reliably increased, decreased or remained unchanged, or in terms of the proportion of youth transitioning from a dysfunctional to a non-clinical status (“clinically significant change”). The present study will report differences in mean total scores for the two groups as well as the proportion of each group demonstrating clinically reliable improvement, stability or worsening of their symptoms,

defined as a change of 8 or more points in either direction after 6 and 12 months of treatment.

School reengagement. School reengagement was defined as having initiated or returned to an educational program (academic or vocational training), operationalized as attending the planned activity minimum of 2 or 3 times per week (or 9–14 days per month). The youth's status was recorded at baseline and at 3-month intervals thereafter until the end of treatment.

Data analyses

Data were analyzed using the IBM Statistical Package for the Social Sciences (SPSS), version 28. Descriptive and inferential analyses were performed to examine characteristics of the full sample at baseline as well as differences between the two groups. Variables indicating statistically significant differences at intake were included as covariates in subsequent testing of group differences in treatment outcomes.

Chi squared tests were performed to estimate differences in the likelihood of the young person actively engaging in treatment and remaining in treatment beyond 12 months. We performed a Student's *t*-test to determine group differences in average treatment duration.

To account for the non-independence of the repeated measures of the HoNOSCA (at 6 and 12 months) and school reengagement (at 3, 6, 9, and 12 months), the data were analyzed by fitting a generalized estimating equation model (GEE) (60). GEE is an increasingly utilized multilevel regression technique that adjusts standard errors for correlated data (such as in longitudinal designs) and avoids issues pertaining to multiple comparisons (61). It allows for the examination of non-normal distributions of the independent and dependent variables, including binomial distributions. A working correlation structure is determined *a priori*, defining the assumed (theoretical) relationship between the repeated measures. As is frequently the case for longitudinal data, the current analyses were performed using an autoregressive correlation structure (AR-1), which assumes stronger correlations for observations closer together in time. In line with current recommendations for models containing dichotomous variables, a generalized score statistic (Chi squared) was calculated and reported for each model. Test assumptions were examined and reported where relevant.

Results

Between November 2017 and February 2023 131 adolescents aged 11–18 years (mean 14.9 years, 54% male) and their families were enrolled in the ECID. The average duration of treatment for all enrolled participants at the time of the present analysis was 19 months (*SD* = 11.9 months). 7.1% of youth left the program in the first 6 months of treatment. It is not possible to distinguish between those who successfully transitioned to a lower level of mental health care and those who simply discontinued treatment.

TABLE 1 Demographic and clinical profiles at baseline by group.

	<i>n</i>	Gender	Mean age (<i>SD</i>)	HoNOSCA total score (<i>M</i>)	School absence (%)	School absence months (<i>M</i>)
PS	62	56% male	15.0 (1.4)	23.4	91.5	19.0
Non-PS	69	52% male	14.8 (1.6)	21.7	84.1	11.7

School absence (%) = percentage of each group considered chronically absent at intake.

School absence months (*M*) = average duration of school absence at intake by group.

TABLE 2 Pearson correlations between school reengagement rates at 0, 3, 6, 9, and 12 months with percentage engaged and sample size.

	3 mo	6 mo	9 mo	12 mo	% engaged	<i>N</i>
Baseline	0.846**	0.534**	0.376**	0.264*	12.3	122
3 mo		0.620**	0.436**	0.312**	16.8	131
6 mo			0.448**	0.449**	29.2	113
9 mo				0.533**	57.4	101
12 mo					54.9	91

***p* < 0.001.

**p* < 0.05.

Demographic and clinical profiles at baseline

The mean clinical severity of the full sample at baseline as measured by the HoNOSCA was 22.4, with scores ranging from 9 to 37. Of the 91 youth with available scores on all HoNOSCA items at baseline, all but two (98%) were categorized as being “very severe” (i.e., scored 3 or higher on two or more items). Eighty eight percent of the youth enrolled in the ECID presented with chronic school absenteeism at the start of treatment ranging in duration from 0 to 36 months (*m* = 15.3).

Forty seven percent of the full sample was determined either to be presenting with at risk mental states (ARMS) or currently meeting criteria for a psychotic disorder (henceforth labeled Psychotic Spectrum, PS). The psychotic spectrum and non-psychotic spectrum groups were indistinguishable in their age and gender distributions ($t_{119} = 1.04$, $p = 0.30$ and $X_1 = 0.241$, $p = 0.377$) as well as in their clinical severity at baseline as measured by the HoNOSCA total score ($t_{91} = 1.671$, $p = 0.098$). Although matched in terms of the likelihood of attending school at intake ($X_1 = 1.547$, $p = 0.274$), youth on the psychotic spectrum had on average been absent from school 60% longer than the general high-risk group at the start of treatment ($t_{120} = 4.26$, $p < 0.001$). Duration of school absenteeism at intake was therefore included as a covariate in the analysis of school reengagement. See Table 1 for details.

Outcomes

Engagement with ECID

Ninety-five percent of youth on the psychotic spectrum and 85% of youth not on the psychotic spectrum engaged in treatment. This difference is statistically significant ($X_1 = 4.218$, $p = 0.049$).

For those already discharged from treatment, youth on the psychotic spectrum are more likely to remain in treatment past 12 months (94 and 80% for PS and non-PS respectively, $X_1 = 5.276$, $p = 0.024$) and youth in this group also remain in active treatment longer on average (25 vs. 20 months for PS and non-PS respectively, $t_{82} = 2.382$, $p < 0.020$).

Reengagement with school

School reengagement was statistically significantly correlated between all time-points for the full sample (see Table 2). Data was therefore analyzed by fitting a logistic generalized estimating equation (GEE) model, assuming an autoregressive (AR-1) correlation structure with duration of school absenteeism at intake and time as continuous covariates. The interaction effects of group with school absenteeism and time with school absenteeism were also examined.

The likelihood of school engagement for the whole sample increased from 12 to 55% over the course of the 1st year of treatment. Results indicate a main effect of duration of school absenteeism ($X_1 = 15.371$, $p < 0.001$) but not of group ($X_1 = 1.015$, $p = 0.314$) or time ($X_1 = 0.003$, $p = 0.959$). The interaction effect of school absenteeism with time was significant ($X_1 = 18.174$, $p < 0.001$) whereas that of group and school absenteeism was not ($X_1 = 0.037$, $p = 0.848$). For the sample as a whole, the timeline for returning to school differs as a function of the duration of school absenteeism at intake. No statistically significant differences were observed between the two groups in terms of their return to school over 12 months. See Figure 1 and Table 3 for complete details.

Change in HoNOSCA scores at 6 and 12 months

The HoNOSCA total score was statistically significantly correlated between all time-points for the full sample (see Table 4). Data was therefore analyzed by fitting a linear generalized estimating equation (GEE) model, assuming an autoregressive (AR-1) correlation structure.

The average HoNOSCA total severity score dropped by 3.3 and 3.5 points in the first 6 months for the PS and non-PS groups respectively and by 6.3 and 6.7 points in the first 12 months. Results of the marginal effect model (GEE) indicate no main effect of group [$X_1 = 0.249$, $p = 0.618$, $\beta = -3.307$ S.E. = 6.62 (*CI* 95% = -16.286 – 9.672)], suggesting there are no differences in HoNOSCA total severity score changes between the two groups over time.

Reliable change is defined as 8 points or more, making a decrease by 8 or more points a reliable improvement and an increase by the same amount a reliable deterioration. An ordinal GEE model was fitted to estimate the association between group and the distribution of youth into categories of change at six and 12

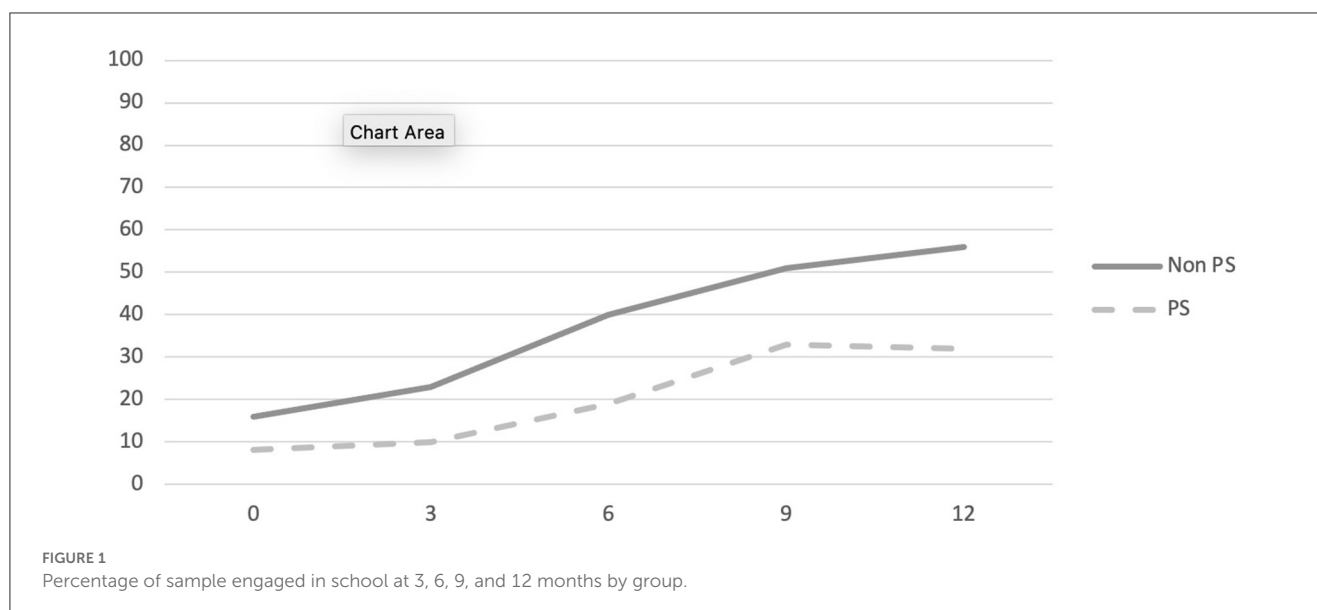


TABLE 3 GEE marginal model parameters estimating association between study group, school absences and time with likelihood of engaging with school at 0, 3, 6, 9, and 12 months.

	B	SE	95% CI
PS	−0.589	0.5917	−1.749–0.571
School absence	0.295	0.0718	0.155–0.436
Time	0.007	0.1266	−0.242–0.255
PS*School absence	0.009	0.0422	−0.073–0.092
PS*Time	−0.052	0.013	−0.077– −0.026

TABLE 4 Pearson correlations among month 0, 6, and 12 HoNOSCA total score with means, SD, skewness, kurtosis, and sample size.

	6 mo.	12 mo.	M	SD	Skew	Kurtosis	N
Baseline	0.610**	0.303*	22.4	5.85	0.124	−0.561	121
6 mo.		0.525**	19.7	6.54	0.203	0.092	92
12 mo.			17.0	5.62	0.358	−0.160	58

** $p < 0.001$.

* $p < 0.05$.

months. Results indicate no main effect of group, suggesting there is no statistically significant difference between the two groups in terms of the distribution of youth into categories of change [$X_1 = 0.068$, $p = 0.795$, $\beta = -0.099$ S.E. = 0.3761 (CI 95% = −0.638–0.836)]. See Figure 2 for details.

Discussion

The present study compared the demographic and clinical profiles of youth on the psychotic spectrum entering intensive, in-home mentalization-based treatment as well as their treatment outcomes over the first 12 months of treatment with those of youth

presenting with a generally high-risk (non-psychotic) profile. To our knowledge, this is the first empirical study examining MBT treatment outcomes for high-risk, non-help-seeking youth on and off the psychotic spectrum.

The feasibility and acceptability of the intervention were examined by looking at the proportion of the young people in each group engaging in treatment as well as their treatment duration. Despite previously not having been successfully engaged by community-based and inpatient treatment programs, youth in both groups were overwhelmingly willing to participate in the intervention. Youth on the psychotic spectrum were statistically significantly more likely to engage (95% vs. 85 for the non-PS group) and remained in treatment longer on average. The low levels of drop-out from the ECID intervention aligns with previous literature demonstrating the high acceptability of MBT for high-risk groups (62).

In line with previous research (5, 6, 8, 29) and study hypotheses, the two study groups present with similarly high and complex symptomatology at intake, most struggling with comorbid psychiatric conditions. Youth on and off the psychotic spectrum experience similar rates of symptom reduction over the course of the 1st year of treatment, with more than half appearing clinically stable and four in 10 demonstrating clinically relevant improvement according to the predetermined criteria of the HoNOSCA scales after 12 months. Additional treatment studies are required to contextualize this finding, although it appears significant in light of previous research (15).

Nearly all the adolescents enrolled in the ECID have been absent from school for an extended period at the outset of treatment, many for a year or more. In addition to the obvious detriment to their academic progress, this represents the loss of a key developmental arena in adolescence. School engagement was therefore examined as a core indicator of daily functioning for the group of extremely high-risk youth in the ECID. Our results suggest that more than half youth in the ECID return to school during the 1st year of treatment. In line with previous findings

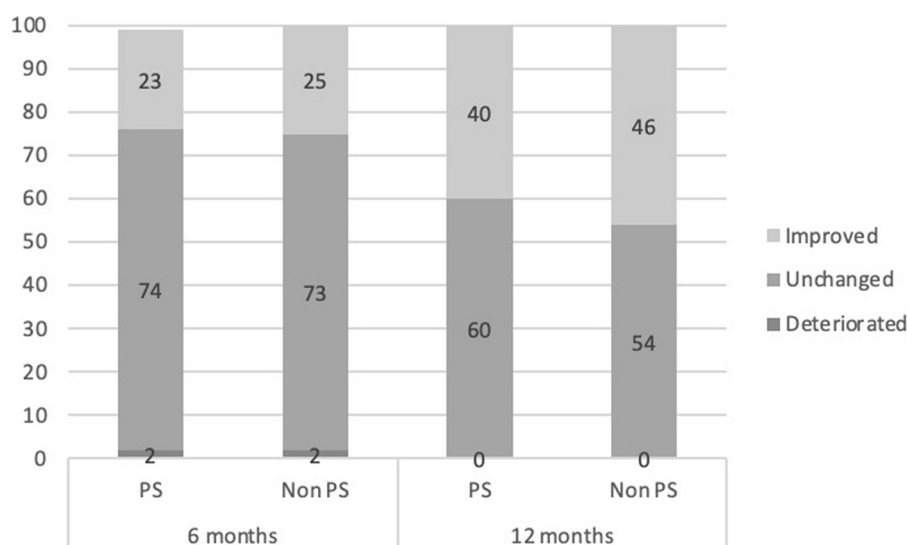


FIGURE 2
Percentage clinically reliable change by category for both study groups comparing baseline to 6 and 12 months of treatment.

suggesting that youth on the psychotic spectrum present with lower functioning than other high-risk youth, these young people had been absent from school significantly longer at intake than the comparison group. Results indicate that the duration of school absenteeism prior to enrolment predicts the rate of return for each group. We found no main effect of being on the psychotic spectrum, suggesting this distinction is not of primary relevance for this outcome.

A number of clinical and empirical findings can help shed light on the present findings. The analysis of treatment engagement, symptom severity and school functioning suggest that the youth on the psychotic spectrum are nearly indistinguishable from those high-risk adolescents not presenting with at-risk mental states. This is consistent with findings from empirical literature suggesting that ARMS may co-occur with a range of non-psychotic symptoms, yielding highly complex, comorbid presentations with variable levels of severity (5–8). The only statistically significant differences between the two groups in the current study was the ability of youth on the psychotic spectrum to engage in treatment (higher rates of engagement, longer treatment duration) and the earlier onset and duration of school absenteeism at intake (60% longer than those not on the psychotic spectrum). The latter finding may indicate more entrenched functional difficulties among these youth, which is also in line with previous findings. However, both groups are equally likely to experience chronic school absenteeism at intake and reengage at similar rates over the first 12 months of treatment. Taken together, these findings appear to align with previous studies revealing a transdiagnostic effect of treatment for high-risk youth independently of the presence of ARMS (8).

Previous literature has found that mentalization-based interventions can be effective with very high-risk young people, cutting across conventional diagnostic categories. The present findings lend further empirical support to this notion, demonstrating very high levels of treatment acceptability

and a substantial proportion of youth experiencing clinically relevant improvement on broad indicators of clinical severity and functioning. Previous literature has suggested aspects of mentalization-based treatment that may be particularly relevant and effective for high-risk youth with severe and complex clinical presentations [see Debbané et al. (28) for a review]. Like the ECID, mentalization-based interventions typically highlight the importance of establishing a strong working alliance by modeling an explicitly non-expert, not-knowing stance and going at the pace of the young person. This may be of particular relevance for youth on the psychotic spectrum whose confusion and suspiciousness may make the establishment of a trusting relationship even more difficult. But the presence of painful early experiences within primary relationships which is present across the sample of non-help-seeking youth seen in the ECID may also account for this assumed effect. The high level of engagement demonstrated by this historically difficult to engage group seems to strengthen the notion that MBT can increase epistemic trust and the chronologically ensuing improvement of symptom severity and educational attainment lend additional empirical support to the prevailing conceptual models of causal mechanisms associated with MBT (32).

Overall, the present findings lend initial empirical support to the notion that mentalization-based treatment may be acceptable and effective for youth presenting with at-risk mental states (ARMS) or psychotic disorders. The study responds to previously identified gaps in the empirical literature by examining real-life data collected in the context of ordinary clinical services provided to a highly heterogeneous group of high-risk adolescents who have not previously successfully engaged in mental health treatment. The latter feature may be particularly relevant, as previous research on treatment outcomes for youth on the psychotic spectrum has focused—naturally—on help-seeking individuals (8). The relevance and generalizability of the findings

is further strengthened by the inclusion of a range of outcomes, with a focus on broad clinical indicators with established criteria for reliable clinical change and objectively observable functional markers.

These strengths notwithstanding, the present findings should be interpreted with caution and in light of several potential limitations. First, the present study did not include a conventional measure of treatment attrition. In the ECID, youth may remain in treatment despite not being personally engaged as long as their caregivers are perceived to benefit from it. A very small minority of youth never engage but nonetheless remain connected with the program and may still draw benefit from it. Treatment duration is highly variable both for those young people who engage and those who do not. Further analysis is required to establish whether any particular subgroup of youth is likely not to engage and to leave treatment without a suitable further treatment plan. Second, although the measures included in the present study are empirically validated, all outcomes are clinician-rated or -reported. Given the substantial discrepancies typically found between reporters of symptom severity and functioning in adolescence (63), aggregating scores from the young person, parent, and clinician may yield more accurate depictions of the adolescent's clinical functioning. Third, previous literature has identified clinically meaningful subgroups of youth on the psychotic spectrum, ranging in symptom profile and severity as well as their likelihood of progressing toward a psychotic disorder. The present study was limited by its binary definition of psychotic spectrum difficulties and low number of youth with a confirmed psychotic disorder. Future research should investigate whether intensive, in-home mentalization-based treatment has comparable effects on youth across these subgroups.

In summary, youth with at-risk mental states are likely to appear alongside other high-risk youth in generalized mental health care settings, often presenting with significant non-psychotic comorbid psychiatric symptoms and risk factors in addition to ARMS. A transdiagnostic, mentalization-based, person-centered intervention program such as the ECID, targeting youth presenting with a general high-risk, non-help-seeking profile may be an appropriate and effective treatment option also for youth on the psychotic spectrum. This appears in line with authors suggesting the wider implementation of general at-risk clinics for early stage pluripotential syndromes.

Data availability statement

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

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Ethics statement

The studies involving human participants were reviewed and approved by the Research Ethics Committee of the Vidal and Barraquer University Institute of Mental Health, Ramon Llull University (URL). Parents or legal tutors of the adolescents signed a written informed consent that includes clinical aspects and information about the fact that anonymous clinical, age and gender data would be used for research purposes.

Author contributions

MD and LB contributed to the conception and design of the study. LB organized the database, performed the statistical analyses, and wrote the first draft of the paper. MD wrote sections of the paper. Both authors contributed to manuscript revision and approved the submitted version.

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Conflict of interest

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

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Jeremy Ridenour,
Austen Riggs Center, United States

*CORRESPONDENCE

Christiane Montag
✉ christiane.montag@charite.de

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Mentalizing in the context of Mentzos' dilemma—on the use of implicit work in the treatment of non-affective psychosis

Anna-Lena Bröcker¹, Dorothea von Haebler^{1,2}, Günter Lempa³ and Christiane Montag^{1*}

¹Department of Psychiatry and Neurosciences, Campus Charité Mitte, Charité—Universitätsmedizin Berlin, Corporate Member of Freie Universität Berlin and Humboldt Universität zu Berlin, Berlin, Germany, ²International Psychoanalytic University Berlin, Berlin, Germany, ³Psychotherapy Practice, Munich, Germany

Current approaches to the treatment of non-affective psychosis include elements of mentalization-based treatment and the potential in enhancing mentalizing capacity in this patient group has been widely emphasized. This article presents the “psychotic identity dilemma”, a concept by Stavros Mentzos, and a therapeutic approach considering this concept as a valuable complementary addition to these treatments. The idea of a dilemma between closeness and distance, which in itself cannot be represented mentally at first, helps to respond to specific needs of patients with psychotic disorders by placing the treatment focus on fundamental interpersonal processes. Following this train of thought, this article attempts to shed light on the importance of the “*real relationship*” between therapist and patient as well as the exploration of the “*here and now*”, especially at the beginning of psychotherapeutic treatment. Two treatment modes are suggested, one characterized by the *experience of interpersonality* within the therapeutic relationship and a second one characterized by the *reflection of interpersonal phenomena*. These modes are framed by Stavros Mentzos' concept of an identity dilemma. We describe how mentalizing first needs to be addressed *implicitly* in a tolerable, exemplary relationship in which closeness and distance are regulated based on the therapist's countertransference, then *explicitly*. A series of interventions are described, which allow for moments of shared attention, promote intentionality and contingency and, later in the course of therapy, help to integrate experiences into narratives.

KEYWORDS

mentalizing, metacognition, psychosis, schizophrenia, dilemma, implicit, explicit, psychotherapy

Introduction

Because of their clinical relevance and empirical evidence (1), mentalization-based treatments have received a lot of attention in recent decades. While mentalization-based therapy (MBT) was initially designed for the psychodynamic treatment of personality disorders (2), nowadays mentalization-based approaches have found their way into the treatment of other disorders including psychosis (3, 4). Mentalizing is not easily differentiated from neighboring concepts. In fact, it empirically overlaps with concepts such as synthetic metacognition (5–7),

which describes the ability to reflect on oneself and others (in terms of cognition, emotions and intentions) and to integrate this mental knowledge into increasingly complex narratives (of self and others) (8, 9). In contrast to mentalizing, the concept of synthetic metacognition does not offer an explanation as to how the respective abilities form in childhood. It is therefore considered as a rather descriptive approach, which can be complemented by mentalization theory (10). Metacognitive deficits have been found to explain many characteristic features of patients with schizophrenia, such as misattributions of others' mental states (11), lack of self-reflection (12), or difficulties in establishing a trusting therapeutic relationship (13), to name a few. They have also been found to be positively associated with functioning and psychopathology in this patient group (14).

As a result, various psychotherapeutic approaches aim to promote mentalizing or metacognition; both direct adaptations of MBT (3, 4, 15, 16) and further approaches (17–20). We aim to critically reflect on how specific they are with regard to psychosis. What distinguishes people with schizophrenia from other patients experiencing psychotic symptoms, e.g., in the context of post-traumatic stress or severe impairments of personality function? How can the therapeutic approach be refined and even better adapted to the needs of patients with “primary” psychoses? Especially in the initial phase of treatment; how can the difficulty to engage patients and their often critical ambivalence toward treatment be conceptualized and managed?

In the search for the specific, subjective experience of people suffering from “primary” psychotic disorders, the phenomenological view has contributed significantly to the understanding of psychosis as a disorder of the self (21, 22). An elementary (implicit) perception of the self is a prerequisite for all experience, called “ipseity” (23) or “minimal self” (24). In psychosis, this self-evidence of perceiving, being, and interacting in an environment as well as temporal orientation can get lost (22, 25, 26). The weakening of the pre-reflective sense of self can lead to profound experiences of alienation in relation to one's own physical or mental processes, but also in relation to interactions with the environment. This includes, in particular, a loss of interpersonal resonance, i.e., the ability to intuitively attune to an interaction partner. Bodily and emotional attunement processes based on pre-reflexive knowledge, also described as intercorporeality (27), are altered during psychosis; schizophrenia has therefore also been described as a disembodiment disorder (28, 29).

According to one strand of psychodynamic thinking, the difficulties of people with psychosis in regulating interpersonal relationships are due to an inability to integrate the unconscious motivational themes of autonomy and dependence, which are considered foreclosed, but not repressed. Foreclosure in this sense is a form of defense that makes any representation impossible, in contrast to repression, where preconscious representations exist and contradictory motives are in principle accessible (30). This incompatibility of autonomy and dependence as the core of vulnerability for psychosis has been associated with a weakening of “ego-boundaries” in both classical writings and contemporary research (31–35). It has also been associated with changes in the constitution of the self [for a summary see Lempa et al. (17)]. We would therefore like to introduce the “psychotic identity dilemma”, a concept by Mentzos (36), as the key concept of this article. When considering this concept, it is necessary to focus primarily on implicit techniques at the beginning of treatment. We postulate that this focus, which is implemented rather intuitively by many therapists, is an

“active agent” in the successful treatment of psychosis. The specificity of implicit (versus explicit) mentalizing has already been emphasized in recent work (37). In the case of psychosis, we argue that patients can only improve on first implicit and then explicit mentalizing when the patient's dilemmatic formation of relationship is addressed in therapy.

Psychotic identity dilemma

The psychotic identity dilemma (36, 38) builds on the ideas of earlier psychoanalysts that a field of tension exists between need and fear (39), autonomy and dependence (33) or between symbiotic and separate states of self (34). This dilemma is defined by an existential intrapsychic polarity between self-related and other-related tendencies, between closeness and distance, autism and fusion. Mentzos postulates that both biological and biographical factors may contribute to an individual's difficulty to reconcile or integrate these tendencies (40). This results in a permanent unconscious tension, which is assumed to form a predisposition for psychosis. An affected individual is – unconsciously – tossed back and forth between trying to enter into relationships (with the risk of dissolving ego-boundaries) and trying to gain an identity as a person (with the risk of losing contact with a necessary “Thou”) – both options pose an existential threat. Since the dilemma is thought to form in a developmental phase dominated by pre-symbolic processes, it cannot be represented mentally, and thus cannot become the subject of explicit reflection or interpretation. The challenge of a “dilemmatic” psychic structure in interpersonal situations that require an integration of these polarities can cause existential fears in the patient, which in turn can elicit strong emotions in any person interacting with the patient.

Mentzos' concept has been incorporated as a central theory in a recent modification of psychodynamic psychotherapy for people with schizophrenia (MPP-S; 17). Here, a distinction was made between the role of the dilemma as a predisposition for psychosis and its actualization in acute phases of the disorder. The dilemma may remain a latent vulnerability as long as compensation of tension is possible, e.g., through autistic withdrawal or through self-sacrifice by over-adaptation in a “symbiotic relationship.” However, if the structural possibilities of regulation are overstrained, as for example in “threshold situations” (e.g., moving out of the parental home), a further breakdown of the integrative capacities of the ego occurs. A solution to the dilemmatic situation comes at a cost of a psychotic loss of shared reality (38).

Mentzos emphasizes the compensatory character of psychotic symptoms and speaks of defense mechanisms that relate to the underlying dilemma. In this understanding, symptom formation is conceived as a functional attempt to maintain an – albeit distorted – connection to the social world and to protect the boundaries between self and others. It cannot be equated with defense mechanisms of a mature mental apparatus, since the dilemma itself cannot be represented and both poles of the dilemma are existentially threatening. However, such a conceptualization helps to understand and acknowledge an interpersonal “function” of symptoms. In persecutory delusion, for example, the proximity to the persecutor can be secured, but the persecutor never becomes too threatening because close contact is avoided due to fear and suspiciousness (41). From Mentzos'

viewpoint (40), specific therapeutic interventions can be derived that address the underlying problem in order to reduce symptoms (by promoting “constructive” closeness versus distance) and that – at least initially – do not rely on verbal-explicit reflection and interpretation.

Taking Mentzos’ dilemma into account may help to prevent the actualization of an acute dilemma, and thus acute exacerbation of psychosis, patient’s withdrawal or other negative sequelae. Allowing for an exemplary, model experience of a tolerable, non-overwhelming, but real and committed “I-Thou” relationship (42) is the main goal of the initial stage of psychodynamic psychotherapy. Symptoms are regarded as an expression of the identity dilemma and are treated on the premise that they will no longer be necessary once the dilemma is defused.

“Dilemma-sensitive” regulation of the relationship

It is to Mentzos’ credit that he has emphasized the importance of a “real” relationship and thus the importance of implicit coordination processes between patient and therapist (38). Conceptually, the dilemma is assumed to emerge in early developmental phases in which the so-called implicit knowledge about relationships is shaped (43, 44). Fine-tuned interactions between mother and child are embodied and form the basis for later interpersonal interactions. This knowledge is pre-reflexive, i.e., without mental representation, but operates unconsciously into adulthood when people interact with others. The quality of shared experience is crucial for development, though it cannot be abstracted into words. The treatment of psychosis is based on this idea. Since there is no symbolization for an interpersonal dilemma and no possibility to reflect on it, fundamental processes need to mature and the dilemma needs to be defused in a reasonable period of time before representation becomes possible (44, p. 224). To defuse the dilemma, the therapist’s focus is on the therapeutic relationship and shared experiences in *the here and now*. The aim is to create moments of constructive closeness and constructive distance that reduce interpersonal anxiety, by using implicit techniques.

By “moving along” (44, 45), therapist and patient aim to (re)gain the ability of experiencing, perceiving reality with the ego intact. The therapist’s focus is always on the intersubjective field; an intrinsic need for contact is the basic premise of a therapeutic situation and makes the shared experience so meaningful. However, the explicit focus of the session can often lie on a physical “third,” and intersubjective topics might be largely avoided. Talking about basic topics might be necessary to reduce interpersonal fear and set the stage for a relationship. By welcoming any issue the patient brings in and by cautiously encouraging a joint, careful exploration of thoughts and feelings as well as details, context or implications, the shared reflective space can be gradually largened. Through many small implicit regulative circles the intersubjective field is constantly shaped and at best enlarged. “Moving along” is by definition an implicit process, but one that opens up directions that can later be explored explicitly. However, it is crucial that the therapist avoids actualizing the dilemma, by on the one hand, asking too demanding questions (being too intrusive) or, on the other hand, by not showing any curiosity (being too absent).

Stern (44, 46) described so-called “now-moments” that occur unexpectedly and mark an interruption in the moving along within a therapeutic process [“nonlinear jumps” (46, p. 304)]. An interpersonal encounter happens with a strong affective quality—dealing with it “authentically” and constructively, i.e., in our understanding mitigating the high tension of the contact and still maintaining a connection, can lead to so-called “moments of meeting” that change the relationship in a lasting way. This change represents a new state of intersubjectivity. Two separate individuals meet, pause, and continue down a (changed) path. Repeated “moments of meetings” expand the interpersonal field and alter implicit relational knowing. In terms of Mentzos’ dilemma, these encounters can lead to the experience of a new kind of relationship, a “rewriting” of the past: this means that a separate identity and a relationship do not have to be mutually exclusive. Such moments do not need to be interpreted or verbalized to be effective; rather, they run the risk of being truncated by this and not pertaining to real experience. They should be experienced in “real time” (44, p. 226).

Implicit techniques to promote mentalizing

Although the promotion of mentalizing in psychotherapy has its roots in developmental psychology, it has traditionally been understood as aimed at developing explicit, conscious reflection on the mental states of the self and others. Recently, representationalist accounts of social cognition that focus on theory- or simulation-based third-person perspectives have been complemented by enactivist, interaction-based or embodied mentalization approaches. Since the psychotic dilemma is a non-representable state, thinking about mentalizing needs to be extended to its embodied forms (47–49).

Observing the melody of speech and the rhythm of turn-taking, as well as carefully encouraging kinaesthetic interactions and thus emotions, can help build “primordial empathy” (50). Eye contact, mimic expression, and body posture can be synchronized in a very cautious (and mostly intuitive) way, bearing in mind that resonance can indicate interpersonal closeness, but can also become threatening. Any intrusiveness as well as empathic “overexcitement” should be avoided, especially in the case of aversive emotions, as they can limit the ability to mentalize and increase (interpersonal) distress. The therapist can use interruptions in synchrony and bring about subtle changes in voice to mark distance and regulate potential dilemmatic escalations. In addition to promoting shared experiences and synchrony, working on “ego-boundaries” or demarcations is equally important. The therapist may casually mark “like me” or “other than me” situations. Intentional acts of the patient as such should be appreciated and not be discouraged.

The main goal in the initial phase of treatment is to create a tolerable “real relationship” (45) between therapist and patient that will serve as an example for later relationships. This basically means reacting to the underlying dynamics of an (assumed) dilemma. Therefore, the therapist should regulate the “appropriate dose” of interpersonal contact and the “emotional temperature” during sessions. This can be done by asking for feedback directly, but also by adjusting the speaking time and allowing for changes in session frequency and duration. It is important for the therapist to become visible as a dialogical “Thou” with their own perspective and mental

processes, not hiding behind expert knowledge or a particular technique.

Bion (51) introduced the term “negative capabilities” to describe the therapist’s ability to endure doubt, paradox, confusion, or misunderstanding, and to resist the urge to end this state of not knowing too quickly by placing it in interpretive terms or diagnostic categories. This leads to an open, authentic attitude, as it is also known from MBT. With regard to Mentzos’ dilemma, however, each therapeutic action is examined for its potential to mitigate or reactivate the dilemma – it may then be a matter of taking a step back accordingly (17). This may apply to various interpersonal constellations: some patients avoid contact and tend to withdraw or strongly control the conversation and negate the therapist’s existence, while others rather adapt and virtually disappear in the presence of another person.

In acute psychosis, patient and therapist may turn to something “third” (e.g., an everyday occurrence, a hobby, or an external stimulus) to alleviate the interpersonal tension. For this purpose, it can for example be helpful to actually go for a walk together and talk about what you see. Thus, joint attention, the turning to something third, takes place dialogically and physically. It can also be helpful to respond in a “dialogue of action” (52). This involves responding adequately through actions to the other person, who has limited access to verbal representations during psychosis. The therapist attempts to interpret the patient’s actions and forms hypotheses about their origins that are not yet communicable. By acting in a reflective, “responding” manner, escalations are avoided and communication remains possible.

In the developing relationship, mentalization is encouraged as one “moves along” (44, 45). Emotions are addressed and reflected when it seems possible on an interpersonal level. Therapists can also help by vicariously providing their own emotional perspective. Some emotions appear to have been discarded in the process of psychotic symptom formation; these are kept in mind by the therapist as a vanishing point while work is done on the structural capacities to experience and regulate emotions. Implicit work is thus constantly interwoven with explicit interventions. It should be noted that implicit interactions can only partly be regarded as conscious actions of the therapist. Reflection on countertransference or action dialogs can in many cases only take place retrospectively, but represents the therapist’s main instrument for creating favorable conditions for developments of the (body) ego organization.

Ideally, there is a second phase of therapy that focuses on clarifying, interpretive, and confrontational elements of therapy through so-called explicit techniques. An increasingly reflexive approach serves the goal of gradually integrating the experience into one’s own life narrative. This includes reflecting on the causes and conditions of psychosis, exploring its subjective meanings, focusing on the feelings that arise in the therapeutic relationship, and noticing and grieving negative experiences. Building narratives and integrating essential experiences into one’s biography and self-concept is an essential aspect of every psychotherapy. However, this process requires abilities such as decentration and introspection, which are not always accessible for people with psychosis. They may be impaired in situations of high arousal or during acute psychosis or may be limited to certain areas of functioning.

The ability to mentalize should be continuously assessed by the therapist, as should the patient’s tolerance of interpersonal relationships. We argue that an underlying identity dilemma threatens these premises and must first be addressed and mitigated. Only then it becomes possible to intervene explicitly and reflexively. However,

focusing a dynamic regulation of closeness versus distance is always relevant and comes to the fore when the dilemma is very present and causes strong anxiety in the patient. Reactivations of dilemmatic experiences are also possible at later stages of treatment or are confined to particular spheres of life. A sequence of two strictly separated phases is therefore ideal-typical. In reality, therapists should always be sensitive and resort to work with the implicit when necessary. A high degree of flexibility is required to alternate between both modes at the patient’s pace, guided by their countertransference.

Countertransference

Countertransference or co-transference (53, 54) can have an existential quality in the case of psychosis. For example, the patient’s psychotic anxiety may evoke a strong response in the therapist, which, if not adequately reflected upon, may produce unbalanced or even harmful reactions. Reflecting on strong and diffuse feelings in response to a person facing the existential threat of losing their identity, can help to understand the patients’ tendencies to avoid or to control the interaction or to defend themselves. When dilemmatic fears are not explicitly perceived, acknowledged and reflected upon, therapists might unconsciously react inappropriately. They might take all responsibility, give inappropriate personal information, or – on the other hand – become “too technical” and leave the patient to their own devices [for an overview see (17, p. 92ff)]. Another manifestation of the dilemma (in countertransference) can be extreme subtlety or cautiousness or even a desire for fusion and symbiosis in the therapist (55). Sometimes therapists may experience unusual somatic reactions during sessions. Lombardi (56) introduced the term “somatic countertransference” as an indication of mind–body dissociation in the patient, the presence of “asymbolic and pre-symbolic areas of the mind that are deeply embedded in the body” (57, p. 1426). These must first be contained within the therapist’s body before any kind of mentalizing can take place along with the establishment of a “body–mind–contact network” (58).

By constantly “scanning” one’s own emotional reactions and impulses, the therapist may discern indications of repetition of pre-symbolic patterns of interaction, reflect on them, and respond accordingly. Thus, permanent re-actualization of the dilemma and retaliatory attacks by the patient can be avoided (59) and the need for maternal-like care or temporary aversive feelings can become tolerable. In the best case, a calm and helpful climate can be maintained during the session. The ability to perceive and classify countertransference reactions has a relieving and triangulating effect on the interpersonal space. Classification also helps the therapist not to avoid these existential affects, but to reflexively gain space and capacity to respond empathically and without too much anxiety to the patient’s relational offer (17). Consequently, observing, reflecting on and dealing with countertransference is an essential technique in psychodynamic therapy for psychosis.

Main additions to current modifications of MBT

Mentalization-based therapeutic strategies draw on the one hand from cognitive neuropsychology, which examines the central role of meta-representation, including the theory of mind (ToM), in the manifestation of psychosis (60) and on the other

hand from findings in developmental psychology, which emphasize early infant-caregiver interactions and the attachment relationship (61). Current approaches of MBT for psychosis go further and acknowledge the role of embodied mentalizing as a link between sensory-affective signals and cognitive mentalizing (4, 15, 62). Here, the idea is implied that emotional experiences are disconnected from representational states due to anxieties about painful emotions threatening the state of the self. However, the underlying dynamics of interpersonal anxieties between closeness and distance, as described in the dilemma concept, have not been conceptualized before and could be a valuable addition.

Mentzos' dilemma concept extends the explanatory models for the development of psychosis as a functional, though imperfect attempt to regulate relationship and emphasizes the role of the pre-reflective, motivational themes of identity and dependence. With this in mind, some additions to MBT should be considered. It is crucial to mention that these additions do not touch core principles of MBT, such as a "not knowing" therapeutic stance, treating the patient as an intentional agent, the joint search for subjective meaning, a focus on currently felt affects and a careful adjustment to the patient's current level of mentalizing (2). Rather, in our understanding, a "dilemma-sensitive" establishment and regulation of the therapeutic relationship – far beyond the cognitive interventions based on it – must always accompany these processes. It is a specific task and mainstay of treatment for patients diagnosed with primary non-affective psychosis, which requires primary attention and sufficient time. With regard to the later phases of therapy, in which reflection and narrative formation gradually come to the fore, the corrective interpersonal experience helps to strengthen the structural basis for the experience of inner and outer reality. In the process of establishing relationship, the therapist can become a supportive and authentic "Thou" who helps to re-constitute reality. This often includes non-social, but concrete aspects of reality, before mentalizing work can become more central.

Fostering epistemic trust as a principle of MBT (63) is important, but still secondary to the therapist's ability to create a moment-to-moment experiential, "just tolerable" human encounter. Tolerability in the sense of a non-dilemmatic exemplary relationship would not begin with attention to the patient's mistrust or attachment representation (and the therapist's respective attitude and interventions), but earlier in the pre-reflective, embodied forms of meeting, comparable to parental embodied mentalizing (37, 64). Regulation at this stage can only take place on the basis of therapist's countertransference, which allows to perceive the optimal interpersonal "dose". Spatial distance, bodily and verbal presence, session duration and frequency are adjusted on this basis. Structured therapy elements such as a therapeutic contract or psychoeducation, which have been highlighted as prerequisites for MBT in psychosis (4, 65), could activate the dilemma in one case by the powerful presence of another intentional agent (the therapist), or help triangulate an overwhelming dyadic situation in other cases. We believe that all of these components of therapy can be applied, but should be reflected upon for their impact on the patient's assumed dilemmatic disposition. Trust in the truthfulness, generalizability and relevance of the therapist's statements can grow, become conscious, and can increasingly help to reduce epistemic hypervigilance (63). As a result, cognition-based approaches like re-establishing theory of mind and perspective-taking will become more significant.

In summary, we would like to propose to further elaborate the implicit characteristics and techniques of MBT and other therapies for the treatment of patients with non-affective psychosis. We have postulated that in these patients a dilemma of conflicting motives (attachment versus autonomy), which initially cannot be represented mentally, is a characteristic, basal pathomechanism, the consideration of which can provide a valuable background for any other intervention. Implicit techniques should be considered specific here. Our contribution is intended to encourage the exploration of this hypothesis, including potentially elusive processes such as dealing with countertransference or embodied interaction. Our perspective is also intended to contribute to creating an awareness for those patient groups for whom relational functioning is one of the fundamental aspects of their illness and who therefore need sufficient time and space to work on these difficulties in "real time" (44, p. 226).

Data availability statement

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

Author contributions

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

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Conflict of interest

The authors DvH, GL, and CM published a book on the presented therapeutic approach (MPP-s).

