

Reliability and Validity of the Emotional Processing Self-Report

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Deficits in emotional processing are considered to underlie a range of psychopathologies, and thus constitute a crucial target to improve mental health. Given the broad consensus on the importance of emotional processing during psychotherapy to reduce symptomology, it is surprising that there is no self-report scale designed to measure this construct. The purpose of this study was to develop the Emotional Processing Self-Report (EP-SR), a practical easy-to-use tool for assessing client emotional processing during therapeutic sessions. In Study 1, 53 items were developed according to theory and evaluated by experts. Exploratory factor analyses of the newly created EP-SR items were administered in a cross-sectional design to 124 individuals in treatment. In Study 2, multilevel exploratory factor analyses were performed on a sample of 114 patients who completed the EP-SR after each therapy session (1956 measurements). The results indicated that the EP-SR could be used to assess three independent lower order emotional processes: emotional expression, regulation, and understanding emotional meaning. In Study 3, multilevel confirmatory factor analysis was conducted on additional sample of 77 patients who completed the EP-SR after each therapy session (1,423 measurements). Results confirmed the factor structure of the EP-SR. The internal consistency, convergent, incremental, and predictive validity of the EP-SR were confirmed by showing its association with clients' process and outcome measures. The results of these three studies support the reliability and validity of the EP-SR and its clinical importance. Given its user-friendliness and strong psychometric properties, the EP-SR emerges as a good instrument to assess individuals' emotional processing.

Clinical Impact Statement

Question: The present study aims to develop the Emotional Processing Self-Report (EP-SR) to assess clients' emotional processing during therapy sessions and evaluate its psychometric properties.

Findings: The EP-SR reliably measures three key aspects of emotional processing: expression, regulation, and understanding emotional meaning; and it demonstrates strong validity and clinical relevance.

Meaning: The EP-SR provides a user-friendly tool for assessing individuals' emotional processing in therapy, potentially informing therapeutic interventions and progress monitoring.

Next Steps: Future research should explore the EP-SR's utility in various therapeutic modalities and populations to enhance its clinical applicability.

Keywords: emotional processing, emotional expression, emotion regulation, validity

Supplemental materials: <https://doi.org/10.1037/pst0000575.supp>

This article was published Online First April 7, 2025.

Andres Perez-Rojas served as action editor.

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The data and study materials can be obtained by request. The authors report no financial relationships with commercial interests.

Hadar Fisher played a lead role in conceptualization, data curation, formal analysis, methodology, project administration, visualization, writing—original draft, and writing—review and editing. Haran Sened played a supporting role in writing—review and editing and an equal role in formal analysis. Fredrik Falkenström played a supporting role in formal analysis and writing—review and editing. Eshkol Rafaeli played a supporting role in

methodology, supervision, and writing—review and editing. Eran Bar Kalifa played a supporting role in formal analysis and writing—review and editing. Jeanne Watson played a supporting role in writing—review and editing. Dana Atzil Slonim played a supporting role in conceptualization, supervision, and writing—review and editing.

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For decades, the dominant paradigm in psychotherapy research involved testing the efficacy of treatment packages or comparing two treatment packages to determine which one was best for a specific disorder (the “horse race” approach). However, many of these studies found only negligible or no differences between packages’ outcomes, instead providing moderate evidence of the effectiveness for many types of therapy (Cuijpers et al., 2020). Despite this huge effort, meta-analyses suggest that overall, treatment effects have not improved (Johnsen & Friborg, 2015; Ljótsson et al., 2017; Weisz et al., 2019). In recent years, there has been a growing shift away from the evaluation of the relative effectiveness of specific treatment protocols toward evaluating evidence-based processes of change as an alternative approach to understanding and treating psychological problems (Ciarrochi et al., 2022; Hayes et al., 2020). This shift has led to a growing realization that several core client processes are common to many theoretical approaches, and to a search for common factors that would integrate empirical evidence and establish transtheoretical consensual targets for therapeutic work (Gaines & Goldfried, 2021).

One promising avenue of exploration is emotional processing. Emotional processing is broadly defined as the ability to be aware of emotions, tolerate contact with them, and make sense of the emotional experience through exploration and reflection (Auszra et al., 2013; Pascual-Leone et al., 2016). Improvement in emotional processing over the course of therapy has long been considered a core change mechanism in most psychotherapy approaches (Greenberg, 2012; Whelton, 2004). Indicators of successful emotional processing include the person’s ability to talk about, be reminded of, or feel emotional events without experiencing intolerable levels of distress (Rachman, 1980). Previous research suggests that deficits in emotional processing are associated with psychopathology (Luminet et al., 2001; Mennin et al., 2002; Rude & McCarthy, 2003) and maladaptive coping (Gross, 1998; Gross & Muñoz, 1995; Ogińska-Bulik & Michalska, 2020). By contrast, greater processing of emotions and the opportunity to process them during therapy has been found to related to better treatment outcomes (Baker et al., 2012; Pascual-Leone & Yeryomenko, 2017; Pinheiro et al., 2021, 2022).

Various measures capturing different facets of clients’ in-session emotional processing have been developed over the years. Most rely on clinical observers who rate segments of therapy sessions from audio, video, or transcripts. Perhaps the most widely used observer-rated measure of clients’ in-session emotional processing is the Experiencing Scale (EXP; Klein et al., 1986), developed to evaluate *the depth of experiencing*, the extent to which clients engage and explore their feelings moment-by-moment as part of the process of personal meaning-making. A meta-analysis summarizing 10 independent samples and 406 clients found that the EXP has a small-to-medium association with standardized symptom improvements following treatment. Interestingly, even though the EXP is rooted in a client-centered approach, the treatment approach was not found to significantly impact this association (Pascual-Leone & Yeryomenko, 2017). In a recent study, emotion episodes from five sessions of 50 clients treated with cognitive behavioral therapy or emotion focused therapy were rated using the Experiencing Scale. An increase in emotional processing over the course of treatment was tied to pre- to post-therapy improvement in depressive symptoms. Furthermore, higher levels of emotional processing in one session predicted fewer symptoms in the next session (Pinheiro et al., 2021).

Other external coding measures have been developed to assess different aspects of clients’ emotional processing. These include the Client Expressed Arousal Scale-III (Warwar & Greenberg, 1999), the Classification of Affective Meaning States (Pascual-Leone & Greenberg, 2007), the Levels of Engagement Scale (Paivio et al., 2001), the Client Emotional Productivity scale (Auszra et al., 2013), and the Observer Measure of Affect Regulation (Watson et al., 2020). Clinical observational rating procedures have several advantages, including the ability to identify processes that the client may be unaware of and capturing therapeutic processes moment-by-moment. However, they also have several disadvantages. First, observer ratings are highly time-consuming, which makes them impractical when dealing with large numbers of repeated observations over the course of treatment. For example, coding only a few minutes of video using the EXP can take about an hour. Moreover, coding procedures require extensive training to produce reliable results. Therefore, studies involving external raters have primarily been used in studies analyzing between-patient effects of emotional processing on symptom severity. However, methodological research and simulation studies suggest that it is impossible to infer within-individual processes from between-individual attributes and vice versa (Curran & Bauer, 2011; Molenaar, 2004; Wang & Maxwell, 2015). Importantly, emotional processing is not a static variable but rather tends to fluctuate and change throughout treatment (Fisher et al., 2019). Thus, although the overall emotional processing level during therapy (between-patient effects) is informative, changes in emotional processing within the individual client during the therapeutic process are also crucial to examine (within-client effects; e.g., Fisher et al., 2016; Town et al., 2017).

