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Emotional experience and metacognition among people with schizophrenia: Analysis of session by session and outcome of metacognitive-oriented psychotherapy

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ABSTRACT

Background: Research suggests that in-session emotional experiences in psychotherapy promote both session and treatment outcomes across different clinical samples and treatment approaches. However, little is known about how this notion applies to clients with schizophrenia, who experience particular deficits related to emotional experience. To explore this question, we investigated the association between clients' emotional experience and their session outcome evaluations and metacognitive growth in a metacognitively-oriented treatment, Metacognitive Reflection and Insight Therapy (MERIT). MERIT is a recovery-oriented treatment approach for psychosis that focuses on recapturing a coherent sense of self and personal agency by enhancing metacognitive capacity.
Method: Five-hundred-and-sixty-three sessions of 37 clients with schizophrenia who took part in an ongoing MERIT trial were analyzed. The Emotional Experience Self-Report (EE-SR) and Outcome Rating Scale (ORS) were collected on a session-by-session basis. Levels of metacognition ware assessed pre- and post-treatment using the Metacognitive Assessment Scale-Abbreviated (MAS-A) coding system. We used multilevel modeling to test our session-level predictions, and linear regression analysis for treatment-level predictions.
Results: Greater emotional experience, expression, and regulation within a session were associated with better session outcome. Regarding treatment level, greater emotional experience was associated with improvement in metacognitive mastery.
Conclusions: Our findings reveal that experiencing emotions in MERIT has significant implications for clients' subjective well-being during therapy sessions and for their ability to respond to psychological challenges using metacognitive knowledge. These findings lend weight to the idea that emotional experience is a key mechanism of change in metacognitive therapy for schizophrenia.

1. Introduction

Individuals with schizophrenia face diverse challenges in several domains linked to the experience of emotion including emotion recognition, emotion awareness, emotion expression, and emotion regulation (Hoekert et al., 2007; Kring and Moran, 2008; O'Driscoll et al., 2014; Trémeau, 2006; Turetsky et al., 2007). Deficits in these domains are known to influence a wide range of symptomatic, functional, and subjective outcomes, including social relationships, communication skills, motivation, work-functioning, global functioning, and psychiatric symptoms (Hofer et al., 2009; Kimhy et al., 2012; Kimhy et al., 2020; Kring and Elis, 2013; Ludwig et al., 2019).

The research that has established associations between emotional challenges and psychological outcomes has raised the important possibility that psychosocial treatments that encourage emotional experience may uniquely create recovery opportunities for clients with

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schizophrenia. One such form of psychosocial treatment widely believed to affect emotional experience is psychotherapy. Emotional experiences have been suggested not only to be a common occurrence during the process of psychotherapy but also to be a meaningful source of therapeutic change across diverse clinical samples and therapeutic frameworks (Burum and Goldfried, 2007; Carryer and Greenberg, 2010). One specific model of psychotherapy has focused on the effects of in-session emotional experience as defined by the extent to which clients are in touch and engaged with their emotions within a given psychotherapy session (Greenberg and Pascual-Leone, 2006). Recent research has found associations between in-session emotional experience and improvement of functioning among clients with affective and anxiety disorders (Fisher et al., 2016; Rubel et al., 2017), reduced symptoms and better reflective functioning among clients with panic disorder (Keefe et al., 2019), and better therapeutic alliance and reduced distress among clients with a major depressive disorder (Town et al., 2017).

To date, however, there is no systematic research into whether this pattern of results holds true for people with schizophrenia. In other words, is being engaged with emotional experiences during psychotherapy also positively related to outcome in schizophrenia? To explore this question, the current study explored the impact of in-session emotional experience, expression, and regulation on outcomes in people with schizophrenia treated with Metacognitive Reflection and Insight Therapy (MERIT; Lysaker and Klion, 2017).