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

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Robert Herold,
University of Pécs, Hungary
Christiane Montag,
Charité University Medicine Berlin, Germany

*CORRESPONDENCE

Jonas G. Weijers
✉ j.weijers@rivierduinen.nl

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Diverging effects of mentalization based treatment for patients with borderline personality disorder and schizophrenia: an explorative comparison

Jonas G. Weijers^{1*}, Fleur van Kaam¹, Jean-Paul Selten^{1,2},
Remco F. P. de Winter^{1,2,3} and Coriene ten Kate¹

¹GGZ Rivierduinen, Institute for Mental Health Care, Leiden, Netherlands, ²MHeNs School for Mental Health and Neuroscience, Maastricht University, Maastricht, Netherlands, ³Vrije Universiteit Amsterdam, Amsterdam, Netherlands

Introduction: There is robust evidence that both patients with schizophrenia (SCZ) and borderline personality disorder (BPD) display mentalizing difficulties. Less is known however about differences in the way mentalization based treatment (MBT) impacts mentalizing capacity in SCZ and BPD patients. This study compares the impact of MBT on mentalizing capacity in individuals with SCZ and BPD.

Method: The thematic apperception test was used to measure mentalizing capacity. It was administered at the beginning and end of treatment to 26 patients with SCZ and 28 patients with BPD who enrolled in an 18-month long MBT program. For comparison a sample of 28 SCZ patients who did not receive MBT was also included. Using the social cognition and object-relations system, these narratives were analyzed and scored. Missing data was imputed and analyzed using intention-to-treat ANCOVAs with post-treatment measures of mentalizing capacity as dependent variables, group type as independent variable and baseline mentalizing capacities as covariates.

Results: Results showed that patients with BPD showed significantly more improvement on several measures of mentalizing, including complexity of representation ($\eta_p^2 = 0.50$, $p_{\text{pooled}} < 0.001$), understanding of social causality ($\eta_p^2 = 0.41$, $p_{\text{pooled}} < 0.001$) and emotional investment in relationships ($\eta_p^2 = 0.41$, $p_{\text{pooled}} < 0.001$) compared to patients with SCZ who received MBT. No differences were found regarding affect-tone of relationships ($\eta_p^2 = 0.04$, $p_{\text{pooled}} = 0.36$). SCZ patients who received MBT showed greater performance on understanding of social causality ($\eta_p^2 = 0.12$, $p_{\text{pooled}} = 0.01$) compared to SCZ patients who did not receive MBT, but no differences were observed on complexity of representations, capacity for emotional investment or affect-tone of relationships.

Discussion: Patients with BPD performed better after receiving MBT on three dimensions of mentalizing capacity than SCZ patients who received MBT. Remarkably, SCZ patients who received MBT performed better on one dimension of mentalizing capacity compared to SCZ patients who did not receive MBT. Whereas MBT for BPD clearly involves improvement on most aspects of mentalizing, MBT for SCZ seems to thwart a further decline of other-oriented, cognitive mentalizing. Treatment goals should be adapted toward these disorder-specific characteristics.

KEYWORDS

mentalization based treatment, mentalizing capacity, borderline personality disorder, schizophrenia, impact of treatment

1. Introduction

Schizophrenia-spectrum disorders (SSDs) and borderline personality disorder (BPD) are usually treated as very distinct disorders, both in their respective treatment approaches and the conceptualization of their respective pathogeneses. SSD—an umbrella term comprising different classifications such as brief psychotic disorder, schizoaffective disorder, schizophrenia, and psychotic disorder not otherwise specified—affect around 1.5% of adults and are characterized by episodes of psychosis, which may involve hallucinations or delusions (1). On the other hand, BPD is characterized by instability in interpersonal relationships, self-image, and affect, along with impulsive and reckless behavior, and it affects around 1.6% of adults (2). Whereas BPD is commonly viewed as a pathological development of personality characteristics that hampers functioning and is caused by both biological factors (i.e., temperament) and (childhood) adverse events (3), SSDs are predominantly thought of as a neurodevelopmental disorders [e.g., (4)]. Furthermore, the first choice in treatment for BPD is psychotherapy (3), with pharmacotherapy as an adjunctive component. Some have even argued that treatment for BPD should preferentially be conducted without pharmacotherapy (5). The first choice of treatment in SSDs is still antipsychotic medication, at least regarding positive symptoms like delusions and hallucinations (6).

However, recent research has shown that the distinction between BPD and SSDs is less clear-cut than often assumed and that psychotic disorders exist on a continuum (7). Early views assumed borderline psychopathology occupied a conceptual area between neurosis and psychosis [e.g., (8)], and overlap was by definition expected. Both patients with borderline and psychotic pathology were thought to experience difficulty to differentiate between self- and other generated experiences, with patients with schizophrenia-spectrum disorders also experiencing difficulty distinguishing between fantasy and reality (8). In a recent study, Slotema et al. (9), observed that 38% of patients with a borderline condition also adhered to enough symptoms of an SSD to be given the diagnosis. Thus, there is a greater overlap in symptomatology than previously thought. Both BPD and SSDs are characterized by episodes of disturbed perception of reality, such as hallucinations or delusions. As opposed to SSDs, in BPD such disturbances were, by definition, considered to be transient. However, research has shown that the regularly occurring psychotic symptoms in BPD, including hallucinatory experiences and delusions, also often persist over time, and are for a large part already present in early childhood (10). On the other hand, it is rare for SSD patients to experience hallucinations or delusions continuously, there are often phases of increased intensity and periods of absence. Furthermore, it was previously held that psychotic symptoms in BPD are more related to stress and childhood trauma as opposed to a constitutional vulnerability in SSD. But recent research shows that childhood trauma is a significant causal factor in the development of both

disorders (11, 12) and contrary to what was initially thought, both childhood trauma, momentary stress and affective instability play major roles in the severity of psychotic symptoms in patients with SSD (13). Other symptoms that are often observed in both BPD and SSD include mood instability, impulsivity (including substance abuse), and suicidality. Additionally, both patients with BPD and SSDs are thought to experience disturbances in self-awareness and self-representation (14): at times they find it difficult to distinguish between self- or other-generated experiences. Furthermore, whereas SSDs were historically generally treated psychopharmacologically, several forms of psychotherapy were in fact found to be effective in treating SSDs, including cognitive behavioral therapy for psychosis (15), and eye movement desensitization and reprocessing (16). Moreover, a recent investigation revealed that in young individuals showing the first signs of borderline personality disorder (BPD), there is a notable presence of symptom combinations that closely resemble the early manifestations of bipolar disorders and SSDs and that it is difficult accurately distinguishing these disorders during this early stage and establishing identification frameworks and preventive interventions that are tailored to each specific disorder (17).

A robust body of evidence from the last two decades has also established that both disorders are characterized by disturbances in mentalizing capacity [e.g., (18, 19)]. Mentalizing, or the ability to understand and make sense of one's own and others' mental states and emotions, is an important aspect of social cognition. It is the process by which people make sense of each other and themselves, in terms of subjective states and mental processes (20). A recent meta-analysis concluded that BPD patients show impairments in the ability to reflect on their own mind and the mind of others (21). Similarly, several meta-analyses have now established that SCZ patients have an impaired ability to understand thoughts and feelings of others [for overviews see (22, 23)], have an impaired awareness of their own internal sensory-affective experience (24), and show difficulty verbalizing such experience (25). Lastly, separate meta-analyses have concluded that mentalizing capacity is robustly related to psychopathology across psychiatric disorders (26).

Given the widely observed impairments in mentalizing in both disorders and their relation to impaired social functioning and psychopathology, there has been increased interest in treatments that target mentalizing capacity, most notably Mentalization Based Treatment (MBT), the topic of this study (20, 27–30). MBT is a psychodynamic therapy that assists patients in buttressing their reflective capacities. Since its inception (20), MBT has developed into an established treatment for BPD (31). Studies showed that MBT reduces symptomatic burden directly post-treatment, but even years after treatment termination, patients who received MBT continued to show improvement (32, 33). Since these early studies, MBT has been widely implemented as one of the few evidence-based treatments for BPD. Although evidence is still scarce, recent studies suggest that

MBT has also beneficial effects on the mentalizing capacity of patients with BPD (28) (Rizzi et al., Under review)¹ and SSDs (30).

However, whether MBT can be implemented as effectively for the much more narrowly defined classification schizophrenia (SCZ) remains unclear. SCZ is a severe condition that next to positive symptoms, is characterized by negative symptoms, including flattened affect and avolition, disorganized thinking and behavior. There are a few reasons that MBT may not be as impactful for SCZ as for BPD. Firstly, SCZ is generally viewed to be the most severe and chronic disorder among SSDs, and our earlier findings suggest that MBT works less effectively regarding the more chronic variants of SSDs (30). Secondly, despite the symptomatic similarities between BPD and the broad spectrum of SSDs, there is relatively little comorbidity with the much more narrowly defined classification of SCZ—around 2% according to a recent study (9), which points to substantive differences between them. Thirdly, mentalizing difficulties have long been suggested to be more severe in SCZ (34), which has been corroborated by recent research (35–37). Thirdly, it was suggested that mentalizing in BPD seems to be characterized more by an instability rather than a deficit, while patients with SCZ tend to show a more structural impairment (30). Fourthly, BPD patients seem to be characterized by a tendency to excessively attribute incorrect intentions to others, or to “hypermentalize,” and some patients were even observed to perform better at certain tasks of affect-oriented mentalizing compared to healthy controls (38). SCZ patients, in contrast, have been thought to hypomentalize [i.e., to reason unimaginatively and concretely about other person's behavior; (39)], with their performance on mentalizing tasks being similar to those of autistic patients (18). It should be noted however, that this tendency to hypomentalize seems most prominent in SCZ patients characterized by negative and disorganized symptoms as opposed to those characterized by positive symptoms, who do tend to hypermentalize (40, 41). Lastly, although the evidence is still limited, recent studies have shown that neurocognition (42, 43) in SCZ patients shows a limited but progressive deterioration over time which is faster than in patients with other SSDs. Results from another study suggested that mentalizing capacity may similarly decline as well (44). This may severely hamper the effects of psychotherapies such as MBT, especially concerning its impact on mentalizing, given the observed relationship between neurocognition and mentalizing (45). So, the question remains whether therapies developed for BPD can readily be transposed to SCZ.

Given the high burdens of BPD and SCZ carried by patients, their families, and society, and the potential benefits of improving mentalizing, it is crucial to better understand how treatment affects mentalizing in both disorders. Given the previously observed quantitative (37) and qualitative (39) differences in mentalizing impairment between BPD and SCZ patients, it is likely that MBT may affect mentalizing differently in both disorders.

The purpose of this study was to compare the impact of MBT on mentalizing capacity in individuals with SCZ and BPD. Mentalizing capacity was measured using a performance-based instrument before and after treatment. The changes in mentalizing capacity were compared

in three groups: BPD patients who received MBT, SCZ patients who received MBT and SCZ patients who did not receive MBT.

2. Materials and methods

2.1. Study design and participants

The present study used data from two previous studies: a randomized controlled trial (30), that compared Mentalization Based Treatment for psychotic disorder (MBTp) to treatment as usual (TAU) in a sample of patients with a wide range of SSDs, and a naturalistic study with uncontrolled design that observed patients with a range of personality disorders who received MBT (34). Data of both studies were combined in order to run an explorative, comparative analysis of the effect of MBT on mentalizing capacity in patients with SCZ and BPD. Because of the substantial overlap between BPD and the broad diagnostic category of SSDs [38%; (9)], as opposed to the relatively minuscule overlap between BPD and the much more narrowly defined classification of SCZ [2%; (9)], from the original RCT sample only patients with SCZ were included ($N=54$), not patients with other SSDs [$N=30$; see (22)]. From the original naturalistic study (34) only participants with BPD ($N=28$) were selected. Participants with other types of personality disorders were not included ($N=18$). Because of the overlap between cluster A personality disorders like schizoid or schizotypal personality disorders and SCZ, no patients with a (comorbid) cluster A personality disorder were included. None of these patients had comorbid SSDs.

The current study ultimately comprised three groups of participants: 28 patients with SCZ who did not receive MBT, 26 patients with SCZ who received MBT, and 28 patients with BPD who received MBT. Patients with SCZ were recruited from community treatment teams at two mental health care facilities in the Netherlands (GGZ Rivierduinen and Altrecht) and had to meet the following inclusion and exclusion criteria: a SCZ classification [diagnosed with the Comprehensive Assessment of Symptoms and History (CASH; (46))] and not having a comorbid BPD classification; having been in treatment for SCZ from at least 6 months up to a maximum of 10 years; being between 18 and 55 years old; and not having intellectual disability or substance abuse issues (30). Participants with BPD were part of a larger group of patients with personality disorders who had been referred to the MBT team. They met the following inclusion criteria: a classification with BPD [based on Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)] and not having a co-morbid SSD, cluster A personality disorder or substance abuse issues.

2.2. Therapy

Both the participants with SCZ and BPD who enrolled in the MBT program, received an 18-month long treatment that consisted of psychoeducation, group therapy, individual therapy, and psychiatric consultation (and potentially psychiatric medication). MBT is a psychodynamic treatment approach drawn from attachment theory, that combines individual and group therapy. Its primary goal is to enhance mentalizing capacity, especially in stressful conditions, to decrease psychopathology and improve functioning. The MBT treatment manual [(47); was employed for both groups of disorders]. The essentials were similar, with sessions emphasizing affect in the here and now, establishing

¹ Rizzi E, Weijers J, ten Kate C, Selten JP. Mentalization-based treatment for a broad range of personality disorders: A naturalistic study. *BMC Psychiatry*. Under review [preprint].

a secure therapeutic relationship, adjusting the complexity of mentalizing intervention on the basis of the level of stress, and adopting a “not-knowing” therapeutic attitude. However, disorder-specific patient characteristics necessitated different treatment approaches (30).

At the beginning of the treatment, the patients received at least four sessions that focused on teaching them about the essential components of mentalizing. The one-on-one therapy sessions provided a space where patients could discuss problems they encountered during group sessions or in their daily life, with an emphasis on five broad categories: commitment to treatment, psychiatric symptoms, social interactions, harmful or evasive behavior, and their functioning in the community. The group therapy sessions involved up to eight patients and two therapists meeting once a week for an hour.

For participants in the SCZ group, the dosage of the sessions was somewhat reduced to a 1 h group session per week and a half-hour individual session once every 2 weeks. Patients in the BPD group received individual MBT sessions once a week and group MBT sessions either once or twice a week. The decision to opt for either depended on the patient's symptom severity and level of social functioning at baseline. The vast majority of patients (whether SCZ or BPD) received therapy from the same treatment team (the MBT unit at GGZ Rivierduinen). All clinicians involved completed a two-day MBT training program with a certified trainer in The Netherlands. To ensure treatment fidelity and adherence to the treatment manual, all therapists received weekly supervision by experienced and registered MBT supervisors who used video-taped sessions, where possible, to discuss and reflect on interventions, particularly regarding their adherence to the MBT treatment model and their contribution to mentalizing. An MBT supervisor rated four randomly selected video-taped sessions, using an MBT adherence scale, and determined them to adhere to the treatment model adequately.

2.3. Measures

2.3.1. Mentalizing capacity

The Thematic Apperception Test (48) was used to evaluate mentalizing capacity. The TAT involves showing black-and-white pictures of ambiguous social situations to participants, who were then asked to describe what is happening in the picture and what is going through the minds of the characters. Six pictures were used. The TAT narratives were then analyzed using the Social Cognition and Object relations System [SCORS; (49)]. The SCORS assesses four dimensions of mentalizing: complexity of mental representations of people and understanding of social causality, considered to be cognitive aspects of mentalizing, as well as affect-tone of relationships, and capacity for emotional investment, which capture affective aspects of mentalizing.

Complexity of representations represents an individual's capacity to differentiate between the perspectives of different individuals, including themselves and others, in a clear manner. It assesses whether the individual has the ability to create a psychological portrait of various individuals, depicting their motivations, emotions, behaviors, thoughts, desires, and motives, with a certain level of consistency over time. Understanding of social causality means the ability to provide a logical and psychologically minded explanation for the behavior of another. This dimension examines the accuracy and logical coherence of cause-and-effect relationships in interpersonal relations, as well as the identification of psychological mechanisms mediating between

stimuli and responses. The narratives can range from being illogical, incoherent, and lacking causality to describing the psychological processes underlying behaviors and interactions. In other words, individuals react to the external world based on their intrapsychic motivational processes. This dimension measures whether the actions described in the narratives can be logically understood, meaning whether behaviors have a clear and logical cause, and whether these causes are psychologically mediated. Affect-tone measures the degree to which others are perceived as either benign or malign. The dimension measures the emotional quality of these representations within interpersonal relationships. It investigates to what extent an individual has positive or negative expectations toward others and how others are expected to respond emotionally and behaviorally. Can others be trusted, are they inclined to engage in fulfilling relationships, or provide help and comfort? In essence, are relationships enriching or do they solely elicit painful feelings? Capacity for emotional investment measures the extent to which relationships with others are perceived as inherently meaningful or merely as a means to an end. This dimension represents the capacity to invest emotionally in others and the quality of conscience. This dimension aims to assess the extent to which others are used for personal purposes or, at the opposite extreme, are respected for their autonomy and authenticity.

Each dimension is scored on a 5-point scale, with higher scores indicating better social cognitive functioning. Luyten et al. (50) emphasized the significance of the SCORS test as it incorporates almost all facets of mentalization, encompassing cognitive mentalizing, which is evaluated by complexity and comprehension of social causality, and affective mentalizing, measured through the affect tone and emotional investment dimensions. The SCORS test is a valid and dependable tool for assessing social cognition (51), with substantial consistency between pictures (52) and high inter-rater reliability (51, 52). Narratives were scored by psychology master's students who were either blind to the experimental condition of the study (30) or unaware of whether participants had started or ended treatment (34). Interrater reliability was assessed by means of recorded narratives and rated independently by all raters. Inter-rater reliability was acceptable for complexity of representations and understanding of social causality (Cronbach's $\alpha=0.7$), good for affect-tone of relationships (Cronbach's $\alpha=0.8$), and excellent for capacity for emotional investment (Cronbach's $\alpha=0.9$).

2.3.2. Positive symptoms

For descriptive purposes only, positive symptoms were measured at baseline in the two SCZ groups. The Dutch translation (53) of the Positive and Negative Syndrome Scale [PANSS; (54)] was used. The score comprises the average of seven items scored on a 7-point Likert-scale. Further details can be found in Weijers et al. (55).

2.4. Statistical analyses

Repeated measures analyses were used to compare differences in mentalizing capacity pre- and posttreatment. Differences were analyzed for each dimension of mentalizing capacity and for each group of patients separately. ANCOVAs were used to compare differences between groups in mentalizing capacity post-treatment, corrected for baseline differences. All analyses were conducted on the basis of the intention-to-treat principle. BPD patients with MBT were

compared to SCZ patients with MBT, and similar analyses comparing SCZ patient with MBT to SCZ patients without MBT were conducted. Analyses were performed with IBM SPSS Statistics for Windows (version 24).

2.5. Handling of missing data

The analyses of the outcomes were carried out with multiply imputed data, allowing for the use of a proper ‘intention-to-treat’ analysis. The methods for imputation were identical to the original studies [see (22, 23) for details]. To create imputed datasets, a fully conditional Markov chain Monte Carlo (MCMC) approach was used, generating five datasets for each analysis. Rubin’s rules were applied to combine the results obtained from the analyses conducted with these imputed datasets. In the group of SCZ patients who did not receive MBT 25% of data ($N=6$) was imputed; in the group of SCZ patients who received MBT 35% of data ($N=9$) was imputed; and in the group of BPD patients who received MBT 21% of data ($N=6$) was imputed.

3. Results

3.1. Sample statistics

There were no differences between SCZ patients who received MBT and those who did not regarding age, gender, duration of illness, use of medication, level of education, or severity of psychotic symptoms at baseline (all $ps > 0.09$).

No differences were observed between BPD patients who received MBT and SCZ patients who received MBT on age, or level of education. There was a significant difference on gender, with a minority of patients with BPD being male (31.3%, $N=10$), and the majority of SCZ patients being male (66.7%, $N=16$), $\chi^2(1)=6.54$, $p=0.01$. For more demographics, please refer to Table 1.

3.2. Time effects

Post-treatment, BPD patients with MBT scored higher on several measures of mentalizing compared to baseline, including: complexity of representations [$F(1, 26)=15.43$, $p_{\text{pooled}} < 0.001$], understanding of social causality [$F(1, 26)=43.51$, $p_{\text{pooled}} < 0.001$] and capacity for

emotional investment [$F(1, 26)=10.57$, $p_{\text{pooled}} < 0.01$]. No significant differences were found regarding affect-tone of relationships [$F(1, 26)=0.34$, $p_{\text{pooled}}=0.63$].

Post-treatment, SCZ patients with MBT did not score significantly higher on several measures of mentalizing compared to the start of treatment, including: complexity of representations [$F(1, 26)=1.11$, $p_{\text{pooled}}=0.37$], understanding of social causality [$F(1, 26)=0.76$, $p_{\text{pooled}}=0.45$] and affect-tone of relationships [$F(1, 26)=1.53$, $p_{\text{pooled}}=0.34$]. There was a significant decrease in capacity for emotional investment [$F(1, 26)=-13.09$, $p_{\text{pooled}}=0.02$].

Post-treatment, SCZ patients without MBT did not score significantly higher on several measures of mentalizing compared to the start of treatment, including: complexity of representations [$F(1, 26)=1.65$, $p_{\text{pooled}}=0.23$] and affect-tone of relationships [$F(1, 26)=0.57$, $p_{\text{pooled}}=0.64$]. There was a significant decrease in capacity for emotional investment [$F(1, 26)=-16.69$, $p_{\text{pooled}} < 0.001$] and understanding of social causality [$F(1, 26)=-12.39$, $p_{\text{pooled}}=0.004$].

3.3. Group vs. time interaction effects

Post-treatment, BPD patients with MBT scored higher than SCZ patients with MBT on complexity of representations [$t(52)=6.43$, $\eta_p^2=0.50$, $p_{\text{pooled}} < 0.001$], understanding of social causality [$t(52)=4.94$, $\eta_p^2=0.41$, $p_{\text{pooled}} < 0.001$] and capacity for emotional investment [$t(52)=3.26$, $\eta_p^2=0.16$, $p_{\text{pooled}}=0.002$]. No significant differences were found regarding affect-tone of relationships [$t(52)=0.93$, $\eta_p^2=0.04$, $p_{\text{pooled}}=0.36$].

Post-treatment, SCZ patients with MBT scored higher than SCZ patients without MBT on understanding of social causality [$t(52)=2.52$, $\eta_p^2=0.12$, $p_{\text{pooled}}=0.01$]. However they did not score higher on complexity of representations [$t(52)=1.40$, $\eta_p^2=0.06$, $p_{\text{pooled}}=0.17$], capacity for emotional investment [$t(52)=0.57$, $\eta_p^2=0.02$, $p_{\text{pooled}}=0.58$] or affect-tone of relationships [$t(52)=0.46$, $\eta_p^2=0.02$, $p_{\text{pooled}}=0.65$].

Pooled means and standard deviations at baseline and post-treatment for each subgroup of patients are shown below in Table 2.

3.3.1. Secondary analyses

Given the significant difference of gender between the BPD and SCZ groups who receive MBT, we conducted additional sensitivity analyses, to control for the potential influence of gender. The analyses were similar to the main ANCOVAs, but with gender as an added covariate. Results revealed no deviations from the results of the

TABLE 1 Means and standard deviations for descriptive variable in three patient groups.

	SCZ		SCZ-MBT		BPD	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive symptoms	10.77	4.09	13.33	4.52	n/a	n/a
Years since first psychosis	5.4	2.99	6.7	3.63	n/a	n/a
Dose	63.7	152.21	107.05	148.82	n/a	n/a
Age	32.4	9.35	32.8	7.92	31.07	8.84
Level of education	4.46	1.43	4.58	1.36	4.71	1.08
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Gender (male)	22	78.57	16	61.54	8	28.57

TABLE 2 Pooled means and standard deviations for each dimension of mentalizing capacity in three patient groups.

	N	Baseline		18 months		Baseline		18 months	
		M	SD	M _{pooled}	SD _{pooled}	M	SD	M _{pooled}	SD _{pooled}
		Complexity				Social causality			
BPD with MBT	28	2.07	0.64	2.57	0.36	1.85	0.32	2.44	0.33
SCZ with MBT	26	2.06	0.21	2.00	0.18	1.97	0.42	1.90	0.32
SCZ no MBT	28	1.98	0.28	1.92	0.16	1.91	0.33	1.65	0.32
		Affect-tone				Emotional investment			
BPD with MBT	28	2.94	0.43	2.93	0.44	1.45	0.49	1.79	0.41
SCZ with MBT	26	2.95	0.47	3.09	0.55	1.76	0.46	1.48	0.33
SCZ no MBT	28	3.07	0.34	3.10	0.51	1.77	0.46	1.41	0.41

primary analyses. When controlling for gender, patients with BPD scored higher on complexity of representations, capacity for emotional investment and understanding of social causality (all $p_{\text{pooled}} < 0.006$), but not on affect-tone of relationships ($p_{\text{pooled}} = 0.25$).

4. Discussion

This study investigated the impact of MBT on patients with BPD and SCZ in terms of mentalizing capacity. The results indicate that BPD patients who received MBT show greater improvement in mentalizing capacity in three domains compared to SCZ patients who received treatment, namely: complexity of representations, understanding of social causality, and capacity for emotional investment. In turn patients with SCZ who received MBT performed better on understanding of social causality than patients with SCZ who did not receive treatment, but not on the other domains. Results show that mentalizing capacity improved in most domains after MBT in the BPD group, which echoes earlier findings (28). However, patients with SCZ saw a decline in two of the domains of mentalizing—namely capacity of emotional investment and complexity of representations—corroborating the conclusion that mentalizing capacity may show a progressive decline in the course of the disorder (44). While the group of SCZ patients who received MBT maintained the baseline level of understanding of social causality, those who did not showed a progressive decline.

While the positive impact of MBT on mentalizing capacity in BPD is undeniable, its impact in patients with SCZ is less clear-cut. SCZ patients who received MBT showed either a stabilization (with regard to affect-tone of relationships and understanding of social causality) or a reduction (with regard to capacity for emotional investment and complexity of representations) in mentalizing capacity. However, this does not mean that MBT is ineffective in the group of SCZ patients. The results showed that the post-treatment difference on understanding of social causality between SCZ patients who received

MBT and those that did not, was medium- to large-sized. Such an effect cannot easily be dismissed, even if MBT only seemed to be able to thwart the natural decline in this domain of mentalizing. Secondly, this result is believed to be meaningful as several previous studies observed a strong relationship between cognitive, other-oriented mentalizing—which we consider understanding of social causality to be—and negative symptoms and social functioning [e.g., (56)]. This may indicate that, while MBT does not *improve* mentalizing capacity, it may offer some protection against a potentially progressive decline in other oriented, cognitive mentalizing capacity and thereby potentially against the development of negative symptoms. However, more research is needed to examine the long-term effects of MBT on both SCZ and BPD. Follow-up investigations are currently being conducted to examine whether the gains in mentalizing capacity in BPD and the stabilization in SCZ last 5 years after the end of treatment.

Potential reasons for the decline in mentalizing capacity in SCZ patients over time may be manifold. Schizophrenia is widely held to be extremely damaging to interpersonal relationships and social standing. After a psychotic episode, patients may experience significant changes in their social environment, such as losing friends, romantic relationships, or employment. Social isolation may lead to decreased exposure to social cues, resulting in reduced mentalizing capacity over time. Studies have shown that social functioning tends to decline most during the first 5 years after the onset of schizophrenia (57). These losses can be difficult to recover due to factors such as hospitalizations, negative symptoms, cognitive decline, self-stigma, and medication side-effects (29). Indeed, research has shown that social isolation is associated with poorer social cognition in patients with schizophrenia (58). In a previous study we also observed that, at the end of MBT treatment, patients with a relatively recent onset SSD, functioned at a level in-between healthy controls and chronic SCZ patients (30), suggesting that patients with SCZ (or at least a more chronic SSD) are more likely to suffer from social isolation. In this regard, Fonagy and Allison (59) have suggested that the success of MBT lies in the rekindling of motivation to again engage in

meaningful communication with the social environment. This, in turn, can help patients to modify their cognitive models based on feedback from others. However, patients with schizophrenia often have smaller and more fragile social networks, which may limit their ability to benefit from these interactions. As a result, they may struggle to learn from others between sessions and have poorer treatment outcomes (60, 61).

Relatedly, negative symptoms, such as affective flattening, and avolition, which may lead to decreased motivation and interest in social interactions, may result in reduced mentalizing capacity over time and can lead to decreased motivation and interest in social interactions. Indeed, research has shown that negative symptoms are associated with poorer mentalizing in patients with SCZ (56, 62).

Neurocognitive deficits, such as impairments in attention, working memory, and executive functioning, may also impact mentalizing capacity over time as research has shown that neurocognitive deficits are associated with poorer social cognition (62) and a recent study showed that the neurocognitive decline in SCZ averages about 16 IQ points over time (43).

Chronic stress is also a common feature of SCZ that can have negative effects on brain function and cognitive performance. Chronic stress can cause neuroinflammation and oxidative damage to neurons, disrupting neural networks, potentially leading to impairments in cognitive domains including mentalizing capacity (63).

4.1. Strengths and weaknesses

Importantly, some caveats apply to the conclusions of the current study. First, one significant weakness of the present study is that the experimental samples were derived from two previous studies with different study designs, which were not originally intended to compare SCZ and BPD. As such, the study is merely explorative in nature. Additionally, there was no BPD control group without MBT to compare to, making it impossible to accurately gauge the actual impact of MBT on this group. As such, no causal conclusions can be derived from this study, and its results should be interpreted with caution.

Second, as mentioned in the introduction, a decline in neurocognitive capacity may have contributed to differences in treatment effect, however since no IQ-testing was done, it is difficult to determine how well the groups were matched at baseline on a neurocognitive level. However, we were able to determine that the three groups did not significantly differ from each other in terms of level of education and while other factors influence academic performance as well, there is a highly significant relationship between academic performance and IQ (64).

Third, the original RCT examining MBT for a wide range of SSDs (30) included more measures of mentalizing capacity including theory of mind and insight. Both were positively impacted by MBT. However, since these measures were not present in the naturalistic study of MBT in a range of personality disorders (23) we could not compare them. Still this makes it likely that there are other aspects of mentalizing that are differently affected, even in SCZ.

Fourth, the comparison between the two diagnostic groups was somewhat lop-sided. BPD patients received more MBT than the SCZ patient, with one to two group sessions per week and one individual session per week. Based on clinical experience, when initially designing the study (55), we had expected weekly individual sessions

to be too strenuous for patients with SCZ. However, other authors have experienced that MBT can in fact be provided more often, even up to multiple (individual) sessions per week (37), although it remains uncertain whether this also goes for the combination of group and individual therapy. Thus, we cannot rule out that the difference in dosage of treatment may have added to the observed differences in impact. Individual sessions once per 2 weeks may have failed to instantiate a secure working relationship between client and therapist or may have resulted in too big a timespan between sessions to maintain focus on therapeutic goals. This may also have resulted in a loss of interest or motivation. More research is needed to determine whether increasing the number of sessions per week, results in more treatment success. Additionally, it is unclear what the optimal ratio of group to individual sessions is.

Fifth, this study had an attrition rate of between 21 and 35% which may have impacted the results due to selective drop-out. We tried to mitigate the impact of potential statistical artifacts caused by selective drop-out (e.g., those who are most severely affected may be most likely to drop out) with imputed data, but multiple imputation itself is held to be less reliable with greater drop-out numbers. Still, recent research has shown that even very high rates of missing data (up to 50%) can be handled adequately by multiple imputation (65).

The study's strength first lies in its rigorous research design with blinded raters. Second, missing data were imputed enabling us to conduct a true intention-to-treat analysis. Third, the vast majority of patients received treatment by the same MBT team, at GGZ Rivierduinen, increasing internal treatment consistency between diagnostic groups. Fourth, all therapists underwent intensive supervision to ensure that sessions met MBT standards. Also, the same supervisors were involved in both diagnostic groups and across treatment facilities. This means that differences in tone and approach were kept to a minimum. Fifth, the different groups of patients were paired well on variables such as age and level of education and also on severity of symptoms and use of medication (regarding the SCZ groups). There was a significant difference in gender between the BPD group and SCZ group with MBT, but we were able to conduct a sensitivity analysis with gender as a covariate, and observed that the result did not differ significantly from the main analyses.

4.2. Recommendations

As our results suggest that BPD and SCZ are divergently impacted by MBT, we recommend continuing to develop a variant of mentalization-informed treatment more specifically tailored to SCZ. Previously (30), we argued that MBT for psychotic disorders should be implemented earlier rather than later during the development of the disorder as more chronic patients may benefit less from therapy than early-onset patients. The current study corroborates this view, as it suggests that the progression of SCZ, the stage of chronic psychotic vulnerability, may be characterized by a gradual decline of mentalizing capacity. Still, MBT for SCZ should not be easily dismissed, as this study also provided evidence that MBT has a medium to large stabilizing effect on other oriented, cognitive mentalizing in patients with SCZ.

Bateman et al. (66) have suggested a staged approach to the treatment of psychosis, where mentalization-informed treatment interventions should be tailored to the needs of each developmental

stage of SSD. We agree and would like to add that treatment goals could also be adjusted to the developmental stage of the SSD as well. Treatment in the early stages should be aimed at increasing mentalizing capacity, prevention of onset of psychosis and the establishment of a supportive and mentalizing network around the patient. Once a first episode has occurred, the aim should be a prevention of relapse, the establishment of social support and societal rehabilitation. Lastly, concerning MBT for SCZ then, we hold that treatment perhaps should be aimed more at consolidation of (certain aspects of) mentalizing and the social network, rather than improvement, but more research is needed to substantiate this view. Additionally, as suggested elsewhere (30) we believe that MBT for SCZ should be given for a longer period of time, as it takes SCZ patients more time to feel secure enough to start exploring feeling states. For more in-depth recommendations regarding approach and technique, please refer to Weijers et al. (67).

5. Conclusion

The results of this study suggest that MBT improves mentalizing along multiple domains in patients with BPD. Results also suggest that mentalizing shows a limited but progressive decline in patients with SCZ without targeted treatment. MBT for patients seems to stymie the decline of mentalizing in SCZ patients, at least with regard other-oriented, cognitive mentalizing.

Data availability statement

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

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Ethics statement

The studies involving humans were approved by Medisch Ethische Toetsingscommissie Maastricht University. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

JW was responsible for data collection and conceived the idea for the manuscript, and wrote the first and final draft. FK provided feedback and wrote the second draft. CK, RW, and J-PS provided feedback. All authors contributed to the article and approved the submitted version.

Conflict of interest

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

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EDITED BY

Massoud Stephane,
Oregon Health and Science University,
United States

REVIEWED BY

Lucia Sideli,
Libera Università Maria SS. Assunta, Italy
Cherise Rosen,
University of Illinois Chicago, United States

*CORRESPONDENCE

George Salaminios
✉ g.salaminios@ucl.ac.uk

[†]These authors have contributed equally to this work and share first authorship

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The role of mentalizing in the relationship between schizotypal personality traits and state signs of psychosis risk captured by cognitive and perceptive basic symptoms

George Salaminios^{1,2*†}, Elodie Sprüngli-TOffel^{3,4,5,6†}, Chantal Michel^{3,7}, Larisa Morosan^{3,4}, Stephan Eliez³, Marco Armando⁵, Eduardo Fonseca-Pedrero⁸, Melodie Derome⁹, Frauke Schultze-Lutter^{7,10,11} and Martin Debbané^{1,3,4}

¹Research Department of Clinical, Educational and Health Psychology, University College London, London, United Kingdom, ²Research Department, British Association for Counselling and Psychotherapy, Lutterworth, United Kingdom, ³Developmental Clinical Psychology Research Unit, Faculty of Psychology and Educational Sciences, University of Geneva, Geneva, Switzerland, ⁴Developmental Imaging and Psychopathology Lab, Department of Psychiatry, University of Geneva School of Medicine, Geneva, Switzerland, ⁵Department of Psychiatry, Lausanne University Hospital (CHUV), Lausanne, Switzerland, ⁶Department of Psychiatry, University of Geneva, Geneva, Switzerland, ⁷University Hospital of Child and Adolescent Psychiatry and Psychotherapy, University of Bern, Bern, Switzerland, ⁸Department of Educational Sciences, University of La Rioja, La Rioja, Spain, ⁹Translational Research Center, University Hospital of Psychiatry and Psychotherapy, University of Bern, Bern, Switzerland, ¹⁰Department of Psychiatry and Psychotherapy, Medical Faculty, Heinrich-Heine-University, Düsseldorf, Germany, ¹¹Department of Psychology, Faculty of Psychology, Airlangga University, Surabaya, Indonesia

Objective: Schizotypal traits and disturbances in mentalizing (the capacity to understand the mental states driving one's own and others' behaviors) have been implicated in increased vulnerability for psychosis. Therefore, we explored the associations linking schizotypal traits, mentalizing difficulties and their interactions to clinical high-risk for psychosis (CHR-P), as captured by the Basic Symptoms (BS) approach, during adolescence and young adulthood.

Methods: Eighty-seven adolescents and young adults from the general population (46% male, 44% female; age: 14–23 years) were assessed with the Schizophrenia Proneness Interview (SPI-CY/A) for 11 perceptive and cognitive BS, with the Schizotypal Personality Questionnaire (SPQ) for schizotypal traits, and with the Reflective Functioning Questionnaire (RFQ) for self-reported mentalizing abilities. The RFQ evaluates the level of certainty (RFQc scale) and uncertainty (RFQu scale) with which individuals use mental state information to explain their own and others' behaviors.

Results: Logistic regression models showed significant positive effects of the SPQ disorganization scale on perceptive BS and of the SPQ interpersonal scale on cognitive BS. Post-hoc analyses revealed that schizotypal features pertaining to odd speech and social anxiety, respectively, were associated with perceptive and cognitive BS. Furthermore, higher scores on the RFQu scale and lower scores on the RFQc scale independently explained the presence of cognitive BS. Finally, significant interaction effects between RFQc and SPQ odd speech on perceptive BS, and between RFQc and SPQ social anxiety on cognitive BS were found.

Conclusion: Our findings suggest that schizotypal traits and mentalizing significantly relate both independently and through their interactions to the presence of cognitive and perceptive BS included in CHR-P criteria. Furthermore, mentalizing dysfunction may contribute in the relation between schizotypal traits and early state signs of CHR-P. Mentalizing may support both detection and early treatment of CHR-P among adolescents and young adults who present with trait risk for psychosis.

KEYWORDS

mentalization, schizotypy, basic symptoms, psychosis, CHR, reflective functioning

1. Introduction

Contemporary research suggests that clinical psychosis is a neurodevelopmental disorder that commonly emerges during late adolescence/young adulthood, and is preceded by premorbid and prodromal aberrations manifesting primarily within the perceptual, interpersonal and cognitive domains (1). In doing so, psychosis is expressed along a continuum ranging from relatively stable trait abnormalities, to sub-clinical psychotic manifestations of lesser severity and duration, and finally to the severe reality distortions typically identified in people diagnosed with the clinical form of the illness (2, 3). Importantly, the transition from premorbid and prodromal psychotic manifestations to a clinically diagnosable form of psychosis has been linked to adverse outcomes in social, interpersonal, and occupational functioning that often persist despite symptomatic improvement following psychological or pharmacological treatment (4). For this reason, the focus of clinical intervention is progressively shifting toward a more preventative approach, seeking to identify and treat risk for psychosis during its premorbid and assumed prodromal stages, i.e., the clinical high-risk (CHR-P) stage, prior to the onset of the first clinical episode (5). Several studies suggest that early intervention might improve outcomes and reduce illness-related costs (6, 7). However, the psychological processes that are involved in the earliest stages of psychosis expression and should be targeted early to prevent the onset of clinical illness remain unclear (8).

Two main approaches have been developed for the assessment of the CHR-P stage that most proximally precedes the onset of clinical psychosis: the ultra-high risk (UHR) and the basic symptoms (BS) approaches (9). Although both approaches focus on the detection of newly emergent CHR-P states conferring proximal vulnerability for transition to psychotic disorders, they differ in terms of the manifestations they seek to capture. First, the UHR paradigm primarily relies on the assessment of positive psychotic manifestations (e.g., unusual thought content, persecutory ideas, grandiosity, perceptual abnormalities and disorganized speech) that are too brief or not severe enough for a psychiatric diagnosis of clinical psychosis (10). In contrast, the BS approach relies on the assessment of a wider range of subtle, subjectively experienced shifts in cognitive and perceptual processes, including but not restricted to experiences of thought interference, unstable ideas of reference, attentional problems and language difficulties (11, 12). As such, the assessment of BS has been suggested as a

complementary approach that can support the detection of the earliest CHR-P states, prior to the development of attenuated psychotic symptoms (9, 11, 12).

Overall, the UHR and BS approaches have been shown to be sensitive in capturing proximal risk for conversion to clinical psychosis among help-seeking populations, with conversion rates ranging between 15.0% at one year to 29.1% at three years for UHR criteria, and between 25.3% at one year to 50.0% at three years for the BS “cognitive disturbances” (COGDIS) criterion (9). Yet, conversion rates seem to have generally declined in CHR-P samples in recent years (13). At present, the alternative assessment of the two symptomatic UHR criteria based on attenuated and transient psychotic symptoms and COGDIS have been recommended for clinical use (9, 14) to support the timely application of indicated treatments to attenuate the risk for conversion to clinical psychosis (15, 16). Importantly however, beyond the risk of clinical psychosis, CHR-P patients who do not transition to psychotic disorders have been repeatedly reported to have adverse mental health and functional outcomes, including poor social functioning, persistence or development of non-psychotic mental health disorders, and non-remission of CHR-P symptoms (17). Thus, from a clinical perspective, further elucidating the factors, including premorbid vulnerability traits (18), that may potentiate or attenuate psychosis risk will support the application of targeted early prevention treatment approaches aiming to attenuate clinical trajectories at the earliest stages of their expression.

Current approaches to study the first signs of psychosis in non-clinical populations are based on the psychometric evaluation of schizotypal personality traits that capture the phenotypic expression of the underlying genetic liability for schizophrenia-spectrum disorders (19, 20). Contrary to the symptomatic CHR-P states, schizotypal traits are subjectively recognized by individuals as common aspects of their personality functioning (21–23). Most psychometric analyses examining the factorial structure of schizotypal traits typically identify three dimensions: a cognitive-perceptual (positive schizotypy: hallucination and delusion-like phenomena), an interpersonal (negative schizotypy: social anxiety, constricted affect) and a disorganization dimension (odd behaviors and speech) (22, 24). Longitudinal research with study intervals spanning from 5 to 50 years suggests that self-reported schizotypal manifestations represent distal trait markers for the development of psychotic disorders, with heightened negative schizotypy identified as the most consistently reported distal predictor of conversion to psychosis in CHR-P samples (18, 22, 25).