Second, external observers can only assess clients’ emotions that are expressed behaviorally. As a consequence, these measures are strongly influenced by clients’ ability to verbally express their emotions (which is only one of several facets of emotional processing). Notably, a discrepancy was observed between clients’ reports of in-session *experienced* emotions and the emotions expressed as indicated by external observers based on arousal ratings of videotaped therapy segments (Warwar et al., 2003). This finding underscores the need for a self-report measure to evaluate emotional processing from the clients’ perspective (LeDoux & Hofmann, 2018). This measure should be seen as complementary to external rater measures.

Although there is widespread agreement among researchers and clinicians on the importance of emotional processing to ultimately reduce symptomology, surprisingly, there is no self-report instrument that measures this construct. Having statistically strong and practically useful measures of emotional processing are crucial to better understand the various ways in which it can lead to therapeutic change. In the past 5 years, state-of-the-art designs in psychotherapy research have been based on session-by-session measurement of processes and outcomes. This type of design enables the investigation of the temporal relationship between treatment processes and symptomatic change to determine which constitutes the predictor and which constitutes the outcome. However, these designs also require short practical measures to reduce the burden on the participant (client or therapist) who is asked to complete the questionnaires. The present study aimed to develop a user-friendly self-report measure that assesses emotional processing during psychotherapy sessions.

Several self-report measures have been developed to evaluate the general ability to experience and process emotions (as opposed to in-session emotional processing) and are widely used in various areas of research in psychology. For example, the Emotional Processing Scale (Baker et al., 2007; Lauriola et al., 2021) was designed to capture the multifaceted nature of emotional processing. It includes five subscales: suppression, signs of unprocessed emotion, controllability of emotion, avoidance, and impoverished emotional experience. Previous studies indicate that poor emotional processing is related to various psychopathologies, including general anxiety disorder (e.g., Górska, 2021), post-traumatic disorder (e.g., Ogińska-Bulik & Michalska, 2020), and greater somatic symptoms (e.g., Maroti et al., 2021). In addition, there is evidence that the ability to experience and process emotions as a trait improves after psychotherapy (Baker et al., 2012). However, given that this scale was designed to measure the general ability to process emotions as a trait, it is limited in its ability to measure the state of processing emotions in a given situation or track changes in this process in a shorter period of time.

An initial effort to assess clients' reports of in-session emotional experiences was made by Fisher et al. (2016), who developed a bipolar scale to evaluate clients' estimates of their own emotional experience during a session. Clients were asked to mark the extent to which they experienced their emotions 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*). Sessions in which patients reported more emotional experience than they usually did were followed by more improvement in these clients' levels of functioning in the next session (Fisher et al., 2016). Fisher et al. (2020) also tested which therapists' interventions facilitated the experience of emotions during therapy and found that moderate use of affect-focused interventions was associated with higher levels of emotional experience.

The present study was designed to develop a new measure building upon the previous measure of emotional processing but expanding it by combining additional dimensions making up emotional processing during psychotherapy sessions. This article describes the preliminary stages in the development of a multifaceted scale named the Emotional Processing Self Report (EP-SR). The goal was to produce a short and easy-to-use but nevertheless comprehensive measure that incorporates the key aspects of emotional processing. In particular the EP-SR is designed to evaluate the ability to experience and process emotions rather than to measure emotional states (cf. Profile of Mood States) or the intensity of emotions.

Emotional Processing

There are various definitions for emotional processing proposed by different researchers. For example, Rachman (1980) defined emotional processing as the mechanism through which emotional disturbances are absorbed and diminished, allowing an individual to function without significant disruption from these emotions. This process involves the gradual reduction of emotional responses over time, allowing individuals to return to normal functioning after experiencing emotional disturbances. Successful emotional processing, according to Rachman, includes the ability to talk about, see, listen to, or be reminded of significant events without experiencing distress or disruptions. Foa and Kozak (1986) offered a different perspective, describing emotional processing as the process by which

accurate information is incorporated into the fear structure and modifies the pathological elements in the structure.

Pascual-Leone and Kramer (2023) suggested that emotional change can occur in several distinct ways, which are not always fully compatible, and that to gain a comprehensive understanding, one should consider the various facets that together produce emotional change. To address this, in developing the EP-SR, we adopted Greenberg and Pascual-Leone's (2006) definition of emotional processing as the progressive awareness, working through, regulation, and integration of emotions experienced by the individual. We chose this definition for several reasons. First, it offers a comprehensive understanding of the various processes involved in emotional processing. From this perspective, emotional processing can be seen as a meta-process that includes subprocesses that together enable the processing of emotional information. Second, it aligns well with a broad range of psychological approaches, making it versatile and widely applicable.

Pascual-Leone et al. (2016) suggested that emotional processing is composed of the following facets. *Emotional experience* refers to the extent to which clients are actively engaged in the experience of emotions (including the sense of being the owner of an emotional experience and being in touch with deep emotional experiences). In other words, emotional experience does not simply consist of talking about emotions but also feeling them.¹ *Arousal* is defined as the extent to which physiological changes and bodily sensations are part of the client's emotional experience. *Emotional expression* is considered to be the extent to which clients express their emotions during the therapy session. *Emotion regulation* refers to the extent to which clients feel they can modulate their emotions. This concept encompasses both the ability to effectively manage and adjust emotional responses and the difficulties or failures in doing so, such as experiential avoidance driven by a fear of emotions. It involves a delicate balance between fostering emotional arousal that enhances awareness and managing these intense emotions. Emotion regulation plays a critical role in how emotional information is perceived, processed, and integrated, as it can either facilitate or obstruct deeper emotional processing by influencing the emotional information available for processing (Sheppes et al., 2011). *Understanding emotional meaning* is defined as the extent to which the client comprehends the meaning and significance of their emotional experiences and applies these insights to resolve problems.

Overview of the Present Studies

The present study aimed to develop a comprehensive self-report instrument that assesses the extent to which clients process their emotions during a treatment session. This scale is vital to clinical theory and practice, since it would enable the exploration of clients' perspectives on a critical therapeutic process in an easy-to-use manner. One major challenge that researchers face when developing a measure for implementation in studies involving repeated assessments and the evaluation of multiple constructs is the need to balance

¹ In the context of self-report, emotional experience also includes the general awareness that one is experiencing emotions. That is, a high rating on emotional experience indicates that the participant experienced emotions and was aware of experiencing them. A low rating on this scale could mean that the person either did not experience emotions or experienced them but was not aware of them. However, note that this concept is distinct from the model of levels of awareness suggested by Lane and Schwartz (1992).

burden placed on the participants while covering the complexity and retaining the psychometric properties of the measure (Gabriel et al., 2019). Based on our experience in session-by-session assessment, in the present study, we aimed to achieve 5- to 10-item scale.

Three studies were conducted. In Study 1, items were developed according to theory and expert feedback. Exploratory factor analyses (EFAs) of the EP-SR items were conducted on data from a cross-sectional sample of individuals who stated that they were in treatment. It was recently suggested that when testing the psychometric properties of a new scale, at least one sample should include individuals who share a key attribute with the target population (Clark & Watson, 2019). The EP-SR was designed to be administered to clients immediately after a therapy session. Therefore, the EFA was tested on a sample of clients and in the context of therapy sessions. In Study 2, multilevel EFAs were run on a sample of clients who completed the EP-SR after each therapy session. In Study 3, multilevel confirmatory factor analyses were conducted on data from a separate independent sample of clients to confirm the factor structure of the EP-SR. Finally, the internal consistency and the convergent, incremental, and predictive validity of the EP-SR were tested and confirmed.