Whereas most current evidence-based practices for treating psychosis are focused on symptom reduction and skill acquisition (Combs et al., 2007; Hagen, 2011; Moritz and Woodward, 2007), MERIT is more directly concerned with subjective aspects of recovery including the recapturing of a sense of agency, purpose and meaningful place in the world (Slade, 2009; Leonhardt et al., 2017). MERIT seeks to achieve these ends by stimulating the development of the capacity for metacognition. The promotion of metacognitive capacity is believed to allow for individuals to make meaning of and respond effectively to the challenges and possibilities that they face in life and ultimately experience themselves as fully connected to others within their communities (Hasson-Ohayon and Lysaker, 2021; Lysaker and Klion, 2017; Lysaker and Hasson-Ohayon, 2021).

The term metacognition was originally described as "knowledge and cognition about cognitive phenomena" (Flavell, 1979). There are several treatments that address metacognitive deficits and each seem to emphasize different aspects of the construct (Lysaker et al., 2018). For example, metacognitive therapy is focused on the beliefs people have about their cognitions (Wells, 1995) and metacognitive training is focused on cognitive distortions and overconfidence in false judgments (Moritz and Woodward, 2007). In contrast, MERIT relies on the integrated model of metacognition which uses a somewhat broader understanding of the term metacognition. This model addresses the processes which allow individuals integrate information to form larger pictures of their lives (Lysaker et al., 2020a,b, 2021). Of note, this approach follows the work of Semerari et al. (2003) and understands metacognition as involving four different domains including awareness of oneself, awareness of others, awareness of oneself and others in the larger social context, and the use of this reflective knowledge to respond to psychological challenges.

Evidence supporting the clinical importance of metacognition in psychosis can be found in a metanalysis that showed metacognitive abilities were associated negatively with levels of psychiatric symptoms and positively with psychosocial functioning measures (Arnon-Ribenfeld et al., 2017). Research supporting MERIT's effectiveness in improving different dimensions of metacognition such as mastery and self-reflection includes randomized controlled trails (Vohs et al., 2018; de Jong et al., 2019), open trails (Bargenquast and Schweitzer, 2014; de Jong et al., 2016) and a series of case studies (e.g., Cohen-Chazani et al., 2021; Arnon-Ribenfeld et al., 2018; Igra et al., 2020).

To study the effects of emotional experience on outcome in MERIT, the current study utilized a combined session-by-session and pre-post

treatment approach. Previous evidence has highlighted how session-by-session evaluations of in-session client experience can help identify change mechanisms in psychotherapy (e.g., Atzil-Slonim et al., 2018; Rubel et al., 2017). Importantly, these studies suggest that exploring in-session emotional experience via a session-by-session approach could allow researchers to trace the role of emotional processes in both session gain levels and treatment outcome levels. Given the centrality of emotional experiences for well-being and metacognitive abilities, in-session emotional experience could be especially important for metacognitive-based psychotherapy with clients with schizophrenia. Of note, MERIT aims to promote emotional reflection by enhancing processes of identification, differentiation, and integration of emotional experiences with broader mental activities across multiple narrative episodes (Lysaker and Klion, 2017). Interestingly, a study examining clients diagnosed with panic disorder showed that emotional experiences in panic-focused psychodynamic psychotherapy promoted reflection (Keefe et al., 2019), which is a core part of the operational definition of metacognition (Hasson-Ohayon and Lysaker, 2021). However, previous studies have not yet examined the role of emotional processes in MERIT. In the current study we assessed session-by-session emotional experience and explored its associations with subjective well-being at the session level and metacognitive growth at the overall therapy level, among people with schizophrenia.

Our hypotheses were:

1. Higher emotional experience scores at the end of each session would be associated with better personal well-being after the session (controlling for pre-session personal well-being).
2. Higher mean level scores of emotional experiences across the treatment would be associated with more metacognitive improvement following treatment.