Although schizotypal traits have been related to CHR-P states (23, 26), not all people exhibiting schizotypal trait manifestations develop more dysfunctional or clinically relevant psychotic states (27). Indeed, according to most conceptual models, schizotypal traits are not assumed to be sufficient to indicate risk for clinical psychopathology (22, 28, 29). Rather, state manifestations of psychosis risk, such as those captured by the UHR and BS approaches, may represent clinical exacerbations of schizotypal personality traits; while a second source of risk may emanate from additional neurobiological aberrations (29, 30). This was recently empirically supported (23), yet, the psychological factors that may potentiate the transition from non-clinical schizotypal manifestations to the earliest state signs of psychosis risk, such as self-experienced cognitive and perceptual BS, remain unclear.

An important psychological factor mitigating the development of risk states for psychosis may be mentalizing - the capacity to perceive or interpret one's own and others' behaviors, as being driven by intentional mental states, such as thoughts and feelings (31–34). Mentalizing constitutes a multifaceted construct that captures attempts to make sense of oneself and others in terms of subjective mental states. In doing so, mentalizing enables us to form representational models of human behavior in order to adaptively navigate the complexity of the social world, as well as monitor and regulate our own thinking and feeling states (31). Meta-analyses indicate that both schizophrenia and CHR-P patients exhibit dysfunctions in multiple domains of mentalizing (35, 36). More recently, a longitudinal study showed that mentalizing abilities, assessed through the use of narrative-based methodologies, significantly predicted conversion to clinical psychosis in a CHR-P sample (37). Importantly, another line of research indicates that subtle mentalizing difficulties are already present among non-clinical adult and adolescent samples who report schizotypal traits, prior to the development of clinical state manifestations, suggesting an early pathway toward illness expression (38–40). Furthermore, evidence suggest that mentalizing difficulties among adolescents who report schizotypal trait manifestations may contribute to the emergence of clinically-relevant symptoms, including thought problems and delusional ideation (38, 41). Thus, previous findings among both CHR-P and non-clinical samples highlight that mentalizing may play a role in modulating the trajectory of emerging psychosis across the developmental continuum of its expression.

However, to the best of our knowledge, the relationships between schizotypal traits, mentalizing dysfunction, and early state manifestations of psychosis risk, such as those captured by BS criteria, have yet to be simultaneously examined. Elucidating the nature of associations linking schizotypal traits and mentalizing difficulties to the presence of state manifestations relevant for psychosis during the critical developmental window from adolescence to young adulthood may contribute to inform early prevention treatment strategies aiming to attenuate the trajectory of emerging psychosis at its earliest stages.

Thus, the present study seeks to (a) assess the associations of schizotypal traits and self-reported mentalizing with the presence of cognitive and perceptual BS in a sample of community adolescents and young adults, and (b) examine whether schizotypal traits interact with mentalizing difficulties to account for the presence of cognitive and perceptual BS. On the basis of previous research suggesting that schizotypal traits and mentalizing dysfunctions are linked with psychotic symptoms among CHR-P samples (26, 37),

we hypothesized that schizotypal traits and self-reported mentalizing difficulties (i.e., high uncertainty and low certainty in mental states) would be independently associated with the presence of both perceptive and cognitive BS. Furthermore, given that mentalizing has been proposed as a psychological factor that may modulate CHR-P among individuals who exhibit premorbid schizotypal trait manifestations (32, 37), we hypothesized that schizotypal traits would account for the presence of cognitive and perceptive BS in the presence of mentalizing difficulties.

2. Materials and methods

2.1. Participants and procedure

Eighty-seven community adolescents and young adults (47 female, 40 males), aged 14 to 23 years ($M = 19.27$, $SD = 2.09$) were recruited *via* written advertisements in public schools, universities and community centers in the city of Geneva, Switzerland. None of the participants suffered from past/present psychiatric disorders, or neurodevelopmental disorders (e.g., autism spectrum disorder). Written informed consent was obtained from all participants and legal guardians of those under 18 years of age.

2.2. Measures

The *Schizotypal Personality Questionnaire* (SPQ) (42) measures schizotypal traits subjectively experienced as common aspects of one's personality functioning. It yields three dimensional scores and nine subscale scores: cognitive-perceptual (unusual perceptual experiences, ideas of reference, suspiciousness, odd beliefs or magical thinking), interpersonal (social anxiety, constricted affect, lack of close friends) and disorganization (odd speech, odd behaviors). The French version of the SPQ has shown good reliability (Cronbach's $\alpha = 0.91$) (42) and has been validated for French-speaking adolescents (43).

Mentalizing was assessed using the French version of the *Reflective Functioning Questionnaire* (RFQ) (44). The RFQ is a brief and easy to administer measure that assesses participants' self-reported certainty and uncertainty about mental states, reflecting how confident vs. how doubtful one is in utilizing mental state information, such as thoughts and feelings, to explain their own and others' behaviors. Items are scored on a seven-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The *uncertainty about mental states* subscale (RFQu) focuses on the extent to which individuals agree with statements such as 'Other people's thoughts are a mystery to me' and 'Strong feelings often cloud my thinking'. High scores on the RFQu reflect poor usage of mental state information and a stance characterized by a lack of knowledge about mental states. The *certainty about mental states* subscale (RFQc) focuses on the extent to which individuals disagree with statements such as 'I do not always know why I do what I do'. RFQc items are recoded so that high scores reflect better usage of mental state information and adaptive levels of certainty about mental states. The RFQ has been shown to correlate with measures of mindfulness, perspective-taking and empathy (45) and its brief nature makes it a suitable assessment tool for the purposes outcome evaluation in the context of clinical settings and clinical trials. The RFQ has been validated for French-speaking adolescents

(44) showing satisfactory reliability for both the RFQu (Cronbach's $\alpha=0.68$) and the RFQc scale (Cronbach's $\alpha=0.74$).

The *Schizophrenia Proneness Instrument, Adult version* (SPI-A) (46) for participants aged ≥ 18 years and the *Child & Youth version* SPI-CY (47) for participants aged < 18 years were used to assess the presence of cognitive and perceptive symptoms included in BS criteria that are equal in both versions. COGDIS captures nine cognitive BS (i.e., inability to divide attention, captivation of attention by details of the visual field, thought interference, thought pressure, thought blockages, disturbances of receptive speech, disturbances of expressive speech, disturbances of abstract thinking, unstable ideas of reference). All nine cognitive symptoms from COGDIS were assessed in the current study. In addition to these, COPER also captures two perceptive BS (i.e., visual and acoustic perception disturbances). Because the current study focused on differentiating between cognitive and perceptive symptoms, we also included COPER items that assess the two perceptive symptoms but, for the current recommendation of only COGDIS for clinical use (9), excluded cognitive BS included in COPER only (i.e., thought pressure, derealization, and decreased ability to discriminate between ideas and perception, fantasy and true memories). SPI-A/CY rate cognitive and perceptive BS for the maximum frequency of their occurrence within the past 3 months ranging from 0 (BS has not occurred in the past 3 months) to 6 (BS has occurred daily within the past 3 months). For the purposes of the current study, which only included participants from the general population, BS item scores on the SPI-A/CY were recoded as categorical variables according to their presence or absence: a score of 0 signified the *absence* of the BS (assigned to scores of 0), while a score of 1 signified the *presence* of the BS (assigned to all scores between 1 and 6). According to rating rules, symptoms that were reported as occurring unchanged throughout life (i.e., a score of 7), were also assigned a score of 0 for not representing a risk state manifestation. Finally, sum scores of the two dichotomized perceptive BS scores and the nine dichotomized cognitive BS scores were calculated and again dichotomized ($0=0$ and $\geq 1=1$) to indicate the presence/absence of any perceptive or cognitive BS.

2.3. Statistical analyses

SPSS 23.0 was used for data analyses. Multivariate logistic regressions were performed to assess the effects of SPQ and RFQ scores as well as their interactions on the presence of perceptive and cognitive BS. In order to allow comparisons between variables, SPQ and RFQ continuous scores were transformed into z scores. Because participant gender, age, education level and nationality were not significantly associated with the presence of cognitive and perceptive BS in the current sample, these were not entered as covariates in the analyses.

First, two multivariate logistic regression analyses were conducted using the enter method to examine the effects of the three SPQ dimensions on perceptive and cognitive BS. In the first model, all SPQ scales were entered together as independent variables and perceptive BS was entered as the dependent variable, while in the second model, cognitive BS was entered as the dependent variable. Next, post-hoc regression analyses were conducted using the enter method to examine which subscales of each significant SPQ dimension drove the effect on perceptive and cognitive BS.

Second, two multivariate logistic regression analyses were conducted using the enter method to examine the effects of RFQ scales (RFQu and RFQc) on perceptive and cognitive BS. The two RFQ scales were entered as independent variables in each model, while perceptive and cognitive BS scores were entered as dependent variables in each model, respectively.

Finally, multivariate logistic regression analyses using the enter method were conducted in order to uncover possible interaction effects between SPQ subscales and RFQ scales on perceptive and cognitive BS. SPQ subscales shown to have a significant independent effect on perceptive and cognitive BS in the previous analyses, along with RFQ scales were used in the models as predictors.

3. Results

3.1. Descriptive statistics

Table 1 presents the demographic data of the sample, the frequency of perceptive and cognitive BS, as well as the mean z scores for the SPQ and RFQ scales. While low-frequency BS were common (Table 1), only 1.1% of participants fulfilled COGDIS requirements, and 9.2% COPER requirements for CHR-P.

3.2. Simple effects of schizotypal traits and mentalizing on basic symptoms

Regression analyses of the simple effects of SPQ dimensions on the presence of perceptive or cognitive BS showed that the SPQ disorganization dimension had the only significant but weak effect on perceptive BS ($\beta=0.18$, Wald $\chi^2(1)=1.09$, $p<0.05$), while the interpersonal SPQ dimension had the only significant but weak effect on cognitive BS ($\beta=0.11$, Wald $\chi^2(1)=4.52$, $p<0.05$) (Table 2). Post-hoc analyses demonstrated that the SPQ odd speech subscale (disorganization dimension) drove the effect on perceptive BS ($\beta=0.24$, Wald $\chi^2(1)=4.47$, $p<0.05$) and that the SPQ social anxiety subscale (interpersonal dimension) drove the effect on cognitive BS ($\beta=0.31$, Wald $\chi^2(1)=9.31$, $p<0.01$) (Table 3). In doing so, effects of the single subscales were slightly larger than the effects of their corresponding dimensions.

Regression analyses of the simple effects of RFQ scales on the presence of perceptive and cognitive BS showed that both RFQc ($\beta=-0.12$, Wald $\chi^2(1)=4.51$, $p<0.05$) and RFQu ($\beta=1.76$, Wald $\chi^2(1)=6.14$, $p=0.01$) had statistically significant but again weak effects on cognitive BS (Table 4). No significant independent effects of RFQ scales on perceptive BS were identified.

3.3. Interaction analyses

Because the odd speech and social anxiety SPQ subscales significantly accounted for the presence of perceptive and cognitive BS, respectively, two regression models were computed to examine the interaction effects of (a) SPQ odd speech with RFQ scales on perceptive BS and (b) SPQ social anxiety with RFQ scales on cognitive BS (Table 5).

TABLE 1 Distributions and means of socio-demographic and clinical variables.

Socio-demographic variables	Total (N = 87)
<i>Age (years)</i>	
Mean (SD)	19.27 (2.09)
Range	14.04–23.73
<i>Sex, n (%)</i>	
Female	47 (54%)
Male	40 (46%)
<i>Nationality, n (%)</i>	
Swiss	30 (34.5%)
Mixed including Swiss	22 (25.28%)
Other	35 (40.22%)
<i>Parental highest education, n (%)</i>	
Lower secondary education (ISCED 0–2)	8 (9.20%)
Upper secondary education (ISCED 3–7)	79 (90.80%)
<i>Participant highest education, n (%)</i>	
No information	6 (6.90%)
Lower secondary education (ISCED 0–2)	34 (39.08%)
Upper secondary education (ISCED 3–7)	47 (54.02%)
<i>Participant occupational status, n (%)</i>	
Employed	3 (3.45%)
Searching for employment	3 (3.45%)
Still in education	73 (83.91%)
Other	8 (9.19%)
<i>Clinical variables</i>	
Any perceptible basic symptoms, n (%)	19 (21.80%)
Any cognitive basic symptoms, n (%)	31 (35.60%)
SPQ cognitive-perceptual scale, mean z score (SD)	−0.04 (6.36)
SPQ interpersonal scale, mean z score (SD)	0.15 (4.45)
SPQ disorganized, mean z score (SD)	−0.11 (3.45)
RFQ, mean z score (SD)	0.09 (3.44)
RFQc, mean z score (SD)	−0.22 (4.52)

Regression analyses revealed a significant interaction effect between SPQ odd speech and RFQc on perceptible BS ($\beta = -0.53$, $Wald \chi^2 (1) = 4.28$, $p < 0.05$), indicating that the likelihood of experiencing perceptible BS was higher when SPQ odd speech was high and RFQc low (Figure 1). In addition, a significant interaction effect between SPQ social anxiety and RFQc on cognitive BS was found ($\beta = -0.57$, $Wald \chi^2 (1) = 5.34$, $p < 0.05$). This revealed that the likelihood of experiencing cognitive BS was higher when SPQ social anxiety was high and RFQc was low (Figure 2).

4. Discussion

To the best of our knowledge, this is the first empirical investigation of the associations linking schizotypal traits, self-reported mentalizing and their interactions with the presence of basic symptoms (BS) included in CHR-P criteria. Findings indicate single associations of low effect size of disorganized and interpersonal schizotypal traits with perceptible and cognitive BS, respectively. Furthermore, self-reported mentalizing was independently associated with the presence of cognitive but not perceptible BS. Importantly, schizotypal trait features pertaining to odd speech and social anxiety were shown to interact with self-reported mentalizing difficulties, specifically low certainty in mental states, to account for the presence of perceptible and cognitive BS in our community adolescent and young adult sample. More specifically, results showed that the likelihood of experiencing perceptible BS was higher when odd speech was high and mentalizing certainty was low, while the likelihood of experiencing cognitive BS was higher when social anxiety was high and mentalizing certainty was low.

4.1. Effects of schizotypal personality traits and self-reported mentalizing on perceptible and cognitive basic symptoms

The observed a significant association between schizotypal personality traits pertaining to odd speech and perceptible BS is in line with previous studies suggesting that disorganized speech relates to perceptual aberrations in people diagnosed with schizophrenia and non-clinical individuals, and that the two may be underpinned by shared neurobiological substrates (48). Interestingly, two previous

TABLE 2 Logistic regression analyses of SPQ scales on perceptible and cognitive BS.

Dependent variables Independent variables	β	SE	Wald (df = 1)	p	Exp(β)	95% CIs of Exp(β)
<i>Perceptible BS</i>						
SPQ cognitive-perceptual	0.06	0.04	2.27	0.13	1.06	0.98; 1.14
SPQ interpersonal	0.06	0.06	1.09	0.30	1.06	0.95; 1.19
SPQ disorganized	0.18	0.08	5.05	<0.05	1.20	1.02; 1.40
<i>Cognitive BS</i>						
SPQ cognitive perceptual	−0.03	0.05	0.48	0.49	0.97	0.88; 1.06
SPQ interpersonal	0.11	0.05	4.52	<0.05	1.12	1.01; 1.24
SPQ disorganized	0.05	0.08	0.29	0.59	1.05	0.890; 1.23

BS, Basic Symptoms; SPQ, Schizotypal Personality Questionnaire.

TABLE 3 Post-hoc regression analyses of SPQ subscales on perceptive and cognitive BS.

Dependent variables	Independent variables	β	SE	Wald (df = 1)	p	Exp(β)	95% CIs of Exp(β)
<i>Perceptive BS</i>							
	SPQ odd behaviors	0.07	0.15	0.21	0.65	1.07	0.80; 1.44
	SPQ odd speech	0.24	0.12	4.47	<0.05	1.28	1.02; 1.60
<i>Cognitive BS</i>							
	SPQ social anxiety	0.31	0.10	9.3	<0.01	1.37	1.1; 1.68
	SPQ no close friends	−0.16	0.18	0.81	0.37	0.85	0.60; 1.21
	SPQ constricted affect	−0.01	0.22	0.00	0.98	0.10	0.65; 1.53

BS, Basic Symptoms; SPQ, Schizotypal Personality Questionnaire.

TABLE 4 Logistic regression analyses of RFQ scales on perceptive and cognitive BS.

Dependent variables	β	SE	Wald (df = 1)	p	Exp(β)	95% CIs of Exp(β)
<i>Perceptive BS</i>						
RFQu	0.09	0.09	1.10	0.30	1.10	0.92; 1.31
RFQc	0.02	0.07	0.07	0.79	1.02	0.88; 1.18
<i>Cognitive BS</i>						
RFQu	0.18	0.07	6.14	<0.05	1.19	1.04; 1.37
RFQc	−0.12	0.06	4.51	<0.05	0.89	0.79; 0.99

BS, Basic Symptoms; RFQu, Reflective Functioning Questionnaire uncertainty about mental states; RFQc, Reflective Functioning Questionnaire certainty about mental states.

TABLE 5 Interaction analyses of SPQ subscales and RFQ scales on perceptive and cognitive BS.

Dependent variables	Independent variables	β	SE	Wald (df = 1)	p	Exp(β)	95% CIs of Exp(β)
<i>Perceptive BS</i>							
	SPQ OddSp	0.23	0.12	3.71	0.05	1.26	1.00; 1.60
	RFQc	0.09	0.09	1.05	0.31	1.09	0.92; 1.30
	RFQu	0.14	0.11	1.67	0.20	1.15	0.93; 1.43
	SPQ OddSp*RFQc	−0.05	0.03	4.28	<0.05	0.95	0.90; 1.00
	SPQ OddSp*RFQu	−0.06	0.04	1.82	0.18	0.95	0.87; 1.03
<i>Cognitive BS</i>							
	SPQ SocAnx	0.30	0.11	7.46	<0.05	1.35	1.09; 1.67
	RFQc	−0.04	0.08	0.20	0.66	0.96	0.82; 1.13
	RFQu	0.07	0.10	0.51	0.48	1.07	0.89; 1.30
	SPQ SocAnx*RFQc	−0.06	0.02	5.34	<0.05	0.95	0.90; 0.99
	SPQ SocAnx*RFQu	−0.01	0.05	0.04	0.84	0.99	0.91; 1.08

SPQ OddSp and SocAnx, Schizotypal Personality Questionnaire Odd Speech and Social Anxiety; RFQc and RFQu, Reflective Functioning Questionnaire Certainty and Uncertainty.

studies examining the neurofunctional correlates of schizotypal traits during adolescence in terms of resting-state functional connectivity reported a significant relationship between the disorganized dimension of the SPQ and neural activation in the auditory and visual networks (49, 50). Thus, it might be relevant for future research to investigate the relationship between neural activation patterns, schizotypal traits and perceptive BS among CHR-P groups.

Furthermore, we found a positive association between schizotypal trait features pertaining to social anxiety and cognitive BS. Previous

studies have reported higher levels of social phobia among UHR adolescent and young adult samples compared to non-clinical controls, with social phobia in UHR samples being associated to the severity of psychotic symptoms (51). Importantly however, social phobia primarily involves worries about embarrassing oneself due to inadequate behavior, particularly in the eyes of unfamiliar people, while schizotypal social anxiety does not diminish with familiarity and tends to be associated with paranoid fears rather than negative judgments by others (22). Interestingly, findings from a first-episode

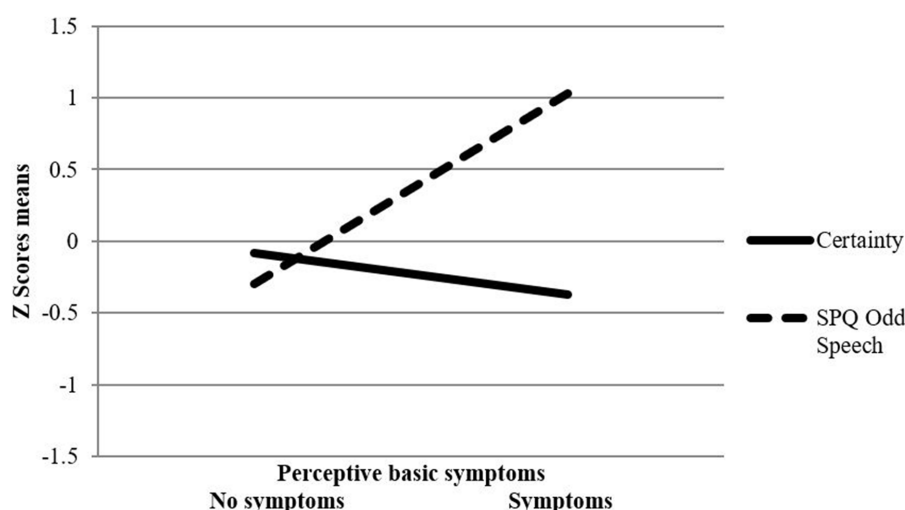


FIGURE 1
Interaction between SPQ odd speech and RFQ certainty on perspective basic symptoms.

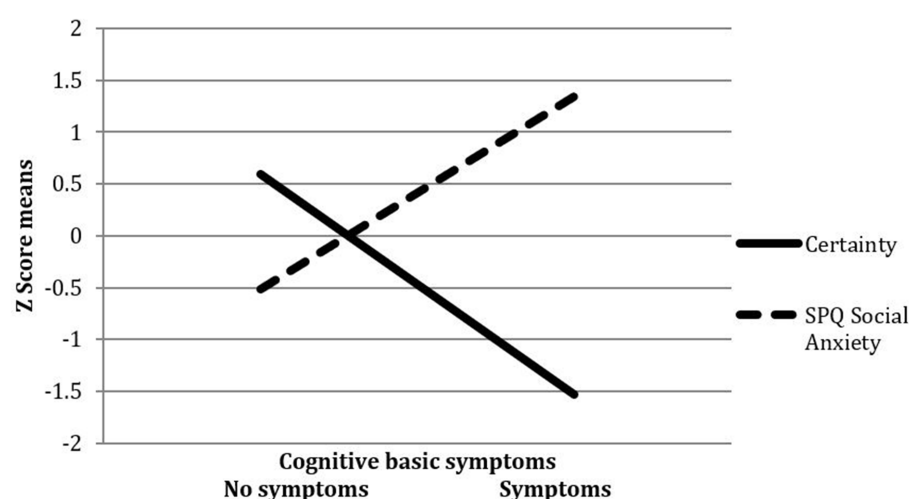


FIGURE 2
Interaction between SPQ social anxiety and RFQ certainty on basic symptoms.

of psychosis sample suggest that social phobia and paranoid/persecutory ideation may cooccur during the early stages of clinical expression (52). Furthermore, data from a structural equation modeling study showed that although negative schizotypy, mainly represented by social anxiety, was linked to cognitive BS in a CHR-P sample, positive schizotypy had a stronger association (23). Thus, it might be speculated that it is the paranoid/persecutory nature of schizotypal social anxiety that drives the association with cognitive BS. This should be explored in future studies, comparing the association of schizotypal social anxiety and social phobia with cognitive BS. In addition, it might be relevant for future studies to explore whether factors previously shown to underpin social phobia among CHR-P samples, such as self-perceived stigma (53), may also contribute in the relation between schizotypal social anxiety and cognitive BS. Nonetheless, from a clinical point of view, schizotypal

social anxiety may constitute an important early prevention target to attenuate the development of CHR-P states.

The association of self-reported mentalizing difficulties (i.e., high uncertainty and low certainty in mental states) with the presence of cognitive BS is in line with a previous studies suggesting that mentalizing difficulties relate to psychosis-relevant thought problems in non-clinical adolescents (38) and to aspects of cognitive disorganization in UHR adolescents and young adults (37). Overall, it appears that mentalizing difficulties are linked to the presence of emerging state manifestations relevant for psychosis risk during adolescence and young adulthood, and may contribute to increased vulnerability for the illness.

Surprisingly, the results of the current study did not show an association of self-reported mentalizing with perceptive BS. This is in contrast to previous studies showing that mentalizing dysfunction relates to perceptual aberrations, such as hallucinations, in clinical

psychosis and non-clinical samples (40, 54). It must be noted however, that perceptive BS are clearly distinct from hallucinatory phenomena in that they are not subjectively perceived, at least initially, as external stimuli, but are rather immediately experienced as alterations in one's own visual and auditory senses, occurring in the perception of real stimuli (46). Thus, it is possible that the association between mentalizing difficulties and perceptual aberrations may only become evident once the latter manifest in the form of attenuated auditory or visual hallucinations. Furthermore, previous studies suggesting associations between mentalizing problems and perceptual aberrations in clinical and non-clinical samples have employed task-based measures of mentalizing, which specifically capture the ability to attribute other peoples' cognitions. In contrast the RFQ is a self-report measure designed to also capture self-oriented and affect-based aspects of mentalizing. Indeed, previous studies that have either used the RFQ in non-clinical samples or have used narrative-based methodologies to assess mentalizing in UHR samples did not report associations with perceptual abnormalities or hallucinatory phenomena (37, 38). As such, methodological differences in the assessment of both mentalizing and perceptual symptoms may have accounted for the divergence from previous findings.

4.2. The role of reflective functioning in the relationship between schizotypal traits and basic symptoms

Results of the current study indicate that schizotypal trait features of social anxiety and odd speech, respectively, interacted with reduced certainty in mental states to account for the presence of cognitive and perceptive BS. In the case of cognitive BS, this interaction presented in addition to the single effect of schizotypal social anxiety, while in case of perceptive BS, only the interaction of mentalizing certainty and odd speech became significant.

The interaction between schizotypal trait features of social anxiety and mentalizing might elucidate some the underlying mechanisms linking schizotypal social anxiety with cognitive BS. In the context of failures to form adaptive representations of one's own and others' mental states during interpersonal situations, schizotypal social anxiety may exert a disorganizing effect on cognitive functions (55), which is putatively expressed as self-experienced cognitive BS. Furthermore, cognitive BS might further impair already present mentalizing difficulties, leading to a vicious circle of increasing mentalizing impairment and symptoms. Future studies should employ longitudinal designs to explore whether better mentalizing abilities exert a protective role against the development of cognitive BS among adolescents and young results who present with schizotypal trait features of social anxiety, and whether cognitive BS increase mentalizing difficulties.

Our findings also suggest that the likelihood of reporting the presence of perceptive BS in our sample was higher when odd speech was high and mentalizing certainty was low. Previous studies have shown that disorganization features of schizotypy, including odd speech, are prospectively linked to the developmental trajectory of clinically-relevant perceptual aberrations (56). Our study adds to these findings by suggesting that difficulties in adaptively using mental states to understand one's own and others' behaviors may

contribute in the experience of perceptual aberrations among individuals presenting with disorganization features of schizotypy.

Overall, the current findings lend support to a model in which mentalizing difficulties contribute in the relation between schizotypal traits and CHR-P relevant symptoms. This resonates with data from Boldrini et al. (37) who found that mentalizing dysfunctions related to symptoms of unusual thought content, persecutory ideas and disorganized communication, as well as increased the likelihood of future transition to a psychotic disorder in a UHR group of young adults. Thus, our results add to those of previous studies suggesting that mentalizing may contribute in modulating psychosis vulnerability across the continuum of its expression, from premorbid trait signs to state manifestations of psychosis risk and toward transition to a first clinical episode. Future studies with large samples may benefit by utilizing network analysis to further elucidate the complex nature of associations linking mentalizing dimensions, schizotypal traits and CHR-P.

4.3. Strengths and limitations

While the assessment in a community sample within the age range of highest risk of psychosis and the assessment of BS are clear strengths of our study, some limitations require careful interpretation of the results. First, the data were derived from a relatively small convenience sample and further associations of schizotypal traits and mentalizing with BS could have emerged with a larger more representative sample. In addition, cognitive and perceptive BS in the current study were only analyzed as categorical variables, according to their presence and absence. Thus, we did not examine the relation of schizotypal traits or self-reported mentalizing with the severity of BS, as the latter's distribution was biased toward low ratings due to the non-clinical nature of the sample. It must also be noted that due to the small sample size and convenience sampling method used, the distributions of certain sociodemographic variables assessed in the current study (i.e., participants' occupational status and parental education) precluded their inclusion in the analyses as covariates. Similarly, we did not assess social risk factors previously shown to relate to CHR-P, such as childhood trauma (57) and bullying victimization (58), thus, it remains possible that these may have confounded the findings of the study. Furthermore, the cross-sectional nature of the study's design prevents us from drawing any causal conclusions about the relationships between the variables studied. Finally, on the basis of previous findings from a large representative Swiss community sample with much lower prevalence rates of cognitive and perceptive BS (58), it is likely that our sample has been biased toward people already experiencing some mental health problems and, therefore, presenting with a 2–3 times higher prevalence of BS.

5. Conclusion

Despite these limitations, the current study provides preliminary evidence on the relationship between trait and state manifestations relevant for psychosis risk and on the contribution of the psychological process of mentalizing to the relationship between the two. From a clinical standpoint, our results highlight that mentalizing abilities may

be a worthwhile target of preventative interventions to sustain resilience against the development of BS and other risk states relevant for psychosis among adolescents and young adults who present with interpersonal and disorganization features of schizotypy.

Data availability statement

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

Ethics statement

The studies involving humans were approved by Swissethics (Swiss Association of Research Ethics Committees) project number 2018-00251. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

GS: Conceptualization, Writing – original draft, Writing – review & editing. ES-T: Data curation, Formal analysis, Writing – original draft, Writing – review & editing. CM: Methodology, Writing – review & editing. LM: Data curation, Writing – review & editing, Formal analysis. SE: Conceptualization, Funding acquisition, Resources, Writing – review & editing. MA: Writing – review & editing. EF-P: Writing – review & editing. MD: Writing – review & editing. FS-L: Writing – review & editing, Methodology. DM: Conceptualization, Funding acquisition, Resources, Supervision, Writing – review & editing, Formal analysis, Methodology.

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Conflict of interest

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Giorgio Falgares,
University of Palermo, Italy
Larisa Morosan,
University Medical Center Groningen,
Netherlands

*CORRESPONDENCE

Francesca De Salve
✉ francesca.desalve@unicatt.it
Chiara Rossi
✉ chiara.rossi1@unicatt.it

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Mentalizing in individuals with state and trait risk for psychosis: a systematic review

Francesca De Salve*, Chiara Rossi* and Osmano Oasi

Department of Psychology, Catholic University of Sacred Heart, Milan, Italy

Background: Mentalization is an umbrella concept defined as the ability to interpret one's and others' mental states. Previous studies have hypothesized that mentalization may be a crucial resilience factor that significantly moderates the likelihood of developing psychotic disorders in individuals with both state and trait risk factors for the illness.

Purpose: The study reviews the role of mentalizing abilities (e.g., reflective functioning, Theory of Mind (ToM), and metacognition) in young adults with At-Risk Mental States (ARMS) and schizotypal traits. Specifically, the objective is to include articles that (a) evaluate the links between low mentalizing and both state (ARMS/CHR) and trait (schizotypy) risk for psychosis (b) compare the differences in mentalizing abilities between individuals with ARMS, schizotypy, full-blown psychosis, and healthy controls.

Method: Electronic databases (PsycINFO, PubMed, Scopus, and Google Scholar) were used to search for articles, while Rayyan was employed to facilitate the screening and selection of studies. Eligible studies are original English-language; peer-reviewed research articles on populations that met validated risk diagnostic criteria for psychosis, ARMS, and healthy controls; empirical studies evaluating the association or differences between psychotic risk and mentalizing abilities. Non-English language studies, the ones not considering state or trait risk for psychosis, and qualitative studies were excluded. After the application of the PRISMA checklist and the inclusion and exclusion criteria previously mentioned, 10 articles were extracted. The systematic review has been registered on Prospero (CRD42023397594).

Results: Low levels of reflective functioning and metacognition may predict a transition to psychosis. In addition, reflective functioning and metacognitive impairments are associated with attenuated psychotic symptoms in both state risk groups and in non-clinical individuals with schizotypal traits. Concerning ToM tasks, mixed results emerged.

Conclusion: The results obtained from the review suggest that the application of strategies to attenuate maladaptive metacognitive beliefs and low mentalization may be equally effective in improving psychotic symptoms. The assessment of mentalization and metacognition could potentially provide additional prognostic value over factors predisposing to psychosis. Good mentalization and metacognition functioning should be considered as protective factors able to minimize the transition to psychosis.

KEYWORDS

At-Risk Mental States, schizotypy, CHR, UHR, mentalizing, metacognition, Theory of Mind (ToM)

1. Introduction

Mentalizing refers to the capacity to understand ourselves and others' behavior in terms of intentional mental states – i.e., feelings, desires, wishes, attitudes, and goals (1). It is a complex construct encompassing the capacity to deduce cognitive and emotional states pertaining to oneself and others. This underscores its dynamic character in relation to diverse contexts of interpersonal interactions (2). Given its complexity, in order to facilitate its measurement within studies, mentalizing has been operationalized through the introduction of the reflective function construct, which is often used synonymously with mentalization. Reflective function (RF) captures all the different facets of mentalizing, including mental state understanding for both cognitions and affects in oneself and others (3). Mentalization can be conceived as an umbrella term, covering related constructs from social cognition research including Theory of Mind (ToM) and metacognition (4, 5). ToM is the ability to make inferences about others' thoughts and intentions. The term refers to the cognitive ability to attribute mental states to others and understand the link between mental states and actions (6). Metacognition has been primarily defined as the ability to “think about thinking” (7). It involves introspection of one's own behavior, whereas ToM involves perceiving the mental states driving others' behavior. It is unclear to what extent mentalization, ToM, and metacognition are independent mechanisms with distinct abilities that relate to different outcomes, or whether they share a common architecture that allows them to follow similar developmental paths and provide similar inputs (8). Nevertheless, ToM and metacognition may overlap mentalization, respectively, for the component directed toward others and for the cognitive component concerning awareness of thought. The shared identity of mentalization, metacognition, and Theory of Mind can be captured by the concept of Higher-Order Cognition (HOC) (9). HOC processes stem from hierarchical networks of information processing that allow for abstraction. They involve self-awareness and awareness of oneself in relation to others and the world. In the context of psychotic or first-episode psychotic patients, the role of HOC functions has been investigated in numerous studies (10–13). These studies have explored the significance of mentalizing abilities across the continuum of psychosis, leading to the hypothesis that enhancing HOC could assist individuals in reorganizing their cognitive processes, resulting in more flexible and adaptive models of reality testing (9, 14).

When discussing the psychotic continuum, it is essential to focus on schizotypy and At-Risk Mental States (ARMS). Schizotypy represents the manifest expression of an underlying trait vulnerability for schizophrenia spectrum disorders (15). This construct unfolds along three principal dimensions: the cognitive-perceptual dimension (positive schizotypy: hallucination, delusional phenomena), the interpersonal dimension (social anxiety, constricted affect), and the disorganization dimension (odd behaviors, odd speech) (16, 17). Its expression encompasses a broad range of phenomenology involving personality, subclinical, and clinical psychosis (15).

Individuals with ARMS – also known as at Clinical High Risk (CHR) or Ultra High-Risk (UHR) for psychosis – exhibit a vulnerability of state (i.e., newly emergent attenuated psychotic symptoms, brief and limited psychotic symptoms, reduced social occupational functioning) and/or genetic risk based on having a first degree relative with psychosis. These factors increase the likelihood of

psychotic onset. The concept of ARMS has settled thanks to UHR criteria for psychosis, one or more of the following conditions should be fulfilled: (a) first-degree relative with a psychotic disorder; (b) diagnosis of schizotypal personality disorder; (c) attenuated/or subthreshold psychotic symptoms, (d) brief limited and intermittent psychotic symptoms (i.e., that have resolved spontaneously within a week of onset) (18). Moreover, individuals with ARMS have consistently low social and occupational functioning or have incurred a decrease in the latter of at least 30% from the previous year (19). The formulation of the At-Risk Mental State (ARMS) construct – alongside the Clinical High Risk (CHR) and Ultra High Risk (UHR) criteria – was undertaken with the objective of identifying individuals who are at increased proximal risk for transitioning into a primary episode of psychosis. Consequently, its significance resides in the early detection and intervention before the onset of full-blown clinical psychosis.

Past research has brought out that people with psychotic disorders, including those with ARMS and schizotypal traits often experience difficulties with mentalization, ToM, and metacognition. According to some authors, excessive focus on self generates dysfunctional metacognitive beliefs (e.g., positive metacognitive beliefs and negative beliefs) that predispose subjects to vulnerability to psychopathology (20, 21). Specifically, positive metacognitive beliefs about psychotic experiences (i.e., belief that worrying/ruminating will help to cope) can lead to hallucinations and delusions, while negative beliefs (i.e., negative beliefs about uncontrollability of thoughts and negative beliefs about thoughts in general) can cause distress (22).

Regarding ToM, the literature presents inconsistent results. On the one hand, deficits in ToM appear to constitute a vulnerability factor for the transition to psychosis in at-risk individuals (23); however, on the other hand, some longitudinal studies conducted on large samples do not support this finding (24).

The existing studies show high heterogeneity in methods, samples, and results. To the best of our knowledge, no recent systematic review that has already been published focuses on this specific topic. This justifies a thorough examination of the nature of the links between mentalizing and psychosis risk aimed at integrating the knowledge accrued in the more recent years.

This systematic review aims to (a) evaluate the links between low mentalizing and both state (ARMS/CHR) and trait (schizotypy) risk for psychosis, (b) compare the difference in mentalizing abilities between individuals with ARMS, schizotypy, full-blown psychosis, and healthy controls. For the purposes of the current review, the construct of mentalizing due to its complex and multifaceted nature will be restricted only to studies that have strictly measured reflective functioning, as well as ToM and metacognition.

2. Methods

A systematic review was conducted to identify studies that examined mentalization abilities in individuals with ARMS, schizotypal traits and healthy controls. To ensure a relatively recent comprehensive overview of the literature, the starting year for article publication was set as 2010. The review protocol was developed following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines (25) and was registered on PROSPERO (number: CRD42023397594, latest updated on 29/03/2023).

2.1. Study selection

In February 2023, data sources for relevant publications on empirical studies were gathered *via* computer-based searches in four databases, namely Google Scholar, Scopus, PubMed, and PsycINFO. Each database was searched independently using three specific iteration research strings: (“At-Risk Mental States”) OR (“Ultra High-Risk”) OR (“Clinical High Risk”) OR (Schizotypy) AND (“Mentalizing”) OR (“Theory of Mind”) OR (“Metacognition”). These strings were selected to encompass a broad range of features related to mentalizing abilities and At-Risk Mental States. Citations were retrieved independently for each iterative search and compiled into a complete list, which was then screened for duplicates and imported into Rayyan for the title and abstract screening. The tool aims to improve the efficiency and transparency of systematic reviews and thanks to the blind review function, it allows the convoluted researchers deputed to evaluate the articles to minimize selection bias. To minimize bias, a third independent judge was included to evaluate articles in which the two main judges did not agree. More details are given in section 2.4.

2.2. Inclusion criteria

Articles that present a sample composed of individuals at risk for psychosis by both state (ARMS/CHR) and trait (schizotypy) conditions were included. The ARMS approach to psychosis was introduced in the mid-1990s to describe a state in which there is a heightened risk of developing psychosis (18, 26). To be included in the review, studies were required to:

- (a) have at least one of the following risk conditions: a family history of schizophrenia, schizotypal personality traits, schizotypal personality disorder, the presence of attenuated positive symptoms emerging or worsening, and deterioration of social and occupational functioning. More specifically, we will include the studies considering the following instruments for the assessment of ARMS condition: Comprehensive Assessment of At-Risk Mental States (CAARMS), Structured Interview for Psychosis-risk Syndromes (SIPS), Early Recognition Inventory for the retrospective assessment of the Onset of schizophrenia Checklist (Checklist-ERIRAOS) the companion Scale of Prodromal Symptoms (SOPS), the Basel Screening Instrument for Psychosis (BSIP), the Basic Symptoms (BSABS), and the Schizophrenia Proneness Instrument, Adult Version (SPI-A). All these instruments are usually utilized to assess the ARMS condition. Studies that do not meet the risk criteria and/or have not used a valid assessment including the above-mentioned instruments were automatically excluded;
- (b) investigate the association between psychotic risk and mentalizing abilities;
- (c) evaluate differences in mentalizing abilities (reflective functioning, ToM, and metacognition) between individuals with state or trait risk for psychosis, overt psychosis [according to the Diagnostic and Statistical Manual of Mental Disorders (DSM) or International Classification of Diseases (ICD)], and healthy controls/comparison group;

- (d) be peer-reviewed research articles;
- (e) be original articles. Reviews, meeting abstracts, conference proceedings, notes, letters to the editor, research protocols, patents, editorials, books or chapters, and other editorial materials were deemed ineligible for inclusion in this systematic review;
- (f) be quantitative studies;
- (g) be published between 2010 to June 2023;

2.3. Studies inclusion

Two reviewers, F.D.S. and C.R., conducted a thorough review of all non-duplicate titles and abstracts to identify articles that were eligible for inclusion in the study. The same reviewers meticulously analyzed the full text of all pertinent articles and resolved any disagreements by reaching a consensus. In the event of any potential differences in agreement, a third reviewer, O.O., was designated to serve as an arbitrator.

2.4. Data extraction

F.D.S. and C.R. independently extracted the following data: type of psychotic risk (CHR/ARMS/UHR and schizotypy), participants, gender, age, methodology involved, type of mentalizing abilities measured instruments and major outcomes.

Data are available in [Table 1](#).

3. Results

Of 1,699 studies retrieved from Google Scholar, Scopus, PubMed, and PsycINFO, after screening all non-duplicate titles and abstracts, 1,602 did not fit the preliminary inclusion criteria. Subsequently, the full text of 97 articles was retrieved and the studies were analyzed for the specific inclusion criteria. Of these 97 studies, 87 were excluded. Reasons for exclusion were lack of appropriateness of the study sample (e.g., no state or trait risk for psychosis under previously mentioned criteria were assessed or considered), no pertinence of the construct analyzed in the study (i.e., Reflective functioning, ToM, Metacognition examined), wrong publication type (i.e., review or meta-analysis, qualitative methodology), no English language. Please see [Figure 1](#) for more details about the inclusion/exclusion process. Therefore, 10 articles met the inclusion criteria and were identified as suitable for our review.

In the following paragraphs, study characteristics and results will be presented. Section 3 will focus on specific mentalizing abilities (reflective functioning, ToM, and metacognition) and their association with state and trait risk for psychosis. In addition, the study will present the variations in mentalizing skills among patients with ARMS/CHR, schizotypy, healthy individuals, and patients with full-blown psychosis. Exploring the differences in mentalizing abilities between these groups could provide a better understanding of the progression of psychotic disorders and enable the development of interventions to enhance mentalizing abilities and social functioning.