Study 1

The aim of Study 1 was to develop an initial version of the EP-SR, a novel multidimensional measure of emotional experiencing and processing. The EP-SR is designed to encapsulate the five theoretically derived content areas of emotional experience, arousal, emotional expression, emotion regulation, and understanding emotional meaning. This study primarily focused on creating a concise initial version of the measure to be delivered in Study 2, which involves a more intensive session-by-session design.

Method

Participants

The study was conducted in Israel and participants were Hebrew speakers. The sample comprised 124 individuals (90 cisgender women and 34 cisgender men) aged 18–67 years ($M = 33.84$, $SD = 8.77$) who were undergoing treatment at the time of the study. Of the sample, 24.2% were single, 57.3% were married, and 0.8% was divorced. No other demographic information is available for this sample.

Measures

The EP-SR. Items for the EP-SR were generated from a comprehensive review of the literature on emotional processes in psychotherapy, consultation with experts in the field (clinical and research), and a critical review of existing scales and measures of emotional experiencing and processing. A scale blueprint (i.e., the hypothesized factor structure; see Table 1) was created to provide a framework for item creation (Rust & Golombok, 2014). The 53 items were developed to address the five key content areas hypothesized to comprise the multidimensional construct of EP-SR (Table 1).

An expert panel consisting of three international researchers, Prof. Lesley Greenberg, Prof. Eshkol Rafaeli, and Prof. Jeanne Watson—who have all published scales or other research in the field of emotional processing in psychotherapy, was consulted on the definition of internalization and the appropriateness of the items

generated for each content area, including item phrasing. The experts were asked to review the questions and rate the extent to which they found each item appropriate for the scale. The agreed-upon definition as well as the experts' ratings are provided in the Supplemental Material. Fourteen items were rated nine or above (on a scale of 1–10) by all three raters and were included in the next stage. Initial items were written in English and after the experts' ratings were translated into Hebrew. The potential ambiguity of the items and the possible indecisiveness, acquiescence, or the social desirability bias of respondents was tackled at the item development and expert review stages. The instructions for the EP-SR were as follows: "Using the scale provided below, please indicate how much each statement reflects your experience in the therapy session. In today's session" Participants rated the EP-SR on a 5-point Likert scale, with responses ranging from 1 (*not at all*) to 5 (*very much*).

Procedure

All participants were recruited through a lab email call for research volunteers or via social networking sites (e.g., Facebook). Potential participants were provided with a web link that directed them to the survey hosted on Qualtrics. After clicking on the link, individuals were directed to a consent form that outlined the purpose of the study and participation confidentiality. Participants were then instructed to indicate that they had read the consent forms and consented to participate in the research. The data and study materials can be obtained by request.

Overview of Study 1 Data Analyses

To explore the factor structure of the EP-SR items, a series of EFAs were conducted using polychoric correlations and specifying principal axis factoring and an oblique (i.e., direct oblimin) rotation. Bartlett's test of sphericity and the Kaiser–Meyer–Olkin measure of sampling adequacy was used to assess the factorability of the items. Overall sampling adequacy can be concluded, when Bartlett's test of sphericity is significant, and the Kaiser–Meyer–Olkin value exceeds .60 (Tabachnick et al., 2013). The number of factors to be retained was determined in line with best practices, including parallel analysis, the Kaiser–Guttman criterion (i.e., retention of factors with eigenvalues 1.0), examination of the scree plot, and investigation of the pattern matrix provided data-driven decisions regarding the best factor structure (O'Connor, 2000). The theory and the design blueprint were also used to guide decision-making as to the final items to retain after EFA.

Results

Preliminary Analyses

Bartlett's test of sphericity was significant ($\chi = 913.48$, $df = 120$, $p < .001$), and the Kaiser–Meyer–Olkin value was 0.76, indicating that the initial 14 items were appropriate for factor analysis. Furthermore, all measures of sampling adequacy taken from the diagonal of the anti-image correlation table were $> .70$.

EFA

The first EFA resulted in the extraction of five factors with eigenvalues greater than 1 (i.e., 4.23, 3.58, 1.39, 1.06, and 1.01,

Table 1*Scale Blueprint Identifying the Hypothesized Factor Structure of the EP-SR*

Item
General instruction: Using the scale provided below, please indicate how much each statement reflects your experience in the therapy session.
Emotional experience
1. I experienced deep emotions.
2. I felt in touch with my feelings, thoughts, memories, or other experiences.
3. I felt emotionally detached.
4. I experienced new emotions.
5. I experienced emotions in a way that I have not experience before.
6. I felt that my experience of emotions came from my guts.
7. I acknowledged my emotions.
8. Emotions did not seem to belong to me.
9. I became more aware of experiences that I was avoiding.
10. My emotions felt blunt/dull.
11. I took time to figure out what I am really feeling.
12. I switched my emotions off.
13. I did not experience emotions even when I spoke about emotional issues.
14. I allowed myself to fully experience my emotions.
Arousal
15. I felt that my body reacted to emotional issues (I felt physically uncomfortable, an uneasy feeling in my stomach, etc.).
16. I had emotional reactions such as tears or a shaky voice.
17. I was very aware of changes in bodily sensations.
18. I felt my emotions in some physical sense in my body
Emotional expression
19. I allowed myself to express my emotions.
20. I let my feelings come out freely.
21. I felt free to express my emotions.
22. I bottled my emotions up.
23. I kept quiet about my emotions
24. I expressed deep felt emotions.
25. I could not express my emotions.
26. I was able to communicate my emotional experience to my therapist.
27. I was able to express emotions I experienced during the week.
28. I was able to express my emotional experiences that came up during the session.
29. I tried to be less emotional and more rational.
Emotion regulation
30. My emotions remained within a "manageable" or "controllable" range.
31. It was difficult to tolerate unpleasant emotions.
32. I tried to avoid feeling intense emotions.
33. I was able to express my emotions constructively even when I felt very emotional.
34. My emotions felt too intense for me.
35. My emotional reaction was so strong that it felt unpleasant.
36. It was difficult to control my emotions or my reactions to them.
37. I felt overwhelmed by my emotions.
38. I felt that I could regulate my emotions
39. Talking about negative feelings made them worse.
Understanding emotional meaning
40. I was able to link my emotions to events from the previous week.
41. I was able to link my emotions to events from the past.
42. I was able to see that the same emotion is aroused in a range of situations.
43. I came to important realizations regarding my emotional experiences.
44. Some feelings or experiences of mine which had been unclear have become clearer.
45. I delved into my emotions in an attempt to get a thorough understanding of them.
46. I tried to work out why I felt the way I did.
47. What I understood regarding my emotions will help me in my day-to-day life.
48. I understood something about my feelings and emotions that will help me in the future.
49. I understood why I feel certain emotions or why I behave in a certain way.
50. I found new meaning in my emotional experiences.
51. I felt confused about my emotions.
52. I realized that my emotions are valid and important.

Note. EP-SR = emotional processing self-report.

respectively). Inspection of the pattern matrix revealed that these factors aligned with the blueprint. The first factor aligned with *emotional expression*, the second factor aligned with *emotional experience*, the third factor aligned with *emotion regulation*, the

fourth factor aligned with *arousal*, and the fifth factor aligned with *understanding emotional meaning*. Next, items loading highly on these five factors were evaluated for deletion against the following criteria: (a) poor factor loadings (i.e., loadings < .40) or small

communalities (i.e., $< .40$), (b) cross-loadings on two or more factors (i.e., loadings $> .4$ on the second factor), (c) a lack of conceptual/face validity (i.e., if the loading of an item on a factor did not align with theory or the design blueprint; Clark & Watson, 2019; Floyd & Widaman, 1995; Rust & Golombok, 2014; Smith & McCarthy, 1995). The use of these criteria resulted in the removal of eight items and a final set of eight items that did not meet any of the exclusion criteria. All items from the *emotional experience* subscale were excluded during this procedure because of high loadings on several factors. Given the importance of this scale and that an additional EFA was planned, we decided to include the item from the *emotional experience* subscale that had the lowest loading on the other factors, resulting in nine items (Clark & Watson, 2019).