2. Methods

2.1. Participants and treatment

This study was a part of a randomized controlled trial of MERIT that includes session-by-session process assessment at a community clinic at Bar-Ilan University (Clinicaltrial.gov ID NCT03427580). Of note, the main outcomes of the trial were metacognition, psychiatric symptoms and quality of life. In addition to pre-post measures, the process variables of the trial included session by session evaluations of both intervention characteristics such as therapeutic alliance and fidelity, as well as personal tendencies and experiences such as subjective well-being and emotional experiences. A recent study based on a sub set of the data collection focused on process measures and assessed which specific interventions of MERIT enhance therapeutic alliance and session outcome (Lavi-Rotenberg et al., 2020). An additional study (Hasson-Ohayon et al., submitted) compares MERIT and waiting list groups with regard to main outcomes of symptoms, quality of life and metacognition. The current study is focused on the process measures of emotional experience and their relation to session outcome and changes in metacognition.

Participants were 37 adults diagnosed with schizophrenia (n = 34, 91.9%) or schizoaffective disorder (n = 3, 8.1%). All clients had a diagnosis of schizophrenia spectrum disorders according to previous medical data as well as according to the Mini International Neuropsychiatric Interview (Sheehan et al., 1998) that was conducted as part of the intake procedure. Data were collected from 563 sessions that took place from January 2018 to December 2020. Clients had a mean age of 38.5 (SD = 9.37, age range 23–56 years), and the male/female ratio was 24:13 (64.9%:35.1%), respectively. The majority of participants were single (n = 31, 83.8%); five (13.5%) were married; and one (2.7%) was divorced. The mean educational level was 12.5 years (SD = 1.87), and 22 (44.1%) were fully or partially employed. The mean age of receiving a diagnosis was 22.5 (SD = 8.95), and the mean number of lifetime

psychiatric hospitalizations was 2.76 (SD = 2.86). Both prior to and during the study, all clients were taking prescribed antipsychotic medication and receiving rehabilitative services in the community.

Clients approached the clinic voluntarily, seeking therapy due to psychological challenges. Exclusion criteria were intellectual disability, neurological disorders, substance use problems, acute psychosis, and risk for suicidal behavior, based on the intake interview. Therapists were 11 clinical or rehabilitation psychology interns who took part in a structured MERIT training prior to the trial and participated in one weekly hour of group supervision provided by a MERIT expert (last author of current study). MERIT includes the implementation of eight core therapeutic elements within each session. The core elements are posited to interact synergistically and allow clients the opportunity to practice and become better able to form a more integrated sense of themselves and others, and then use that knowledge to better understand and manage the challenges they face in life (Lysaker et al., 2020). The core elements of MERIT are: (a) focusing on the client's agenda, (b) introducing the therapist's mind, (c) reflecting on narrative episodes, (d) exploring the psychological problem, (e) reflecting on interpersonal processes, (f) reflecting on therapeutic progress, (g) stimulating the client's self-reflectivity and understanding of the other's mind, and (h) stimulating the client's mastery (Lysaker and Klion, 2017).

Clients who wished to take part in the trial were offered 24 weekly sessions of MERIT. The mean treatment length was 15.5 sessions (SD = 7.28, range 3–24).[1] Clients with fewer than three recorded sessions were excluded from the study, as the procedure requires at least three observations for each client (Hox, 2010). Of the 37 clients initially included in the study, four (10.8%) clients had not completed therapy by the time of our data analysis, three (8.1%) clients were withdrawn from the study and referred to other mental health services more in line with their needs, and five (13.5%) clients dropped out during therapy. Thus, the analysis of the first hypothesis comprised data from 563 sessions of 37 clients, and the analysis of the second hypothesis comprised data from 452 sessions of 25 clients who completed post-treatment evaluation.

2.2. Instruments

2.2.1. Pre-post measures
Indiana Psychiatric Illness Interview (IPII; Lysaker et al., 2002). The IPII is a semi-structured interview developed to assess how individuals understand their experience with mental illness. The interview consists of five open-ended questions concerning the life story and illness history of the client, allowing for metacognition to naturally arise when clients talk about their life narrative. In the current study, the IPII was administered by a clinical psychologist during the intake procedure, and again at the end of the therapy. Responses were audiotaped and transcribed, and metacognition was later rated using the Metacognition Assessment Scale–Abbreviated (MAS-A).