TABLE 1 Studies characteristics according to extraction parameters.

Authors and year	Type of psychotic risk	Gender	Mean age (SD)	Methodology	Construct measured	Instruments	Major outcomes
Barbato et al. (28)	Clinical High Risk (CHR): 153 Help Seeking Control (HSC): 68	M: 88 F: 65	19.7 (± 4.2)	Longitudinal	Metacognition	<i>Metacognition</i> : Meta-Cognitions Questionnaire (MCQ) <i>Psychotic risk</i> : Structured Interview for Prodromal Syndromes (SIPS)	At baseline, the CHR group exhibited significantly higher levels of conviction in negative beliefs related to uncontrollability, thoughts' uncontrollability, danger, and thoughts in general compared to the help-seeking control (HSC) group.
Boldrini et al. (50)	Ultra-High Risk (UHR): 57 Healthy Control (HC): 53	M: 44 F: 66	16.85 (± 2.35)	Longitudinal	Reflective Functioning (RF)	<i>Mentalization</i> : Reflective Functioning Scale (RFS) <i>Psychotic Risk</i> : Structured Interview for Prodromal Syndromes (SIPS)	There was a negative correlation between mentalization and attenuated psychotic symptoms, additionally, individuals with lower RF were more likely to develop a psychotic disorder.
Brüne et al. (36)	At-Risk Mental States (ARMS): 23 Schizophrenia (SZ): 15 Healthy Control (HC): 21	M: 37 F: 22	24.61 (± 4.48)	Cross-sectional	Metacognition	<i>Metacognition</i> : Metacognition Questionnaire (MCQ) <i>Psychotic risk</i> : Structured Interview for Prodromal Syndromes (SIPS)	Individuals with ARMS displayed higher scores in both “negative beliefs” and “need for control” MCQ subscales, as well as in their overall MCQ scores when compared to the control group. Remarkably, those who later converted to psychosis had higher negative metacognitive beliefs at baseline.
Kong et al. (34)	Ultra-High Risk (UHR): 28 Healthy Control (HC): 28	M: 19 F: 9	20.35 (± 3.15)	Cross-sectional	Theory of Mind (ToM)	<i>ToM</i> : ToM Picture Stories Task (ToM-PST) <i>Psychotic risk</i> : Structured Interview for Prodromal Syndromes (SIPS)	There were no significant differences between the two groups in terms of ToM skills.
Ohmuro et al. (32)	At-Risk Mental States (ARMS): 36 First Episode Psychosis (FEP): 40 Healthy Control (HC): 25	M: 36 F: 65	21.7 (± 4)	Experimental	Theory of Mind (ToM)	<i>ToM</i> : ToM Picture Stories Task (ToM-PST) <i>Psychotic risk</i> : Comprehensive Assessment of At-Risk Mental States (CAARMS)	In ARMS and FEP groups ToM was significantly lower than that of the HC. Differences between ARMS and HC disappeared when controlling for premorbid IQ. ToM deficits in ARMS were confirmed only in the comprehension of higher-order false belief.
Salaminios et al. (30)	Schizotypy: 105	M: 52 F: 53	15.72 (± 1.91)	Cross-sectional	Reflective Functioning (RF)	<i>Mentalization</i> : Reflective Functioning Questionnaire <i>Schizotypy</i> : Schizotypal Personality Questionnaire (SPQ)	Schizotypal traits (specifically, social anxiety and odd speech) were associated with RF dysfunctions.
Stanford et al. (23)	Clinical High Risk (CHR): 63 Schizophrenia (SZ): 13 Healthy Control (HC): 24	M: 71 F: 7	24.73 (± 5.83)	Cross-sectional	Theory of Mind (ToM)	<i>ToM</i> : “Apple Task,” “Refrigerator Task,” “The Strange Stories Task” <i>Psychotic risk</i> : Structured Interview for Prodromal Syndromes (SIPS)	The higher-order Theory of Mind (ToM) capacity was similarly in CHR and HC. The lowest levels of ToM were obtained from schizophrenic patients. Finally, performance at ToM was influenced by IQ.

(Continued)

TABLE 1 (Continued)

Authors and year	Type of psychotic risk	Gender	Mean age (SD)	Methodology	Construct measured	Instruments	Major outcomes
Vargas et al. (33)	Clinical High Risk (CHR): 24 Healthy Control (HC): 26	M: 24 F: 23	19.84 (\pm 2, 47)	Cross-Sectional	Theory of Mind (ToM)	ToM: Short Story Task <i>Psychotic risk</i> : Structured Interview for Prodromal Syndromes (SIPS)	CHRs did not differ in explicit ToM ability but produced less spontaneous inference of mental states. The negative association between ToM skills and symptoms was confirmed.
Wastler and Lenzenweger (35)	Schizotypy: 40 Negative affect: 30 Healthy control (HC): 46	M: 24 F: 82	19.33 \pm (1.73)	Cross-sectional	Theory of Mind (ToM)	ToM: Original hinting task and Self-referential hinting task <i>Schizotypy</i> : Perceptual Aberration Scale and Magical Ideation Scale	Schizotypal individuals made significantly more hypermentalization errors than both control groups. Moreover, Self-referential hypermentalization was significantly related to referential thinking, aberrant salience, interpersonal schizotypal traits.
Zhang et al. (31)	Clinical High Risk (CHR): 84 Healthy Control (HC): 95 Schizophrenia (SZ): 66	M: 127 F: 118	26.9 (\pm 7.6)	Cross-sectional	Theory of Mind (ToM)	ToM: Reading the Mind in the Eyes Test (RMET) <i>Psychotic risk</i> : Structured Interview for Prodromal Syndromes (SIPS)/ Scale of Prodromal Symptoms (SOPS)	CHR and SZ subjects had difficulties in reading the mind. Both CHR and SZ subjects spent almost twice as much time on RMET as HC individuals. For SZ patients a significant positive correlation was found between RMET accuracy and time response.

Detailed information about study characteristics, including the type of risk for psychosis (ARMS, UHR, CHR, schizotypy), participants, gender, age, the methodology involved, type of mentalizing abilities measured (reflective functioning, ToM and metacognition), and major outcomes are presented in Table 1.

3.1. Study characteristics

Table 1 displays the study characteristics based on the extraction parameters. The studies included in the review have a sample size dimension that varies from a minimum of 48 (27) to a maximum of 221 participants (28).

Out of the 10 studies extracted, 2 specifically investigate reflective functioning (29, 30), 6 focus on the Theory of Mind (23, 31–35), and 2 on metacognition (28, 36).

Among the 2 studies on reflective functioning, one focuses on the risk for psychosis attributed to schizotypal personality (30), and the other one on the comparison between UHR patients and help seeking controls (29).

Regarding the 6 studies on Theory of Mind, 2 investigate differences between healthy controls and CHR/UHR (33, 34), 3 compare state risk (CHR/UHR/AMRS), people suffering with psychosis, and healthy controls (23, 31, 32), and the last one focuses on the differences between schizotypal, negative affect and healthy control groups (35).

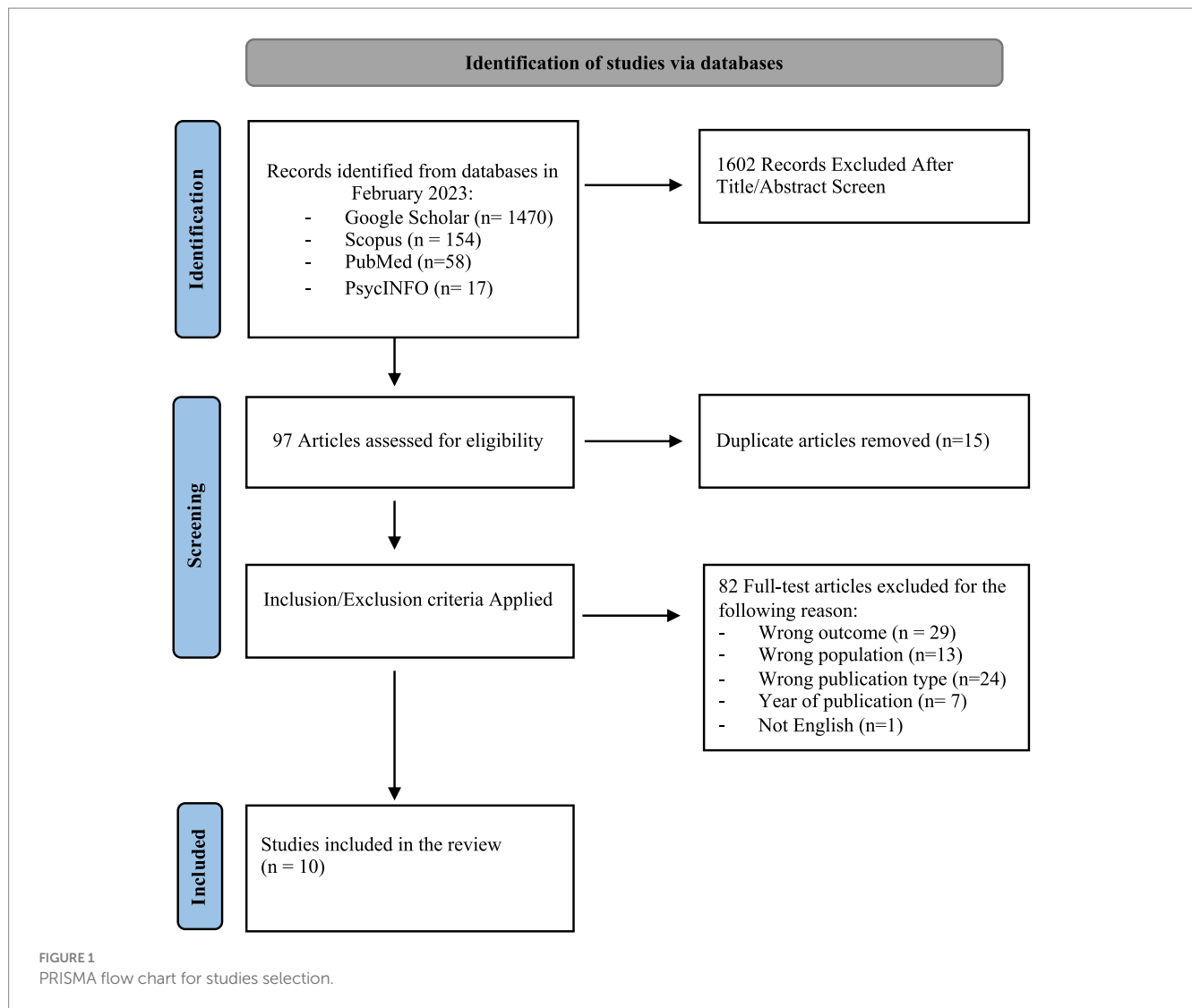
Finally, concerning metacognition, 1 study investigates differences between CHR patients and Help-Seeking Control (28), while the other focuses on differences between ARMS individuals, people suffering with psychosis, and healthy controls (36).

3.2. Types of mentalizing ability analyzed (reflective functioning, ToM, metacognition)

3.2.1. Reflective functioning

Two studies have been concerned with investigating the association between risk for psychosis (schizotypy and UHR) and reflective functioning – the operationalization of mentalization (29, 30).

Salamini et al. (30) aimed to investigate various aspects related to schizotypal personality characteristics – assessed with the Schizotypal Personality Questionnaire (37) and mentalization. Mentalization was measured through the Reflective Functioning Questionnaire (38) a self-report instrument evaluating mentalizing abilities by assessing the degree of certainty and uncertainty with which individuals utilize mental state information to understand their own and others' behavior. Results revealed that social anxiety and odd speech – features of schizotypy traits – contributed significantly to uncertainty about mental states. These findings highlight schizotypal traits – in particular, social anxiety and odd speech – were associated with RF dysfunctions.



Concerning state risk for psychosis, Boldrini et al. (29) conducted a study that focused on reflective functioning in a clinical sample of Ultra High-Risk (UHR) – status indexed on the Structured Interview for Psychosis-Risk Syndrome (SIPS) (39) – and help seeking controls. The study had multiple objectives, including comparing reflective functioning scores between UHR and help seeking controls, exploring the association between reflective functioning and subclinical psychotic symptoms, and examining the predictive value of reflective functioning for the transition to psychosis in UHR subjects. Reflective functioning was assessed through the Reflective Functioning Scale (40) which provides an index of the ability to mentalize derived from the application of transcripts from the Adult Attachment Interview. It is designed to evaluate whether individuals comprehend attachment-related experiences in terms of mental states. The study found significant differences in mean reflective functioning scores between UHR and help seeking controls, with UHR individuals displaying significantly lower scores. Correlation analysis revealed a negative relationship between reflective functioning and certain attenuated positive psychotic symptoms. Additionally, the analysis confirmed that reflective functioning had a significant effect on the transition to psychosis, explaining over 17% of the variance. Reflective functioning

levels emerged as the only dimension capable of predicting the onset of psychosis in this population, with high accuracy in distinguishing UHR individuals who transitioned to psychosis from those who did not develop the disorder. These findings, along with the results from other studies, highlight the presence of mentalizing impairments in both UHR individuals and those with schizotypal traits (29, 30).

3.2.2. Theory of mind (ToM)

Of the 10 selected studies, 5 focused on ToM in individuals at Clinical High Risk (CHR), Ultra High-Risk (UHR) or At Risk Mental State (ARMS) (23, 31–34), and 1 was on differences between schizotypy, negative affect, and healthy control groups in ToM levels (35). Stanford et al. (23) comprehensively evaluated Theory of Mind (ToM) in Clinical High Risk (CHR) individuals – status assessed with SIPS/SOPS (41) – comparing them with healthy controls and people suffering with schizophrenia. ToM was measured by three different tasks: “The Apple Task” (42), “The Refrigerator Task” (43) and “The Strange Stories Task” (44). The “Apple Task” is a cartoon-based assessment that examines whether an individual can determine if an object has been moved in their absence, focusing on first-order false beliefs. Meanwhile, the “Refrigerator Task” is another cartoon-based

task that introduces the concept of recognizing deception, emphasizing second-order false beliefs. Finally, the Strange Stories Task is a verbal task that entails advanced inference skills and an understanding of higher-level cognitive processes in others, such as telling white lies, sarcasm, and pretense. No significant differences were found in first-order false belief tasks. Only people suffering with schizophrenia displayed deficits in higher-order ToM tasks. Both CHR patients and the healthy group performed on higher-order tasks similarly but differently from people suffering with schizophrenia – who performed worse than both groups. Notably, none of the ToM measures predicted conversion to psychosis.

Ohmuro et al. (32) compared Theory of Mind (ToM) in healthy controls, First Episode Psychosis (FEP) individuals, and those with ARMS – criteria assessed with Comprehensive Assessment of At Risk Mental States (45). Significant differences were found in mean ToM task scores among the three groups. ToM was assessed with the Theory of Mind Picture Stories Task (46). This assignment consists of six illustrated cartoon narratives portraying instances where two characters collaborate, one character engages in deception towards another, or two characters work together to deceive a third individual. For each narrative, participants were tasked with arranging four cards in a logically sound sequence and responding to inquiries concerning Theory of Mind (ToM) proficiency, such as the deduction of a character's intent. FEP and ARMS groups differed significantly from healthy controls, with a trend-level difference between FEP and ARMS. The FEP group scored significantly differently from all other groups on second-order false belief tasks, while ARMS individuals showed a trend-level difference.

Two years later, Zhang et al. (31) assessed Theory of Mind (ToM) in Healthy Controls (HC), CHR – condition assessed with SIPS/SOPS (39), and patients suffering with schizophrenia (SZ) to investigate the impact of time consumption on emotion detection. The Reading the Mind in the Eyes Test was administered as a measure of ToM. It consists of the presentation of photographs of the eye region of human faces (42). The results confirmed difficulties in emotional perception for SZ and CHR individuals. Although CHR individuals performed better than the SZ group on ToM tasks, their time consumption was similar. In contrast, the HC group completed the tasks faster with higher accuracy. Additionally, increasing time reaction was associated with improved emotion recognition, highlighting challenges in taking the Reading the Mind in the Eyes Test (RMET).

Vargas et al. (33) compared a CHR group – criteria assessed with SIPS (39) – with a healthy control group to explore correlations between implicit and explicit ToM and positive and negative symptoms. ToM was assessed through Short Story Task (47) which envisages participants read “The End of Something,” a short story by Ernest Hemingway. After reading the story, participants are asked a series of 14 questions to assess comprehension, explicit mental state reasoning and spontaneous mental state inference. In the results, it was found that CHR did not differ to healthy controls in explicit ToM ability, but CHR produced less spontaneous inference of mental states, suggesting impaired implicit and spontaneous ToM ability. From the associations between ToM and symptoms in the CHR, trend-level relationships were found with positive and negative symptoms. This result suggests that CHR individuals exhibit impaired implicit ToM (implying a decreased ability to spontaneously think about the mental states of others), whereas explicit ToM may be relatively more intact at this stage of disease progression (implying that CHR individuals are

still able to exercise Theory of Mind and imagine the mental states of others when explicitly elicited).

Kong et al. (34) compared healthy patients with UHR individuals for psychosis – condition assessed with SIPS (39). They investigated impaired ToM skills – evaluated using the ToM Picture Stories Task (46) – and their relationship with schizotypy and executive function in UHR subjects. No significant difference emerged between the groups in ToM skills. Low ToM skills were correlated with positive schizotypy and executive function in UHR individuals.

Wastler and Lenzenweger (35) investigated the relationship between schizotypal traits – assessed with The Schizotypal Personality Questionnaire (48) – and ToM performance. ToM was measured with original and self-referential hinting Task which assess one's ability to make inferences about self and others' and mental states based on given indirect speech (43). They expected individuals with high schizotypal traits to perform worse than healthy and psychiatric control groups in overall ToM. Specifically, they anticipated more self-referential hypermentalization errors (i.e., excessive inferences and extrapolations beyond the social cues provided regarding the mental state of others) from the schizotypal group. Notably, the schizotypal group exhibited the highest number of self-referential hypermentalization errors. These errors were correlated with schizotypal trait features, encompassing phenomena such as ideas of reference and anomalous perceptions (indicative of positive schizotypy), alongside manifestations of social anxiety and restricted affect (characteristic of negative schizotypy).

The results obtained from the extracted studies do not confirm the presence of significant differences between CHR/ARMS or UHR and healthy controls for cognitive ToM (23, 32–34). Individuals with CHR, however, take longer (a similar time that is taken by people suffering with psychosis) than healthy controls to attribute emotion to others – a measure of emotional ToM (31). Finally, low ToM abilities have been associated with a wide range of schizotypal manifestations (34); with evidence from one study suggesting that those reporting high schizotypal traits show a tendency towards committing more hypermentalizing errors (35).

3.2.3. Metacognition

Two of the 10 studies identified were concerned with assessing the association between metacognition and CHR/ARMS (28, 36). Barbato et al. (28) conducted a longitudinal study on CHR individuals – condition assessed with SIPS (39), and help-seekers control (HSC). The authors' objective was to track and analyze metacognitive development over time in a group of CHR. Additionally, they sought to establish whether there was a connection between metacognition and the subsequent onset of psychosis. Metacognition was measured with Meta-Cognitions Questionnaire (MCQ) (20). It has been developed to assess metacognitive beliefs, judgments, and monitoring that are thought to be involved in the development of psychological disturbances. MCQ has five sub-scales: (i) positive beliefs about worry, which includes items related to the idea that worrying is necessary to solve problems; (ii) negative beliefs about uncontrollability of thoughts and corresponding danger, with items related to beliefs about mental and physical danger of worrying and about worrying being uncontrollable; (iii) cognitive confidence, which refers to the efficacy of one's cognitive skills such as attention and memory; (iv) negative beliefs about thoughts in general, including themes of responsibility, punishment, and superstition whose items

concern the negative outcomes that might result from specific thoughts; and (iv) cognitive self-consciousness, which includes items regarding one's tendency to focus on their own thinking processes (28). From the results emerged that negative beliefs about uncontrollability and cognitive confidence were positively associated with general symptoms in the CHR group. At the baseline, the CHR group reported significantly more conviction in negative beliefs about uncontrollability, negative beliefs about the uncontrollability of thoughts and danger, and negative beliefs about thoughts in general, as well as higher overall MCQ scores compared to the help-seeking controls (HSC), but their conviction in these beliefs decreased over time. Moreover, those who later converted to psychosis had higher negative metacognitive beliefs at baseline. The study suggests impairments in metacognitive beliefs may be linked to the development of genuine psychotic transition. The second selected study was conducted by Brüne et al. (36) and compared a group of ARMS individuals – condition assessed with SIPS/SOPS (39), people suffering with psychosis, and a healthy control with respect to metacognition – assessed with Meta-Cognitions Questionnaire-Revised (49). People with ARMS showed significantly higher scores in both the “negative beliefs” and “need for control” MCQ subscales, as well as overall MCQ, compared to the HSC. Of note, those experiencing psychosis had the highest overall MCQ scores among the groups studied. Both studies identified (28, 36) confirmed that CHR/ARMS individuals present more negative metacognitive beliefs and a higher overall MCQ score compared to respective controls.

4. Discussion

To the best of our knowledge, up until the search date of February 2023, this systematic review represents a pioneering endeavor aimed at investigating the role of mentalizing abilities (reflective functioning, ToM, and metacognition) concerning vulnerability to psychosis. The review pursued the following objectives: (a) to assess the associations between low mentalizing and the risk for psychosis due to both state (ARMS/CHR) and trait conditions (schizotypy), and (b) to compare the differences in mentalizing abilities between individuals with ARMS, schizotypy, full-blown psychosis, and healthy controls.

Studies extracted confirmed the negative associations of mentalizing abilities with state (29, 31, 33), and trait (30, 35) risk for psychosis. Specifically, results revealed, that low levels of RF and negative metacognitive beliefs are predictive of transition to psychosis in individuals at risk (28, 29). Negative metacognitive beliefs, such as negative beliefs about the uncontrollability of thoughts and negative beliefs about thoughts in general, appear to be characteristics of individuals who meet the clinical criteria for the ARMS (20).

The research findings regarding differences in mentalizing abilities (23, 28, 29, 32–36) among individuals with ARMS, schizotypy, full-blown psychosis, and healthy controls yielded mixed results. It was observed that negative metacognitive beliefs and the “need for control” tended to be more pronounced in individuals at risk (28, 36). In the context of Theory of Mind (ToM) tasks, some studies failed to identify significant distinctions between CHR patients and healthy controls (23, 33, 34), whereas others reported lower ToM performance levels among schizotypal (35) and CHR individuals (31, 32).

The variability in these findings possibly indicates that in individuals with CHR, their cognitive Theory of Mind (ToM) abilities

may remain fairly intact (23, 33, 34). However, they do tend to take significantly more time to recognize emotions in facial expressions compared to healthy controls (31). The need for more time to “read” emotions on the face is plausibly related to the greater difficulty of CHR compared to healthy controls in discerning and understanding the emotional component. Additionally, the discrepancy in the obtained results could be attributed to the effect of cognitive functioning. In fact, studies conducting statistical analyses controlling IQ did not find significant differences between individuals at risk for psychosis and the controls (31, 32), showing that lower IQ scores may be responsible for the differences in ToM performance found between the groups.

To summarize, deficits in reflective functioning and dysfunctional metacognitive beliefs have been identified both in individuals with trait and state risk for psychosis (28–30, 36). The results derived from studies on reflective functioning (29, 30) and metacognitive beliefs (28, 36) align with the perspective that considers impairments in these capacities as potential moderators of the expression of psychotic phenotypes (50–52). Therefore, clinical strategies aimed at enhancing mentalization and metacognition, and thereby promoting resilience, may be more tailored to address the specific needs of individuals across the spectrum of psychosis.

4.1. Clinical implications

Mentalization Based Treatment for Psychosis (MBT-P) applied to individuals with both state and trait risk for psychosis may help in the management of attenuated psychotic symptoms. MBT-P, moreover, could be helpful in preventing (53, 54) from the onset of full-blown psychosis through improved long-term social functioning (53, 55). In addition, dysfunctional personality traits are particularly prevalent in this population (56, 57), and an estimated 40% of this population has a personality disorder in comorbidity (50), findings that can justify the application of treatment.

Moreover, the results obtained from the review suggest that the application of strategies to attenuate maladaptive metacognitive beliefs may be equally effective in improving psychotic symptoms in CHR (19, 58–61). Metacognitive training is grounded in theoretical principles that focus on addressing cognitive (e.g., jumping to conclusions) and problem-solving (e.g., poor memory recall) errors and biases, which, in turn, play a significant role in the formation of false beliefs, eventually leading to delusional states (62). Case studies and preliminary trials have shown promising results for metacognitive therapies, showing benefits in improving the sense of self and perceived agency and attenuation in negative metacognitive belief in people suffering with schizophrenia (63, 64). Working on altered mentalization (62) and metacognition (64) should mitigate the phenotypic expression of psychotic disorders, improving the discontinuous experience of the self and psychotic symptomatology in individuals with both state and trait risk for psychosis (65–67).

4.2. Limitations and future directions

The present systematic review has several limitations. In general, the research designs used in the selected studies make causal inferences difficult. Therefore, the implementation of more

longitudinal studies on the role of mentalization and metacognition and clinical trials applying MBT-P and metacognitive interventions are advocated.

Another constraint to consider is the paucity of research that was both identified and carried out within the temporal scope encompassed by this systematic review. This factor also hampers the ability to make causal inferences.

Finally, only one study (33), among those selected, included neurophysiological or neuroimaging measures in conjunction with psychological/behavioral measures. Considering neuroimaging assessments could further elucidate the links between mentalizing and psychosis risk.

5. Conclusion

Considering that impairments in mentalization and metacognition were associated with a wide range of attenuated psychotic symptoms and were predictive of psychotic onset, the assessment of mentalization and metacognition could potentially provide additional prognostic value for individuals along the psychotic continuum (51, 68). In this regard, further research is needed to clarify the relationship between the mentioned dysfunctions and the development and persistence of psychotic and nonpsychotic clinical symptoms. Lastly, it would perhaps be more appropriate to consider good functioning of mentalization and metacognition as protective factors that can improve levels of social and occupational functioning predictive of transition to psychosis (66, 69, 70).

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.

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Claudia Oppenauer,
Karl Landsteiner University of Health Sciences,
Austria

Gerry Byrne,
University of Oxford, United Kingdom

Jorge Flores,
Pontificia Universidad Católica de Chile, Chile

*CORRESPONDENCE

Patricia Soto-Icaza
✉ patriciasoto@udd.cl
Stefanella Costa-Cordella
✉ stefanella.costa@udp.cl

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Towards a comprehensive approach to mentalization-based treatment for children with autism: integrating attachment, neurosciences, and mentalizing

Stefanella Costa-Cordella^{1,2,3*}, Patricia Soto-Icaza^{4*},
Karin Borgeaud⁵, Aitana Grasso-Cladera^{2,6} and Norka T. Malberg⁷

¹Centro de Estudios en Psicología Clínica y Psicoterapia, Facultad de Psicología, Universidad Diego Portales, Santiago, Chile, ²Centro de Estudios en Neurociencia y Neuropsicología Humana, Facultad de Psicología, Universidad Diego Portales, Santiago, Chile, ³Millennium Institute for Depression and Personality Research (MIDAP), Santiago, Chile, ⁴Laboratorio de Neurociencia Social y Neuromodulación (neuroCICS), Centro de Investigación en Complejidad Social (CICS), Facultad de Gobierno, Universidad del Desarrollo, Santiago, Chile, ⁵Hospital Dr. Exequiel González Cortés, Santiago, Chile, ⁶Institute of Cognitive Science, Universität Osnabrück, Osnabrück, Germany, ⁷Yale Child Study Center, New Haven, CT, United States

Autism spectrum disorder (ASD) is diagnosed based on socio-communicative difficulties, which are believed to result from deficits in mentalizing, mainly evidenced by alterations in recognizing and responding to the mental states of others. In recent years, efforts have been made to develop mentalization-based treatment (MBT) models for this population. These models focus on enhancing individuals' ability to understand and reflect on their own mental states, as well as those of others. However, MBT approaches for people with ASD are limited by their existing theoretical background, which lacks a strong foundation grounded in neuroscience-based evidence properly integrated with attachment, and mentalizing. These are crucial aspects for understanding psychological processes in autism, and as such, they play a pivotal role in shaping the development of tailored and effective therapeutic strategies for this specific population. In this paper we review evidence related to the neurobiological, interpersonal, and psychological dimensions of autism and their implications for mentalizing processes. We also review previous mentalization-based frameworks on the psychosis continuum to provide a comprehensive understanding of attachment, neurobiology, and mentalization domains in therapeutic approaches for autism. After presenting a synthesis of the literature, we offer a set of clinical strategies for the work with children with autism. Finally, we provide recommendations to advance the field towards more robust models that can serve as a basis for evidence-based therapeutic strategies.

KEYWORDS

mentalization-based treatment, theory of mind, attachment, autism, neurodevelopment, neurodevelopmental disorders, child psychotherapy

1 Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that affects communication and social interaction (1–4). Autism is a complex and heterogeneous condition that has undergone changes in its conceptualization and diagnostic criteria over the past few decades, shifting from a categorical to a dimensional perspective.

Individuals with ASD are often described as having difficulties in mentalizing – the ability to understand and think about other people's thoughts, feelings, and intentions (5–13). Specifically, people on autistic spectrum may experience difficulties in mentalizing emotional states due to their struggles to understand social cues or interpret facial expressions accurately (5, 7, 14–18). This feature can lead to difficulties in interpersonal relationships and social functioning.

Therapeutic approaches to address these difficulties have arisen from mentalization-based treatment (MBT). While MBT was initially developed for individuals with borderline personality disorder (BPD), its application has broadened significantly over time. Today, it is used to treat a variety of psychological conditions in different populations, demonstrating its versatility and effectiveness as a therapeutic approach (19).

One of the MBT approach applications that might be interesting to look at when thinking about ASD is the development of MBT for individuals with psychosis (4, 20). Although individuals with ASD have different characteristics and challenges than individuals with BPD and psychosis, research has suggested an overlap between autistic and psychotic symptoms, particularly regarding problems with mentalizing or understanding the minds of others and oneself (4, 20–22). The psychosis spectrum is characterized by a rupture in the sense of “going-on-being” in the world, involving a diminished skill to relate with others, especially when it comes to emotional bonding (20). Therefore, these individuals experience mentalizing disruptions even in the premorbid and prodromal stages (4, 20). Nevertheless, mentalizing disruptions do not perform as aetiological or causal factors for the subsequent development of clinical psychosis. Instead, mentalizing capacities may be a protective factor (23) to mitigate early psychotic trajectory and foster recovery in individuals at high risk and clinically diagnosed with psychosis, respectively (20). In autism, similarly, deficits in mentalizing are not aetiological factors, but the ability to understand their own emotions and thoughts, as well as those of others, can serve as a protective factor that promotes resilience. In this way, enhancing and optimizing mentalizing could improve social functioning in autism. This would support the potential benefits of mentalization-based interventions in neurodevelopmental conditions like autism.

Considering this, we argue that interventions targeting mentalizing deficits could help alleviate psychological symptoms in individuals with ASD. MBT, with its focus on essential social cognitive processes that support social functioning, may particularly benefit individuals with ASD who struggle to identify and differentiate between different mental states in themselves and others. Furthermore, due to its emphasis on interpersonal relationships, MBT may assist individuals in managing socio-relational challenges.

In the following sections, we will review the evidence of social functioning difficulties in ASD from both symptomatological and neurobiological perspectives to provide a comprehensive understanding of the dimensions of ASD and their implications for mentalizing processes. We will also examine evidence related to MBTs and how insights from neuroscience research can inform the development of targeted interventions. Finally, we will propose clinical strategies that can be incorporated into existing mentalization-based models to better address the needs of children with ASD and present potential directions for advancing research in this field.

2 Social functioning and mentalizing in autism

From a clinical and neurocognitive perspective, behavioral difficulties in social functioning have been associated with autism from an early stage of development (6, 7, 14, 24). The Diagnostic and Statistical Manual of Mental Disorders, in its Fifth Edition (4) describes three main groups of a range of deficits in social communication and social interaction. First, deficits in social-emotional reciprocity, such as abnormal social approach and difficulties in maintaining two-way communication, decreased interest in shared interests, emotions, or affections, and failure to initiate or respond to social interactions. Secondly, impairments in nonverbal communicative behaviors used in social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication to abnormalities in eye contact and body language or from impairments in understanding and use of gestures to a total lack of facial expression and non-verbal communication. Finally, deficits in developing, maintaining, and understanding relationships, such as difficulties in adjusting behavior in different social contexts, difficulties in pretend play or making friends, and a lack of interest in other people.

The neurocognitive line of studies has shown that infants described as having an increased likelihood of autism show alterations in attention to socially relevant stimuli (6, 14, 25), and that children with ASD have alterations in the development of one of the precursors to the ability to understand the desires, intentions and beliefs of others, i.e., *joint attention* (7, 24, 26). Alterations in face perception, emotional processing and visual scanning of faces have also been described in the literature (7, 14, 16, 27, 28).

One of the most reported difficulties in autism has been the alterations in mentalizing ability, also known as *theory of mind* (ToM) (5–13). Mentalization is a fundamental skill that enables individuals to understand the thoughts and feelings of others, allowing them to make inferences about the mental states of those around them (29–31). This ability involves the capacity to make inferences about states of mind that are not directly observable, ultimately enabling individuals to predict the behavior of others (8, 30, 32). The most reliable evidence of one's capacity to understand another person's perspective is their ability to understand ‘false belief’ situations. In these scenarios, an individual predicts or explains someone else's behavior based on that person's beliefs, rather than the actual reality as known by the observer. The ability to mentalize is particularly tested when the perceptions of two individuals diverge, and the observer must consider not only what they see or know but also what the other person sees or knows (33). Alterations in the ability to understand and engage in social interactions are often observed in individuals with autism. This includes difficulties in comprehending the social use of language, interpreting the intentions and emotions of others in social situations, and engaging in mentalization processes. Neurobiological research has shed light on the underlying neural mechanisms.

Studies have identified reduced neural responses in key regions of the mentalization brain network, notably the temporoparietal junction (TPJ) and the medial prefrontal cortex (mPFC), during mentalization tasks (10–13). However, it's essential to note that the mentalization brain network comprises a complex set of neural connections, encompassing not only the TPJ and mPFC but also the precuneus/

posterior cingulate cortex, temporal poles, and superior temporal sulcus (7, 34–39). These intricate connections highlight the brain's role in mentalization processes, enabling individuals to understand and anticipate the actions of others. Furthermore, comparative neuroanatomical evidence has shown that in humans, the brain region including the TPJ and posterior superior temporal sulcus (STS) is significantly expanded compared to non-human primates. This expansion facilitates functional connections with sensory areas associated with body perception (extrastriate body area - EBA), movement (middle temporal area - MT/V5), and attention processes (inferior parietal lobe). These connections are vital for processing social information and exhibit selective responses from the earliest stages of development (40, 41). In addition to the alterations in the TPJ and mPFC, studies on ASD have also reported atypical functioning in the temporal lobe, including the STS (27, 42–48). These findings suggest functional connectivity abnormalities within the mentalization brain network, emphasizing the importance of considering these factors when seeking to understand the core social difficulties in individuals with ASD.

The social nature of the mentalizing ability underscores its relational component, prompting questions about the levels of complexity where this ability is required or involved. For instance, understanding scenarios involving false beliefs, as mentioned earlier, necessitates the capacity to think from another person's perspective in the context in which the observer (oneself) is involved. Notably, studies have described a specific phenomenon known as 'camouflage,' which is observed in both men and women with ASD who present high cognitive abilities. This phenomenon plays a significant role in compensating for communication difficulties and may contribute to the challenges of diagnosing ASD in women (49–53). Indeed, almost 25% of the caregivers' reports of girls with ASD described that the child presents a powerful desire to please others compared to only 10% of the caregivers' reports of boys with ASD (54). The phenomenon of social camouflage comprises an explicit effort to "mask" or "compensate" autistic characteristics and use conscious or unconscious techniques that result in a behavioral presentation less marked by autistic characteristics (51, 55). More specifically, authors have described making eye contact during conversation, using learned phrases or previously prepared jokes in conversation, imitating the social behavior of others, imitating facial expressions or gestures, and learning and following social scripts as examples of camouflage. While many individuals adjust their behavior based on social expectations or influence, one of the distinctive aspects of camouflage in individuals with ASD is its demand for significant cognitive effort. This effort can be draining and may result in heightened stress responses, including social overload, anxiety, and depression. Moreover, it can negatively impact self-identity development. Unlike typical social adaptation, camouflage in people with ASD involves a unique and often exhausting compensation and masking mechanism (56). A possible interpretation could be that the alterations described in the mentalization network make the adaptation of one's behavior to social demands so complex and demanding for individuals with ASD that it results in incurring in significant emotional and psychological costs for them.

Taken together, this evidence highlights the relational dimension of social functioning, in terms of a diverse knitting of human relations that could entail emotions, satisfactions (or not) of needs, contexts,

etc. Importantly, these relations can be experienced as reciprocal, synchronized, stable, i.e., trustworthy and secure, or unpredictable, ambivalent, non-reciprocal, and even threatening, i.e., unreliable and insecure, from a very early age. Therefore, if the social phenomenon is closely associated with how those interactions are mutually experienced, and autism is described as having social interferences, the question that naturally arises should be does autism impact the relationship between infants and their caregivers? If it does, how does autism impact those relationships?

In the following section, we will delve into the topic of attachment development in autism. We will also examine the neuroscience perspective on attachment in autism to gain a more comprehensive understanding of the condition and its potential treatment with MBT.

3 Attachment and autism

Attachment theory has made significant contributions to the fields of psychology, psychopathology, education, and health in recent years. However, studying attachment patterns in relation to autism can be a complex undertaking.

Historically, attachment has been assessed using the Strange Situation Test (57). This method identifies various types of attachment based on a child's reactions to separation and reunion situations with their caregivers and strangers. However, this type of assessment may not be suitable for children with autism who struggle with changes to their daily routine and find unexpected separations distressing, as noted by (58, 59). Considering these elements, some authors modified the Strange Situation procedure so that the mother or stranger remained with the child throughout the procedure, and the child was never left alone (59–61). Studies showed that when a modified Strange Situation paradigm was used, no significant differences were found between the groups of children with ASD and children with other neurodevelopmental disorders in criteria for proximity, maintenance of contact, avoidance of proximity or contact resistance (60, 61). Moreover, findings showed that mothers of securely attached children with autism scored higher on the sensitivity scale than mothers of insecurely attached children, even when controlling for the children's level of functioning, their diagnosis, and their level of responsiveness to their mothers (62). This evidence is showing that children with autism can indeed form a sense of security towards their caregivers, and that attachment-related behaviors in autism are linked to the caregiver behaviors, specifically sensitivity and emotional availability (63).

The literature on the topic of attachment in children with autism has produced mixed results. Some studies have found that these children have higher levels of insecure attachment compared to other groups. However, there have been inconsistencies in the analysis and evaluation methods used (64). Recent evidence suggests that children with ASD and intellectual disability may experience more severe behavioral and emotional problems, as well as attachment difficulties, compared to children with other developmental disabilities (65). Additionally, children with ASD tend to have less close attachment relationships and more inhibited attachment behaviors than children with other developmental disabilities. Studies consistently show that children with autism react to their caregiver's separation, that they direct more social behavior

at the caregiver than at a stranger, and their proximity-seeking behavior increases after separation from the caregiver (59). It has been found through studies that caregivers play a significant role in promoting secure attachment in children with autism. Interventions that focus on enhancing maternal/paternal sensitivity and strengthening the parent–child relationship can be helpful in achieving this (59, 62–64). Children with autism and their families may be at increased risk of developing insecure attachment patterns due to difficulties in communication and social functioning associated with autism, and the prevalence of similar traits and mental health problems among family members (16, 64, 66–68). Furthermore, there is evidence that suggests that children with autism and their parents can experience higher levels of stress (69, 70), making attachment security more complex to achieve. In addition, children with autism that also have attachment difficulties present particular challenges for therapists, researchers, and all those seeking to understand their symptoms and provide appropriate support (70). Based on this evidence, interventions aimed at addressing behavioral and emotional problems in children with ASD may benefit from a model that uses attachment relationships to help the child regulate their emotions with the help of caregivers.

During the dyadic interaction between children and their attachment figures, a complex process of accommodation and coordination occurs at multiple levels, resulting in the emergence of self-reflecting awareness and socioemotional skills (71–74). This interaction can be understood as the result of a biologically evolved neural program which aims to organize behavior in times of need, especially in mammals (75, 76). Hence, during this dyadic interaction, brain activity is modulated in both the children and the attachment figure, through psychobiological accommodation, synchronization, and coordination of physiological rhythms (e.g., brain and heart activity) (71, 73, 77–79). Brain structures such as the amygdala, the anterior cingulate insula and orbitofrontal cortices play a major role in these processes (80, 81). A large body of literature has demonstrated the occurrence of synchrony in physiological variables (e.g., skin conductance, respiration, heart rate) during the caregiver–child interaction. Synchrony in brain activity during dyadic interaction is associated with parental sensitivity and positive socio-emotional outcomes (82, 83). In turn, increased level of parental stress is associated with less brain-to-brain synchrony in areas implicated in inferential processes for mental states and social cognition (e.g., prefrontal cortex, dorsolateral prefrontal cortex, and frontal gyrus) (82). Research has shown that synchronicity in cardiac activity and respiration can serve as biomarkers for vagal tone, which is related to physiological regulation and stress, as well as parents' engagement capacity (84, 85). For example, research has found that there is an increase in mother–infant concordance regarding heart activity during periods of affect and vocal synchrony in dyadic interactions. This is positively correlated to child/family functioning, as noted in the work of Feldman et al. (79).

The neuropeptide oxytocin is one of the biomarkers of attachment. According to research, oxytocin contributes to interpersonal bonding, parental care, trust establishment and social attachment in typical development (86, 87). In autism, research has indicated that intranasal oxytocin can positively impact social functioning and attachment (88, 89).

For example, an experimental trial on multiple-dose oxytocin treatment found a beneficial effect on repetitive behaviors and feelings

of avoidance (90). It has been suggested that oxytocin may reduce emotional arousal in the amygdala circuitry (88). The amygdala has many oxytocin receptors and receives direct axonal projections from hypothalamic nuclei (91). This allows for direct neuroendocrine modulation of amygdala-centred circuits, contributing to its role in social processing. Moreover, the amygdala's distributed connectivity within the social brain provides it with a central position for modulating various brain networks crucial for social cognition. In autism, functional connectivity of the amygdala was found to be significantly attenuated to the bilateral orbitofrontal cortex and the right pSTG, which are both important hubs for social functioning, according to research conducted on young male adults (88). However, the effects of oxytocin are not consistent across all studies. For example, a recent study in boys and girls with autism showed that only the group who received intranasal oxytocin and concurrent intensive psychosocial training demonstrated a notable enhancement in social responsiveness (89).