In the final EFA of the nine items using a polychoric correlation matrix as input, two factors had eigenvalues greater than 1 and explained 55.67% of the variance in the items. This reduction in the factors was expected and resulted from the need to keep the scale short. The final nine items, factor loadings, and scale statistics are presented in Table 2. The two remaining factors were respectively labeled Emotional Processing and Emotion Regulation. Factor 1, emotional processing, had an eigenvalue of 2.76 and accounted for 30.71% of the variance in the items. The five items that loaded highly on emotional processing reflected the extent to which clients experienced, expressed, and generated a greater understanding of their emotions. The items had loadings that ranged from .57 to .81. Factor 2, emotion regulation, had an eigenvalue of 2.25 and accounted for 24.96% of the variance in the items. The four items that loaded highly on emotion regulation reflected the extent to which clients feel that their emotions and bodily arousal can be modulated. It had loadings that ranged from .60 to .92. The pattern of results was preserved when including or excluding the one item from the experience subscale. The internal consistency of the items on each subscale assessed with Cronbach's α was good (α s of .70, .75, .74 for the total scale, Emotional Processing, and Emotion Regulation, respectively).

Discussion Study 1

While our preliminary analysis suggested a five-factor solution aligned with our theoretical blueprint (emotional expression, experience, regulation, arousal, and *understanding emotional*

meaning), the refinement process led to a more parsimonious two-factor structure. Notably, items from the emotional experience subscale were excluded due to their tendency to load on multiple factors. Given the theoretical importance of this subscale, we decided to retain one item in subsequent analyses. The final EFA, conducted on nine items, yielded a two-factor solution that explained 55.67% of the variance in the data. Emotional processing (Factor 1) encompassed items reflecting the experience, expression, and understanding of emotions, accounting for 30.71% of the variance. Emotion regulation (Factor 2) included items addressing the modulation of emotional and physiological arousal, accounting for 24.96% of the variance. Both subscales demonstrated good internal consistency (Cronbach's α of .74 and .75 for emotional processing and emotion regulation, respectively), supporting the reliability of the scale in capturing its intended constructs. This two-factor solution aligns with the broader literature on emotional functioning, which often emphasizes the interplay between processing and regulation as critical dimensions in mental health and adaptive functioning (Webb et al., 2012). However, it is important to note that this study was conducted at the between-person level using cross-sectional data, serving primarily as a preliminary analysis for item selection. Study 2 examines the factor structure of these selected items at the within-person level, providing crucial insights into whether this factor structure holds when analyzing session-by-session fluctuations in emotional processing and regulation during therapy.

Study 2

The aim of Study 2 was to examine whether the factor structure of emotional processing identified at the between-person level in Study 1 would replicate when analyzing within-person variations across therapy sessions. Given that psychological processes often show different structural patterns when examined at between- versus within-person levels of analysis (Rush & Hofer, 2014), we sought to determine whether the two-factor structure found in Study 1 would hold when analyzing session-by-session ratings of emotional processing. While we did not formulate formal hypotheses, we expected that emotional processing might show greater differentiation at the within-person level. This means that distinct components of emotional processing, such as experience, expression, and understanding emotional meaning, might emerge as more clearly defined factors,

Table 2
Study 1 Factor Loadings

Item number/item text	Study 1: EFA factor loading	
	Emotional processing	Emotion regulation
I let my feelings come out freely	0.80	
It was difficult for me to express my emotions	0.79	
I found new meaning in my emotional experiences	0.66	
I felt in touch with important feelings, thoughts, memories, or other experiences	0.64	−0.42
I understood why I feel certain emotions or why I behave in a certain way	0.63	
I felt overwhelmed by my emotions		0.84
I felt that I could regulate my emotions		0.78
It was difficult to tolerate unpleasant emotions		0.68
I felt my emotions in some physical sense in my body		0.57
Eigenvalues	2.76	2.25
Item variance explained, %	30.71	24.96
Cronbach's α	.75	.74

Note. EFAs = exploratory factor analyses.

when analyzing repeated ratings of emotional experiences during therapy sessions compared to broader patterns between individuals.

Method

Clients

The sample was composed of 114 clients engaged in individual therapy recruited consecutively from a university outpatient clinic between August 2017 and August 2018. On average, the clients received 14 treatment sessions ($SD = 10.06$, range 1–64). Approximately, 86.9% ($N = 1956$) of the sessions were available for analysis. The clients were aged 19 or above ($M_{age} = 39$ years, $SD = 12.6$, age range 21–70 years), and the majority were cisgender women (62%) and cisgender men comprising 38%. In the sample, 43% of the clients were single, 14% were divorced or widowed, and 42% were married or in a permanent relationship. In addition, 66% percent had at least a bachelor's degree, and 82% were employed (full or part time). Eighty-nine percent of participants were Jewish, 65% identified as nonreligious, while the remaining 11% were non-Jewish. Additionally, 72% of participants were born in Israel, and of those not born in Israel, 79% came from Russia. The Mini-International Neuropsychiatric Interview Version 5.0 (Sheehan et al., 1998) was used to establish an Axis I diagnosis. The interview was conducted at intake by trained independent clinicians. All intake sessions were audiotaped, and 25% of the interviews were selected randomly and rated again by a second independent diagnostician. The mean kappa value for the Axis I diagnoses was excellent ($\kappa = 0.97$). Approximately, 23% of the clients reported experiencing relationship problems or academic/occupational stress; however, they did not meet the criteria for an Axis I diagnosis. Most clients were diagnosed with affective disorders² (43%) or anxiety disorders³ (23%) as the primary diagnosis. Additional primary diagnoses included obsessive-compulsive disorder (4%) or other disorders (7%).

Therapists and Treatment

The sample was composed of 58 therapists (78% women). They were MA or PhD students at different stages of clinical psychology training (1–5 years of experience). The therapists received 1 hr of individual supervision and 4 hr of group supervision on a weekly basis. All therapy sessions were audiotaped for use in supervision. Supervisors were senior clinicians with expertise in psychodynamic models.

Individual psychotherapy consisted of—one to two weekly sessions. The dominant approach in the clinic is a short-term psychodynamic psychotherapy treatment model based on a blend of object relations, self-psychology, and relational theories (Kohut, 1971; Winnicott, 1971). Treatment was open-ended in length; however, given that psychotherapy was provided at a university-based outpatient clinic, treatment lasted between 9 months and 1 year.

Procedure

The study was conducted in compliance with the university ethical review board. The study procedures were part of the routine battery in the clinic. Clients consented to participate as volunteers and were told that they could choose to terminate their participation in the study at any time with no effect on their treatment, and that the therapists would be unaware of their responses. The clients

completed the nine items EP-SR developed in the previous study electronically using computers located in the clinic rooms immediately after each therapy session. The instructions and scale were similar to those described in Study 1. Clients began completing the EP-SR from the start of treatment and continued to do so throughout the entire treatment period.

Analysis

To explore the data structure of the EP-SR, a series of multilevel EFAs was conducted using MPLUS, applying the same decision criteria as specified in Study 1.

Results

Preliminary Analysis

Barlett's test of sphericity was significant ($\chi = 6,278.78$, $df = 36$, $p < .001$), and the Kaiser–Meyer–Olkin value was 0.76, indicating that all nine items were appropriate for factor analysis. All measures of sampling adequacy taken from the diagonal of the anti-image correlation table were $> .60$.