Metacognition Assessment Scale–Abbreviated (MAS-A; Lysaker and Klion, 2017, 2005, 2010) The MAS-A consists of four domains that reflect one's ability to understand different mental phenomena and use this understanding in order to cope with other psychological challenges: (a) self-reflectivity or the ability to comprehend one's own mental states; (b) understanding the mind of the other or the ability to comprehend others' mental states; (c) decentration or the ability to comprehend that there is a world that exists outside them, and that others have their own independent motives and desires; and (d) mastery or the ability to use psychological self-knowledge when responding to social and psychological challenges. Each of the four domains is rated on an aligning subscale: self-reflectivity and mastery are on a 0–9 scale; understanding

of others is on a 0–7 scale; and decentration is on a 0–3 scale. Higher scores indicate a higher complexity of functions and ideas in each domain. Encoding is done by quantifying the frequency and level of detail in spontaneous speech with regard to the individual's thoughts and feelings about the self and others. Previous studies found good-to-excellent levels of interrater reliability and acceptable test-retest stability (Lysaker et al., 2005, 2010). Evidence for the validity of the MAS-A is found in studies showing that higher MAS-A scores were associated with better performance in multiple domains of neurocognition (Lysaker et al., 2007), social cognition (Lysaker et al., 2010), awareness of illness (Lysaker et al., 2005), and elements of cognitive insight (Lysaker et al., 2008). In addition, higher levels of MAS-A scores were associated with less emotional withdrawal and paranoia (Lysaker et al., 2005).

In the current study, evaluations were carried out in accordance with the MAS-A encoding system by two trained raters who were masked to the time of the transcribed interview (i.e., raters did not know whether the interview was conducted pre or post treatment). Using intra class correlation the interrater reliability of the subscales of the MAS-A ware found to be: Self reflectivity- 0.74, understanding the mind of other- 0.75, decentration- 0.58 and mastery- 0.60. The internal consistency of the four subscales was 0.88.

2.3. Session-by-session measures

Outcome Rating Scale (ORS; Miller et al., 2003). The ORS is a visual analog scale developed as a brief alternative to the OQ-45 (Lambert et al., 2004). The scale is widely considered a valid indicator of progress in treatment and demonstrates strong reliability estimates (Miller et al., 2003). The ORS is designed to assess subjective well-being, functioning, interpersonal relationships, and social role performance (Lambert et al., 2004). In the current study, respondents completed the subjective well-being subscale before and after each session in order to assess within-session changes. The scale yields scores ranging from 0 (very low well-being) to 10 (very high well-being).

Emotional Experience Self-Report (EE-SR; Fisher et al., 2016). The EE-SR is a scale inquiring about clients' estimates of their own emotional experience during the session. The scale was inspired by observer-based rating systems that measure the depth of clients' experiences of emotions such as the Experiencing Scale (Klein et al., 1986). Clients are asked to endorse the extent to which they experienced their feelings in a rich and vivid manner on a scale ranging from 0 ("in today's session, I was disconnected from my emotions") to 7 ("in today's session, I was emotionally involved, and I fully and vividly experienced my emotions"). The EE-SR has been found to be both stable in measuring the same person over time and sensitive in picking up changes within the person (Fisher et al., 2016). The scale consists of three subscales: emotional experiencing, emotional expression, and emotional regulation. In the current study, reliability for the emotional experience measure (α = 0.73) and the emotional regulation measure (α = 0.72) were satisfactory; reliability for the emotional expression measure (α = 0.41) was low.