The above reflects the complex nature of the oxytocin influence on social cognition. Further research is needed to fully understand oxytocin's mechanisms and potential therapeutic applications in autism.

Based on the reviewed findings, it is important for an integrative psychotherapeutic model for individuals with autism to consider the child's characteristics, their impact on the bond with their caregiver, and the effects of having a diagnosis. How a caregiver perceives the mental state behind a child's behavior can affect how they respond, ultimately affecting the quality of their relationship.

This highlights the vital link between attachment and mentalizing, which will be further examined in the following section, particularly concerning autism.

4 Attachment and mentalizing in autism from a relational perspective

Studies indicate that a diagnosis of autism can have positive effects on the parent–child relationship in certain cases. Parents report decreased negative evaluations of their child's behavior following diagnosis and individuals with autism report gaining valuable insights into their past experiences and being able to reframe their sense of self after receiving a diagnosis. This newfound understanding can serve as a protective factor in the relationship between parents and their child with autism (69).

When it comes to self-identity and mentalizing, it's important to note that the camouflage mechanism can play a role in self-awareness. While many individuals may model their behavior based on societal expectations or influence from others, individuals with autism may use camouflage as a way to compensate and mask their true selves. This can require a significant amount of cognitive effort, leading to heightened stress responses, social overload, anxiety, depression, and even a negative impact on self-identity development [as noted by Hull et al. (56)].

The evidence presented supports the significance of addressing the ability to understand and interpret the thoughts, feelings, and intentions of oneself and others, aligning with the core principles of mentalization-based therapy. In the following sections, we aim to incorporate these elements to propose a therapeutic model capable of helping transform one's and others' sense of self.

5 Foundations and applications of mentalization-based treatment: exploring adaptations for autism spectrum disorder

MBT is an evidence-based psychotherapy approach with the primary goal of improving individuals' capacity to comprehend their own thoughts and emotions, as well as those of others. This approach combines concepts from psychoanalysis with attachment theory and research on social cognition. MBT has demonstrated effectiveness in reducing symptoms, enhancing interpersonal skills, and ultimately, elevating overall quality of life. Originally, MBT was developed to foster mentalizing in individuals diagnosed with borderline personality disorder (92). Over time, MBT has evolved to address a broad range of applications for patients with different diagnoses and at different developmental stages. Specialized versions of MBT have been created to attend to the specific needs of adolescents (MBT-A) and children (MBT-C). Additionally, MBT has been modified to address conditions such as eating disorders, depression, post-traumatic stress disorder (PTSD), and antisocial personality disorder (93).

The framework of MBT is built on two key assumptions. First, it believes that the ability to understand mental states is developed through early attachment relationships and is closely intertwined with the development of the self. Second, MBT recognizes that disruptions in these early attachment relationships can hinder the growth of an individual's capacity for mentalization and the development of their self-structure.

MBT mainly proposes a developmental model of the self, drawing from concepts in developmental psychology, attachment theory and psychoanalysis. However, as previously mentioned, when adapting MBT for individuals with ASD, it's crucial to establish a strong foundation rooted in neuroscience-based evidence while coherently incorporating attachment theory and mentalization processes. To address this challenge, the following sections will explore the therapeutic principles and applications of MBT, with a focus on the model for psychosis as a starting point. Additionally, we will delve into the current state of MBT in the context of autism.

5.1 MBT in psychosis

The primary objective of MBT is to establish an intersubjective narrative construction space that fosters the development of mentalizing capacity, enabling individuals to effectively process emerging thoughts and feelings. This is achieved by establishing a patient-therapist relationship that evokes affective states and engages the patient in a reflective process. An essential component of MBT is the repair of mentalizing ruptures that may occur during therapy sessions.

In psychosis, Debbané et al. (20) have proposed that MBT can be effectively applied in the treatment of young people at risk for psychosis by adhering to three clinical principles. The first principle involves adopting a therapeutic stance that fosters mentalizing by stimulating curiosity about the complexity of mental states. The therapist plays an active role in encouraging reflection on interpersonal experiences, including the therapy session itself. The second principle focuses on affective experiences and encourages patients to recognize

and verbalize their feelings while reflecting on the events that preceded them. This promotes a trusting relationship and enables the patient to reconceive non-mentalizing explanations of behavior in terms of opaque and complex states of mind. The third principle centers on enhancing embodied mentalizing, where the therapist supports patients in finding words to express affective states and links them to bodily or perceptive experiences, thus enhancing their sense of self-continuity and facilitating a coherent view of their self-experience. The primary focus of the therapist in MBT is to make affects the main topic of joint attention during therapy sessions. By increasing awareness of their own and others' minds, young individuals who are at risk of developing psychosis can use their thoughts to regulate and communicate their affective experiences (94). The therapist helps the patient recognize and verbalize their emotions, as well as reflect on their interpersonal experiences. This can lead to a stronger sense of self and help individuals regulate and communicate their emotions more effectively. For individuals with psychosis, MBT can be particularly beneficial because it focuses on increasing their awareness of their own and others' minds, helping them restructure their thinking patterns towards more flexible and reality-based beliefs. In general, therapeutic approaches that prioritize mentalizing can assist individuals in maintaining their resilience against fixed and distorted thought patterns, even when they are at risk for psychosis due to neurogenetic or other factors (95).

Based upon these considerations about the MBT model in psychosis, and considering the difficulties described in mentalizing ability in autism, may the question arise as to whether it is possible to develop an autism MBT model that integrates neuroscience, attachment, and mentalizing evidence?

5.2 Social functioning in psychosis and autism

While there are distinct neurodevelopmental characteristics between autism and psychosis, social functioning challenges have also been observed in individuals with psychosis, particularly those diagnosed with Schizophrenia Spectrum Disorders (SSD) as a proxy for psychosis (1–3, 96, 97). Research suggests that individuals with schizophrenia often struggle with social cognition, including difficulties inferring others' intentions (i.e., mentalization, (1–4) which is also an element in autism).

Social cognition entails various cognitive processes that integrate different brain structures and networks (1, 34) and allows individuals to understand the thoughts, intentions, beliefs, and feelings of other people (1, 35, 98). Moreover, social cognition underlies social behavior and enables functioning in social contexts (1, 34, 36) because those cognitive processes embed information about other persons and about interpersonal norms and procedures to participate efficiently in the social world (98). As in the case of autism, evidence in SSD has shown that mentalizing impairment has been associated with an abnormal activation in brain regions related to the mentalizing network during mentalization tasks, i.e., the medial prefrontal cortex (mPFC) and the temporoparietal junction (TPJ) (2). Moreover, in interplaying games, patients with schizophrenia showed an opposite pattern of bargaining compared to control individuals, which was in association with brain regions that are related to social decision mechanisms, i.e., the mPFC, the inferior parietal lobule, and the TPJ (35).

Unlike psychosis and schizophrenia, the distinction of ASD as a neurodevelopmental condition presents a significant opportunity to explore the challenges in understanding mental states. This difference can be crucial for developing a specialized MBT model tailored for autism. It is possible to consider that the pervasive feature of autism encompasses an early and primary interference with the ability to mentalize from the beginning. Thus, mentalization-based interventions may be beneficial for individuals on the autism spectrum who struggle to identify and distinguish between different mental states in themselves and others. This is because, through MBT, individuals can develop a more nuanced awareness of their thoughts, emotions, and motivations, leading to increased self-reflection and self-understanding. Moreover, considering that MBT recognizes the interactive nature of mentalizing and that mentalization deficits are associated with social dysfunction (3, 7, 99), a therapy focusing on enhancing the ability to mentalize both oneself and others, can foster improved interpersonal understanding and communication.

5.3 Current studies on MBT for children with ASD

Current interventions to improve social and mentalizing abilities in individuals with ASD have been mainly based on Cognitive Behavioral Therapy (CBT) (100, 101). However, during the last years, the idea of incorporating therapeutic strategies specially focused on improving mentalizing abilities (e.g., MBT) for individuals with ASD has become more accepted (102–105). In addition, studies (103, 106, 107) have preliminarily assessed the effectiveness of these types of interventions by adapting ideas from MBT (31, 108, 109), showing an incipient development of therapeutic strategies with MBT as theoretical background.

Studies have shown the benefits of working alongside parents and focusing on relational aspects.

It has been argued elsewhere the potential of the MBT-C model to increase the child's capacity for emotional regulation and improve general psychosocial functioning (102). This is achieved using a scaffolding approach that provides a secure and predictable therapeutic framework and by working with parents in a therapeutic manner that models a more connected interactive style. It is suggested that using MBT-C, it can be possible to work on a new model of relationship that fits the child's "regulation profile" and the caregiver's capacity to learn and apply a new way of connecting and communicating (102). Moreover, there is evidence that showed the impact of an MBT group intervention for parents of children with autism associated with an improvement in parental reflective functioning and emotional regulation and a significant interaction effect between the time of intervention and parents' sense of efficacy (107).

Additionally, there are interventions that may not specifically focus on mentalizing, but they still work towards improving related capacities. These interventions can offer valuable information on the potential effectiveness of this model for the targeted population. In this regard, there is evidence that children with autism improve their social communication skills by increasing their role as initiators of social interactions such as improvements in social and emotional behavior, communication, eye contact, joint attention, and imitative play (110).

It has been also found that working with children with ASD through interactions between children and parents using a Developmental, Individual Difference, Relationship-Based model of intervention (DIR) may enhance important aspects of mentalizing such as joint attention and regulation, engagement across a wide range of emotions, two-way communication, and complex social problem solving (111).

The evidence examined thus far suggests that treatments centred around mentalizing and related skills have the potential to significantly improve social functioning, psychological adjustment, and emotional regulation in children with autism. However, there is currently no research supporting the effectiveness of a MBT model specifically for children with ASD.

In this regard, we argue that in order to develop therapeutic approaches in autism suitable to be empirically tested, there is a need for a more robust underlying theory. We propose that such a theory should integrate attachment, neuroscience, and mentalizing. In this article, we have presented some of the current advancements in autism research, specifically in the areas of attachment and mentalizing, from a neuroscience perspective.

In the subsequent section, we outline possible avenues for progress, considering both clinical and research possibilities.

6 Working from a mentalization-based approach: a proposal of clinical strategies for the work with children with autism

After reviewing the available evidence, we propose a set of elements that should be considered within current mentalization-based models in order to better meet the needs of children with ASD.

By focusing on a core capacity that may promote resilience in a wide range of children with various presenting problems, MBT aims to be a transdiagnostic therapy that can be adapted to the particular needs of a range of difficulties.

Regarding ASD, MBT approaches, and especially those that work with children (e.g., MBT-C) may be helpful as they offer an alternative model of the relationship between the caregiver and the child, which fits both the child's and caregiver's capacities to reflect on their own and other's mental states and generalize a new way of regulating, connecting, and communicating with themselves and others. MBT with children may support developmental experiences through a secure, predictable, yet flexible therapeutic framework to improve psycho-social functioning and increase emotional regulation skills.

Considering these elements, we propose a body of therapeutic actions that are focused on the complex interplay among the therapist, the child, and the caregiver in the context of ASD. In this respect, it is important to note that ASD exhibits a widely heterogeneous range of social and cognitive symptoms, which has challenged comprehension and therapeutic approaches. It has been argued that this enormous phenotypic heterogeneity is closely related to a complex multifactorial etiology (112–116), making even more complex the understanding of this neurodevelopmental condition. Importantly to the conceptualization of therapeutic strategies of the social challenges present in ASD is to notice that autism does not necessarily co-occur with intellectual disability. Indeed, it has been described that the comorbidity with intellectual disability is around 33.0% (117).

Furthermore, clinical therapeutic approaches in ASD should consider that even though communication difficulties are present in both verbal and non-verbal individuals with ASD (4), children with ASD with both cognitive and language difficulties exhibit different challenges to address. This is particularly important for both pre-verbal children and children with language or cognitive difficulties. These individual characteristics should be taken into account, irrespective of the age, in order to adapt each clinical strategy to each level of development of each child and their unique challenges. Based on these considerations, our proposal includes two key aspects: (1) the specific developmental obstacles that the child may face, regardless of their age, and (2) the work with parental mentalizing ability to enhance the caregiver's ability to understand the child's communicative challenges.

- a) Knowing the features of autism while keeping the not-knowing stance: a comprehensive understanding of relevant information and scientific knowledge will contribute to debunking myths and misconceptions regarding autism and individuals with ASD. This knowledge holds significant potential in developing self-identity and fostering a deeper sense of self-understanding by:
 - Acknowledging the child's unique experience and co-constructing the diagnosis together—not taking the child's experience for granted.
 - Being curious about their states of mind that arises in situations linked with difficulties in social communication and/or related with their pattern of interests and behaviors.

Considering the presence of restrictive and repetitive behaviors and patterns, it is crucial to assist the child in balancing an “overinterpretation” and an “overlook” of both their experiences and their own characteristics. The exercise of weighing each individual's role in a situation (whichever may be) is challenging. In addition, social interactions are highly complex situations that require predictive abilities, and mentalization is a critical skill needed to interpret, comprehend, and attribute both one's own and other's behaviors (7, 35, 118–120). The presence of a diagnosis can add some confusion to this exercise. It is possible that the child becomes lost in the details of the attributions or confused, unravelling the net of social thoughts and interpretations. “Overinterpretation” and “overlook” pathways can both interfere with the awareness of self-in-relation-to-other and the self-in-relation-to-the-world (95). Considering the child's development stage, this co-constructing experience between the therapist and the child can contribute to restructuring (re-routing) the functional configuration of thinking towards more flexible patterns (95).

- b) Creating mentalizing narratives about events related to social communication difficulties: it may be helpful for children to have someone join them in reflecting on and understanding their thoughts and feelings about their own unique (and in some cases, “socially uncommon”) characteristics of personality, interests or thoughts in a curious rather than critical approach. Exploring autism's meanings constructed from non-mentalizing interactions with others plays a crucial

role in self-identity. For example, health professionals, teachers, classmates, relatives, etc. may give misleading labels, leading to children feeling confused, misunderstood and invalidated about themselves and their experiences.

- c) Working with the autobiographical narrative: creating a life story that incorporates the child's own characteristics, interests and experiences, can strengthen self-esteem, emotional regulation and self-identity. By exploring the impact of cultural perspective regarding autism (e.g., stigma or gender bias) in the autobiographical narrative of the child, self-awareness, re-routing and mentalization are reinforced.
- d) Working with process rather than content: learn and understand in the here-and-now how to cope with and regulate the emotions associated with rigid thinking and/or restrictive interests and behaviors, the presence of comorbidities or symptoms, sensorial interferences, among others.
- e) Working with parents (caregivers) in mentalizing autism: it may be helpful to visit specific episodes where the child-caregiver dyad faces autism-related issues and to mentalize what happened. The parent-therapist work should reflect on the caregiver's thoughts and feelings related to the child's characteristics and behaviors in order to revise the role of the diagnostic on their relationship with their child. For example, a diagnosis may be overused when it is used excessively to explain a child's behavior, disregarding other possible causes and hindering a complete comprehension of the child's inner thoughts and feelings. Also, mentalizing the diagnosis can promote an empathic awareness of when the caregiver's own anxieties lead them to intrusive and controlling behaviors in the relationship with the child. On this point, it is also important to consider that relatives of children with autism might display subclinical symptoms (16), so the parents' self-identity may also be questioned in the psychotherapeutic process, which may add to the challenge of mentalizing their children's experiences, especially if the caregiver has not yet had the opportunity to reflect on their own childhood experiences.
- f) Collaborative work with educational and health systems: therapeutic strategies should include collaborative work with the child's educational system. Communication with the school regarding the child's coping at school and how to support them is crucial to reinforce their self-identity development and facilitate the inclusion of the child in the social context. Additionally, and considering the eventual presence of comorbidities, therapeutic strategies should also include working together with the health system, such as a psychiatrist, neurologist, occupational therapist, and speech therapist, in order to strengthen the interventions and to understand the entire network of meanings in which the child is immersed.

7 Advancing research: practical guidance and prospects

As we mentioned earlier, no research currently supports the effectiveness of a MBT model specifically for children with

ASD. We have argued that a therapeutic approach worthy of empirical testing needs a more robust underlying theory. Here, we have presented some of the current advancements in research in ASD, specifically in the areas of attachment and mentalizing, from a neuroscience perspective. Although there have been some developments in this area, more information is needed to understand how therapeutic strategies aiming to enhance mentalizing might work better for individuals with ASD.

Therefore, to move forward in the research field, it is crucial to conduct further research exploring the neurobiological mechanisms underlying attachment and mentalizing, particularly in the context of ASD.

Once equipped with this knowledge, the subsequent step may involve the design of therapeutic approaches that seamlessly integrate attachment theory, neuroscience, and mentalizing. Such integration has the potential to give rise to tailored therapeutic approaches that take into account the distinctive neurobiological characteristics of individuals with autism, potentially resulting in enhanced care and the facilitation of empirically validated interventions.

Following this, the research should shift its focus to the conduct of empirical studies aimed at evaluating the effectiveness of these therapeutic approaches. These studies may encompass a range of methodologies, including randomized controlled trials, feasibility studies, and secondary analyses. Therapeutic outcomes should include improving social functioning, psychological adjustment, and emotional regulation (in addition to mentalizing abilities). Additionally, achieving these improvements may reduce caregivers' distress, which can be seen as a secondary therapeutic outcome.

To assess these therapeutic outcomes, studies might benefit from the incorporation of measures of general social functioning, social interaction functioning, communication abilities, and the presence of restricted, repetitive, and stereotyped behavior. For example, studies can use validated scales such as The Social Communication Questionnaire (SCQ) (121–123). For the assessment of mentalizing in children, the Reflective Functioning Scale (124, 125) can be used to score mentalizing in the Child Attachment Interview (126), and also in the Parent Development Interview (127) for the assessment of mentalizing in parents. In this context, it may also be beneficial to evaluate social camouflage (for example, using the CAT-Q) (55). Since social camouflage involves using mechanisms to make specific features of personality or behaviors appear “less autistic,” it is possible for an individual with ASD to interpret their actions and personal traits by considering how others might interpret those features. Although this process of interpretations and attributions may be iatrogenic for the individual, it involves a complex mentalization process. It is important to note that the consequences of the use of masking mechanisms of “autistic” traits should be addressed in the therapeutic context, due to the negative impact that it could have on self-esteem and self-identity.

Finally, it is crucial to acknowledge the heterogeneous nature of autism, which is reflected in important individual differences among individuals with ASD. This includes considering factors such as age, gender, language abilities, cognitive performance and cultural backgrounds. It is equally important to consider potential cultural differences that may impact outcomes in different populations and situations when examining the effectiveness of MBT for individuals with autism.

8 Conclusion

In this paper we have shown that comprehensive models to understand the psychological processes of children with ASD have prospects for advancement. Integrating attachment, neuroscience, and mentalizing can help in achieving this goal. While there is room for improvement, there is already a path to follow. The current evidence supports the importance of utilizing neuroscience within psychological therapeutic models like MBT. Our literature review suggests that MBT models are suitable for integrating the latest neuroscientific findings into therapeutic considerations. This approach will provide a secure environment for individuals with autism to address any psychological issues they may be experiencing—particularly those related to mentalizing.

MBT has the potential to be a valuable therapeutic approach for children with ASD. By fostering mentalization, it can help children develop a more nuanced awareness of their thoughts, emotions, and motivations, ultimately leading to increased self-reflection and self-understanding. Furthermore, MBT promotes the development of more flexible thinking patterns, aiding individuals in coping with and regulating their emotions effectively.

We also highlighted the importance of considering the caregiver's role in the therapeutic process. Collaborative work with parents or caregivers can enhance their understanding of the child's unique experiences and challenges, ultimately strengthening the parent–child relationship. This approach extends to educational and health systems, emphasizing the need for cooperation to support the child's social inclusion and overall well-being.

We additionally emphasize the importance of recognizing the diverse needs of pre-verbal children and those with language or cognitive difficulties as a crucial aspect to consider when tailoring effective clinical strategies. It is important to acknowledge individual characteristics and adapt interventions accordingly, regardless of age. Proper therapeutic strategies must take into account the stage of development at which each child is and should be adapted to address the challenges specific to that developmental level. We argue that an appropriate therapeutic approach should not only foster a supportive environment for the child's development but also a caregiver–child relationship.

However, the next step is to conduct studies that evaluate the outcomes of MBT interventions, considering factors such as social functioning, psychological adjustment, emotional regulation, and mentalizing abilities. These studies should be mindful of the heterogeneity within the autism spectrum, accounting for variations in age, gender, language abilities, cognitive performance, and cultural backgrounds.

In summary, we offer a promising avenue for the development of effective therapeutic approaches for children with ASD. By incorporating attachment theory, neuroscience, and mentalization processes, we can work toward providing tailored interventions that address the unique needs of each child. Through empirical research and a collaborative effort involving caregivers, educational systems, and healthcare professionals, we can advance our understanding and application of MBT, ultimately improving the well-being and social integration of children with autism.

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

SC-C: Conceptualization, Writing – original draft, Writing – review & editing. PS-I: Conceptualization, Writing – original draft, Writing – review & editing. KB: Conceptualization, Writing – original draft. AG-C: Writing – original draft. NM: Conceptualization, Writing – review & editing.

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Conflict of interest

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

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EDITED BY

Javier Ortuño Sierra,
University of La Rioja, Spain

REVIEWED BY

Juan Francisco Rodríguez-Testal,
Sevilla University, Spain
Rebeca Aritio,
University of La Rioja, Spain

*CORRESPONDENCE

Neus Barrantes-Vidal
✉ Neus.Barrantes@uab.cat

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I don't understand how I feel: mediating role of impaired self-mentalizing in the relationship between childhood adversity and psychosis spectrum experiences

Jacqueline Nonweiler¹, Pilar Torrecilla¹, Thomas R. Kwapil²,
Sergi Ballespí¹ and Neus Barrantes-Vidal^{1,3*}

¹Departament de Psicologia Clínica i de la Salut, Universitat Autònoma de Barcelona, Barcelona, Spain,

²Department of Psychology, University of Illinois at Urbana-Champaign, Champaign, IL, United States,

³CIBER de Salud Mental, Instituto de Salud Carlos III, Madrid, Spain

Introduction: Childhood adversity is associated with the severity of multiple dimensions of psychosis, but the mechanisms underpinning the close link between the two constructs is unclear. Mentalization may underlie this relationship, as impaired mentalizing is found in various stages of the psychosis continuum. Nonetheless, the differential roles of self- and other-mentalizing in psychosis are not well understood.

Methods: Parallel multiple mediation was conducted for the relationship between a diverse range of childhood adversity types, including intentional and nonintentional harm, and schizotypy (positive, negative, disorganized), psychotic-like experiences (PLE) and paranoia via self-mentalizing (attention to emotions and emotional clarity) and other-mentalizing in $n = 1,156$ nonclinically ascertained young adults.

Results: Significant parallel multiple mediation models were found for all psychotic outcomes except negative schizotypy. The associations between intentionally harmful childhood adversity and psychotic outcomes were significantly mediated by increased attention to emotions for most models and decreased emotional clarity for some models. No significant mediation was found for parental loss. Paternal abuse was only mediated by attention to emotions whereas the effects of maternal abuse were mediated by attention to emotions and emotional clarity. Other-mentalizing only showed mediating effects on one of thirty models tested.

Conclusion: Results highlight the mediating role of impaired self-mentalizing in the association between childhood adversity and psychosis. This is consistent with disturbances of self-concept and self-boundary characterizing, in particular, the positive dimension of psychosis. Maternal versus paternal figures may contribute differentially to the development of mentalizing. These results could inform future preventative interventions, focusing on the development and maintenance of self-mentalizing.

KEYWORDS

mentalization, self-other, schizotypy, parental loss, childhood adversity, paranoia, psychotic-like experiences

1 Introduction

Childhood adversity is associated with the severity of multiple domains of psychosis symptoms (1–4) and predicts later transition to psychosis (5). It encompasses a range of experiences including emotional, physical, and sexual abuse, along with emotional and physical neglect, and other ‘nonintentional’ adverse experiences that may occur during childhood such as the loss of a parent. Nonetheless, mechanisms underpinning the close link between the different types of childhood adversity and psychosis remain unclear. One mechanism that may underlie the relationship between childhood adversity and psychosis that is associated with both factors is mentalization, a multidimensional construct that incorporates the ability to notice and understand internal mental states of the self and others (6, 7). The role of mentalization in severe mental health problems such as personality disorders and psychosis has evolved to indicate that it is a transdiagnostic protective factor (8) that can be fostered across the developmental course to improve social, functional, and therapeutic outcomes and wellbeing.

The link between maltreatment and mentalizing is intuitive, as mentalizing is developed through social interaction in which understanding of complex social cues is mirrored from important attachment figures (e.g., parents) back to the child (9). Through identification of children’s mental states, parents help the child to develop understanding of their own mental states (10). In the case of childhood maltreatment, however, attachment relationships are often disrupted, and children may not be given, could dislike, or may even miss learning this crucial developmental skill entirely by avoiding reflection of the caregiver’s mental states (11, 12). Thus, childhood adversity can result in subsequent impairment or delayed development of the ability to mentalize (13–15), as well as discriminate and understand emotions (16–19).

Expanding the knowledge base of mentalization led to rationales for the role of this construct in the psychosis spectrum (20–23) and to proposed (24) and successful mentalization-based interventions for psychosis (25); however, the specific mechanistic relationships between mentalization and psychosis are not well understood (21, 26). Indeed, a novel area of inquiry is understanding the role of mentalization at sub-clinical levels. From a dimensional perspective, schizotypy is conceptualized as a broad phenotype that encompasses personality traits, subclinical expressions like psychotic-like experiences (PLE), and psychotic disorders (e.g., schizophrenia) (27). Consistent with the multidimensionality of psychosis, schizotypy is composed of at least three dimensions, namely, positive, negative and disorganized schizotypy, that have distinct associations with risk factors and associated symptoms similar to psychotic disorders (27–29). Subclinical schizotypy is consistently associated with PLE and psychosis symptoms, and the development of schizophrenia-spectrum disorders (30–32). Studying subclinical manifestations of psychosis helps to avoid the confounding effects associated with clinical status (e.g., symptom severity, medication effects, stigma, comorbidity, etc.), and thus enhances the analysis of etiological factors and mechanisms involved in the developmental course and trajectory of psychosis risk and resilience (33–35).

Research supports poor mentalization, usually operationalized using Theory of Mind tasks to evaluate understanding of others’ mental states, as a risk factor in several stages of the psychosis

spectrum. Mentalizing impairments are found in earlier stages of the psychosis spectrum at attenuated levels (36). They are present in help-seeking groups who experience temporary psychotic states (37–41), and in community samples reporting PLE (42, 43). More severe expressions of the psychosis continuum, such as schizoaffective disorder (44) and, in particular, disorganized schizophrenia, are also associated with impaired mentalization (44, 45). Furthermore, mentalization has been shown to mediate the relationship between several risk factors and PLE (46), psychosis symptoms (47, 48), and psychotic disorders (49).

Studies examining the differential relationships of impaired mentalization with psychosis dimensions are scant and clear conclusions cannot be drawn. In clinical psychosis, the negative symptom dimension in general (50) and social dysfunction in particular (51, 52) have been associated with poor mentalization, but hypotheses that mentalization is related to the positive dimension are less often supported by evidence (48, 51). Nonetheless, this could be due to operationalization of mentalization typically focused on understanding others’ mental states, but not understanding of one’s own (i.e., self mentalizing), which may be more closely related to the self-identity and self-boundary disturbances that characterize the positive dimension (53, 54). Although associations between positive symptoms and mentalization have been found between sub-threshold hallucinations/delusions and poor performance on mentalizing tasks (42, 55, 56), contradicting evidence exists (48, 51, 57). Studies examining associations between subclinical disorganized schizotypy and mentalization have been limited and the results are equivocal; to our knowledge, only one study examines this relationship, which found that only social anxiety (negative dimension) and odd speech (disorganized dimension) were associated with impaired mentalization, which mediated the relationship between schizotypy and thought problems, an indicator of disorganized outcomes (58).

Whereas associations between aberrant mentalization and different levels of psychosis expression are established, to date, the great majority of mentalization research has considered the construct as a whole, despite mentalization being understood to operate under four primary dimensions; self-other; automatic-controlled, cognitive-affective, and internal-external (59). Recently, a call for increased focus on the dimensions of mentalizing and their distinct roles and significance in various spectral disorders has been posed (59). Research by our group evaluating self- and other-mentalization as mediators and moderators in mental health symptomatology indicates that self-mentalization is a particularly relevant factor (60–62). Although the role of the self has been a focus of psychosis spectrum research for decades (63–68), a paucity of psychosis research to date has focused on self-mentalization (69).

1.1 The present study

In an aim to integrate both the understudied disorganized schizotypy dimension and the dearth of self-mentalization evidence particularly in subclinical schizotypy, this study will explore the relationship of the self-other polarity of mentalization with the three schizotypy dimensions. First, we aim to explore the associations of self- and other-mentalization with positive, negative, and disorganized schizotypy in a nonclinically ascertained sample. Secondly, we will

examine, for the first time, the possible mediating role of self- and other-mentalization in the relationship between a wide range of childhood adversity experiences with schizotypy, PLE, and paranoia. To our knowledge, only one study to date has examined the mediating role of mentalization in the relationship between childhood maltreatment and psychosis, albeit in a clinical sample, which revealed that mentalizing only mediated the relationship between childhood maltreatment and negative symptoms (48). Of note, different forms of intentional (e.g., maltreatment) and nonintentional (e.g., parental loss) adversity experiences, as well as the distinction between paternal versus maternal abuse during childhood, will be examined.

We predicted that positive, negative, and disorganized schizotypy would be associated with impaired self-mentalization. That is, individuals with high schizotypy would notice and understand their own emotions, thoughts, and feelings more poorly. While some evidence suggests that high positive and negative schizotypy dimensions are linked to deficits in emotional awareness and regulation (70), given the lack of clear grounding on the differential contributions of self-mentalizing factors versus other-mentalizing in schizotypy, and that most mentalization research in psychosis has only focused on other-mentalization, the study is exploratory regarding self-mentalization. For other-mentalization, we expected that the associations with schizotypy dimensions in this nonclinical sample would be aligned with previous research (i.e., negatively associated with other-mentalization) (36, 44, 45, 47, 71, 72), albeit at an attenuated level. Next, we expected that self- and other-mentalization would mediate the association between childhood maltreatment and all schizotypy dimensions, PLE and paranoia. Finally, following previous results found in epidemiological studies (73), prospective cohorts (74) and the group's previous findings using experience sampling methodology (75), we hypothesized that the relationship between childhood adversity and psychotic outcomes via mentalizing would be more pronounced for those types of adversity characterized by an 'intention to harm' as compared to accidental adversity such as loss of a parent.

2 Methods

2.1 Participants

Participants were recruited at a university using posters and an email distributed to all students and university staff inviting them to take part in a broader study about environmental sensitivity and mental health (approved by the Ethics Committee of the Universitat Autònoma de Barcelona, ref. 5426). Participants were excluded if they were under 18 years old or had grandparents of non-Spanish origin, an exclusion criterion placed for the context of the broader study for genetic analysis purposes. After removing $n = 47$ participants of non-Spanish origin, $n = 38$ participants with careless responses according to the Infrequency Scale (76), and data from $n = 7$ dropout participants, responses from the original sample of $n = 1,246$ were reduced to $n = 1,156$ ($M_{age} = 23.29$, $SD = 6.49$; range 18–62 years; 76.2% female). Of the final sample, $n = 545$ (47.1%) of participants had previously or were currently undergoing psychological treatment, and $n = 204$ (17.6%) had previously or were currently undergoing pharmacological treatment related to mental health.

2.2 Procedure

After obtaining informed consent, participants were administered an online questionnaire via Qualtrics survey software that included all materials of the present study. Participants were able to re-enter the questionnaire to complete it in multiple sessions if desired with a maximum allotted time for completion of 3 days.

2.3 Materials

2.3.1 Childhood adversity

The Childhood Trauma Questionnaire-Brief (CTQ-B) (77) is a widely used self-reported measure with 28 items assessing the severity of sexual, physical and emotional abuse and physical and emotional neglect before the age of 18 years old. To reduce factors for childhood adversity, subscale totals for physical abuse, emotional abuse, physical neglect and emotional neglect were reduced to a single component for emotional/physical adversity. A detailed description of this procedure can be referenced in the 'Data Analysis' section.

The Childhood Care and Abuse Questionnaire-Brief (CECA.Q) (78–80) assesses aspects of childhood adversity that are not covered in the CTQ-B (e.g., parental loss, role reversal). It includes subscales for maternal antipathy, paternal antipathy, maternal psychological abuse, paternal psychological abuse, parental loss, role reversal and support. All CECA.Q subscales were included in the present study except the support subscale, which does not measure adversity.

2.3.2 Mentalization

The recently developed Mentalization Scale (Ment-S) (81) was administered as it is the only mentalization questionnaire with a distinct factor for other-mentalization. The 10 items of the other-mentalization subscale were assessed and a total sum score was employed for the study. The Trait Meta-Mood Scale-24 (TMMS) (82) was administered to evaluate self-mentalization, as it offers two 8-item factors to further classify emotional self-knowledge: attention to emotions (8 items) and emotional clarity (8 items).

2.3.3 Schizotypy, positive PLE and paranoid traits

The Multidimensional Schizotypy Scale-Brief (MSS-B) (83) is a 38-item self-report measure designed to assess the positive (MSS Positive; 13 items), negative (MSS Negative; 13 items) and disorganized (MSS Disorganized; 12 items) schizotypy dimensions. Evidence shows that this scale overcomes limitations of other schizotypy measures such as an unclear conceptual framework, outdated items, ethnic/sex differences, or exclusion of the disorganized dimension. The scale has good internal reliability and construct validity (28, 83).

PLE were measured using the frequency score of the positive subscale (20 items) of the Community Assessment of Psychic Experiences (CAPE) (84). Paranoia personality traits were assessed with the ideas of reference (9 items) and suspiciousness (8 items) subscales of the Schizotypal Personality Questionnaire (85).

2.4 Data analysis

Descriptive statistics, internal consistencies and correlational analysis were conducted for all variables of interest (Table 1). Note that

TABLE 1 Descriptive statistics.

	α	Mean/SD	Min	Max	Skewness	Kurtosis
TMMS attention	0.89	27.84/7.32	9	40	−0.28	−0.78
TMMS clarity	0.93	25.84/7.48	9	40	0.04	−0.83
Ment-S other mentalizing	0.79	40.55/5.03	20	50	−0.50	0.28
Childhood adversity (CTQ)						
Emotional abuse	0.83	8.88/4.30	5	25	1.40	1.65
Physical abuse	0.73	5.64/1.63	5	20	4.10	22.03
Emotional neglect	0.86	10.44/4.26	5	25	0.63	−0.29
Physical neglect	0.46	6.26/1.92	5	19	2.24	6.89
Childhood adversity (CECA.Q)						
Parental loss	0.27 ^a	0.22/0.49	0	3	0.07	4.56
Psychological abuse (father) (<i>n</i> = 996) ^b	0.82	2.08/3.20	0	16	1.93	3.45
Antipathy (father) (<i>n</i> = 996) ^b	0.74	2.31/2.81	0	12	1.39	1.14
Psychological abuse (mother) (<i>n</i> = 1,105) ^b	0.78	3.14/3.64	0	17	1.27	1.00
Antipathy (mother) (<i>n</i> = 1,105) ^b	0.81	1.72/2.77	0	12	1.78	2.40
Paternal abuse (<i>n</i> = 996) ^b	− ^c	0.00/0.94	−0.74	3.74	1.69	2.32
Maternal abuse (<i>n</i> = 1,105) ^b	− ^c	0.00/0.94	−0.86	3.58	1.52	1.70
Role reversal	0.79	11.64/7.09	0	32	0.53	−0.34
CAPE positive PLE (<i>n</i> = 1,111) ^b	0.83	30.31/6.37	20	58	0.93	0.82
MSS positive schizotypy	0.76	2.76/2.68	0	12	0.95	0.21
MSS negative schizotypy	0.70	2.12/2.15	0	12	1.56	2.89
MSS disorganized schizotypy (<i>n</i> = 1,115) ^b	0.88	3.56/3.56	0	12	0.79	−0.59
SPQ suspiciousness	0.76	3.29/2.26	0	8	0.35	−0.80
SPQ ideas of reference	0.74	3.10/2.33	0	9	0.44	−0.64

n = 1,156 unless otherwise noted.
TMMS, Trait Meta-Mood Scale; Ment-S, Mentalization Scale; CTQ, Childhood Trauma Questionnaire; CECA.Q, Childhood Care and Abuse Questionnaire; CAPE, Community Assessment of Psychic Experiences; MSS, Multidimensional Schizotypy Scale; SPQ, Schizotypal Personality Questionnaire.
^aNote that this subscale includes four items and parental losses do not necessarily covary, so internal consistency is expected to be low.
^bSee the methods section for explanation of lower *n* for these variables.
^cThese are the means of standardized *z*-scores of the subscales for psychological abuse (α = 0.82, 0.78 for father and mother, respectively) and antipathy (α = 0.74, 0.81 for father and mother, respectively).

some subscales differ slightly in their number of respondents. For CAPE Positive PLE and MSS Disorganized Schizotypy, missing data is due to a technical error in the data collection software. For CECA.Q psychological abuse and antipathy, reduced responses are reflective of the number of respondents who only had a paternal or a maternal figure, but not both. Sample size for CECA.Q antipathy is in all cases smaller compared to psychological abuse because one item of this subscale was only responded by participants who have siblings.

To reduce factors for childhood trauma (to 5 predictor variables) and the number of mediation models, two *a priori* analyses were conducted using trauma measures. Given the low-endorsement rates of sexual abuse and that primarily modest-to-high correlations (0.26–0.65) were observed between CTQ non-sexual abuse subscales (emotional abuse, emotional neglect, physical abuse, and physical

neglect), and following Sheinbaum et al. (86), principal components analysis (PCA) was conducted to produce a single emotional/physical adversity factor. This PCA yielded one component that explained 59% of the variance. Additionally, due to high correlations (r = 0.75 for father and r = 0.76 for mother, p < 0.001 for both) rather than exploring CECA.Q psychological abuse and CECA.Q antipathy separately for maternal and paternal figures, we elected to combine standardized (*z*) scores for available data on psychological abuse and antipathy into one measure of adversity for each parent: CECA.Q maternal abuse and CECA.Q paternal abuse.

Moderate-strong correlations (0.47–0.57) were observed between mentalization domains, and thus the three mentalizing factors—attention to emotions, emotional clarity and other-mentalizing—were simultaneously entered into parallel multiple mediation models for all

outcome variables. A visual depiction of the *a-priori* mediation models tested can be seen in Figure 1. Parallel multiple mediation analyses were conducted using Hayes (87) PROCESS Macro Model 4 for assessing indirect pathways. Compared to the use of several single mediation analyses, parallel mediation accounts for the variance of other mediators in the model and is well-suited to inter-correlated mediators, as it offers a more precise estimate of indirect effects. This technique has been repeatedly demonstrated as useful in psychosis research (86, 88, 89).

Mediations of the associations of trauma and psychosis outcomes via mentalization are demonstrated by significant indirect coefficients with lower-and upper-bound confidence intervals that do not include zero. Six mediation models were tested for each of the nonclinical psychosis outcomes (positive, negative and disorganized schizotypy, positive PLE, suspiciousness, and ideas of reference) and with each of the five trauma indicators (emotional/physical adversity, maternal abuse, paternal abuse, role reversal, and parental loss) as the independent variable and the three mentalizing domains (attention to emotions, emotional clarity, and other-mentalizing) entered simultaneously as mediators, resulting in a total of 30 mediation models analyzed. Analyses were limited to these *a priori* hypothesized models. Bootstrapping with 10,000 resamples was conducted to generate bias-corrected confidence intervals.

3 Results

Descriptive statistics for all variables are presented in Table 1 and Pearson correlations are in Table 2. Despite small effect sizes, direction

of associations as displayed in Table 2 indicates a pattern of positive associations for attention to emotions with schizotypy, PLE and suspiciousness, but negative associations with emotional clarity. Meanwhile, other-mentalizing was had small to moderate sized associations with negative schizotypy and disorganized schizotypy, but was not associated with positive schizotypy, PLE or paranoia. Moderate or near-moderate associations were observed for negative schizotypy with all mentalization factors and for disorganized schizotypy with emotional clarity.

3.1 Mediation analyses

After entering the three mentalization factors as parallel mediators in the models, increased attention to emotions was a significant partial mediator for most models including intentional forms of adversity (i.e., emotional/physical adversity, maternal and paternal abuse, and role reversal) and decreased emotional clarity for some models. All significant mediations were partial. Note that the general direction of effects for attention to emotions and emotional clarity in the mediation models is consistent with correlational analysis; that is, higher scores for attention to emotions is associated with higher outcomes, while lower clarity is associated with higher outcomes. Other-mentalizing was only a significant mediator in one model that examined the relationship between role reversal and negative schizotypy.