EFA

Since the primary goal of the scale is to document within-person differences over the course of therapy, the first EFA looked at within-person factors with unrestricted between-person variance. This resulted in the extraction of three within-person factors with eigenvalues greater than 1 (i.e., 2.42, 1.85, and 1.09, respectively). Inspection of the pattern matrix revealed that these factors aligned with the blueprint. The first factor aligned with *understanding emotional meaning*, the second factor aligned with *emotion regulation*, and the third factor aligned with *emotional expression*. Finally, items loading highly on these three factors were evaluated for deletion against the following criteria: (1) poor factor loadings (i.e., loadings $< .40$) or small communalities (i.e., $< .40$) and (2) cross-loadings on two or more factors (i.e., loadings $> .3$ on the second factor). The use of these criteria resulted in the removal of two items, resulting in a final set of seven items that did not meet any of the abovementioned criteria. We ran a second EFA on the new set of items which confirmed the three-factor model, with a comparative fit index (CFI) of .998, root-mean-square error of association (RMSEA) $< .001$, and a standardized root-mean-square residual (SRMR) of .007. Factor loadings above .4 are presented in Table 3. The Akaike information criterion (AIC) of the total scale was 0.14, and AIC of the subscales ranged from 0.51 and 0.65, which was expected given the generality of the total scale and the specificity of each subscale (Clark & Watson, 2019).

² The following *Diagnostic and Statistical Manual of Mental Disorders, fourth edition* diagnoses were included in the affective disorders cluster: major depressive disorder, dysthymia, and bipolar disorder.

³ The following *Diagnostic and Statistical Manual of Mental Disorders, fourth edition* diagnoses were included in the anxiety disorder cluster: panic disorder, agoraphobia, generalized anxiety disorder, and social anxiety disorder.

Table 3*Study 2 Item Distribution and EFA Factor Loadings*

Item	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Emotion expression	Understanding emotional meaning	Emotion regulation
I let my feelings come out freely	4.16	0.88	−0.95	0.58	0.714		
It was difficult for me to express my emotions	2.00	1.10	0.94	0.013	−0.55		
I found new meaning in my emotional experiences	3.40	1.03	−0.44	−0.24		0.538	
I understood why I feel certain emotions or why I behave in a certain way	3.08	1.09	−0.24	−0.59		0.779	
I felt overwhelmed by my emotions	2.82	1.25	0.09	−0.99			−0.771
I was not able to tolerate unpleasant emotions	2.54	1.31	0.42	−0.93			−0.605
I felt my emotions in some physical sense in my body	3.04	1.29	−0.06	−0.106			−0.586
Eigenvalues					1.679	2.069	1.039
Item variance explained, %					12%	13.5%	19.1%
AIC					0.62	0.65	0.51
Cronbach's α					.79	.75	.76

Note. EFAs = exploratory factor analyses; AIC = Akaike information criterion.

Discussion Study 2

Our preliminary within-person analysis suggested a three-factor solution that aligned with our theoretical understanding of emotional change in therapy (understanding emotional meaning, emotion regulation, and emotional expression). The refinement process involved removing two items that showed poor psychometric properties, resulting in a final seven-item scale that maintained this three-factor structure. The final EFA demonstrated excellent model fit ($CFI = .998$, $RMSEA < .001$, $SRMR = .007$), supporting the robustness of this solution at the within-person level. Understanding emotional meaning (Factor 1) encompassed items reflecting clients' understanding and interpretation of their emotional experiences. Emotion regulation (Factor 2) included items addressing the modulation of emotional responses, and emotional expression (Factor 3) captured items related to the outward manifestation of emotions. All subscales demonstrated appropriate internal consistency, with AICs ranging from 0.51 to 0.65, while the total scale showed an expected lower AIC of 0.14 given its broader scope. This three-factor solution provides a more nuanced understanding of emotional functioning during therapy than the two-factor structure found at the between-person level in Study 1, suggesting that emotional processes may be more differentiated when examined at the within-person level. These findings align with recent theoretical work emphasizing the importance of studying psychological processes at the within-person level, as between-person structures may not necessarily reflect how these processes operate within individuals over time (Rush & Hofer, 2014).

A notable limitation of this factor structure is that each factor contains only two or three items. This limited number of items per factor can potentially impact the scale's reliability and may not fully capture the breadth and complexity of each construct, potentially leading to reduced construct coverage. Additionally, scales with few items are more susceptible to random measurement errors and may be less stable across different samples or time points. Despite this limitation, brief scales with strong psychometric properties are particularly useful in clinical settings, where time constraints are often a concern. They allow for efficient assessment without compromising too much on measurement quality. Study 3 was design to confirm this factor structure and examine how these factors fluctuate session by session and relate to therapeutic change during treatment.

Study 3: Testing Confirmatory Factor Analysis Session by Session and Validating the EP-SR

Study 3 aimed to confirm the factor structure of the seven-item EP-SR. We also investigated construct validity by demonstrating convergent validity, incremental validity, and predictive validity of the EP-SR subscale scores. Convergent validity was tested against the Difficulties in Emotion Regulation Scale (DERS) as reported by the patient before the session. Emotion regulation is a critical component of emotional processing, and it is included as one of the subscales of the EP-SR. Given the overlap between these constructs, we expected high correlations between presession emotion regulation and both the total EP-SR and its emotion regulation subscale. Predictive validity was assessed using several outcome measures, including DERS at the following assessment,⁴ patient satisfaction with the session, and patient and therapist ratings of symptoms after the session. Previous studies have consistently highlighted the importance of emotion processing for positive treatment outcomes (Goldman et al., 2005; Pascual-Leone & Greenberg, 2007). Consequently, we hypothesized that emotional processing and each of its subscales would significantly predict improvement in treatment outcomes. Convergent and incremental validity were tested against a measure of therapeutic alliance. We anticipated a significant positive association between therapeutic alliance and emotional processing based on strong evidence from prior research showing a robust link between these constructs (Fisher et al., 2016; Town et al., 2017). This relationship may arise from the interdependence of these processes or from shared variance related to participants' tendencies to rate positive items highly when satisfied with the session and their relationship with the therapist. While these constructs are related, they are also distinct, each having unique effects on treatment outcomes.

⁴ The DERS measure was used for two purposes in our validation analyses, reflecting different temporal relationships with emotional processing. Presession DERS served as a concurrent measure for convergent validity, assessing how clients' immediate emotion regulation difficulties relate to their emotional processing during the session. Postsession DERS functioned as an outcome measure for predictive validity, capturing how session-based emotional processing might influence subsequent regulatory capabilities. This dual use reflects our understanding that emotion regulation difficulties are not static but rather dynamic and capable of change, particularly through therapeutic processes such as emotional processing during the session.

Therefore, we expected a significant positive association between emotional processing and alliance, and that emotional processing would predict outcomes above and beyond the therapeutic alliance. Based on the studies noted, we expected small to medium effect sizes between emotional experience and its subscales and both outcome and alliance measures.