2.4. Data analytic strategy

The session-level dataset had a hierarchical structure (sessions nested within clients); as a result, individual observations were not independent of one another. For this reason, to test the study's hypotheses regarding the associations between session-level emotional experience and session-level well-being improvement, we used multilevel modeling (Hox, 2010). Specifically, a two-level multilevel model was used, partitioning the total variability in the outcome variable of session s of client c into two components: within-client variability at Level 1 and between-client variability at Level 2. The predictors (i.e., emotional experience, expression, regulation, and pre-session ORS) were person-mean centered, which allowed us to examine the associations at

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[1] Of note, sessions between March 2020 and July 2020 took place via Zoom due to a COVID-19 lockdown and were not part of our data analysis as clients did not complete measures during these sessions.

the within-client level. Mean predictors per participant were included in the multilevel model in addition to person-mean centered predictors. We tested the need to include the therapist at Level 3, but a deviance test indicated no improvement in fit statistics. All session-level analyses were conducted using R-nlme library (Pinheiro and Bates, 2022).

The treatment level dataset was analyzed using linear regressions. The average level of overall emotional experience of each client was used to predict subsequent change in metacognition.

3. Results

3.1. Metacognition pre-post-treatment

Table 1 presents the means and standard deviations for each of the MAS-A subscales at the beginning of treatment and after treatment and the results of paired *t*-tests comparing pre- and post-treatment metacognitive levels. There was a significant increase in clients' capacity for self-reflection ($t(24) = 2.46$, $p < 0.05$) and mastery ($t(24) = 2.16$, $p < 0.05$) following treatment. There were no significant changes in the metacognitive understanding of the other's mind or in the decentration subscales. There were medium effect sizes for the improvement in self-reflectivity (Cohen's d = 0.52) and mastery (Cohen's d = 0.48) following treatment. There was a small effect size for the improvement in understanding the mind of others (Cohen's d = 0.26) and we did not find treatment to affect the decentration scale (Cohen's d = −0.07).

3.2. Power analysis

The sample size was aimed to be able to find small effects on the session level and medium effects on the treatment level. We used the R package param test (Hughes, 2017) to perform power simulations for both analyses. For session level results, with 37 participants and an average of 15 sessions per participant, power to find a small effect (d = 0.2) was over 0.99. For treatment level results, with 37 participants, power to find a medium effect (d = 0.5) was 0.9. However, as some participants could not be entered into the analysis (see method section for reasons for exclusions of cases) only 25 participants remained, leaving less than adequate power of .7 to find a medium effect.

3.3. Session-level results

To test whether emotional experience, regulation, and expression were associated with post-session ORS, the following two-level model was estimated:

3.3.1. Level 1

ORS-Post-Session(ti) = β(0i) + β(1) × Experience Mean Centered(ti) + β(2) × Expression Mean Centered (ti) + β(3) × Regulation Mean Centered(ti) + β(4) × ORS-Pre-Session Mean Centered(ti) + β(5) × Experience Client Mean(i) + β(6) × Expression Client Mean (i) + β(7) × Regulation Client Mean(i) + β(8) × ORS-Pre-Session Client Mean(i).

3.3.2. Level 2

β(0i) = γ(00) + u(0i).

In this model, the reported post-session ORS of client i at time t was modeled on Level 1 by emotional experience, emotional expression, and emotional regulation centered around each client's mean in order to isolate the within-subject effects (Raudenbush and Bryk, 2002), while controlling for the level of pre-session reported ORS. On Level 2 the slope was modeled as fixed effects (i.e., the sample's mean effects) as well as random effects (i.e., the deviation of the client's effects from the fixed effects). Table 2 shows, as hypothesized, that in-session emotional experience, expression, and regulation were associated with greater post-session well-being.

3.4. Treatment-level results

To test whether clients' emotional experience predicted metacognitive change from pre-treatment we conducted linear regressions. We entered the mean score of the 3 subscales of the EE-SR (emotional experience, expression, and regulation) as predictors, and the metacognitive change score (pre-post) of each metacognitive scale (self, other, decentration, and mastery) as dependent variables. As Table 3 shows, it was found that emotional experience was a significant predictor of metacognitive mastery change ($\beta = 0.96$, $p = 0.036$). The overall model adjusted R^2 was 0.109. Emotional expression and regulation were not found to be significant predictors of mastery change. In addition, we found neither emotional experience, expression nor regulation to be significant predictors of the self, other, or decentration metacognitive subscales.