For the model using the combined emotional/physical adversity component, parameter estimates of the direct, total, and indirect effects can be found in Table 3. Indirect effects for increased attention to emotions in this model were significant for positive schizotypy,

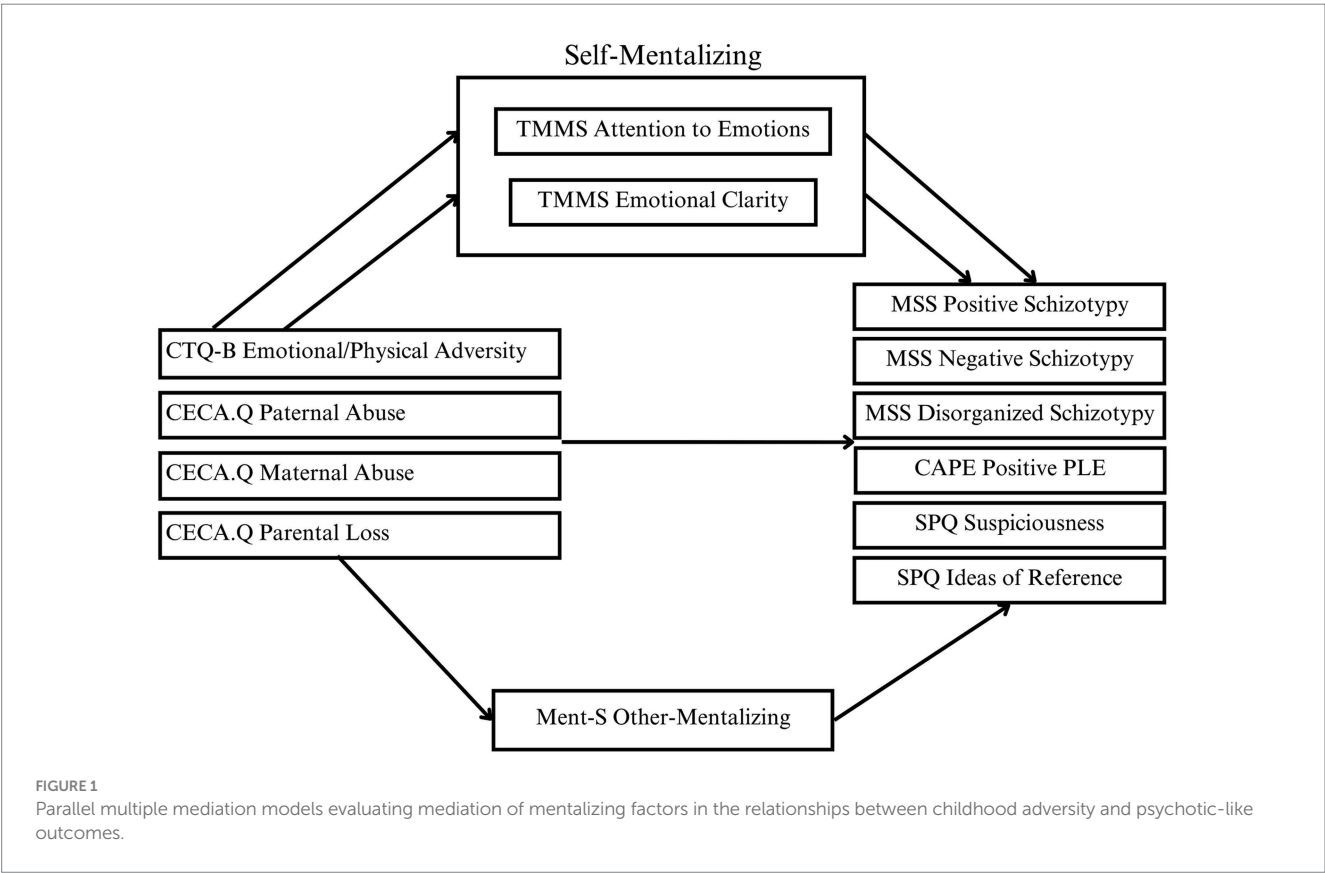


TABLE 2 Pearson correlations for study variables ($n = 1,156$).

	TMMS clarity	Ment-S other-mentalizing	CTQ emotional/physical adversity	CECA.Q maternal abuse	CECA.Q paternal abuse	CECA.Q parental loss	CECA.Q role reversal	MSS positive schizotypy	MSS negative schizotypy	MSS disorganized schizotypy	CAPE positive PLE	SPQ suspiciousness	SPQ ideas of reference
TMMS attention	0.53***	0.47***	0.08*	0.06*	0.12***	0.03	0.08**	0.16***	−0.26***	0.02	0.13***	0.10**	0.14***
TMMS clarity		0.56***	−0.07*	−0.07*	−0.03	−0.01	0.01	−0.06	−0.26***	−0.37***	−0.13***	−0.19***	−0.17***
Ment-S other-mentalizing			−0.00	0.05	0.03	0.03	0.12**	0.07*	−0.29***	−0.17***	0.01	−0.04	−0.01
CTQ emotional/physical adversity				0.56***	0.57***	0.23***	0.41**	0.20***	0.22***	0.31***	0.24***	0.29***	0.16***
CECA.Q maternal abuse					0.35***	0.08**	0.34**	0.21***	0.11***	0.29***	0.23***	0.26***	0.20***
CECA.Q paternal abuse						0.10**	0.24**	0.14***	0.09**	0.27***	0.22***	0.24***	0.17***
CECA.Q parental loss							0.24**	−0.01	0.08**	0.06	0.03	0.06*	−0.01
CECA.Q role reversal								0.19**	0.08**	0.17**	0.18**	0.16**	0.13**
MSS positive schizotypy									0.10**	0.38***	0.74***	0.44***	0.59***
MSS negative schizotypy										0.31***	0.18***	0.22***	0.11***
MSS disorganized schizotypy											0.48***	0.54***	0.43***
CAPE positive PLE												0.56***	0.65***
SPQ suspiciousness													0.57***

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Medium effect sizes in bold, large effect sizes in bold and italics. TMMS, Trait Meta-Mood Scale; Ment-S, Mentalization Scale; CTQ, Childhood Trauma Questionnaire; CECA.Q, Childhood Care and Abuse Questionnaire; MSS, Multidimensional Schizotypy Scale; CAPE, Community Assessment of Psychic Experiences; SPQ, Schizotypal Personality Questionnaire.

TABLE 3 Parallel multiple mediation analyses examining indirect effects of CTQ motional/physical adversity on nonclinical psychotic phenomena via self-mentalizing factors (1) attention to emotions and (2) clarity of emotions, and (3) other-mentalizing.

	Unstandardized parameter estimate	SE	95% Bias-corrected confidence interval	
			Lower	Upper
Positive schizotypy				
Total effect	0.5357*	0.0772	0.3842	0.6872
Direct effect	0.4511*	0.0763	0.3014	0.6008
Indirect total effect	0.0846*	0.0201	0.0477	0.1268
Indirect effect via attention to emotions	0.0456*	0.0203	0.0086	0.0879
Indirect effect via emotional clarity	0.0393*	0.0210	0.0002	0.0834
Indirect effect via other-mentalizing	−0.0004	0.0077	−0.0159	0.0154
Negative schizotypy				
Total effect	0.4678*	0.0618	0.3466	0.5889
Direct effect	0.4866*	0.0588	0.3712	0.6021
Indirect total effect	−0.0189	0.0255	−0.0682	0.0324
Indirect effect via attention to emotions	−0.0274*	0.0130	−0.0559	−0.0047
Indirect effect via emotional clarity	0.0079	0.0077	−0.0041	0.0256
Indirect effect via other-mentalizing	0.0006	0.0118	−0.0223	0.0252
Disorganized schizotypy				
Total effect	1.1175*	0.1016	0.9181	1.3169
Direct effect	0.9270*	0.0927	0.7451	1.1089
Indirect total effect	0.1905	0.0492	0.0957	0.2871
Indirect effect via attention to emotions	0.0752	0.0329	0.0128	0.1424
Indirect effect via emotional clarity	0.1146	0.0598	−0.0036	0.2304
Indirect effect via other-mentalizing	0.0008	0.0057	−0.0102	0.0151
Positive PLE				
Total effect	1.5530*	0.1858	1.1885	1.9175
Direct effect	1.3257*	0.1824	0.9679	1.6835
Indirect total effect	0.2273*	0.0526	0.1308	0.3369
Indirect effect via attention to emotions	0.1069*	0.0501	0.0136	0.2112
Indirect effect via emotional clarity	0.1242*	0.0621	0.0043	0.2498
Indirect effect via other-mentalizing	−0.0038	0.0137	−0.0344	0.0236
Suspiciousness				
Total effect	0.6535*	0.0638	0.5283	0.7787
Direct effect	0.5575*	0.0618	0.4363	0.6786
Indirect total effect	0.0960*	0.0203	0.0576	0.1381
Indirect effect via attention to emotions	0.0437*	0.0187	0.0079	0.0820
Indirect effect via emotional clarity	0.0524*	0.0264	0.0012	0.1050
Indirect effect via other-mentalizing	−0.0001	0.0034	−0.0073	0.0077
Ideas of reference				
Total effect	0.3628*	0.0678	0.2297	0.4958
Direct effect	0.2520*	0.0652	0.1240	0.3800
Indirect total effect	0.1108*	0.0231	0.0667	0.1574
Indirect effect via attention to emotions	0.0550*	0.0237	0.0100	0.1026
Indirect effect via emotional clarity	0.0559	0.0290	−0.0012	0.1136
Indirect effect via other-mentalizing	−0.0002	0.0041	−0.0090	0.0084

*95% CI does not include zero.

negative schizotypy, disorganized schizotypy, PLE, suspiciousness and ideas of reference. There was a significant indirect effect for emotional/physical adversity via emotional clarity on positive schizotypy, PLE and suspiciousness. Indirect effects of emotional clarity on positive schizotypy, disorganized schizotypy and positive PLE were such that trauma was associated with lower emotional clarity which is, in turn, associated with higher scores on psychotic outcomes; however, the effect of emotional/physical adversity on suspiciousness via emotional clarity was the opposite, such that lower emotional clarity was related to decreased suspiciousness. Outcomes that were significant for both attention to emotions and emotional clarity in this model reflect relatively equivalent effect sizes for the two specific indirect effects, with the exception of disorganized schizotypy which was driven predominantly by emotional clarity.

In the model for paternal abuse (Table 4), there was a significant indirect effect of paternal abuse on all outcomes via higher attention to emotions. In the case of negative schizotypy, the indirect total effect of all mediators combined was nonsignificant, indicating that there was no parallel mediation, but that attention to emotions remained a significant mediator of the association between paternal abuse and negative schizotypy after controlling for the other mediators (emotional clarity and other-mentalizing). Unlike other outcomes, the indirect effect of increased attention to emotions for this model was related to lower scores of negative schizotypy. No significant indirect effects were found for emotional clarity or other-mentalizing in the relationships between paternal abuse and psychosis outcomes. Mediating effects of mentalization on all outcomes had relatively small effect sizes but were most pronounced for positive PLE and disorganized schizotypy, which are roughly double those of other outcomes.

The model evaluating the multiple parallel mediation model between maternal abuse and psychosis outcomes with mentalization factors as mediators is presented in Table 5. There was a significant indirect effect of maternal abuse on psychosis outcomes via greater attention to emotions for positive schizotypy, disorganized schizotypy, PLE, suspiciousness and ideas of reference. In the case of negative schizotypy, maternal abuse was associated with higher attention, but decreased negative schizotypy. Contrary to results for paternal abuse, significant indirect effects of decreased emotional clarity were also found for maternal abuse on most outcomes: positive schizotypy, disorganized schizotypy, suspiciousness and ideas of reference. All outcomes had a significant indirect total effect (Table 5) indicating multiple parallel mediation, except for negative schizotypy, which indicates that its only significant mediator, attention to emotions, has an indirect effect on negative schizotypy even after controlling for effects of other mediators. Although emotional clarity did not reach significance as a mediator for paternal abuse, in general, the effect sizes for specific indirect effects of attention to emotions between maternal abuse and outcomes are roughly half of those for paternal abuse.

There was a significant indirect effect of role reversal on all indicators of schizotypy, positive PLE and paranoia via attention to emotions, which were most pronounced for the positive dimension (Table 6). Significant indirect effects were found via emotional clarity for suspiciousness, positive schizotypy, and ideas of reference. The only significant indirect effect of other-mentalizing was found in this model for the association between role reversal and negative schizotypy. Effect sizes in this model are attenuated compared to other models.

Parental loss was not related to any psychosis outcomes via mentalizing (Table 7). The only significant results were found for

negative schizotypy and suspiciousness. There was a significant effect of parental loss on negative schizotypy after controlling for all mediators and a significant total effect of parental loss on negative schizotypy, along with a significant total effect of parental loss on suspiciousness.

4 Discussion

The present study explored, for the first time, the relationship between the self and other dimensions of mentalization with schizotypy, and extended these findings by examining the mediating role of self- and other-mentalization in the associations between a wide range of childhood adversities, including intentional (i.e., emotional/physical adversity, maternal and paternal abuse, and role reversal) and nonintentional (i.e., parental loss) harm, and psychotic-like outcomes.

Overall, associations of mentalizing domains with the schizotypy dimensions were consistent with previous research in other mental health phenotypes, such that attention to emotions is positively associated with impairment and increased symptoms, while emotional clarity is consistently supported as a protective factor, or, in other words, one that attenuates impairment (61, 62, 90, 91). The positive schizotypy dimension was directly and more strongly correlated with attention to emotions than with emotional clarity, which is consistent with findings that positive schizotypy is associated with increased attention to emotions in general, lower clarity (90) and lower emotional recognition (92). Interestingly, the disorganized dimension had a nonsignificant correlation with attention to emotions, but a moderate inverse association with emotional clarity, suggesting that independent of how much people with disorganized schizotypy attend to their thoughts, they struggle to understand them and thus, lack clarity. One study found that clarity of self-concept is more transient in clinical psychosis and demonstrated that decreased clarity was associated with both positive and negative psychosis symptoms, however disorganized symptoms were not evaluated (63). Recent studies have suggested that emotional dysregulation is a core component of the disorganized schizotypy dimension (93).

Overall, a pattern of significant parallel multiple mediation was observed for all models including intentional, but not nonintentional, forms of adversity and all psychotic-like traits and experiences except negative schizotypy. Specific indirect effects revealed that childhood adversity is related to increased levels of psychotic-like features through increased attention and secondarily through decreased clarity, but that other-mentalizing is not a relevant factor in these relationships. As the singular exception, the model examining the impact of role reversal showed a significant parallel multiple mediating effect on almost all psychotic-like features, including negative but not disorganized schizotypy, and the association between role reversal and negative schizotypy was significantly mediated by other-mentalizing. Decreased emotional clarity and increased attention to emotions were significant mediators in the associations between maternal abuse and nearly all psychosis spectrum outcomes (except negative schizotypy), whereas for paternal abuse, significant indirect effects were only found for attention to emotions. There was no significant indirect effect of parental loss on psychotic-like features via mentalizing.

Most of the parallel mediation models were not significant for negative schizotypy; however, specific indirect effects suggest that increased attention to emotions was inversely associated with negative

TABLE 4 Parallel multiple mediation analyses examining indirect effects of CECA.Q paternal abuse on nonclinical psychotic phenomena via self-mentalizing factors (1) attention to emotions and (2) clarity of emotions, and (3) other-mentalizing.

	Unstandardized parameter estimate	SE	95% Bias-corrected confidence interval	
			Lower	Upper
Positive schizotypy				
Total effect	0.3868*	0.0877	0.2148	0.5588
Direct effect	0.2936*	0.0868	0.1232	0.4640
Indirect total effect	0.0932*	0.0229	0.0522	0.1414
Indirect effect via attention to emotions	0.0743*	0.0245	0.0308	0.1265
Indirect effect via emotional clarity	0.0148	0.0211	−0.0272	0.0585
Indirect effect via other-mentalizing	0.0041	0.0064	−0.0068	0.0192
Negative schizotypy				
Total effect	0.2122*	0.0714	0.0721	0.3524
Direct effect	0.2609*	0.0680	0.1275	0.3942
Indirect total effect	−0.0486	0.0292	−0.1062	0.0079
Indirect effect via attention to emotions	−0.0417*	0.0166	−0.0776	−0.0135
Indirect effect via emotional clarity	0.0041	0.0071	−0.0080	0.0208
Indirect effect via other-mentalizing	−0.0110	0.0135	−0.0391	0.0150
Disorganized schizotypy				
Total effect	1.0229*	0.1173	0.7928	1.2530
Direct effect	0.8631*	0.1062	0.6547	1.0715
Indirect total effect	0.1598*	0.0570	0.0488	0.2735
Indirect effect via attention to emotions	0.1327*	0.0385	0.0612	0.2123
Indirect effect via emotional clarity	0.0318	0.0661	−0.0984	0.1646
Indirect effect via other-mentalizing	−0.0047	0.0083	−0.0235	0.0107
Positive PLE				
Total effect	1.4384*	0.2106	1.0250	1.8518
Direct effect	1.2034*	0.2069	0.7973	1.6095
Indirect total effect	0.2350*	0.0630	0.1200	0.3668
Indirect effect via attention to emotions	0.1954*	0.0615	0.0883	0.3274
Indirect effect via emotional clarity	0.0333	0.0687	−0.1048	0.1685
Indirect effect via other-mentalizing	0.0063	0.0137	−0.0166	0.0406
Suspiciousness				
Total effect	0.5659*	0.0738	0.4210	0.7107
Direct effect	0.4743*	0.0715	0.3340	0.6147
Indirect total effect	0.0915*	0.0239	0.0457	0.1399
Indirect effect via attention to emotions	0.0682*	0.0220	0.0289	0.1146
Indirect effect via emotional clarity	0.0210	0.0291	−0.0364	0.0781
Indirect effect via other-mentalizing	0.0024	0.0045	−0.0049	0.0134
Ideas of reference				
Total effect	0.4308*	0.0783	0.2772	0.5844
Direct effect	0.3154*	0.0752	0.1679	0.4629
Indirect total effect	0.1154*	0.0278	0.0626	0.1725
Indirect effect via attention to emotions	0.0899*	0.0273	0.0159	0.0583
Indirect effect via emotional clarity	0.0229	0.0318	−0.0392	0.0853
Indirect effect via other-mentalizing	0.0026	0.0047	−0.0051	0.0142

*95% CI does not include zero.

TABLE 5 Parallel multiple mediation analyses examining indirect effects of standardized scores of CECA.Q maternal abuse on nonclinical psychotic phenomena via self-mentalizing factors (1) attention to emotions and (2) clarity of emotions, and (3) other-mentalizing.

	Unstandardized parameter estimate	SE	95% Bias-corrected confidence interval	
			Lower	Upper
Positive schizotypy				
Total effect	0.5849*	0.0838	0.4205	0.7493
Direct effect	0.4934*	0.0831	0.3303	0.6565
Indirect total effect	0.0915*	0.0233	0.0494	0.1410
Indirect effect via attention to emotions	0.0390*	0.0204	0.0018	0.0823
Indirect effect via emotional clarity	0.0422*	0.0198	0.0058	0.0838
Indirect effect via other-mentalizing	0.0104	0.0090	−0.0022	0.0317
Negative schizotypy				
Total effect	0.2511*	0.0676	0.1184	0.3837
Direct effect	0.2818*	0.0645	0.1552	0.4085
Indirect total effect	−0.0308	0.0272	−0.0847	0.0220
Indirect effect via attention to emotions	−0.0220*	0.0124	−0.0491	−0.0008
Indirect effect via emotional clarity	0.0116	0.0091	−0.0020	0.0332
Indirect effect via other-mentalizing	−0.0204	0.0138	−0.0489	0.0049
Disorganized schizotypy				
Total effect	1.1017*	0.1105	0.8849	1.3184
Direct effect	0.9122*	0.1004	0.7151	1.1092
Indirect total effect	0.1895*	0.0565	0.0809	0.3017
Indirect effect via attention to emotions	0.0752*	0.0350	0.0086	0.1470
Indirect effect via emotional clarity	0.1245*	0.0601	0.0096	0.2439
Indirect effect via other-mentalizing	−0.0102	0.0095	−0.0323	0.0046
Positive PLE				
Total effect	1.5109*	0.2007	1.1172	1.9047
Direct effect	1.2644*	0.1977	0.8765	1.6523
Indirect total effect	0.2465*	0.0613	0.1348	0.3746
Indirect effect via attention to emotions	0.1020*	0.0513	0.0069	0.2098
Indirect effect via emotional clarity	0.1281*	0.0610	0.0142	0.2530
Indirect effect via other-mentalizing	0.0164	0.0181	−0.0093	0.0617
Suspiciousness				
Total effect	0.6373*	0.0700	0.4999	0.7747
Direct effect	0.5377*	0.0680	0.4043	0.6712
Indirect total effect	0.0996*	0.0236	0.0557	0.1477
Indirect effect via attention to emotions	0.0389*	0.0199	0.0012	0.0797
Indirect effect via emotional clarity	0.0581*	0.0259	0.0082	0.1099
Indirect effect via other-mentalizing	0.0026	0.0052	−0.0057	0.0155
Ideas of reference				
Total effect	0.4916*	0.0736	0.3471	0.6361
Direct effect	0.3761*	0.0711	0.2366	0.5157
Indirect total effect	0.1155*	0.0266	0.0646	0.1686
Indirect effect via attention to emotions	0.0476*	0.0238	0.0019	0.0961
Indirect effect via emotional clarity	0.0624*	0.0281	0.0074	0.1194
Indirect effect via other-mentalizing	0.0054	0.0062	−0.0013	0.0082

*95% CI does not include zero.

TABLE 6 Parallel multiple mediation analyses examining indirect effects of CECA.Q Role Reversal on nonclinical psychotic phenomena via self-mentalizing factors (1) attention to emotions and (2) clarity of emotions, and (3) other-mentalizing.

	Unstandardized parameter estimate (value of <i>p</i>)	SE	95% Bias-corrected confidence interval	
			Lower	Upper
Positive schizotypy				
Total effect	0.0719*	0.0109	0.0505	0.0933
Direct effect	0.0630*	0.0108	0.0419	0.0841
Indirect total effect	0.0088*	0.0031	0.0030	0.0152
Indirect effect via attention to emotions	0.0069*	0.0029	0.0015	0.0130
Indirect effect via emotional clarity	−0.0010*	0.0027	−0.0063	0.0042
Indirect effect via other-mentalizing	0.0029	0.0018	−0.0002	0.0068
Negative schizotypy				
Total effect	0.0244*	0.0089	0.0070	0.0419
Direct effect	0.0350*	0.0085	0.0183	0.0516
Indirect total effect	−0.0105*	0.0035	−0.0176	−0.0039
Indirect effect via attention to emotions	−0.0032*	0.0016	−0.0067	−0.0006
Indirect effect via emotional clarity	−0.0003	0.0009	−0.0022	0.0014
Indirect effect via other-mentalizing	−0.0071*	0.0024	−0.0123	−0.0029
Disorganized schizotypy				
Total effect	0.0865*	0.0148	0.0574	0.1155
Direct effect	0.0805*	0.0134	0.0542	0.1067
Indirect total effect	0.0060	0.0076	−0.0090	0.0209
Indirect effect via attention to emotions	0.0114*	0.0048	0.0020	0.0212
Indirect effect via emotional clarity	−0.0016	0.0080	−0.0172	0.0143
Indirect effect via other-mentalizing	−0.0038	0.0024	−0.0092	0.0003
Positive psychotic-like experiences				
Total effect	0.1635*	0.0265	0.1115	0.2155
Direct effect	0.1438*	0.0259	0.0930	0.1947
Indirect total effect	0.0196*	0.0084	0.0038	0.0364
Indirect effect via attention to emotions	0.0162*	0.0073	0.0028	0.0312
Indirect effect via emotional clarity	−0.0001	0.0081	−0.0161	0.0158
Indirect effect via other-mentalizing	0.0035	0.0040	−0.0039	0.0121
Suspiciousness				
Total effect	0.0521*	0.0093	0.0339	0.0703
Direct effect	0.0458*	0.0089	0.0283	0.0633
Indirect total effect	0.0063*	0.0034	−0.0005	0.0131
Indirect effect via attention to emotions	0.0069*	0.0029	0.0015	0.0128
Indirect effect via emotional clarity	−0.0013*	0.0036	−0.0086	0.0057
Indirect effect via other-mentalizing	0.0007	0.0014	−0.0021	0.0037
Ideas of reference				
Total effect	0.0424*	0.0096	0.0235	0.0612
Direct effect	0.0344*	0.0092	0.0164	0.0525
Indirect total effect	0.0079*	0.0037	0.0007	0.0152
Indirect effect via attention to emotions	0.0080*	0.0032	0.0019	0.0144
Indirect effect via emotional clarity	−0.0014	0.0037	−0.0087	0.0059
Indirect effect via other-mentalizing	0.0013	0.0015	−0.0015	0.0044

*95% CI does not include zero.

TABLE 7 Parallel multiple mediation analyses examining indirect effects of CECA.Q parental loss on nonclinical psychotic phenomena via self-mentalizing factors (1) attention to emotions and (2) clarity of emotions, and (3) other-mentalizing.

	Unstandardized parameter estimate (value of <i>p</i>)	SE	95% Bias-corrected confidence interval	
			Lower	Upper
Positive schizotypy				
Total effect	−0.0551	0.1609	−0.3708	0.2606
Direct effect	−0.1231	0.1564	−0.4300	0.1839
Indirect total effect	0.0680	0.0362	−0.0008	0.1407
Indirect effect via attention to emotions	0.0346	0.0390	−0.0421	0.1125
Indirect effect via emotional clarity	0.0183	0.0410	−0.0612	0.1019
Indirect effect via other-mentalizing	0.0150	0.0167	−0.0151	0.0528
Negative schizotypy				
Total effect	0.3594*	0.1287	0.1068	0.6120
Direct effect	0.3929*	0.1218	0.1538	0.6319
Indirect total effect	−0.0335	0.0448	−0.1204	0.0556
Indirect effect via attention to emotions	−0.0149	0.0175	−0.0516	0.0184
Indirect effect via emotional clarity	0.0051	0.0126	−0.0183	0.0341
Indirect effect via other-mentalizing	−0.0238	0.0244	−0.0750	0.0216
Disorganized schizotypy				
Total effect	0.4118	0.2181	−0.0161	0.8398
Direct effect	0.3161	0.1955	−0.0674	0.6966
Indirect total effect	0.0957	0.0961	−0.0883	0.2845
Indirect effect via attention to emotions	0.0425	0.0656	−0.0887	0.1738
Indirect effect via emotional clarity	0.0631	0.1160	−0.1624	0.2951
Indirect effect via other-mentalizing	−0.0099	0.0142	−0.0433	0.0126
Positive psychotic-like experiences				
Total effect	0.3829	0.3903	−0.3829	1.1487
Direct effect	0.2316	0.3768	−0.5078	0.9709
Indirect total effect	0.1513	0.0967	−0.0352	0.3425
Indirect effect via attention to emotions	0.0616	0.0998	−0.1322	0.2598
Indirect effect via emotional clarity	0.0650	0.1229	−0.1761	0.3087
Indirect effect via other-mentalizing	0.0247	0.0313	−0.0246	0.1018
Suspiciousness				
Total effect	0.2798*	0.1358	0.0133	0.5464
Direct effect	0.2167	0.1290	−0.0364	0.4698
Indirect total effect	0.0632	0.0409	−0.0158	0.1456
Indirect effect via attention to emotions	0.0399	0.0384	−0.0408	0.1102
Indirect effect via emotional clarity	0.0239	0.0531	−0.0815	0.1305
Indirect effect via other-mentalizing	0.0054	0.0087	−0.0077	0.0279
Ideas of Reference				
Total effect	−0.0487	0.1402	−0.3237	0.2262
Direct effect	−0.1194	0.1327	−0.3797	0.1409
Indirect total effect	0.0706	0.0421	−0.0110	0.1542
Indirect effect via attention to emotions	0.0394	0.0437	−0.0476	0.1236
Indirect effect via emotional clarity	0.0242	0.0536	−0.0799	0.1328
Indirect effect via other-mentalizing	0.0071	0.0101	−0.0080	0.0067

*95% CI does not include zero.

schizotypy, consistent with the well-established finding that negative schizotypy is associated with diminished emotional expression and experience (32, 94). This dimension is characterized by alogia, anergia, avolition, anhedonia, flat affect, and a general disinterest in other people and the world as a whole (27). In general, comparisons with antecedent, similar research are difficult to make as only one other study has evaluated such relationships (albeit in a clinical sample) (25), however the models are incomparable as the previous paper followed mediation requirements outlined by Baron & Kenny (95), which supposes that all variables must be associated to conduct mediation and thus indirect effects were only evaluated (and supported) for negative symptoms. Conversely, our study followed the process outlined by Hayes (96), which does not require empirical associations, but instead, theoretical support for proposed indirect associations. Thus, several additional models were conducted that revealed, we believe, thought-provoking results.

4.1 Intentional versus nonintentional childhood adversity

To our knowledge, no previous research has evaluated whether there are differential effects of mentalization on the relationship between intentional versus general, unintentional childhood adversity and psychotic outcomes, and particularly not in a nonclinically ascertained sample. Results revealed that only intentionally harmful childhood adversity (i.e., maltreatment and neglect) impacted mentalization functioning, compared to nonintentional childhood adversity as indexed by parental loss. The measure used for parental loss in this study assesses the loss of one or both parent figures before age 18 due to death, separation, or abandonment. Such losses are certainly impactful to those who suffer them, as they almost inevitably result in a pivotal destabilization of family, extensive emotional consequences, and often essential and monumental family restructuring (97). Despite the repercussions of a central loss such as that of a parent figure, no significant effects were found on psychotic-like features via mentalizing, and parental loss did not affect most outcomes, even after controlling for mentalization levels. This could indicate that mentalization is negatively affected more by central but harmful attachment figures than potential consequences to attachment relationships following parental loss such as (1) a lack of attachment figures, or (2) more 'distant' attachment figures, perhaps outside of the family, that develop epistemic trust with a child after they suffer parental loss. Indeed, some literature suggests that adjustment difficulties following bereavement are not consistently related to grieving but are instead accounted for by inadequate care following parental loss (98). Such a finding emphasizes the importance of a parent's role as a supportive, understanding, and responsible adult figure, rather than a dangerous and untrustworthy one (99).

4.2 Differential effects of maternal and paternal abuse

A non-hypothesized finding that merits further study was the differential effects of maternal versus paternal abuse on self-mentalizing factors. Results suggest that increased attention in the wake of childhood adversity is more impactful in the case of paternal

abuse, as coefficients for the mediating role of attention to emotions are roughly double the same coefficients for maternal abuse for all outcomes. Nonetheless, in the case of maternal abuse the additional mediating effect of impaired clarity is present for all outcomes excepting negative schizotypy. Despite gender-role stereotypes whereby maternal figures are responsible for child rearing and paternal figures provide resources for the family outside the home being challenged in recent years, the mean age of our sample suggests that most maternal figures may still be the principal caregiver. Considering that mentalization is usually developed through relationships with said primary caregiver(s) (9), mentalization could be severely impacted if the mother-child relationship is damaged. For example, a 'good enough mother' conceptualized by Winnicott (100) and later expanded upon through attachment relationships by Bowlby (101) is suggested to be necessary for adequate child development, particularly of socioemotional abilities such as mentalization. If, for example, the maternal figure is the primary caregiver, but instead of providing security, stability and fostering epistemic trust with the child, fails to play this role and breaks epistemic trust by engaging in abusive or neglectful behavior, the child's mentalization skills may be more highly impaired than they would in a father-child relationship. This notion is supported in a recent study which demonstrates that maternal psychological states are more impactful on children's adult clinical psychosis status than paternal psychological states (102). In cases where the father is the primary caregiver, perhaps this dynamic could be expected to be reversed, however, extant literature does not shed light on this question.

4.3 Know thyself: the role of the self

An overwhelming pattern of significant findings for self- but not other-mentalizing was revealed in analyses of this study. Extant literature suggests that adaptive emotional strategies are helpful in preventing psychosis, and that emotional clarity has been shown to be 'protective' from the development of other mental health disorders (103). This, combined with evidence of (especially self-) mentalization as a transdiagnostic protective factor (8, 60, 62, 91), suggests that maintaining good self-mentalizing in the wake of adverse events could potentially result in better outcomes. The implication of an impaired understanding of the self in psychosis is well-accepted, with results suggesting that disturbances in understanding and identifying with the self may underpin self-disorders which hyper-aggregate in psychotic spectrum disorders (104, 105). Perhaps the ability to self-mentalize, developed during the formative years, could impede significant impairments in the development of self-identity, protecting from psychotic outcomes. Although the precise role of self-mentalization is not well understood, results that partially support our findings have been found in various stages of the psychosis spectrum; for example in self-concept clarity (63), misattributions of self-referential representations (106, 107), and even after traumatic life events which importantly interact with the self to affect psychosis proneness (108). Evidence supporting good mentalizing as a buffer for the impact of persecutory delusions (positive dimension) on functioning (109) further suggests that mentalizing can be protective, but, when impaired conveys risk.

Until the call for evaluation of distinct mentalization polarities (59), mentalization was evaluated solely as a general construct,

without exploring differential contributions of self- vs. other- polarities of mentalization. Nonetheless, positive symptoms are highly implicated in self-identity and self-boundary (53, 54) and thus measures of self-mentalization may more precisely capture characteristics of positive schizotypy than other-mentalization. Indeed, contemporary cognition research suggests that understanding of the 'self' forms the stem of understanding the 'other' (110). Overall, this evidence combined with the consideration that psychotic symptoms are viewed as a 'disturbance to the self', and that self-mentalizing gives rise to self-organization, emotional regulation, and sense of agency, might account for the fact that that psychosis spectrum impairments are substantially associated with self-mentalizing. Of note, self-mentalizing not only impacted positive psychotic-like features, but also the disorganized schizotypy dimension. Potentially, impaired self-mentalizing (i.e., increased attention but decreased clarity, in alignment with our results) after the exposure to childhood adversity negatively impacts the ability to organize and express thoughts and behavior, that is, resulting in a manifestation of disorganized schizotypal features.

Overall, our lack of significant findings for other-mentalizing could be due to higher discrimination of the mentalization construct in the current study, whereby self- and other-mentalizing are separated, revealing that self-mentalizing drives associations. In fact, only one model revealed an indirect effect via other-mentalizing, in which childhood experiences of role reversal decreased negative schizotypy through increased other-mentalizing. To date, mentalization has been operationalized primarily using various Theory of Mind tasks, which overall evaluate other-mentalizing. These studies support (other-) mentalizing as a mediator of childhood neglect and psychosis symptoms (47), of trauma/expressed emotion and schizotypal symptoms (72) and have even found that (other-) mentalizing fully mediates the association between social perception difficulties and negative symptoms (71). Although role reversal and its impact on other-mentalizing has not been examined previously, one may speculate that assuming parental responsibilities and providing emotional support to the parent from a young age might subserve the development of an increased capacity to think about and understand other's emotions and needs (i.e., other-mentalizing) and this, in turn, may increase one's curiosity and openness to the world (i.e., diminished negative schizotypy).

4.4 Strengths and limitations

This study benefits from (1) its novelty in exploring self- and other-mentalization in a combined study, (2) exploring a wide range of childhood adversity types, including distinctions between intentional and nonintentional harm, (3) a unique examination of the role of maternal versus paternal abuse, and (4) the assessment of psychosis spectrum outcomes in an extensive sample of nonclinical young adults. While assessing impairment at the clinical level is helpful, it may not be early enough to develop interventions and understanding that can ultimately prevent severe functional impairment, particularly in the case of psychosis (110). Schizotypy offers a unifying construct for the psychosis spectrum that provides benefits for understanding the role of mechanisms such as mentalization in the development of disorders (26, 35). More so, acknowledging the

multidimensionality of the construct allows to unravel the distinct etiological and developmental pathways that specifically lead to positive, negative or disorganized manifestations (27). Thus, the study of schizotypy features in a nonclinically ascertained sample may, in fact, be a chief strength of the study.

Unfortunately, the cross-sectional nature of our study design does not allow for causal associations to be evaluated, although hypotheses were made based on extant literature and theoretical grounding which guided subsequent analysis; thus, the present findings should be replicated in longitudinal studies. A small amount of missing data due an error in survey administration software resulted in few items being removed from certain measures for some participants. Albeit slight, this limitation should be noted. Small effect sizes are also found throughout the study, which are often frowned upon, however, discovering significant results aligned with theoretical hypotheses in a nonclinical sample suggests that, further along the developmental trajectory for psychotic disorders when differences are more glaring, effect sizes would be more pronounced. Nonetheless, future research could evaluate a similar model in clinical psychosis expressions at a clinical level of psychosis expression.

4.5 Conclusions, implications, and future directions

The present findings assessing self- and other-mentalizing separately but simultaneously offered what could be new understanding of the self-other polarities in the psychosis spectrum: self-mentalizing may be the driver behind evidence of impaired mentalization, particularly in those who have experienced intentionally harmful childhood adversity. Mentalization-based treatment has already shown to be effective in reducing psychosis symptoms (111), but these findings further illuminate awareness of which specific mentalization dimensions should be targeted. Indeed, this offers compelling implications for interventions and psychoeducation across the psychosis spectrum. Psychoeducation and interventions focused on self-mentalization should be prioritized particularly in psychosis' earliest expressions, that is, schizotypy, as interventions that target mentalization in psychosis suggest that early intervention results in better outcomes (111) and contemporary economics demonstrates that it is more beneficial to invest resources early in development in order to capture the full potential of interventions (112, 113).

Data availability statement

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

Ethics statement

The studies involving humans were approved by Ethics Committee of the Universitat Autònoma de Barcelona (ref. 5426). The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

JN: Conceptualization, Data curation, Formal analysis, Writing – original draft. PT: Data curation, Formal analysis, Writing – review & editing. TK: Writing – review & editing, Methodology. SB: Writing – review & editing, Conceptualization, Supervision. NB-V: Conceptualization, Supervision, Writing – review & editing, Data curation, Funding acquisition, Project administration, Resources.

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Conflict of interest

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

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Armida Mucci,
University of Campania Luigi Vanvitelli, Italy
Anna-Lena Bröcker,
Charité University Medicine Berlin, Germany

*CORRESPONDENCE

Cristiana Montemagni
✉ cristiana.montemagni@unito.it

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Conceptual disorganization as a mediating variable between visual learning and metacognition in schizophrenia

Cristiana Montemagni^{1,2*}, Claudio Brasso^{1,2}, Silvio Bellino^{1,2},
Paola Bozzatello^{1,2}, Vincenzo Villari^{1,2} and Paola Rocca^{1,2}

¹Dipartimento di Neuroscienze "Rita Levi Montalcini", Università Degli Studi di Torino, Turin, Italy,

²Dipartimento di Neuroscienze e Salute Mentale, A.O.U. Città Della Salute e Della Scienza di Torino, Turin, Italy

Objectives: The aim of this study was to evaluate the relative contributions of visual learning and conceptual disorganization to specific metacognitive domains in a sample of outpatients with stable schizophrenia.

Methods: A total of 92 consecutive outpatients with stable schizophrenia were recruited in a cross-sectional study. We analyzed the data with five path analyses based on multiple regressions to analyze the specific effect of visual learning on metacognitive capacity and metacognitive domains and the possible mediating role of conceptual disorganization.

Results: We found that (i) visual learning was negatively correlated to metacognitive capacity and its domains on the one hand and conceptual disorganization on the other hand; (ii) conceptual disorganization was negatively associated with metacognition and its domains; and (iii) when the mediation effect was considered, conceptual disorganization fully mediated the relationship between visual learning and mastery, whereas it served as a partial mediator of the effect of visual learning on the other metacognition domains, i.e., self-reflectivity, understanding others' mind, and decentration.

Conclusion: These results delineate an articulated panorama of relations between different dimensions of metacognition, visual learning, and conceptual disorganization. Therefore, studies unable to distinguish between different components of metacognition fail to bring out the possibly varying links between neurocognition, disorganization, and metacognition.

KEYWORDS

path analysis, mediation, visual learning, metacognition, mastery, conceptual disorganization, schizophrenia

1 Introduction

Metacognition (MC) is a complex and multidimensional construct that includes a wide spectrum of processes involving semi-independent abilities or cognitive acts that contain primarily reflexive qualities (1), ranging from the discrete ones, in which an individual identifies a particular emotion or a precise thought, to the more synthetic ones, in which a person integrates separate thoughts and produces holistic representations of oneself or others (2, 3). In

doing so, a person is not only passively acquiring information but also building a coherent narrative and developing meaning from their experiences (4–6).

The “integrative model” proposed by Hasson-Ohayon et al. (7) describes MC as a spectrum of activities ranging from the awareness of and reflection upon discrete and specific mental experiences to the ability to grasp reciprocal relationships between thoughts, emotions, and underlying intentions, integrating and synthesizing them into something broader, i.e., a coherent and usable representation of experience and a complex and integrated sense of themselves and others over time and their place in their community rather than fragmented one, in order to find ways to live a more full and satisfying life.

MC impairment has been known in schizophrenia (SZ) for a long time (8), but only recently has MC received major attention in SZ research. The reason for this greater interest stems from the main role of MC in developing a consistent subjective sense of personal identity (9, 10) and interpersonal networks (11–13).

Moreover, there is evidence of conceptual links between MC and other related but independent constructs, such as neurocognition (NC) and social cognition (SC) (14–16), which are more focused on the level of exactness of perceptions and representations, while in contrast, MC focuses on psychological experience synthesis into mental representations with a large variety in terms of complexity, adaptiveness, and flexibility (17).

Furthermore, even if a number of studies suggest that reasonable neurocognitive functioning is a necessary but not sufficient prerequisite to intact SC and MC in SZ (16, 18, 19), the relationships between NC, SC, and MC have not yet been fully elucidated and could be influenced or moderated by additional factors.

Disorganized symptoms, which reflect a characteristic underlying dimension close to the core of the illness, have proven to be a moderator between NC and both SC and MC, given the influence they have on the effectiveness of synthesis of discrete information into an organized whole, a critical factor of both SC and MC (20). The meta-analysis by Arnon-Ribenfield et al. (21) has shown a large inverse relationship between MC and disorganized symptoms, which have proven to have a stronger association with NC than the one they have with positive or negative symptoms (22–24).

However, when testing relationships between disorganized symptoms, NC, and MC, it is crucial to define, on the one hand, the variables (i.e., the focus on disorganized clusters or specific disorganized symptoms and the focus on fundamental vs. secondary aspects of MC), and on the other hand, the methodology for defining and assessing the variables, as it varies across different studies, which makes it difficult to compare results.

The disorganization factor [defined according to the consensus five-factor solution proposed by Wallwork et al. (25)] comprises three items of the Positive and Negative Symptom Scale (PANSS), namely, “conceptual disorganization” (CD), “difficulty in abstract thinking,” and “poor attention,” the last two presenting a possible overlap with NC impairment, whereas CD has the highest loading in the disorganization factor (26). CD consists of incoherent sequences of ideas, which results in verbosity, and atypical features such as circumstantial, illogical or tangential speech, or weakened goal of thinking and peculiar use of words and sentence constructions (27–30). Myers et al. (31) have found that only patients with formal

thought disorder (FDT), as defined by PANSS CD score of ≥ 3 , showed reduced metacognitive self-reflectivity. However, the authors did not assess NC.

A recent study from our group (32) using a network analysis to explore the relative centrality and inter-relationships between symptoms, NC, SC, MC, and real-world functioning in early and late phase SZ revealed two key findings: first, disorganized symptoms considered as a whole are a critical piece connecting NC symptoms and MC exclusively in the late-SZ group (duration of illness >5 years); second, in the whole sample, regardless of illness duration, visual learning connected NC domains with disorganization, avolition, and MC.

1.1 The current study

The purpose of the current study, which involves secondary data analysis from our previous study (32), was to analyze how visual learning and CD influence specific MC domains in a sample of outpatients with stable SZ.