Method

Participants

The sample was composed of 77 clients receiving individual therapy recruited from the same university outpatient clinic as in Study 2 between August 2018 and August 2019. The clients were aged 19 or above ($M_{\text{age}} = 40$ years, $SD = 13.9$, age range 23–75 years), with 51% identifying as cisgender women and 49% as cisgender men. In the sample, 41.5% of the clients were single, 41.5% were married or in a permanent relationship, and 17% were divorced or widowed. In addition, 77% percent had at least a bachelor's degree, and 84% were employed (full or part time). Ninety percent of the participants were Jewish and 63% identified as nonreligious, while the remaining 10% were non-Jewish. Additionally, 77% of participants were born in Israel, and of those not born in Israel, 72% came from Russia. On average, the clients received 21.18 treatment sessions ($SD = 10.92$, range 2–65). Approximately, 88.3% ($N = 1,423$) of the sessions were available for analysis. Approximately, 26% of the clients reported experiencing relationship problems or academic/occupational stress; however, they did not meet the criteria for an Axis I diagnosis. Most clients were diagnosed with affective disorders (40%) or anxiety disorders (24%) as the primary diagnosis. Additional primary diagnoses included obsessive-compulsive disorder (6%) or other disorders (4%). The mean level of distress, as evaluated using the Outcome Questionnaire (OQ)-45, was 63.88 ($SD = 3.48$). Thirteen clients had started their treatment in the previous year and continued their treatment with another therapist and thus were included in both the Study 2 and Study 3 samples. These patients were excluded from the confirmatory factor analysis (CFA).

Measures

Difficulties in Emotion Regulation Scale—Brief Version-16 (Bjureberg et al., 2016). The DERS-16 is a brief version of the original 36-item measure that assesses the client's global ability to adaptively respond to distressful emotions in daily life across the following five separate domains: (a) nonacceptance of negative emotions (three items, e.g., "When I am upset, I become irritated with myself for feeling that way"); (b) inability to engage in goal-directed behaviors when experiencing negative emotions (three items, e.g., "When I am upset, I have difficulty getting work done"); (c) difficulty in controlling impulsive behaviors when experiencing negative emotions (three items, e.g., "When I am upset, I become out of control"); (d) limited access to emotion regulation strategies perceived as effective (five items, e; and (e) lack of emotional clarity (two items, e.g., "I have difficulty making sense out of my feelings"). Respondents rate each statement on a 5-point Likert scale that ranges from *almost never* (0%–10%) to *almost always* (91%–100%). Higher scores indicate difficulties with emotion regulation. The DERS-16 has been shown to have good reliability (Hallion et al., 2018) which was confirmed in our sample ($\alpha = .951$).

Hopkins Symptom Checklist—Short Form-11 (Lutz et al., 2006). The Hopkins Symptom Checklist—Short Form is an 11-item inventory and is a brief version of the Symptom Checklist-90-Revised (Derogatis, 1975). The items are rated on a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*extremely*) and refer to the previous week. Thus, the mean score of the 11 items represents the symptomatic state of the client during the previous week. It has high internal consistency ($\alpha = .92$) and concurrent validity (Lutz et al., 2006). The between- and within-person reliabilities for the scale in our sample were computed using procedures outlined by Cranford et al. (2006) for estimating reliabilities for repeated within-person measures, and the reliability levels were considered high in the present study (within = 0.82, between = 0.92).

Outcome Rating Scale (Miller et al., 2003). The Outcome Rating Scale (ORS) is a four-item visual analog scale developed as a brief alternative to the OQ-45. The scale is designed to assess changes in three areas of client functioning that are widely considered as valid indicators of progress in treatment: functioning, interpersonal relationships, and social role performance. Respondents complete the ORS by rating four statements on a visual analog scale anchored at one end by the word *low* and at the other end by the word *high*. The sum of the items ranges from 0 to 40, with higher scores indicating better functioning. The ORS was shown to have strong reliability estimates ($\alpha = .87$ –.96) and moderate correlations between the ORS items and the OQ-45 subscale and total scores (ORS total – OQ-45 total: $r = 0.59$). The reliability levels in the present study were considered high, with within-person reliability at 0.96 and between-person reliability at 0.90.

Session Evaluation Scale (Hill & Kellems, 2002). The Session Evaluation Scale (SES) is a five-item measure that assesses the client perceptions of session quality (e.g., "I am glad I attended this session," "I thought that this session was helpful"). Items are rated on a 5-point scale, ranging from 1 = *strongly disagree* to 5 = *strongly agree*. After reverse scoring the two negatively worded items, item responses are averaged, with higher scores reflecting higher perceptions of session quality. Hill and Kellems (2002) reported that the SES yielded adequate internal consistency ($\alpha = .89$ and .91). In the present study, the within- and between-person reliabilities for the scale were high (within = .84, between = .91). The SES showed fairly high internal consistency in the sample ($\alpha = .83$).

Client Working Alliance Inventory-SR (Hatcher and Gillaspay, 2006). The short form of the Working Alliance Inventory (Horvath & Greenberg, 1989) is a 12-item self-report based on Bordin's (1979) tripartite conceptualization of the client-therapist relationship. It includes three subscales: agreement between the client and therapist on goals, the degree of concordance on tasks, and the strength of the therapeutic bond. Clients were asked to use a 7-point Likert scale to rate how accurately each item describes their current therapy experience. The Working Alliance Inventory-SR has good reliability with α coefficients for overall internal reliability ranging from .85 to .95. The between- and within-person reliabilities found in our sample were high (within = .91, between = 1.0).

Procedure

The procedure was similar to the one detailed in Study 2. The clients completed the DERS, ORS, and Hopkins Symptom Checklist before each session and the EP-SR, Working Alliance Inventory, and the SES immediately after each therapy session. In addition, the

therapists also completed the ORS after each therapy session on their client's functioning.

Analysis

Multilevel CFA. Multilevel CFA (MCFA) was performed with R (Version 3.3.2) using the R packages “lavaan.” Model fit was determined using the RMSEA, the SRMR, and the CFI. CFIs $\geq .95$, RMSEA $\leq .08$, and SRMR $\leq .08$ suggested good fit (Hu & Bentler, 1999). Internal consistency was assessed using Cronbach's α . However, this statistic is sensitive to the number of items, such that brief scales will show lower internal consistency reliability estimates than longer scales with similar item correlations. To correct for this, we also calculated the AIC, which is a straightforward indicator of internal consistency (Clark & Watson, 2019).

Convergent, incremental, and predictive validity were tested by examining the associations between the EP-SR and relevant measures. To account for the multilevel nature of the data—sessions nested within patients—multilevel (hierarchical) linear modeling (Raudenbush & Bryk, 2002) was used. We report standardized effect sizes for fixed effects based on the semipartial R^2 parameter (Edwards et al., 2008). This statistic assesses the association of the fixed effect with the repeated outcome based on the F statistic of each parameter in the mixed model. Effect sizes for $R^2 \beta$ are considered small, medium, and large at 0.01, 0.09, and 0.25, respectively (Gignac & Szodorai, 2016).

Results

CFA

An MCFA for independent samples was performed. Fit statistics were a CFI of .932, RMSEA = .08 90% CI [0.061, 1], and SRMR .057, suggesting a moderate fit.

Association With Additional Measures

The results of the multilevel models are presented in Table 4. The total emotional processing scale showed consistent beneficial associations across all outcome measures, predicting fewer emotion regulation difficulties ($B = -1.688, p = .003$) and symptoms ($B = -0.104, p < .001$), better session evaluations ($B = 0.127, p < .001$), improved client outcomes ($B = 0.199, p = .035$), higher therapist-rated outcomes ($B = 2.013, p < .001$), and stronger working alliance ($B = 5.998, p < .001$). At the subscale level, understanding emotional meaning emerged as the most consistently beneficial component, showing significant associations with all outcome measures. Expression was primarily associated with positive session evaluations ($B = 0.083, p < .001$) and working alliance ($B = 1.59, p < .001$). The emotion regulation scale showed a more complex pattern with higher ratings on this scale was associated with fewer emotion regulation difficulties ($B = -1.215, p < .001$), and better therapist-rated outcomes ($B = 0.776, p < .001$), but interestingly, with lower session evaluations ($B = -0.04, p = .004$). Notably, all of these associations were calculated when adjusting for working alliance, indicating their incremental validity.