4. Discussion

Although research has suggested that healthy emotional experience is a vehicle for change in psychotherapy in general, there is a paucity of research focusing on whether emotional experience promotes change in schizophrenia. In this study, we therefore examined the effects of within-session emotional experience within a metacognitively-oriented

Table 2
Hierarchical linear regression predicting ORS post session.

	Value	SD	DF	t-value	p-value
(intercept)	7.06	0.10	522	71.37	*P < 0.001**
Emotion Experience (Mean Centered)	0.37	0.99	522	5.70	*P < 0.001**
Emotion Expression (Mean Centered)	0.23	0.65	522	2.77	*P < 0.01*
Emotion Regulation (Mean Centered)	0.22	0.84	522	2.99	*P < 0.01*
ORS Pre-treatment (Mean Centered)	0.50	0.03	522	13.08	*P < 0.001**
Emotion Experience (Client Mean)	0.08	0.18	32	0.45	.65
Emotion Expression (Client Mean)	0.30	0.18	32	1.63	.11
Emotion Regulation (Client Mean)	−0.14	0.18	32	−0.76	.45
ORS Pre-treatment (Client Mean)	0.85	0.05	32	15.44	*P < 0.001**

ORS: Outcome Rating Scale.
*P < 0.01.
**P < 0.001.

Table 1
Metacognition (MAS-A).

	Pretreatment M (SD)	Posttreatment M (SD)	t (24)	p	Effect Size (Cohen's d)
Self-Reflectivity	4.5 (1.58)	5.26 (1.35)	2.46	0.021	0.52
Awareness of Others	3.28 (1.06)	3.52 (0.78)	0.24	0.228	0.26
Decentration	1.04 (0.89)	0.98 (0.65)	−0.25	0.801	−0.07
Mastery	3.72 (1.44)	4.38 (1.20)	2.16	0.041	0.48

MAS-A: Metacognition Assessment Scale–Abbreviated.

Table 3
Linear regression predicting Metacognitive Mastery change.

	Estimate	SD	t (21)	p-value
(intercept)	0.59	0.29	2.04	.054
Emotion Experience	0.96	0.43	2.24	P < 0.05
Emotion Expression	0.41-	0.50	−0.81	.42
Emotion Regulation	0.22	0.44	0.51	.61

psychotherapy, MERIT, for clients with this mental health condition. We found that greater emotional experience, expression, and regulation within a session were associated with better post-session subjective well-being and that greater emotional experience during therapy predicted post-treatment metacognitive mastery growth.

A possible interpretation of our session-level findings is that experiencing, expressing, and regulating emotions in the context of mutual metacognitive exploration provides clients with emotional relief leading to improved levels of subjective well-being. This understanding is consistent with previous evidence of in-session emotional experience predicting improved well-being among clients without serious mental disorders (Fisher et al., 2016). Of note, various life events of individuals with schizophrenia, such as psychiatric hospitalization, receiving a schizophrenia diagnosis, and disclosing their mental condition to others may give rise to intense conflicting emotions that are hard to experience, express, and regulate (Berna et al., 2011). Previous case reports have shown the benefits of emotional processing and meaning-making of illness perception and psychotic experiences within MERIT (Igra et al., 2020; Cohen-Chazani et al., 2021).

The importance of identifying the contribution of within-session gains to overall treatment outcomes should be further explored. It might be that long-term processes such as adherence and motivation form a link between in-session gains and post-treatment outcomes. Of note, previous research has focused on baseline predictors for favorable outcomes in psychotherapy for psychosis (e.g., female gender, older age, and higher clinical insight; O'Keeffe et al., 2017) and has also focused on predictors for dropout (e.g., lack of insight and low social functioning; Lincoln et al., 2014). Further investigation should explore how session-level outcomes, such as improved subjective well-being, affect therapy level outcomes and clients' adherence to therapy.