Even though there is no unique operational definition of MC, we decided to use the Metacognitive Assessment Scale (MAS) (1), which proved to have high levels of validity and reliability and can be considered the most updated and comprehensive definition of MC (2, 4, 33, 34). Moreover, we decided to analyze not only metacognitive capacity and the total score, but also the four MC subscales: *Understanding One's Own Mind*, *Understanding Others' Mind*, *Decentration*, and *Mastery*.

Inspired by previous scientific literature, the current study has the following objectives: (1) to explore the ability of visual learning (independent variable) to predict the MC total score and the four subscales (dependent or outcome variables); (2) to explore the ability of CD to predict the outcome variables; and (3) to examine whether visual learning was able to predict the outcome variables in the presence of CD.

Given the mediating role of CD between visual learning and the outcome variables, the expectation of the study was that both visual learning and CD would interact in influencing the outcome variables.

2 Methods

2.1 Subjects

Patients with SZ according to DSM-5 criteria (35) were recruited at the Struttura Complessa Psichiatria Universitaria, Dipartimento di Neuroscienze e Salute Mentale, Azienda Ospedaliero-Universitaria “Città della Salute e della Scienza di Torino,” Turin, Italy, between January 2020 and March 2022.

2.1.1 Inclusion criteria

Inclusion criteria were as follows: age between 18 and 65 years, duration of illness of ≥ 5 years, and SZ in a stable phase, i.e., no psychiatric hospitalization and/or treatment modifications for at least 3 months.

Two expert clinicians (CB and CM) confirmed the SZ diagnosis by means of the Structured Clinical Interview for DSM-5, Research Version (36).

2.1.2 Exclusion criteria

Exclusion criteria were as follows: a current diagnosis other than SZ, substance abuse or dependence in the past 6 months, and anamnesis positive for a severe head injury (coma ≥ 48 h). The presence of psychiatric comorbidity and substance use disorders (SUD) was assessed using the SCID-5-TR.

2.1.3 Participants

In total, 92 consecutive outpatients meeting the inclusion and exclusion criteria were recruited in the study. All patients were treated with standard care provided in community mental health centers in Italy.

All study participants provided written informed consent prior to participation.

The study complies with the Declaration of Helsinki and was conducted according to ethics committee approval (protocol number: 0057625).

2.2 Assessment

2.2.1 Clinical assessment

The PANSS (26) was used to assess the severity of positive symptoms and disorganization. The PANSS contains 30 items rated on 1 (absent) to 7 (extreme) scales. It is designed to obtain a measure of positive (items P1–P7) and negative (items N1–N7) symptoms in patients with SZ, as well as a measure of general psychopathology (items G1–G16). We adopted the five-factor solution elaborated by Wallwork et al. (25), which comprises a positive factor (items P1, P3, P5, and G9), a negative factor (items N1, N2, N3, N4, N6, and G7), a disorganized/concrete (cognitive) factor (items P2, N5, and G11), an excited factor (items P4, P7, G8, and G14), and a depressed factor (items G2, G3, and G6), including a total of 20 items.

The Italian version of the Brief Negative Symptoms Scale (BNSS) (37) was adopted to evaluate negative symptoms. The BNSS has 13 items, organized into six subscales: anhedonia, distress, asociality, avolition, blunted affect, and alogia. For all items in the six subscales, higher scores are associated with greater impairment/presence of symptoms, with the exception of the distress item, for which the highest score is associated with the absence of negative emotions. A scale total score (ranging from 0 to 78) is calculated by summing the 13 individual items; subscale scores are calculated by summing the individual items within each subscale. The distress subscale has only one item, which quantifies the absence of distress, but this subscale is otherwise treated in the same manner as the other subscales. For the present study, we considered two factors, i.e., “avolition,” which refers to anhedonia, asociality, and experiential deficit, and “expressive deficit,” comprised of blunted affect and alogia (38).

Conceptual disorganization was assessed through an item on the PANSS (item P2) that reflects loose associations, disrupted goal-directed sequencing, and circumstantiality (39).

Depressive symptoms were evaluated using the Calgary Depression Scale for Schizophrenia (CDSS) (40).

The CDSS includes nine items (depression, hopelessness, self-depreciation, guilty ideas of reference, pathological guilt, morning depression, early wakening, suicide, and observed depression), each rated from 0 (absent) to 3 (severe). Ratings >6 on the total score indicate clinically significant depression.

2.2.2 Cognitive and metacognitive assessment

The Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) Consensus Cognitive Battery (MCCB) (41, 42) was used to assess NC. The MATRICS was designed to measure NC in SZ; it includes 10 subtests across seven NC domains (processing speed, attention, working memory, verbal learning, visual learning, reasoning and problem solving, and social cognition). SC, in terms of emotion processing, was evaluated using the managing emotion section of the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT), also included in the MCCB. The results of the MCCB were expressed as T-scores standardized for age and gender. Higher scores indicate better performance.

Metacognition was evaluated by means of the Metacognition Assessment Scale (MAS) (1), a clinician-rated scale that contains four metacognitive domains, namely, *Understanding One's Own Mind* or *Self Reflectivity* (or the comprehension of one's own mental states); *Understanding Others' Mind* (or the comprehension of other individuals' mental states); *Decentration* (or the ability to see the world as existing with others having independent motives); and *Mastery* (or the ability to use one's mental states to foster effective action strategies in order to face cognitive tasks or cope with psychological distress) (43). The full presence of a function was assigned with a score of “1” and the partial presence of a function with a score of “0.5.” Higher scores relating to a subscale or the total scale reflect higher metacognitive abilities.

2.3 Procedures

Two experienced psychiatrists (CB and CM) conducted a semistructured interview to collect demographical and clinical data (age, gender, years of education, and age at illness onset) and administered PANSS, BNSS, CDSS, and MAS. To reduce inter-rater variability, first they were trained to administer according to common standards; second, at the beginning of the study, they performed independent ratings of the interviews that they conducted with the first 20 patients participating in the study. Afterward, they discussed each interview to reach consensual ratings. The agreement (within one point) between the raters varied from 80 to 95% for all PANSS items; from 80 to 90% for all BNSS items; from 85 to 95% for all CDSS items; and was 80% for the MAS total score. To maintain inter-rater reliability across the entire study period, the two raters participated every 3 months in an in-depth review of a random sample of interviews with the last author (PR).

2.4 Data analysis

Statistical analysis was performed using SPSS Statistics (IBM) 28.0 with a critical value of p of 0.05.

Mean \pm standard deviation (SD) and percentages were calculated.

To test out the specific effect of visual learning on MC and the potential mediating role of CD, we analyzed the data with path-analytic techniques based on multiple regression (44).

Each path analysis was carried out in two steps: first, we tested the direct effect of visual learning on the MAS total score or their four domains; then, we tested the potential mediation of visual learning by CD (five path analytic models). In all the analyses, we statistically controlled the effects of age, schooling, gender, disease duration,

positive, negative, and cognitive symptoms via multiple regression (stepwise method). To account for multiple comparisons, a Bonferroni correction was applied, and a significance level of $\alpha=0.008$ ($0.05/6=0.008$) was used for all analyses.

To test the significance of the mediation effects, we performed the Sobel test for indirect effects.

3 Results

Of the 92 outpatients in our sample, there were 59 male individuals (64.1%), the mean age (mean \pm SD) was 43.5 ± 10.2 years, the mean level of education (mean \pm SD) was 11.2 ± 3.3 years, and the duration of illness (mean \pm SD) was 20.0 ± 9.7 years. Medication protocols were as follows: unmedicated: $n=3$ (3.2%); treatment with atypical antipsychotics: $n=78$ (84.7%); and treatment with typical antipsychotics: $n=11$ (11.9%). The psychopathological and cognitive characteristics of our sample are reported in Table 1.

Control variables alone explained approximately 34.1% of variance in MAS total scores (adjusted $R^2=0.341$, $p \leq 0.001$); 32.8% of variance in MAS Self-reflectivity scores (adjusted $R^2=0.328$, $p \leq 0.001$); 30.1% of variance in MAS Understanding Others' Mind (adjusted $R^2=0.301$, $p \leq 0.001$); 26.8% of variance in MAS Mastery (adjusted $R^2=0.268$, $p=0.023$); 10.3% of variance in MAS Decentration (adjusted $R^2=0.103$, $p=0.066$).

Five path analytic models were specified, and the path coefficients were examined. The results of path analyses are given in Tables 2–6 and Figures 1–5. The effect of visual learning was significant, showing that higher levels of visual learning predicted higher MAS total, MAS Self-reflectivity, MAS Understanding Others' Mind, MAS Mastery, and MAS Decentration scores, after controlling for age, schooling, gender, disease duration, positive, negative and cognitive symptoms (total effect presented in Tables 2–6; see Figures 1A–5A). While there was some evidence of mediation of visual learning by differences in CD in MAS total score, MAS Self-reflectivity, MAS Understanding Others' Mind, and MAS Decentration, the mediation was only partial. The indirect path coefficient of visual learning remained significant after inclusion of CD, while it decreased somewhat in magnitude (beta from 0.504 to 0.387 for MAS Total; beta from 0.486 to 0.385 for MAS Self-reflectivity; beta from 0.601 to 0.512 for MAS Understanding Others' Mind; and beta from 0.277 to 0.224 for MAS Decentration; indirect path in Tables 2–4, 6; see Figures 2B, 3B, 4B, 5B).

However, when the mediation effect of CD was taken into account, visual learning was no longer a significant predictor of MAS Mastery on its own, although the sign of the coefficient remained the same (indirect effect in Table 5; see also Figure 5B).

In addition, Sobel tests for mediation showed that CD significantly mediated the relationship between visual learning and MAS Self-reflectivity ($Z=1.83$; $p=0.03$); MAS Understanding Others' Mind ($Z=2.04$; $p=0.02$); MAS Mastery ($Z=1.88$; $p=0.02$); and MAS Decentration ($Z=1.91$; $p=0.02$). The Sobel test for the MAS total score did not reach statistical significance.

4 Discussion

The purpose of the present study was to investigate the relationship between visual learning and CD in predicting MC within a

TABLE 1 Socio-demographic, psychopathological, cognitive, functioning, and treatment characteristics of the sample.

	(N = 92)
Gender, <i>males</i>	59 (64.1)
Age, <i>years</i>	43.5 (10.2)
Education, <i>years</i>	11.2 (3.3)
Duration of illness, <i>years</i>	20.0 (9.7)
PANSS—Positive	9.4 (4.1)
P2	3.0 (1.5)
BNSS—Avolition	21.3 (7.9)
BNSS—Expressive deficit	14.7 (7.5)
CDSS—total score	3.7 (4.3)
MCCB—Speed of processing	24.5 (8.3)
MCCB—Working memory	28.9 (10.7)
MCCB—Reasoning and problem solving	33.6 (6.8)
MCCB—Attention	29.1 (10.7)
MCCB—Verbal learning	32.3 (8.3)
MCCB—Visual learning	35.3 (14.3)
MSCEIT—Managing emotions section	30.4 (10.6)
Treatment with atypical antipsychotics	78.0 (84.7%)
Treatment with typical antipsychotics	11.0 (12.0%)
Not in treatment with antipsychotics	3.0 (3.3%)
MAS—Total score	12.5 (6.8)
MAS—Self-reflectivity	5.4 (2.8)
MAS—Understanding others' minds	3.6 (2.1)
MAS—Mastery	2.7 (2.4)
MAS—Decentration	0.8 (1.2)

DOI, Duration of illness; PANSS, Positive and negative syndrome scale; BNSS, Brief negative symptom scale; CDSS, Calgary depression scale for schizophrenia; MCCB, Measurement and Treatment Research to Improve Cognition in Schizophrenia (MATRICS) Consensus Cognitive Battery; MSCEIT, Mayer-Salovey-Caruso Emotional Intelligence Test; MAS, Metacognition Assessment.

TABLE 2 Summary of total, direct, indirect paths (standardized coefficients) MAS Total.

	beta	SE	p
A. Total path			
Visual learning—MAS total	0.504	0.045	<0.001
B. Indirect path			
Visual learning—MAS total	0.387	0.041	<0.001
Direct path			
Visual learning—P2	−0.283	0.011	0.007
P2—MAS total	−0.514	0.419	<0.001

MAS, Metacognition assessment scale; P2, Conceptual disorganization.

demographic sample of middle-aged outpatients in late-phase SZ who are in a stable phase of their illness. Three key findings emerged.

First, as expected, it was discovered that outpatients with greater levels of visual learning also had stronger metacognitive capacities, including Self-reflectivity, Understanding Others' Mind, Decentration, and Mastery.

TABLE 3 Summary of total, direct, indirect paths (standardized coefficients) MAS self-reflectivity.

	beta	SE	p
A. Total path			
Visual learning—MAS self-reflectivity	0.486	0.018	<0.001
B. Indirect path			
Visual learning—MAS self-reflectivity	0.385	0.018	<0.001
Direct path			
Visual learning—P2	−0.283	0.011	0.007
P2—MAS self-reflectivity	−0.464	0.178	<0.001

MAS, Metacognition assessment scale; P2, Conceptual disorganization.

TABLE 4 Summary of total, direct, indirect paths (standardized coefficients) MAS understanding others' minds.

	beta	SE	p
A. Total path			
Visual learning—MAS understanding others' minds	0.601	0.013	0.001
B. Indirect path			
Visual learning—MAS understanding others' minds	0.512	0.012	0.001
Direct path			
Visual learning—P2	−0.283	0.011	0.007
P2—MAS understanding others' minds	−0.448	0.122	<0.001

MAS, Metacognition assessment scale; P2, Conceptual disorganization.

TABLE 5 Summary of total, direct, indirect paths (standardized coefficients) MAS mastery.

	beta	SE	p
A. Total path			
Visual learning—MAS mastery	0.215	0.017	0.043
B. Indirect path			
Visual learning—MAS mastery	0.101	0.017	0.321
Direct path			
Visual learning—P2	−0.283	0.011	0.007
P2—MAS mastery	−0.425	0.153	<0.001

MAS, Metacognition assessment scale; P2, Conceptual disorganization.

TABLE 6 Summary of total, direct, indirect paths (standardized coefficients) MAS decentration.

	beta	SE	p
A. Total path			
Visual learning—MAS decentration	0.277	0.009	0.009
B. Indirect path			
Visual learning—MAS decentration	0.224	0.009	0.038
Direct path			
Visual learning—P2	−0.283	0.011	0.007
P2—MAS decentration	−0.236	0.082	0.023

MAS, Metacognition assessment scale; P2, Conceptual disorganization.

Even if it has been hypothesized that MC, symptoms, and NC influence one another bidirectionally (23, 45, 46), visual learning has been found to predict conversion to psychosis among clinical high-risk (CHR) patients (47, 48) and has been shown to be more central than other NC domains in network models investigating the relationships between psychopathology, NC, MC, and real-world functioning in SZ (7, 25). Indeed, given that visual learning measures the ability to locate and remember things in space, it could affect individuals' ability to think about themselves and others and to understand how events are influenced by one another. This could compromise the ability to assess the accuracy of our internal perceptual state and the integrated sense of our perceptual environment, that depends on whether we can predict upcoming sensory information in integrative manner. Thus MC representing a postperceptual decision-making process (7, 49). This is in line with the hypothesis that impaired formation of visual percepts can lead to problems in higher-level processing and with theoretically based models of pathways to functional outcome in SZ starting from microlevel early visual perception (50).

Second, as for CD, our study yielded two main outcomes: first, we found a negative association between visual learning and CD; second, greater severity of CD was negatively associated with increasing levels of MC abilities. It is hard to make comparisons among studies because earlier works analyzed mostly disorganized symptoms instead of CD, a crucial item in the definition of disorganization. We chose to focus on CD because it has been correlated more than other aspects with NC dysfunction (51) and because it resembles Bleuler's concept of "loosening of associations," i.e., the central mechanism underlying disturbances in thinking, motivation, and affective expression. However, our results obviously replicate the findings of the previous study of our group (32), which found that disorganization and visual learning not only exhibited high centrality indices, but also seemed to be consistent with a meta-analysis (23) reporting that disorganization was associated with all NC domains. Generally, individuals with NC impairments express a more disorganized speech, making it difficult for listeners to discern the essential information needed to bind the speaker's ideas.

As for the relationship between CD and MC and their subscales, we found that, as thinking becomes more disordered and less goal-directed, patients display a reduced ability to think about their own thinking or engage in self-reflective processes, i.e., MC decreases. Our results are consistent with the findings of the meta-analysis by Arnon-Ribenfield (21), which reported strong negative associations between MAS subscales and PANSS factors. Following that meta-analysis, 18 further studies (52–69) have been published: the sample size ranges from 6 (66) to 324 patients (63); only four studies included NC measures (57, 58, 61, 68); and most of them adopted a selection of different MC scales, capturing different MC types and aspects that could have differential relationships with each of the different disorganized symptoms.

However, when we analyze research literature that focuses on a single item of disorganization instead of all symptoms, the effect size depends on the level of the symptoms in the sample, i.e., becoming higher at higher levels of disorganized speech (20, 31).

Of course, a number of hypotheses have been proposed concerning the strong association between MC capacity and disorganized symptoms. First, it has been suggested that disorganized symptoms and MC capacity share conceptual links. Individuals who

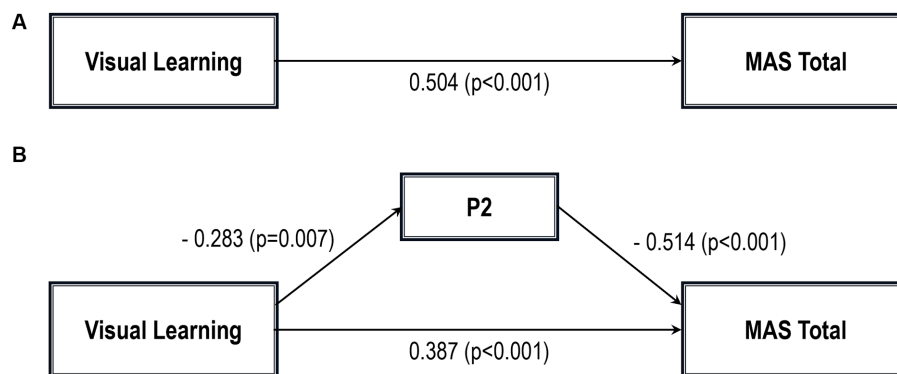


FIGURE 1

Path analysis model MAS total. (A) Total path. (B) Direct and indirect paths. MAS, Metacognition assessment scale; P2, Conceptual disorganization.

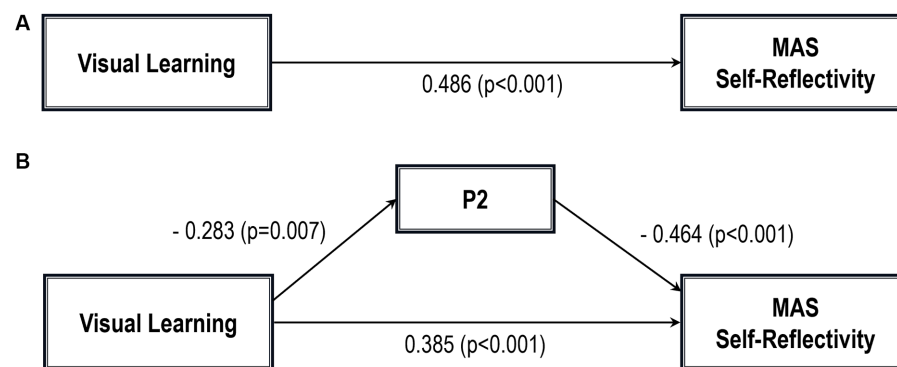


FIGURE 2

Path analysis model MAS self-reflectivity. (A) Total path. (B) Direct and indirect paths. MAS, Metacognition assessment scale; P2, Conceptual disorganization.

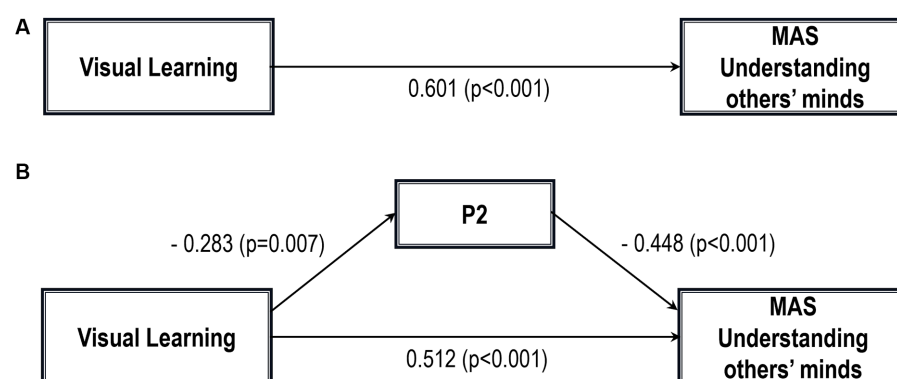


FIGURE 3

Path analysis model MAS understanding others' minds. (A) Total path. (B) Direct and indirect paths. MAS, Metacognition assessment scale; P2, Conceptual disorganization.

find it difficult to organize their ideas, concepts, and feelings coherently would also exhibit difficulties in the integration of internal experiences (i.e., thoughts and feelings) together in a cohesive framework. Second, the presence of a correlation between these variables does not automatically assume a causal relationship between

them; anyway, the fact that significant disorganized symptoms, when present, may impact an individual's MC capacity is a possibility to be considered. Third, the strong association between the two constructs could be due to the selection of psychometric scales, consequently artificially amped up.

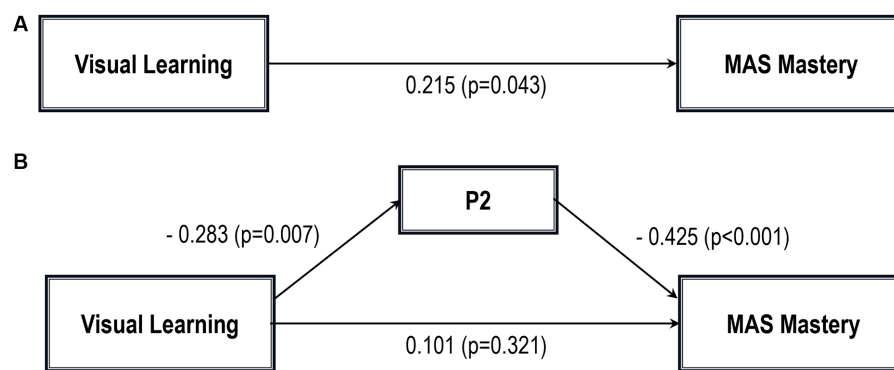


FIGURE 4

Path analysis model MAS mastery. (A) Total path. (B) Direct and indirect paths. MAS, Metacognition assessment scale; P2, Conceptual disorganization.

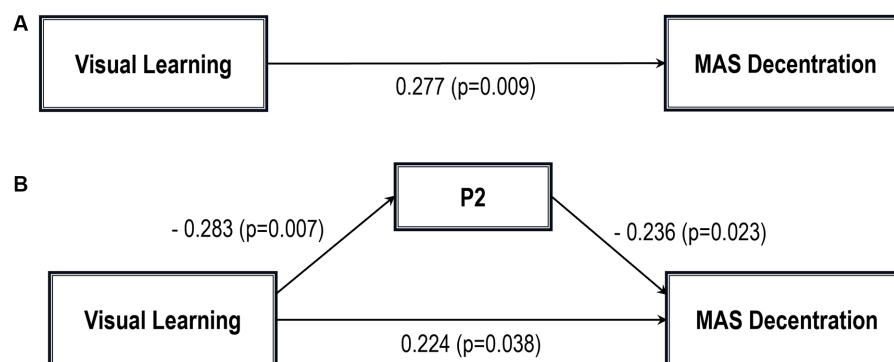


FIGURE 5

Path analysis model MAS decentration. (A) Total path. (B) Direct and indirect paths. MAS, Metacognition assessment scale; P2: Conceptual disorganization.

Third, when CD was included in the five models as a mediating variable between visual learning and MC and its scales, the effect of the former on the latter's kept the positive sign, even though the effect was reduced.

A variable can be viewed as a mediator (DC) insofar as it takes into account the relationship between a given independent variable (IV) (visual learning) and a given dependent variable(s) (DV) (MAS total and its four scales) (70). As stated by Baron and Kenny (70) and Judd and Kenny (71), partial mediation can occur after controlling for the mediator when the IV effect on DV decreases by a non-trivial amount but not to zero, as it happens for MAS Self-reflectivity, MAS Understanding Others' Mind, and MAS Decentration. The perfect mediation occurs when the direct effect is no longer significant after considering the mediator, as for MAS Mastery in our article. Indeed, the relationship between visual learning and MAS Mastery can be completely explained by their relationships with CD.

The above-mentioned results partially replicate those (20, 31) that have shown that CD modulates the moderating effect of disorganized symptoms on the relationship between NC and MC.

Overall, the finding that CD mediates the relationship between NC and specific MC types shows that the term "metacognition" includes a wide range of processes rather than a single construct, each of them describing different aspects of MC. For example, in our study, only

Mastery, a domain of MC that measures the capacity to use the understanding of mental states to face psychological challenges, was no longer explained by NC when CD was taken into account.

4.1 Limitations and strengths

Some limitations should be considered in the interpretation of our results. First, the sample size of the present study was relatively small, even if it was in line with previous studies. Second, we enrolled mainly middle-aged outpatients engaged in treatment and in a stable phase of their disorder. Thus, our results cannot be generalized to other populations, i.e., inpatients or patients in more acute phases of their illness, or those who are drug-naïve or those who refuse treatment. Third, the cross-sectional design did not allow us to establish a cause-and-effect relationship. Thus, future longitudinal studies are needed to investigate the directionality of our findings as well as to identify other variables that may influence these relationships. Fourth, we measured CD only using one clinician-rated item obtained using the PANSS, and no behavior-based measures of disorganized speech were used. These measures would allow to identify disorganization in speech samples using either trained raters or automated analysis. Fifth, even though MAS-A has been

considered an established tool to evaluate the four sub-dimensions of synthetic MC, a recent psychometrical analysis (55) on 130 outpatients with a diagnosis of SZ or schizoaffective disorders has shown that the latent structure of the MAS-A might be essentially one-dimensional.

Notwithstanding these limitations, our study has some strengths.

First, path analyses allowed us to investigate the relationships among the identified variables and estimate the magnitude and hypothesized causal connections between sets of variables. Second, we assessed NC, the “third” variable (31) often omitted in studies analyzing the relationship between MC and disorganization.

5 Conclusion and implications

If replicated, findings from this study could inspire interventions designed to improve MC in patients with stable SZ, i.e., targeting NC or targeting CD. Indeed, we think that if CD and visual learning underlie MC, then our findings may have implications for treatments that address CD and NC. Indeed, these interventions could have an impact on MC; that is, visual learning and CD improvement could help in attributing meaning to experiences and integrating them into larger mental representations of self, others, and the world. However, studies on interventions that target CD or NC rarely include tools to evaluate MC as an outcome.

Moreover, when interpreting our data, it is important to consider two further topics. First, there is no evidence for simple direct relationships among NC, disorganization, and MC, as yet unidentified variables or mediators could intervene in this relationship. Second, results provide further evidence that MC represents a wide spectrum of processes (14): MC domains are indeed separate capacities, such that each one may be influenced by different variables. Therefore, studies unable to distinguish between different components of MC fail to bring out the possibly varying links between NC, disorganization, and MC.

Data availability statement

The datasets presented in this article are not readily available because the full datasets contain identifying information, and data sharing is subject to facility guidelines. Requests to access the datasets should be directed to the CM and paola.rocca@unito.it.

Ethics statement

The studies involving humans were approved by Research Ethics Committee AOU Città della Salute e della Scienza di Torino. The

studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

CM: Conceptualization, Data curation, Investigation, Methodology, Supervision, Writing – original draft, Writing – review & editing. CB: Conceptualization, Methodology, Writing – review & editing. SB: Investigation, Methodology, Supervision, Writing – review & editing. PB: Conceptualization, Methodology, Supervision, Writing – review & editing. VV: Conceptualization, Methodology, Supervision, Investigation, Writing – review & editing. PR: Conceptualization, Supervision, Methodology, Writing – review & editing.

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Conflict of interest

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

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Jonas Weijers,
Maastricht University, Netherlands
Osmano Oasi,
Catholic University of the Sacred Heart, Italy

*CORRESPONDENCE

Pedro Sanz

✉ pedro.sanz@salud.madrid.org

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Mentalization-based approach for schizophrenia spectrum disorders: a psychotherapeutic proposal for evolved schizophrenic trajectories and serious mental disorders

Pedro Sanz^{1*}, Nuria Tur² and Fernando Lana³

¹Programa de Trastorno Mental Grave, Area de Gestión Clínica de Psiquiatría y Salud Mental (AGCPSM), Hospital 12 de Octubre, Madrid, Spain, ²Servicio de Psiquiatría, Unidad del Niño y Adolescente, Hospital Clínico San Carlos, Madrid, Spain, ³Instituto de Neuropsiquiatría y Adicciones (INAD), Centro Emili Mira y Hospital del Mar, Parc de Salut Mar, Barcelona, Centro de Investigación en Red de Salud Mental (CIBERSAM), Departamento de Psiquiatría, Universidad Autónoma de Barcelona, España|MIM (Hospital del Mar Medical Research Institute), Barcelona, Spain

There is a growing interest in psychotherapeutic approaches to pre-psychotic high-risk states or first-episode psychosis, where mentalization-based treatment has shown its utility. This article presents a mentalization-based approach for the treatment of those individuals diagnosed with an evolved schizophrenia spectrum disorder, whose characteristics make them especially inaccessible to reflective psychotherapeutic treatment. A synthesis of the conceptual frameworks that justify the needs for technical modification of the mentalization-based treatment foundational techniques is carried out, followed by the proposal of adaptations, with a focus in self-agency and patient-therapist dyad. Therapeutic interventions are outlined, including illustrative examples. The mentalizing approach presented here holds promise for future research and treatment opportunities for patients with evolved schizophrenia and other serious mental disorders.

KEYWORDS

mentalization-based treatment, schizophrenia, schizophrenia spectrum disorder, serious mental disorder, psychotherapy process, self-agency, dyadic

1 Introduction

Schizophrenia, one of the world's top 15 leading causes of disability (1), is a complex disorder with multifactorial pathology. It is associated with reduced social connections, lower employment rates, and impaired ability to live independently (2).

Schizophrenia has a dual etiopathogenesis, combining both neurodevelopmental and acquired factors (3, 4), where each individual's presentation of the disorder is influenced by genetic predisposition and specific biographical or environmental factors. These alterations manifest at various levels, ranging from neurobiological to sociocultural aspects (5). Schizophrenia and Schizophrenia spectrum disorders (SSM) (6), can affect several neuropsychological functions, including volition, cognition, affect, and psychomotor abilities (7). It also impairs metacognitive and social cognitive functions (8) and, specifically, mentalizing functions (9). These impairments prevent patients from adapting to their environment, causing significant distress and lower functional performance than expected socially and culturally (10).

Antipsychotic drugs have proven to be the treatment with the best evidence level (11), but despite its availability, research indicates that disability among patients with evolved schizophrenia has shown little improvement over the past century (12). In recent years, the focus has been shifting to the prevention, detection and diagnosis of prodromal forms or the initial phases of the disease (first psychotic episodes) (13, 14), while early psychosocial treatments, psychotherapies and trainings have also been developed (15–17) improving evolution and outcome (16).

Mentalization-based treatment (MBT) is an empirically validated psychotherapeutic approach for serious mental disorders, such as personality disorders, which reduces symptoms and improves social functioning (18, 19). Research projects are currently underway for MBT in psychosis (20–25), with preliminary reports suggesting its efficacy in first-episode psychosis and SSD (26–29). Promising research is also ongoing regarding clinical high-risk states for psychosis (30) and emerging psychosis (31, 32).

The approach presented here aims to adapt MBT foundational technique to individuals with evolved schizophrenia spectrum disorders with multiple episodes, persistent severe psychotic symptoms or neurocognitive dysfunctions. The interventions are tailored according to the patient's mentalization and agency capacities observed in the therapist-patient dyad.

We will first describe the conceptual framework that will guide our proposal for the adaptation of MBT to individuals with evolved SSDs. To understand the special characteristics of the psychotherapeutic relationship with patients with severe mentalization problems, we will turn to the postulates of Friston's free energy minimization and predictive coding model and the Second-person neuroscience paradigm, which provide us with neuroscientific foundations to understand the creation of self-boundaries and the configuration of dyadic relationships. From that understanding, we will then rely on Gergely's theory of self-agency development, which will serve as a guide to tailor our psychotherapeutic interventions.

2 Neuroscientific foundations

Friston's neuroscientific model integrates Feynman's principles of free energy and Bayesian probabilistic inference (33, 34). Free energy principles posit that a feature of biological systems is to maintain stability and form when faced with continually changing environment. This preservation of order is referred to as homeostasis. In self-organizing systems, homeostasis is governed by the organism's phenotype. The model suggests that organisms can tolerate limited levels of internal "disorder" to sustain low free-energy levels, as higher levels would lead to instability and risk. According to this perspective, biological success lies in minimizing the free energy, regulating oneself against the environment and influencing the environment to align with one's interests.

To achieve this, biological agents must anticipate and cover against a range of environmental changes in order to maintain stability in the face of a variety of conditions. These are known as "predictions" in Bayesian probabilistic terms (35), and any deviation from the expected predictions caused by the environment is referred to as "predictive error" or "surprise". Thus, to maintain internal equilibrium, predictive errors should be minimal and predictions should be accurate, being interpreted as certainties or confirmations, and allowing us to efficiently manage the environment (35).

In the case of the central nervous system and its connections as a self-organizing system, it must adhere to these principles to maintain functional viability (33). Afferent and efferent states within the central nervous system should remain within physiological limits. Thus, in accordance with this model, it is suggested (33) that the cerebral cortex does not generate "orders" as traditionally believed but generates "predictions." And sensory receptors, in turn, transmit "prediction errors" (34, 36).

It is hypothesized that the central nervous system contains representations of itself in relation to the environment, which is generated and then expanded during its development (37). At this level, these representations exhibit a hierarchical structure, increasing in associative capacity and complexity as we move from basic to more developed structures and from a lower to a higher layer of the cerebral cortex (38–40).

According to this theoretical model (33, 35, 41) the central nervous system can minimize its prediction error in two ways: The first is by changing or expanding its predictions to align more closely with the sensory input, that is, giving value to the predictive error and modifying the prediction, thereby generating more complex mental representations ("learning"). This would occur through a "bottom-up" regulation. Once a better hypothesis has been established to explain the cause of sensory stimulation, instability is attenuated and the rest of the hypotheses are excluded. The second way is by attenuating or disregarding predictive errors, giving greater weight to the predictions made by the cerebral cortex over the information received from the sensory receptors. This is a "top-down" regulation and involves changing the sampling of the environment to confirm the predictions, which may imply an outward-facing motor action. In predictive terms, we can hypothesize that a tolerable level of predictive error triggers contemplative (bottom-up) or exploratory (top-down) curiosity. However, excessive predictive error will lead to

saturation, failed responses to the environment, and a collapse in the predictive system.

The Bayesian probabilistic model implies a bidirectional relationship. The probabilistic link between prediction and predictive error suggests that both factors influence and condition each other. This provides adaptive advantages in relation to the environment, helping the organism to determine its “limits” and where its “epithelium” or friction zone is located (35, 41). From this understanding, we can hypothesize that the only possibility an agent has to “know” its state at any given moment is through the inseparable connection between itself and the world that it is capable of representing to itself through its sensory observations, self-generating a model that continually tests, remakes, and expands itself, thereby remaking and expanding its self-image in relation to the environment. The “Markov blanket” (41, 42) concept represents a probabilistic model to represent this, defining a variable based on the set of variables with which it is exclusively related, while disregarding unrelated ones. In our hypothesis, we adopted this model to define the self-boundaries. Depending on the representations that “descend” and the sensory impressions that “rise,” analogous to a radar pulse bouncing off an object to determine its position, individuals can generate a self-image and respond to the environment (41).

2.1 Dyadic systems and second-person neuroscience

In the context of the agent-environment relationship, we can also consider a unique scenario when the “environment” is another agent like ourself, that is, when a being enters into a relationship with another being, thereby both their inferential systems come into play (43). This gives rise to a dyadic inference system, where each member of the dyad acts as both the emitter and receiver of predictions and predictive errors (35, 44). This dyadic system, with its distinct characteristics, can be seen as a foundational element in all psychotherapies.

EXAMPLE

When a patient receives a predictive error in the form of an ambiguous or unexpected response from the therapist, such as a comment or facial expression that this particular patient does not understand, or interprets as hostile, it will generate discomfort in his predictive system, and he will have to manage it.

In such cases, the patient can escalate the situation to a higher level of representational complexity, for example, by not remaining fixated on the concrete and instead adding more representations, such as recognizing the stable, constant, and reliable relationship that he has with his therapist, and make another prediction like, “Ah, it’s irony. He’s using humor.” This new prediction dissolves the discomfort caused by the predictive surprise, exemplifying a bottom-up regulation. But let us imagine that the patient’s arsenal of predictions is insufficient to deactivate this unexpected response, since the last prediction he makes, such as “He’s tired of me. He thinks I’m stupid,” does not attenuate that “free energy,” and the individual finds himself unstable in the face of the environment, uncomfortable in the dyad with his therapist. In such cases, the patient can expand their perceptual sampling to try to “adjust” it to his expectations (“Is it true or not true that my therapist thinks I am stupid?”). For example, they might observe the therapist’s expression in greater detail to look for indications

that could resolve his doubt, or he could emit a stimulus to the dyad, such as asking a question to the therapist like, “I did not understand the last thing you said. What did you mean?” These actions aim to decrease the predictive error at its source and alleviate the discomfort.

However, if there are no other representations available (including that specific representation of the environment) to counteract the predictive error, its intensity and capacity to destabilize and unbalance the patient will be much greater. The ultimate prediction, such as “He is calling me a fool,” will acquire an absolute certainty. In this case, the patient’s attempt at top-down regulation poses a higher risk of impacting the environment in an unregulated manner. For example, he might verbally aggress the therapist to “take back” what was said or abruptly freeze and cease his collaboration in the session. Such responses would generate an intense and unexpected predictive error for the therapist, which will test his representational capacity, closing the circle in which both the patient and therapist act as emitters and receivers.

These mutual regulation cases, where attempts to regulate one another become destabilizing factors, highlight the significance of the dyad in psychotherapy.

Tronick’s mother-infant model of dyadic states of consciousness, which can be expanded to the therapist-patient dyad, recognizes the importance of dyadic systems. These systems are constituted and regulated from the individual to the mutual level and vice versa (45, 46). Talia’s research on patient and therapist attachment patterns points in a similar direction, showing the bidirectional influences between both members of the dyad and the influence each has on the other, thus facilitating or altering the patient-therapist relationship (47–49). In this line, Schilbach and other authors (50, 51) propose a second-person neuroscience, arguing that to understand the mechanisms of social cognition and mental disorders, we must focus on the human dyad, since studying isolated individuals or experimental conditions lacks ecological validity, showing that when humans interact face-to-face, mental processes distinct from those of the individual or experimental condition are set in motion.

This perspective can also be applied to psychotherapy. Any psychotherapy is a process of joint attention and intervention on the patient’s mind, focusing on different aspects depending on the psychotherapy model’s framework (cognitive and affective contents, mental processes, etc.). However, it also involves an encounter with an equal “other,” requiring attention to what happens between the two individuals and the level of adjustment and coordination that occurs between them. Therefore, psychotherapeutic progress will require a prior, or parallel, movement of adaptation between both members—the constitution of a reliable dyad that operates within a tolerable margin of predictability, where both individuals must become co-dependent agents to maintain the dyadic relationship.

When an individual struggles with effective self-regulation, such as being dysregulated emotionally or experiencing disorganized thoughts or perceptions, their ability to collaborate in dyadic regulation is compromised (52, 53). This is particularly evident in patients with evolved SSD and serious mental disorders, who face greater difficulties in both internal and external regulation. In these cases, the therapist must take on a more active role in supplying and reinforcing stability within the dyadic system externally (52, 54).

However, there are even more challenging limitations when working with serious mental disorders. There are situations where

the patient's emotional intensity exceeds the therapist's therapeutic capacity or when the patient's relational patterns or psychic contents are incomprehensible to the therapist. Such situations will affect the therapist's mind and saturate their predictive capacity, thereby exhausting their reflexivity and ability to maintain a therapeutic role. In predictive terms, the therapist repeatedly experiences excessive predictive errors, having difficulty minimizing them and leading to their own instability. This instability poses risks for both the therapist (in terms of acting, e.g. in a teleological way, getting overinvolved personally and materially in session) and the patient (in terms of potential iatrogenesis, e.g. inadequate assessment and adding chronically a drug in the patient's treatment plan when it was just an acute event).

Studies on dyadic facial expressions (53, 54) support these two positions. They demonstrate that in unsuccessful psychotherapy treatments, therapists become overly involved in patients' interpersonal patterns. However, they also highlight that in patient-therapist dyads, the therapy's outcome is not directly related to the patient's facial repertoire or expressive instability, but to the therapist's ability to deal with them and avoid being involved in complementary patterns, which can be hypothetically linked to their capacity to "tolerate" predictive surprises.

When appropriately handled, these mismatches can serve as catalysts for change in therapy, stimulating the patient's sense of agency (55). A similar assumption can be observed in discussions about infant self-development. Tronick (56) suggests that within the mother-child dyad, the ability to repair mismatches and dysregulations will be the highest expression of a robust sense of agency. This reinforces the individual's capacity to continue expanding their capacity to control the environment and themselves. More recently, within the framework of the free-energy principle and mathematical paradigms, Tschacher (57) and Connolly (58) emphasize the importance of a "chaotic" mental process in therapy (as opposed to a deterministic one) where the instability and uncertainty generated by the therapist and his interventions, are critical in psychotherapy. This chaotic process, beyond the patient's typical and rigid predictive patterns, is viewed as a necessary step for therapeutic change, where the patient experiences a broadening of thoughts, emotions, and behaviors to move them out of their deterministic priors.

However, a crucial question arises: how much mismatch ("chaos" or predictive error) can a patient tolerate? Connolly (58) addresses this point by stating that "there are clearly situations where instability is either undesirable or potentially harmful, in which therapeutic activities that activate chaotic processes should be avoided or at least mitigated or compensated for... such is the case of psychotic disorders." Based on our experience, excessive predictive error in a patient, whether due to high demands or the patient's limitations, can push him towards a representational leap for which he may not be prepared. This can increase the risk of disconnection from or collision with the environment, e.g. to ask for a cognitive challenge to a patient when his eyes are looking at the therapist but his mind appears absorbed in the inner voices he is hearing, or trying to validate empathically a patient presenting with psychopathological phenomena like thought insertion or thought stealing, which can produce a strong paranoid reaction.