As for associations with working alliance itself, the total scale as well as the expression and understanding of meaning subscales were associated with working alliance. However, even the highest association, which was for the understanding emotional meaning

subscale, had an effect size of $f^2 = .169$ (equivalent to $r = .37$), which is only a moderate association. This suggests that the scale has good discriminant validity when compared to working alliance.

Additional Analyses

To explore whether EP-SR ratings fluctuate and change over the course of treatment, we calculated the intraclass correlation coefficient for the total scale. Results showed that 47% of the overall variability was within-person, and 53% was between-person, suggesting fluctuations in ratings between sessions as well as differences between participants. Additionally, we tested the hypothesis that emotional processing ability would improve over the course of treatment. For this purpose, we included the number of sessions as a predictor of the EP-SR ratings in a multilevel model (multilevel linear modeling). We found that emotional processing increased significantly over the course of treatment ($b = 0.005, SE = 0.001, df = 1,498, t = 6.37, p < .001$). In addition, the expression and meaning subscales significantly increased over the course of treatment (expression: $b = 0.007, SD = 0.001, df = 1,422, t = 4.97, p < .001$; meaning: $b = 0.01, SD = 0.002, df = 1,422, t = 7.01, p < .001$), whereas the Emotion Regulation subscale did not show a significant change ($b = 0.001, SD = 0.002, df = 1,498, t = 0.82, p = .41$).

Discussion Study 3

The CFA yielded moderate fit indices, suggesting that the proposed factor structure is reasonably supported by the data. The total EP-SR scale demonstrated consistent beneficial associations across all outcome measures, indicating its potential as a comprehensive measure of emotional processing in psychotherapy. Among the subscales, meaning understanding emerged as the most consistently beneficial component, showing significant associations with all outcome measures. This suggests that the ability to understand and interpret emotional experiences may be a crucial aspect of effective emotional processing in therapy.

The differential patterns observed for the expression and regulation subscales highlight the complex nature of these processes. Emotion expression was primarily associated with positive session evaluations and stronger working alliance, but not with symptom reduction or improved emotion regulation. This may indicate that the ability to express emotions contributes to a positive therapeutic relationship but does not necessarily translate directly to symptom improvement.

The complex patterns observed for expression and regulation suggest that these processes can have both adaptive and maladaptive manifestations depending on the context and how they are utilized. For instance, emotional expression could be cathartic and relationship-enhancing in some contexts but potentially overwhelming or counterproductive in others (Kennedy-Moore & Watson, 2001). Similarly, emotion regulation might involve both adaptive strategies that reduce distress and maladaptive strategies that suppress important emotional experiences (Aldao et al., 2010). Importantly, when considered together as part of the total EP-SR scale, expression and regulation contribute to a more comprehensive measure of emotional processing that shows consistent benefits across outcomes. This suggests that effective emotional work in therapy likely involves a balance of expression, regulation, and meaning-making, rather than relying solely on any single aspect of emotional processing.

Table 4
Study 3 Mixed Model Results

Variable	<i>B</i> (<i>SE</i>)	<i>t</i> (<i>df</i>)	<i>p</i>	<i>R</i> ²
Next meeting DERS				
Intercept	36.434 (1.469)	24.809 (1,291)	<.001***	
Expression	−0.653 (0.354)	−1.844 (1,291)	.065 [†]	.004
Regulation	−0.27 (0.303)	−0.889 (1,291)	.374	.004
Meaning	−0.821 (0.344)	−2.385 (1,291)	.017*	.006
Working alliance	−0.121 (0.03)	−4.047 (1,291)	<.001***	.025
Next meeting DERS				
Intercept	36.436 (1.469)	24.801 (1,293)	<.001***	
Emotional processing total	−1.688 (0.562)	−3.002 (1,293)	.003**	.016
Working alliance	−0.135 (0.028)	−4.868 (1,293)	<.001***	.040
Presession DERS				
Intercept	36.752 (1.488)	24.699 (1,418)	<.001***	
Expression	−0.513 (0.304)	−1.686 (1,418)	.092 [†]	.004
Regulation	−1.215 (0.264)	−4.602 (1,418)	<.001***	.036
Meaning	−1.069 (0.299)	−3.576 (1,418)	<.001***	.013
Working alliance	−0.061 (0.026)	−2.39 (1,418)	.017*	.009
Presession DERS				
Intercept	36.749 (1.488)	24.7 (1,420)	<.001***	
Emotional processing total	−2.752 (0.489)	−5.631 (1,420)	<.001***	.046
Working alliance	−0.057 (0.024)	−2.392 (1,420)	.017*	.010
Next meeting HSCL				
Intercept	1.835 (0.057)	31.97 (1,291)	<.001***	
Expression	−0.019 (0.018)	−1.093 (1,291)	.275	.001
Regulation	−0.04 (0.015)	−2.672 (1,291)	.008**	.004
Meaning	−0.047 (0.017)	−2.734 (1,291)	.006**	.005
Working alliance	−0.005 (0.001)	−3.597 (1,291)	<.001***	.008
Next meeting HSCL				
Intercept	1.835 (0.057)	31.989 (1,293)	<.001***	
Emotional processing total	−0.104 (0.028)	−3.711 (1,293)	<.001***	.024
Working alliance	−0.006 (0.001)	−3.98 (1,293)	<.001***	.029
Postsession SES				
Intercept	4.36 (0.068)	64.55 (1,401)	<.001***	
Expression	0.083 (0.016)	5.237 (1,401)	<.001***	.034
Regulation	−0.04 (0.014)	−2.898 (1,401)	.004**	.013
Meaning	0.092 (0.016)	5.911 (1,401)	<.001***	.039
Working alliance	0.024 (0.001)	17.489 (1,401)	<.001***	.349
Postsession SES				
Intercept	4.359 (0.068)	64.533 (1,403)	<.001***	
Emotional processing total	0.127 (0.026)	4.872 (1,403)	<.001***	.034
Working alliance	0.027 (0.001)	21.046 (1,403)	<.001***	.483
Next meeting ORS				
Intercept	5.925 (0.214)	27.742 (1,291)	<.001***	
Expression	0.013 (0.059)	0.227 (1,291)	.820	.001
Regulation	0.033 (0.051)	0.646 (1,291)	.518	.001
Meaning	0.176 (0.057)	3.064 (1,291)	.002**	.013
Working alliance	0.015 (0.005)	2.933 (1,291)	.003**	.014
Next meeting ORS				
Intercept	5.923 (0.214)	27.74 (1,293)	<.001***	
Emotional processing total	0.199 (0.094)	2.114 (1,293)	.035*	.009
Working alliance	0.018 (0.005)	3.958 (1,293)	<.001***	.033
Postsession therapist ORS				
Intercept	19.052 (0.662)	28.793 (1,307)	<.001***	
Expression	0.583 (0.184)	3.163 (1,307)	.002**	.011
Regulation	0.776 (0.16)	4.844 (1,307)	<.001***	.037
Meaning	0.652 (0.181)	3.6 (1,307)	<.001***	.015
Working alliance	0.123 (0.016)	7.513 (1,307)	<.001***	.094

(table continues)

Table 4 (*continued*)

Variable	<i>B</i> (<i>SE</i>)	<i>t</i> (<i>df</i>)	<i>p</i>	<i>R</i> ²
Postsession therapist ORS				
Intercept	19.055 (0.661)	28.813 (1,309)	<.001***	
Emotional processing total	2.013 (0.296)	6.803 (1,309)	<.001***	.063
Working alliance	0.12 (0.015)	7.848 (1,309)	<.001***	.116
Postsession working alliance				
Intercept	0.387 (0.171)	2.257 (1,419)	.024*	
Expression	1.59 (0.307)	5.184 (1,419)	<.001***	.033
Regulation	−0.38 (0.268)	−1.416 (1,419)	.157	.003
Meaning	4.576 (0.28)	16.363 (1,419)	<.001***	.296
Working alliance				
Intercept	0.387 (0.184)	2.106 (1,421)	.035*	
Emotional processing total	5.998 (0.51)	11.769 (1,421)	<.001***	.177

Note. *R*² is semipartial *R*² presented as an index of effect size of each individual effect. DERS = Difficulties in Emotion Regulation Scale; *SE* = standard error; ORS = Outcome Rating Scale; HSCL = Hopkins Symptom Checklist; SES = Session Evaluation Scale.