In addition to the session-level findings, we found pre-post improvements in self-reflectivity and mastery subscales, in accordance with a previous report of a smaller sub-sample of the current trial (Lavi-Rotenberg et al., 2020). We further found a link between the mean score of emotional experience during therapy and the change in metacognitive mastery following treatment. Namely, clients who had greater emotional experience during therapy improved more in their ability to respond to psychological challenges in a metacognitive manner. It could be that experiencing emotions in a nonjudgmental intersubjective space allows clients to better tolerate, differentiate, and find new meanings in their emotions, thereby promoting reflective emotional functioning that helps them respond in a more complex and integrative manner to psychological problems. It should be noted these findings are in line with previous findings showing that in-session emotional components combined with cognitive insight (which is a core part of MERIT) predicted therapeutic change among people without serious mental disorders (Høglend and Hagtvet, 2019; McCarthy et al., 2017), suggesting that integrating emotional experience with reflective processes is beneficial for therapy outcomes.

When we examined scores on the three subscales of emotional experience, we did not find that emotional regulation and expression predicted metacognitive change. It could be that the items of the emotional experience subscale ("I found new meaning in my emotional experience," "I understood why I have certain emotions or why I behave in certain ways") are more directly related to metacognitive coping, whereas emotional expression and emotional regulation influence other domains of outcome that were not part of our investigation. For

example, Keefe et al. (2019) found that emotional expression was associated with better interpersonal functioning, and Watson et al. (2011) found that emotional regulation predicted improvement in depressive symptoms and dysfunctional attitudes.

Finally, concerning MERIT specifically, the current results may provide important information about potential mechanisms of change. There is evidence of the effectiveness of MERIT in improving metacognition (de Jong et al., 2019; Lavi-Rotenberg et al., 2020; Vohs et al., 2018) and subjective well-being (de Jong et al., 2020) among clients with schizophrenia spectrum disorders, but the question of what particular aspects of MERIT are responsible for this improvement has remained unclear. Previous research suggested that the presence of two metacognitive elements within a session, including the introduction of the therapist's mind and reflecting on progress in therapy, were related to better session outcome in MERIT (Lavi-Rotenberg et al., 2020). The current study further elaborates on in-session predictors of session outcome and adds the role of the client's perspective, specifically in-session emotional factors. Our findings lend weight to the idea that emotional experience is a key mechanism of change in MERIT for clients diagnosed with schizophrenia.

4.1. Limitations and future empirical directions

The current study has several limitations. First, the sample was relatively small and sessions between March 2020 and July 2020 were excluded from the analysis due to COVID-19 lockdowns in Israel that led to online meetings and a temporary stop in session by session data collection. Thus, some of the null results may have been different in a larger sample. Second, reliability for the emotional expression measure was low. Third, while we found a significant association between emotional experience and metacognitive mastery, it is not significant after Bonferroni correction for multiple-comparisons. Hence, this finding should be further replicated in future work with more statistical power. Forth, the study assessed emotional experience with subjective self-report ratings. Adding external ratings such as observers' ratings or advanced computerized analysis of emotional experiences (e.g., assessing arousal in vocal data; Paz et al., 2021) could help develop a fuller picture regarding the impact of emotional experience on therapy outcomes. Further investigation should extend the perspectives of emotional experience and explore the effects of the therapist's perspective, or of a dyadic perspective (i.e., the associations between clients' and therapists' ratings of emotional processes). Finally, although the in-session self-reported emotional experience captures three main emotional aspects, future examinations might focus on the in-session experience and expression of specific emotions as well as on in-session specific emotion regulation strategies, in order to clarify a more nuanced resolution of the interplay between emotions and metacognition.

4.2. Clinical significance

Our findings advance the idea that the outcomes of a metacognitive approach to psychotherapy can be enhanced by emotional processes such as making sense of emotional experiences. Finding new meanings in their emotional experiences seem to help clients to decide how to cope with their life in more adaptive ways. Therefore, it is recommended to cultivate opportunities for emotional identification, differentiation, reflection and integration with broader mental activities, in ways that are aligned with clients' metacognitive capacity.

Author statement

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript.

Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in Journal of Psychiatric Research.

Declaration of competing interest

The authors declare that they have no competing interest.

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