In this regard, MBT has shown to be a safe approach when working with serious mental disorders (21, 59–61), monitoring the patient's mental processes and fostering a trusting (predictable) dyad by adjusting its interventions to the patient's mentalizing capacity at each point. But when treating evolved SSD this can become more difficult, given the absence or the alteration of external references to identify patient's mental process (e.g. think about blunted affect, altered facial mimicry, not conversational turn-taking or not attentional correspondence). To resolve these questions our interventions in the therapeutic dyad will be guided by Gergely's work on the development of the self as an agent.

3 Development of self agency and mentalizing

In the past two decades, developmental psychology and neuroscience research have shed light on the significant role of dyadic regulation in human development and psychopathology. Fonagy (62) describes how the mother's regulation of the infant's mental space within the context of attachment serves as a temporary external regulatory agent during development, assisting in the formation of the mental representations of the child through a process of resonance with the mother's own mental apparatus.

Within these dyadic contexts, infants achieve crucial milestones that strengthen their sense of agency, such as self/no-self differentiation (37, 63, 64) and the progressive development of more complex mental representations of themselves and others (62). This process is mediated through dyadic infant-self tailored mirroring responses. These include time and emotion contingency (for infant referencing), marked responses (to differentiate the partner's authorship from the infant's own), and ostensive cues (to attract the infant's attention with specific referencing for him). These interactions facilitate partial predictability and co-dependency processes (65), strengthening both the sense of agency and ability to make accurate attributions about the intentions of others and, with time, constancy and rupture-and-reparation processes (mismatch and match). Together these processes will lead to the development of a more robust bidirectional self-regulating dyad for both members, fostering a second-person perspective (63).

To facilitate this progression, Gergely proposes different stages in the development of the self and agency (62, 66), with the final stage being a mentalizing agent with representational and autobiographical capacities, capable of understanding one's own behavior and that of others in terms of intentional states of mind.

In our hypothesis to identify these stages and their characteristics will be crucial for our therapeutic purposes. They reveal which agent capacities are at work within the dyad at each point, indicating the contributions each member needs to make to achieve a stable regulated and trusting dyad. This understanding guides the therapist in recognizing the patient's agency limitations and determining the extent of their intervention required to repair, support, or challenge the patient's agent capacities.

The first stage Gergely proposes is the self as a physical agent (66), relying on proprioceptive and perceptual sensory perfect contingencies to detect one's own body in space and its orientation. It determines the body-physical environment boundaries. At this level, there is no place for an equal other; instead, the other is perceived as an environmental object¹.

The next stage is the social agent, where the individual engages with another person, recognizing and interacting with them in an affective and intentional manner, engaging in co-dependent acts such as seeking the other's attention or engaging in turn-taking behaviors. The transition from physical to social adaptations is mediated by a shift in preference from perfect contingencies, typical of the physical world, to less-than-perfect contingencies (62, 66), typical of the social world².

In the subsequent stage (66), the teleological agent, the individual considers themselves and others as intentional agents, interpreting their behavior as driven by rationality and creating efficient-based causal explanations based on the goal of the action. In this stage, there is place for joint attention and the possibility to think and talk about intentions after action execution, although not yet in mental terms, and without considering the other's intentions as distinct from one's own.

This leads to the intentional mental agent stage (66), where the self and others are recognized as agents with intentional "invisible" mental states (needs, desires, feelings, beliefs) that precede action execution (or not-execution). Recognizing these mental states enables individuals to induce, share, or modify them in each other.

Finally, in the representational agent and autobiographical self stage (66), individuals are capable of representing and recognizing a stable autobiographical sense of self and others beyond their eventual mental states. This stage involves the understanding of false beliefs and executive control, providing abilities for more adaptive social functioning.

Usually in the MBT foundational technique for adults we will work on teleological agent stage or superior, leading from pre-mentalizing modes to a deeper mentalizing understanding of the self and other, as well as a more constant and integrated view of self and others (59).

However, in our hypothesis, for patients with evolved schizophrenia and SSD, we will need to extend attention and intervention to the first two stages, physical and social, the protomentalizing stages, in which the limited patient's self-agency

capacities are strongly compromised to reciprocally deal with another self. This will affect the therapist, potentially causing difficulties in understanding both members of the dyad.

4 Mentalization-based approach for SSDs

MBT is a therapy that focuses on the process rather than achieving representational coherence and integration. Its aim is to restore the ability to mentalize, when is lost due to stress, attachment, and non-mentalized affects, and it involves a continuous movement between stabilizing and stimulating mental processes (59, 67).

The mentalization based approach for evolved Schizophrenia spectrum disorders introduced here follows a similar approach to MBT (59), but rather than aiming to restore or consolidate the patient's mentalization (as in the case of MBT for personality disorders), the goal is to create, repair, supply, or support basic mental functions and phenomena (such as attentional, perceptual, emotional and reflective abilities) so that they can later be aggregated or re-aggregated to configure progressively more complex representations.

This is an approach that complements MBT for Psychosis (MBT-P) (9, 21–29, 31, 61), allowing the inclusion of those more severely affected patients who have difficulties in psychotherapy with reciprocal dialectical work, due to impairments in their attentional, perceptual, cognitive or affective capacities.

Technically, it has two main adaptations: changing the affect focus for a dyadic-agency focus, and to be guided by the development of the patient's agency in order to work with pre-mentalizing modes of functioning.

To achieve this, it expands its scope of work to protomentalizing self agency functions, those regarding physical and social agency stages in Gergely's theory (62, 65, 66). By doing so, the aim is to create a predictable environment for the patient during sessions, initially allowing them to feel socially secure with the therapist, so that subsequently, they also perceive the therapist and the conveyed contents he transmits as reliable.

A primary therapeutic factor in therapy (and in human development) is the development of epistemic trust, wherein individuals accept certain contents or information solely because the transmitter has proven to be trustworthy (68, 69). These authors propose that for another individual to generate this trust, they must first demonstrate contingency toward the individual's mental state and respect for their agency capacity (69).

In our case, we hypothesize that a prerequisite to developing this epistemic trust in therapy—to accept the information and attentional proposals offered by the therapist to the patient, is to establish this kind of environmental trust, a predictable social environment that allows the patient to rely in the therapeutic dyad.

Dyad and self-agency are the two fundamental structures of this approach. The dyad serves as the mental workspace for both the patient and the therapist, while agency, as expressed within the dyad, serves as a guide to indicate which functions are being utilized, the degree of adjustment, and the establishment of the

1 We can find alterations at this level for example in the way they could ignore or not to consider their own body care or needs, like pain, temperature regulation or hunger, or first rank psychopathology like own body boundaries alterations, e.g. not to control a part of the body (or being controlled externally), hearing outside what it is inside, "hear" a thought, or perceive their thought is visible outside, to name a few.

2 Alterations at this level can include, problems with joint attention (not initiating, not responding, refusing), altered relational offer (in affect expression or affect responsiveness, querulant, negativistic) or dialectical communication issues (altered turn-taking, mutism), to name some.

patient's self-boundaries in a Markovian sense. Therefore, the working area of our proposal will be focused on self-boundaries.

Typically, aside from reflexes, affect is considered the primary driver of agency expression in human beings (70). We recognize agency through emotional expressions triggered by stimuli (such as rejection, anger, sadness). However, in the case of schizophrenia, these expressions of agency may be abnormal or challenging to identify (e.g., blunted affect, inhibited behavior, fixed or absent facial mimicry). In such cases, the clinician must observe other expressions of agency in the behavioral, paraverbal, or verbal dimensions within the therapeutic dyad. These expressions can range from subtle indicators (e.g., psychomotor restlessness, lack of turn-taking consideration, implicit rejection of topics raised by the therapist) to particular relational offers (e.g., suspicion, distrust, inadequate familiarity) or to more disorganized or unusual behaviors (e.g., symbiotic or submissive merging behaviors, echolalia, oppositionism). Importantly, our hypothesis emphasizes that the sense of agency is not determined by the patient's intention behind his actions (something that is impossible for us to know). Rather, agency is attributed based on the impact the patient has on the therapist, who acts as a proxy for the environment. This is the true significance of dyadic agency.

4.1 Working on self agency actively or passively

Using dyadic agency as an indirect (in our case, tentative) guide to the individual's level of adaptation to their environment will accompany the therapist throughout the therapeutic process and determine which stage of self-agency development is being expressed and what type of intervention can be used. The therapist will then intervene based on a main pair of premises we enunciated before: to try externally to minimize predictive error for the patient or inducing tolerable predictive error. Or, in other words, stabilizing the dyad (consolidating the patient's agency -passively for the patient) or introducing mismatches (actively stimulating patient's agency).

As hypothesized, considering the amount of "chaos" or predictive error the therapist sends to the patient is crucial in therapy. The clinician will be guided by the self-agency developmental stage (physical, social, teleological, mental, or autobiographical) to identify where the patient's dyadic agency is failing. Therapist will then proceed to stabilize the dyad at that level and, after this, to start trying to progress to a more demanding agency.

Stabilizing dyad. Stabilizing a dyad towards a lower stage can be very challenging for the therapist. In MBT this is often achieved through employing empathic validation, guided by the affective resonance that the patient provokes in the therapist. But in advanced SSD, the therapist will frequently encounter predictive errors that can be intense (e.g., not a clear affect to resonate with, patients with incomprehensible speech, bizarre relational offers, rejection of linking). This entails a significant risk of the therapist losing mentalization, leading to modes such as pretend mode (e.g. therapist can hypermentalize -an uncontrollable overproduction

and attribution of intentions), psychic equivalence (being certain about what is happening in the patient's mind), or teleological functioning (the therapist acting instead of mentalizing), which perpetuate dysfunctionality in the dyad. To stabilize the dyad, supporting agency from the outside, the therapist must move in reverse order towards self-agency development, reaching a level where the dyad feels safe. This may involve shifting from autobiographical issues to mental ones or from mental to concrete ones, or from concrete to attentional or relational ones. In our case, when working with evolved SSD the most demanding work occurs when operating at lower levels where joint attention is impaired, and the therapist has fewer references to work with. At these levels, the therapist's task is to simplify interactions through marking and ostensive interventions or to "clean" the sensory "noise" therapist emits by employing different strategies such as lowering sensory stimuli (voice, prosody, body attitude, timing pressures), being clear in speech, avoiding contradictory facial emotional expressions, and narrating their own behavior as it unfolds.

Stimulating dyad. On the other side, to gradually provoke increasing agency demands, the therapist will move upwards tentatively step by step, in line with the stages of developmental self-agency. Moving towards more advanced levels will be easier for the therapist as the patient will demonstrate progressive agency capacities, aiding in dyadic regulation, and the contents both share will be more accessible for language and accurate transmission.

4.2 Working tolerating prementalizing modes

When working on MBT with personality disorders, another key task is to deal with prementalizing modes as soon as they are detected, to recover patient's mentalizing. However, in cases of these evolved and chronic conditions, as mentioned earlier, where there are symptoms and altered neurocognitive, social cognitive, or metacognitive functions, our aim will be to consolidate and strengthen the patient's demonstrated higher agency level. In such cases, the therapist will prioritize a dyadic more predictable interplay over progress attainment. This means that the therapist may need to tolerate and even purposefully work in non-mentalizing modes, refraining from demanding what the patient cannot achieve. For example, functioning in pretend mode and using metaphors or personal and fantasized events involving third parties or oneself may be useful if they facilitate the appearance of mental contents (affect, intentions...) in the narrative, regardless of their mental accuracy.

5 Clinical case

X is 36 years old. He has been diagnosed with schizophrenia and lives with his mother, avoiding social interactions. In therapy sessions, he exhibits logorrhea, excessive and rapid speech, which in his case is not indicative of a manic syndrome, as his thought maintains a normal speed. He leads an orderly, even rigid, life. He can wait placidity in the

waiting room before sessions and is disciplined with the instructions given to him. In sessions, he talks about several things that his mother asks him (such as to run errands). However, his logorrhea prevents him from letting his partner talk. Whenever the therapist is about to speak, X abruptly resumes speaking about unrelated topics, blocking the therapist's turn.

In terms of relational offer, the patient recognizes the therapist and initiates an attentional offer by discussing errands and tasks assigned by his mother. X outwardly appears calm and cooperative, providing an opportunity for the therapist to engage him on a mental agency level (e.g., "how do you feel when your mother asks you for these errands") or a teleological level (e.g., "how do you organize yourself to manage this", "how do you organize this with your mother"). However, due to the lack of true joint attention, genuine conversation becomes unattainable. There is an attentional offer (an initiation of joint attention), but not possibility for a *response* of joint attention.

This scenario can easily lead the session to resemble a monologue, where the therapist, after a while, eventually concludes with recommendations related to behavior or medication. This outcome would result in two separate monologues or, even worse, the therapist imposing their own beliefs about what is important for the patient. Both outcomes represent alienated forms of communication that deviate from fostering a genuine therapeutic relationship.

However, from the perspective of dyadic agency, the therapist acknowledges that he is unable to speak. Therefore, therapist reduces his own required dyadic agency to a lower stage, focusing on the simple recognition of the presence of an "other" attempting to interact with him (Gergely's self as social agent). Then therapist gently moves his hand in a stopping motion and says, "Hey, I cannot talk." Through these soft ostensive cues, the therapist aims to attract the patient's attention while delivering a brief and unambiguous message—a self-revealed state—to reduce sensory complexity at a physical agency level.

Although X initially paused, he continued with his logorrhea, prompting the therapist to maintain this intervention style throughout the session. The therapist repeatedly sent messages such as, "Hey, I want to talk, but I can't," or "I'm listening to you, and I don't want to interrupt, but I would like to say something when you finish." Finally, at the end of the session, the therapist said, "Today, I didn't talk. Maybe next session".

In the subsequent session, X resumed his logorrhea, and the therapist continued with this intervention style. However, at one point, X fell silent and expressed, "I feel bad when I have to listen to you. Serious insults come to my mind when I'm silently listening, and it makes me feel bad. My loud voice distracts me from them".

This abrupt revelation elevated the dyadic agency to a higher level, with X offering attention to his own mental state and revealing that his behavior is caused by an emotional drive.

Upon hearing this, the therapist appreciated the revelation and marked its impact on him ("Oh, now I understand you, thank you for telling me"). The therapist then proceeded to test X's response to joint attention at a mental level, saying, "We will need to address this issue the next time you speak over me," "I'll be attentive, but I'll need your help to determine if I'm being helpful or if I'm annoying

you." X agreed to this approach. In the following sessions, the therapist and X began exploring ways to address this issue during sessions and outside, as well as discussing the impact it had on his interpersonal relationships.

6 Discussion

The mentalization-based approach for evolved SSD outlined here aims to be useful for working with patients when it's not possible for the therapist to apply MBT foundational technique, that is, when it's not possible to generate joint attention, joint intentionality, empathic connection, when there are relevant alterations in the patient's agency capacity, or when the patient remains in non-mentalizing modes chronically. For this purpose, our main proposal is to shift the affective focus to the dyadic agency focus.

The theoretical support for these adaptations is found in Friston's free-energy minimization and predictive coding and the second-person paradigm, which allow us to understand the type of relationship generated in an unpredictable dyad. Bayesian and free-energy explanatory models have been proposed for psychotherapy and for understanding schizophrenia psychopathology. Some interesting developments implementing these models in psychotherapy have been made (41, 57, 58). In the context of SSD, these models have been utilized too to explain the illness (71) or to understand hallucinations and delusions as disturbances in the patient's predictive system (40, 72–74). Furthermore, extensive research has examined the role of agency capacities in patients with this diagnosis from various neurocognitive and neurophilosophical perspectives (75–78). Studies in second-person neuropsychiatry emphasize the importance of the dyad in understanding pathology and psychopathology, shedding light on etiology, symptom maintenance, and treatment possibilities (79, 80). Additionally, research about dyadic facial expressions have proven the impact of schizophrenia on the emotional expression of the dyadic partner, who must contend with the patient's dysregulated emotional register, leading to a downward adaptation in their own facial emotional expression (53, 81, 82).

The other key point of our proposal is to rely on Gergely's work on the development of the self as an agent, which will allow us to work on protomentalizing levels of self-agency while providing us with a staging that will serve as a guide to safely advance in the dyad, supporting or stimulating it to the extent that the dyad can tolerate.

In doing so, our aim is to strengthen the patient's agency and enhance their adaptation to the environment through the establishment of a secure bond with the therapist, which allows both parties to work on the patient's more adaptive self and self-and-other comprehensions.

The goal is for these improved understandings and the therapeutic relationship itself to be transferable to other professionals and the broader social network, aligning with the typical objectives of MBT (69, 83).

Although symptom reduction and improvement in overall functionality are not primary objectives, an improvement in them is envisaged in parallel with the creation and consolidation of the reliable dyad. Another important issue is that the establishment of a

trustworthy dyad, especially with isolated patients, will also give us the opportunity to supervise global well-being and address tertiary prevention issues, considering the excess morbidity and mortality of these patients (84, 85).

The main and most obvious limitation of our proposal is the lack of empirical data supporting its utility. Although grounded on research, our approach is heuristic and needs to be evaluated. Currently, we are in the process of manualizing it and hope to conduct an initial pilot study in the short term.

Another relevant issue pertains to the position of the therapeutic approach discussed here in relation to other treatments. We chose the term “approach” because our proposal is not a treatment in a full sense, but rather a complementary approach to treatment for those patients with severe mental disorders to establish a reliable therapeutic connection which may place them, concurrently or subsequently, in a position to undergo further psychotherapeutic treatment. Similarly, it will be usually complemented by social interventions and pharmacological treatment and may also benefit from other MBT approaches such as group interventions, MBT with families (86) or AMBIT (Adaptive mentalization-based integrative treatment) (87). The supervision of the therapist will be necessary, as usual in MBT, due to the demanding mentalizing job when working from a dyadic agency approach.

Another aspect for which we consider it an approach rather than a treatment is the lack of defined length of intervention. As we have seen, our proposal can serve as a preliminary stage before MBT-P, but it also functions as a way to engage with patients in need of chronic adaptations. In general terms, those patients with more favorable conditions, such as those cases marked by environmental conditions, with acute unfavorable life experiences disabling their sense of agency, may require shorter intervention periods. These individuals may find it easier to establish link with mental health professionals and to experience mentalizing growth. On the other hand, patients with a greater biological burden, more severe neuropsychological deficits, or disorganized attachment styles and relational difficulties will necessitate longer therapies, and more intensive work on establishing connections and adapting to their environment.

We believe that the presented mentalizing approach holds promise for future research and opportunities in the treatment of patients with advanced schizophrenia and serious mental disorders. Furthermore, it provides mental health professionals with perspectives and tools that can assist them in developing deeply respectful and long-term relationships with individuals with seriously altered functionality who face significant communication challenges and struggle to adapt to their environment.

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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.

Ethics statement

Written informed consent was not obtained from the individual (s) for the publication of any potentially identifiable images or data included in this article because therapeutic relationship and paranoid symptoms could be worsened. All the original personal data that appear in the case have been changed or modified (sex, age, lifestyle, family members) or omitted (temporal and geographical location), making it impossible to identify this person.

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PS contributed to conception of this article. All authors contributed to the article and approved the submitted version.

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EDITED BY

George Salaminios,
University College London, United Kingdom

REVIEWED BY

Stefanella Costa Cordella,
Diego Portales University, Chile

*CORRESPONDENCE

Sarah Parkinson

✉ sarah.parkinson4@nhs.net

Bethany Cole

✉ bethany.cole@nhs.net

[†]These authors contributed equally to this work

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Art and mentalizing in early intervention psychosis: rationale and therapist insights on a new psychoeducational course

Sarah Parkinson^{*†}, Bethany Cole^{*†} and Clare Trevelyan

Avon and Wiltshire Mental Health Partnership National Health Service (NHS) Trust,
Bath, United Kingdom

In this paper, we explore the rationale for a combined art therapy and mentalization-based treatment (MBT) group course for those experiencing a first episode of psychosis (FEP). We discuss the theoretical background for how art and MBT theory can help us better understand and work with groups of individuals experiencing FEP, particularly focusing on avoidance and insecure attachment styles. We outline the delivery of a ten-week psychoeducational Art MBT course within an Early Intervention in Psychosis (EIP) Service and discuss our experiential insights into this new modality as co-therapists. We conclude by proposing that art therapy and mentalizing practice together offer an accessible, useful and practical group structure for EIP services, which could improve individuals' mentalizing capacity and overall social functioning.

KEYWORDS

art therapy, mentalizing, first episode psychosis, early intervention, psychoeducation, joint attention, MBT, attachment

1 Introduction

Art psychotherapy is included in United Kingdom (UK) national guidelines for psychosis care and treatment (1). Pilot randomised controlled trials on art therapy in psychosis have demonstrated improvements in social and emotional awareness (2), negative symptoms (3) and changes in attitudes to self and others (4). A major trial, 'MATISSE' however, suggested that art therapy did not offer benefits over and above usual care (5). Criticism of this trial identified a lack of clarity about the format and content of art therapy practice in relation to psychosis (6, 7). A subsequent literature review concluded that therapists and patients consider art therapy beneficial, meaningful and acceptable for psychosis, but again suggested that practice was in need of clearer and more consistent definition (8).

In 2013, an art therapy group was piloted in our local Early Intervention in Psychosis (EIP) service in the UK National Health Service (NHS) (9), basing its design on both national (1) and EIP guidelines (10). Individuals attending this group highlighted the

importance of peer support, working in a group, and not feeling under pressure in therapy. The pilot explored how to find a balance that would help understand and address issues of avoidance while not putting individuals under too much pressure. Increasing the session structure was identified as potentially helpful in guiding group practice, with the recommendation that adopting a mentalizing approach may help individuals maintain the focus on experiences and emotions that may be otherwise avoided. Alongside attending to avoidance, we propose that combining art therapy and mentalizing practice may enhance feelings of trust with others, develop shared attention and enhance mentalizing capacity. This may enable the activity of social learning and increased social functioning; one of the three key areas to attend to in EIP services, alongside the psychological impact of trauma and biological impact of distress (10).

Mentalization describes a “*profoundly social construct in the sense that we are attentive to the mental states of those we are with, physically or psychologically*”, a process that is both imaginative and helps us make sense of each other and ourselves (11). Specific impairments in mentalizing and ‘Theory of Mind’ tasks in adults with psychosis are well established (12, 13). Debbané proposes that those with psychosis can feel disconnected from their sensory and mental functions with a profound loss of agency over their thoughts, feelings and behaviours (14). This feeling of alienation from the self and the external reality can lead to psychotic symptoms, such as hallucinations. Disturbances in experiencing self and reality can be highly distressing and are potentially underappreciated by clinicians (15).

Debbané proposes that these core self-disturbances are associated with a sustained cycle of impaired mentalizing, where pre-mentalizing modes can take over to rescue agency over selfhood (14). Pre-mentalizing modes refer to modes of functioning that help people with disturbed mentalizing organize their experience of themselves and others. There are three basic modes: ‘Psychic equivalence’ or ‘inside-out’ thinking (16) is a state in which inner thoughts and feelings become ‘too real’ and the individual experiences their own, often frightening thoughts and feelings, reflected back from the world around them with no adjustment or understanding. For example, an individual might initially develop a fixed paranoid delusional belief from worries about how others’ think of them. ‘Teleological mode’ is recognised when mental states are expressed or understood in terms of actions alone, as if emotional difficulties can only be resolved in ‘doing’. An example of this might be individuals misunderstanding ordinary events or attributing undue significance to them (for example, *if the traffic light turns red, I will turn left at the junction, this must be a message from God*). ‘Pretend mode’ describes a state in which thoughts and feelings become disconnected from reality; the obvious (‘elephant in the room’) is overlooked. An individual may talk verbosely or tangentially without engaging others in genuinely understanding them.

Attachment theory suggests that early relationships between children and their caregivers shape the individual’s subsequent interpretations and expectations of relationships (17). Insecure attachment styles contribute to these disturbances in mentalizing and also to the development of epistemic mistrust (18). Epistemic

trust relates to social learning and the ability to learn from others, particularly in how to navigate a complex social world (14). In contrast, epistemic mistrust results in resistance to other people’s views, particularly when their views conflict with previously held beliefs. This mistrust cuts the individual off from social learning and the opportunity to update belief systems (18). Understanding of both one’s own and other’s mental states develops in early attachment relationships involving caregivers and child. However, when there is emotional misattunement within that relationship, insecure attachment styles can develop (17, 19). For some, this can lead to exaggerated claims of self-sufficiency and pretence of independence and may manifest clinically in avoidance of close relationships (20). A high proportion of individuals living with psychosis show evidence of insecure attachment styles (21); a meta-analysis showed that 76% of individuals with psychosis had insecure attachment styles, in comparison to 38% of non-clinical groups (22). Furthermore, Carr et al. found that a ‘fearful’ (often described as disorganised) attachment style was most prevalent, thought to arise from experiencing either disrupted care experiences (such as neglect or loss) or frightening behaviour (such as abuse) during childhood (22). Adults with fearful attachment styles can present as highly anxious and avoidant due to conflicting feelings around both needing and resisting emotional closeness (23). Mentalization-based treatment’s (MBT) roots in attachment theory maintain the focus on social relatedness; indeed, focusing more on the therapeutic relationship than other more widely available therapies, such as Cognitive Behavioural Therapy for psychosis.

Addressing deficits in mentalizing are vital to recovery from psychosis, as they are one of the strongest predictors of functional outcome (24). Impaired mental state attribution is the single best predictor of poor social competence in schizophrenia (25). Mentalizing-based approaches are also effective in building resilience for people vulnerable to psychotic experience (16) and potentially improving social functioning in those who transition to non-affective psychosis, especially individuals with recent-onset psychosis (18). In terms of social functioning, MBT for psychosis is best provided sooner rather than later (16, 26), including for individuals ‘at risk’ of psychosis, or Clinical High Risk States, echoing the known value of an ‘early intervention’ approach (10).

Evidence for combined MBT and art psychotherapy practice is well established for those with a diagnosis of Personality Disorder (PD) (27–32). Similar evidence specifically regarding psychosis is limited and mostly focuses on changes in mentalizing capacity as a result of adapted psychodynamic art therapy practice, including a study suggesting significant shifts in the use of reflective functioning (the capacity to understand ourselves and others in terms of intentional mental states) through the use of art (33).

Building on the advances of MBT in understanding the role of the attachment system as a mechanism of change, Springham explores how mentalizing might operate within the use of art-making in therapy (34). As distinct from verbal psychotherapies, the basic relationship in art therapy is triangular: between two humans and an art object. The art objects are physically made, with the making process detectably preserved in their structure. They remain over time and are subject to joint viewing by individuals. As such, the art objects carry particular qualities that extend the

possibilities of how individuals interact with those around them, both verbally and non-verbally (31, 34, 35).

Art making in therapy can be used to test out an idea or feeling in advance of it being made explicit (28, 36). It is seen to promote mentalizing by allowing the internal to be expressed externally and verbalised at a distance (36). Explicit and external mentalizing can be understood by looking at the MBT theory of 'dimensions' (37). Dimensions are described as social-cognitive activities, which represent the movement between two poles that occurs in response to changes both inside (mental states) and outside (the social environment) of ourselves. The four dimensions include 'automatic versus (v) controlled' (also referred to in this paper as implicit v explicit) to describe the shift between 'moving along without thinking' i.e. automatically, and pausing to 'think twice' or in a more controlled or explicit way. In art therapy, this can be used to describe the movement between absorption in drawing and making the idea explicit by putting words to the process. 'Self v other' refers to the shift between self-mentalizing and mentalizing the other. 'Cognitive v affective' describes the ability to identify and use reasoning in regard to mental states and at the other pole to be concerned with feeling. 'Internal v external' mentalizing refers to thinking about mental states in terms of imagining what might be going on inside oneself or another person, as distinct from picking up on external cues such as facial expression.

The opportunity to anchor mental content in an external form (the art object) may help to slow down the process of mentalizing to a manageable pace (30), maintain stability and avoid pre-mentalizing modes. The process of art-making necessitates multiple shifts between internal v external and implicit v explicit dimensions, allowing thoughts and feelings to be converted into words over time (28, 30, 36). These shifts can be seen in the to and fro between self-reflection in art making and interpersonal reflection in art sharing (30). The process of 'anchoring' mental content in art work is understood to hold some of the emotion (38), allowing an individual space to think and restore the cognitive v affective balance needed to mentalize (30). In addition, the created art objects may help clarify ownership of mental content, addressing self v other confusion. Lastly, the act of 'looking together' at each other's work in art therapy offers a model of joint attention, described as the sharing of attentional focus and affect around a common object (39, 40). This allows individuals to contrast their perception of themselves (and their artwork) with how others perceive them (37, 41).

2 The Art MBT course

Below we outline the structure of the Art MBT course, including adaptations for those experiencing a First Episode of Psychosis (FEP). Following this, we discuss three therapists' experiential insights and outline recommendations for future practice and research.

The Art MBT course for FEP was piloted in 2016 in an NHS EIP service in a predominantly rural area of the UK. The course was offered to all individuals under the local EIP service, run by an Art Psychotherapist and a Psychiatric Registrar. The course was held in a local community art studio, moving away from the clinical setting

to reduce stigma and encourage active involvement in community based ventures (10, 42, 43). Five individuals, three males and two females, aged 21 to 30, completed this first course.

The purpose of the Art MBT course was to introduce an understanding of attachment theory within an art therapy and MBT framework. Additionally we wanted to ground the work in a shared understanding of art therapy, mentalizing and psychosis. We adopted a psychoeducational format to help us present theories and facts in a straightforward way giving group members and ourselves a shared language. We hoped this would help open up the conversation, using both art-making and words, about individual experience. The ten-week course was based on the MBT Introductory programme for Borderline PD (a twelve session psychoeducational module) (37) and covered an introduction to mentalizing, basic emotions, attachment, mentalizing culture, anxiety, trauma and depression. Differences with the PD course included the addition of a module on compassion (44) and a more in-depth exploration of mentalizing cultures [an everyday culture or group e.g. a family group or MBT group that discusses why people behave the way they do, in an open minded way (37)]. The mentalizing culture session was held in a local museum/art gallery, with the intention of making further connections to the social and cultural world (43, 45). It explored the role of looking at, drawing and talking about art objects as a source of mentalizing (28), principally through the role of joint attention (34, 39).

Each session lasted two hours and started with individuals sitting together around tables. Artwork made the previous week (drawing, paintings and clay models) was displayed on the wall or on chairs and formed part of the summary of the previous week. Individuals were asked to use their artwork and their reflections to remember the topic from the previous week. The topic for the week's session was introduced with the addition of images projected onto the wall. For example, when exploring emotions of others, everyone looked together at portraits and reflected on differing interpretations of their emotions.

Co-therapists developed art exercises to help individuals learn and practice mentalizing skills, alongside taught material and handouts. An example exercise would be observational drawing to explore a 'not knowing stance'. The principle of adopting a 'not-knowing stance' is key in mentalizing; the therapist maintains humility and an active and curious approach rather than making assumptions or interpretations about what is going on in the other person's mind (37). In this exercise, individuals were asked to select a familiar object from their pocket or bag and draw it with curiosity as if seeing it for the first time. Drawing can be described as "*a marriage of what we know and what we see*" (41) and observational drawing is a helpful way of teasing out our assumptions from the curiosity involved in observation.

After a week or so individuals appeared comfortable to put their artwork up on the wall together. The transition from drawing in one's own space to looking at the work with others is a significant and sometimes daunting shift, involving movement from one dimension to another [for instance, internal to external, as well as implicit to explicit (27, 30)]. Once the artwork was on the wall, individuals were asked to reflect on the exercise with reference to

their art piece. They were encouraged to practice asking mentalizing questions of each other with the intention of stimulating each other's' mentalizing skills, as well as taking the opportunity to practice in a learning environment. Mentalizing questions can be simple curiosity that engages the individual and gets them to be curious about a particular aspect of the painting: *"What was it like to paint that bit?"* In comparison, apparent certainty and lack of curiosity might be something like: *"Wow that's really good! You're brilliant at drawing!"* A statement like this can sometimes be re-framed with the help of the therapist or others in the course: *"I really like your drawing, I'm trying to think what attracts me so much but I'm not sure what it is. Can you say a bit more about it?"*

Following the course, individuals were invited to share their reflections in Audio-Image Recordings (AIRs). AIRs have been developed by art therapists as a visual evaluation format and local examples are available to watch online (46). Individuals selected two to three art pieces to talk about in a recorded interview with a set template of questions. The interview was conducted with either therapist or another group member. Photos of the art pieces and the audio recording were edited together to make a short film which the individual kept as a record of their work. Some individuals gave consent for these recording to be used in education or research (47). Four individuals completed AIRs, and two provided co-therapists with further feedback on the course in a recorded focus group. Both the AIRs and the focus group were transcribed verbatim and compiled into an evaluation report that was presented locally within the trust. This evaluative project was registered and overseen by governance systems within the local NHS Trust. Although we do not refer to specific service user feedback in this paper (due to issues around consent), we have read and re-read these transcripts as part of our reflections on this course.

3 Experiential insights on delivering the Art MBT course

MBT practice is divided into a number of domains of intervention (37), some of which we have used here to organise our reflections. For the purposes of the Art MBT course we focused on the first four domains: 'Not-knowing stance', 'Developing trust and structuring the sessions', 'Mentalizing process' and 'Pre-mentalizing modes'. Later domains, which focus on the relationship, sit within Art MBT therapy. A psychoeducational introduction, like the Art MBT course, needs to be in place to support the individual moving on to Art MBT therapy.

3.1 Not-knowing stance

Individuals on the course welcomed the notion of a curious, 'not knowing' stance, particularly about other people's minds. They were interested to consider contrary evidence or alternative viewpoints, for example, reflecting on interpersonal interactions outside of the group in which they reported acting differently (or having wished to have done so) in terms of being curious about what was going on in

their own mind and the mind of the other. This echoes experiences in other patient groups, where MBT courses have increased the ability to think with multiple perspectives (48). Within the studio we saw that individuals could both practice their not-knowing stance, and model it with each other.

This stance is particularly important on the part of the therapist, as commonly individuals who experience psychosis can feel unable to express their own thoughts and feelings, due to worries about how these will be perceived by others, or the fear of potential consequences [such as involuntary hospitalisation (49)]. We have discussed above how some individuals can struggle with feeling disconnected from their own thoughts, feelings and behaviours, necessitating a sensitive and non-judgmental approach by the therapist to help them start to connect with and sense their experience. Reflective curiosity can be particularly helpful in navigating the individual's own personal experiences of psychosis (14). The medical co-therapist noticed that this felt like an important contrast to interactions where the clinician may feel it is their role to hold and impart knowledge.

3.2 Developing trust and structuring the session

Frequent reflections on uncertainty, paranoia and delusional ideas suggested significant experiences of fear and mistrust amongst group members. We also heard that experiencing psychosis can make it hard to be consoled by others, highlighting the fragility of attachment to others (50). Building epistemic trust needed particular attention and adaptations to practice, for example, making regular use of texts reminding individuals about the session, as well as give them a way to text back with information about late buses. More importantly, it explicitly modelled our intention to keep each individual in mind (18).

Springham and Camic underline how making art can invite feelings of failure if not carefully held by the therapist (31). Validating the art process and keeping a focus on it was important, as was working together at the same time. We notice a parallel with art education here, described as *"a drawing environment in which we can feel encouraged and supported, can dismantle our preconceptions, take risks, fail, make 'bad' drawings and allay our fears and inhibitions"* (41, p.9). This captures a quality of working with art materials that we suggest may help the individual to mentalize the self, in the company of the mentalizing group.

3.3 Mentalizing process

Individuals frequently linked heightened emotional arousal, stress and anxiety with a difficulty in expressing themselves or feeling blank-minded, reiterating the association between emotional dysregulation and poor mentalizing (14). Debbané refers to the therapist's need to carefully scaffold interventions, from 'safe' to more activating components in order to move through the elements of MBT (14). An empathic and validating intervention (seeing

things jointly from the individual's perspective and taking care to understand their experience) is recognised as an essential first and 'safe' level of intervention to return to when emotional arousal is heightened, risking a rapid decrease in mentalizing. For example, if an individual was struggling to know how to start, we could pause the art making to ask others about their own experience. This was not so much to offer ideas and solutions (which often happened), but to share in the experience and validate it.

More activating interventions include using the MBT dimensions, for example, encouraging a individual stuck in a 'cognitive state' of overthinking to be curious about the 'feeling' in their art making, rebalancing the cognitive v affect dimension. In therapy (as distinct from the Art MBT course) the work develops to include the individual's interpersonal relationship with the therapist and other group members and is placed at the deepest and most activating level in the spectrum of mentalizing interventions (37). It includes a focus on affective narrative, or the 'elephant in the room'. This narrative might relate to deeply held feelings of mistrust or alienation that have not yet been approached or identified in therapy (14). Similarly, it may also be the place where the narrative of the individual's avoidant attachment style can begin to be unpacked. The Art MBT course that is the subject of this paper is a foundation to this work up ahead.

We are interested in how using art in this process may have contributed to our ability to moderate the level of activation of our interventions and found that we became familiar with which materials represented safe-ground for different individuals. Soft dough, for example, was used in the first session with the intention of introducing individuals to art materials and to each other in a playful and easily achieved way. To describe this further: a structured exercise led individuals through a series of simple actions to form a body of dough with four legs and a tail from which point they could continue shaping the dough to create a real or imagined creature. The result tended to be a manageable experience involving touch, humour, playfulness and the production of something colourful and 3D. As described above, establishing a sense of safety and validation to return to was an important aspect of this course.

Individuals also created images relating to frightening psychotic experiences. We noticed when choosing images to speak about in the AIRs at the end of the course, it was often these images that were selected, suggesting some significance in the use of the art object to help make psychotic experience more explicit. Reflecting on this led us to develop a session devoted to the experience and definition of psychosis in future courses, called 'What is Psychosis?'

Making and looking at art objects together offered a way of maintaining focus on the mentalizing task of the group. Moving from art-making individually to looking and talking about it together with others helped attendees question their understanding of what they had made, practicing shifts between internal and implicit processes to external and explicit ones, widely recognised as a mechanism of change (28, 30, 32).

Learning about some of the processes of MBT helped individuals step back and reflect on their experience, referred to by some as 'giving distance'. Their understanding of implicit mentalizing was commonly adopted to describe making art and

the artwork itself, while explicit expression was associated with both artwork and speaking together about it. 'Pressing pause', introduced as a way of pacing oneself and stopping to reflect on a situation, was also reported as something practiced at home. We saw the individual's willingness to engage in new ideas as significant, underlining that opportunities to learn about mental health are important to this client group.

Co-therapists joined in the exercises with our own art making and reflections, identifying ourselves visibly as active participants in the group. As well as giving us the chance to self-mentalize, it invited opportunities for non-verbal dialogue between both therapists and group members. This could be used as a starting point to more explicit interactions, as thoughts and feeling were recognised and put into words (32, 35). In addition, having our images on the wall amongst others, invited individuals to be curious about what was going on in our minds as therapists, shifting our role to active participant rather than spectator or observer (32).

3.4 Pre-mentalizing modes

Individuals were able to grasp the essentials of mentalizing and referred to the usefulness of developing these abilities. They reflected on episodes of certainty that fears and delusions were real (associated with the pre-mentalizing state of psychotic equivalence), and were also able to identify these as a loss of mentalizing.

At times individuals described their reliance on the physical attributes of the art objects. For example, the use of art materials and their response to images was a way of finding expression when the individual felt that their ability to think was otherwise lacking or inaccessible. This use of the art object is associated elsewhere in MBT literature with teleological mode (29, 51). The physicality of the objects and the action may be particularly important when 'thinking' is difficult, while looking at them with others to understand some of their significance and meaning moves the process further towards a relational one.

On this first course we did not introduce the concept of pre-mentalizing modes into session material, although we have included them in subsequent courses. Once introduced, the pre-mentalizing 'pretend mode' and 'psychic equivalence' have been readily recognised by individuals on the courses and taken up as a way of naming experience.

4 Practice implications

Based on previous literature (14, 18) and our reflections, we recognise the importance of holding a non-judgmental, curious stance and building epistemic trust with those experiencing psychotic symptoms. Using a psychoeducational model within an MBT framework provided a clear structure to sessions. There was very good attendance, significant for a client group often associated with poor engagement. We noted that the inclusion of art encouraged most of the participants (but not all) to join the

course, making it relatively accessible. We felt that more focus on pre-mentalizing modes was required, so that individuals could start to identify when they might be moving into one of these states. The balance of teaching, art making and looking together needs to be balanced, given that individuals vulnerable to psychosis may also find it hard to concentrate during the taught components of the course. Lastly, the expression of satisfaction and enjoyment in learning and making sense of personal experiences felt significant and resonates with previous literature highlighting the importance of self-agency and the experience of being seen and known (52).

5 Limitations

We are unable to make any assertions in this paper regarding individual feedback, nor wider implications of this work. The lag in time between the course and writing this paper means we are unable to seek further individual consent to share their feedback here. Our course had very small numbers and we were limited geographically to one locality within a trust, so generalisability is very limited. Moreover, during the process of writing this paper, the authors have developed the Art MBT service further to include an ongoing Art MBT therapy group, individual support sessions, as well as running several further Art MBT courses, which may have impacted on their reflections.

6 Future research

Future research into Art MBT for psychosis requires service user involvement from the start; this could include study design, retrieving feedback and presenting findings locally and within published literature. Qualitative exploration into group member experience of the Art MBT course would be highly valuable in understanding the potential processes of change in this new combined psychotherapy modality for psychosis. Research should also aim to take place with greater numbers of individuals and across more localities, so that generalisability is increased. Following this, if other teams decided to continue to a full Art MBT service (including group therapy and individual sessions), further research into the effectiveness of this service would be vital.

7 Conclusion

Combining art therapy and MBT offers an accessible and practical group structure within which to build trust, develop joint attention and increase mentalizing capacity. Adopting MBT's 'not knowing' stance appeared to give group members more capacity to consider and discuss alternative viewpoints. A focus on attachment styles appeared very relevant and acceptable to

individuals, often leading to exploration and discussion about social relationships with family and others, including trying to 'understand misunderstandings'. We saw how mentalizing might operate within the use of art making in therapy in terms of the many different shifts demanded in its making and sharing. Art making may have further helped to slow down the mentalizing process to a manageable pace, making explicit mentalizing or expression of thoughts and feelings more possible. The enjoyment of art and creativity also made the course material more accessible for some. This Art MBT course introduces individuals experiencing FEP to a creative and social learning format in which they can practice joint attention and develop their mentalizing.

Data availability statement

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

Author contributions

SP and CT were co therapists of the sessions described and wrote the first draft of the paper. SP and BC completed the second draft and the submitted version. All authors contributed to the article and approved the submitted version.

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