† *p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

The study's findings on the scale's sensitivity to change over time and its discriminant validity from the working alliance support the EP-SR as a distinct and effective measure of emotional processing in psychotherapy. However, a key limitation is the absence of a more comprehensive comparison measure, such as the Emotional Processing Scale (Baker et al., 2010), which could have provided stronger evidence for convergent validity through its broader subscales and extensive validation.

General Discussion

The EP-SR was designed to capture the level of emotional processing during therapy sessions. Three separate studies, including a total of 315 participants and 3,503 measurements, provided initial support for the factor structure, internal reliability, convergent, incremental, and predictive validity of the EP-SR. Overall, these findings suggest that the EP-SR may prove useful in exploring and assessing emotional processing and its underlying components. The EP-SR was developed for use in research in psychotherapy but could be valuable in studies designed to explore participants' state of emotional processing during any task (as opposed to the general trait of emotional processing) in other areas as well.

The first study was designed to develop an initial version of the EP-SR based on the literature and ratings of experts in the field. The items rated as most relevant by the experts were administered to a sample of participants, and initial EFAs were conducted to create a short version that was then administered to a sample of clients. Participants in the first phase were current or former clients who retrospectively reported on one of their therapy sessions. The results of the first EFA indicated that this version was composed of two main factors: The first factor, emotional processing, includes emotion experience, expression, and understanding emotional meaning; and the second factor was labeled emotion regulation which contains items of emotion regulation and arousal.

The second study was designed to test the factor structure of the EP-SR on a sample of clients completing the EP-SR on a session-by-session basis. This phase was crucial since psychotherapy data are usually structured in a multilevel format, with

repeated measurements nested within patients, and analyses are conducted at the within-patient level. Nonetheless, measures developed to evaluate therapeutic processes often use a cross-sectional analysis that may not fit the type of data for which these measures were designed. Results from the second study indicated that the EP-SR could be used to assess three independent but related lower order emotion processes: emotion expression (e.g., "I let my feelings come out freely"), emotion regulation (e.g., "I felt overwhelmed by my emotions," a reverse item), and understanding emotional meaning ("I found new meaning in my emotional experiences"). These factors are consistent with three out of the five components defined by Greenberg and Pascual-Leone (2006) and Pascual-Leone et al. (2016). The differences in the factors between the first and second studies may be related to the differences in the study design and analysis. Previous research has shown similar results when analyzing within- and between-person factors. For example, Cooke et al. (2022) found that the best fitting affective structure of the Positive and Negative Affect Scale was represented by three factors within-person and two factors between-person, underscoring the importance of disentangling affective structures at both levels (Brose et al., 2015).

Two components—emotional experience and arousal—did not generate distinct factors. Emotional experience items were eliminated, because they showed high loadings on two or more factors. One possible explanation for this pattern of results is that emotional experience is a meta-process involved in all other processes. This supposition is in line with Baker's model, which posits that emotional experience is a meta-process that includes other processes such as being aware of emotional experiences, labeling emotions, understanding their meaning, distinguishing them from bodily sensations, and controlling or regulating them (Baker et al., 2007). Correlatively, the absence of distinct factors may be related to the self-report assessment method since for clients to be able to report on the expression of emotions, regulation of emotions, and the process of making meaning of them, they must first be aware that they experienced emotions. That is, emotional experience is a process that is antecedent to all other processes and involved with them. Future studies with larger sample size might be able to explore this option

using bifactor analysis (Bornovalova et al., 2020). Furthermore, future studies should use qualitative techniques to explore whether clients differentiate various aspects of emotional processing, particularly the emotional experience component.

Arousal also did not generate a distinct factor. Two items measuring high arousal were included in the initial EFA. These items generated separate factors with extremely high loadings (0.975 and 0.947) and showed a high correlation ($r = 0.85$), suggesting that these two items were not distinguishable from each other. Given the need to keep the measure brief, one of these items was excluded. The second item was included in the emotion regulation factor, as it consistently loaded on the same scale as the emotion regulation items and showed high correlation with them. This suggests that while body arousal is necessary for emotional processing, high arousal is often experienced and perceived as dysregulation. The inclusion of bodily arousal in the emotion regulation factor is consistent with the literature which considers that the experience of emotions in the body is a marker of emotion dysregulation (Okur Güney et al., 2019; Waller & Scheidt, 2006). Future research should further explore the nuanced role of physiological arousal in emotional regulation and dysregulation.

The results of the third study confirmed the structure of the three reliable subscales that compose the EP-SR: emotional expression, emotion regulation, and understanding emotional meaning. The three subscales showed good internal consistencies considering that they only contain a few items. Results also confirmed the convergent, incremental, and predictive validity of the EP-SR. Convergent validity was supported by significant correlations between presession emotion regulation (DERS) and scores on both the total EP-SR and its emotion regulation subscale, suggesting that these measures capture related aspects of emotional processing. While emotion regulation and understanding emotional meaning subscales of the EP-SR were significantly associated with the DERS, the expression subscale was only weakly associated. This is not unexpected, as the DERS primarily measures emotion regulation and includes a clarity subscale with items similar to those in the understanding emotional meaning subscale (e.g., DERS Item 5: "I have difficulty making sense out of my feelings").

Predictive validity was supported by significant associations between the EP-SR and postsession outcomes, including patient satisfaction and both patient and therapist ratings of symptoms. Incremental validity was demonstrated by the unique predictive power of emotional processing in relation to treatment outcomes, even when controlling for therapeutic alliance. This indicates that while emotional processing and therapeutic alliance are related, they are distinct constructs that independently contribute to treatment efficacy.

Interestingly, even though the total scale was positively associated with all the outcome and processes measures, the associations with its subscale were less clear-cut. The expression subscale showed a significant positive association with evaluation of the session and the alliance with the therapist. However, it showed no association with several outcome measures including the next session DERS, Hopkins Symptom Checklist, and patient's ORS. These findings converge with previous studies suggesting that expressing emotions during treatment is necessary but not sufficient for therapeutic change. For therapeutic change to occur, emotional

expression should be accompanied (simultaneously or consecutively) by regulation and meaning-making (Auszra et al., 2013; Baker et al., 2007).

Emotion regulation was associated with better next session symptoms but negatively associated with the postsession evaluation scale. This unexpected direction of associations may be related to the complex dual role of emotion regulation in therapy. Many clients enter therapy using maladaptive strategies to regulate their emotions, such as avoidance of emotions (Hayes et al., 1996). Therapists strive to help their clients to adapt more adaptive strategies by aiding them to first access painful emotions, and then regulate them during the session. To achieve this goal, clients need to experience emotions in a less regulated manner, so they can adapt new strategies for regulation (Fisher et al., 2020). This negative association may reflect times in which less regulation of emotions allows other important processes to occur. Future studies should thus combine measures using external raters to test this explanation.

Unlike the expression and emotion regulation subscales, understanding emotional meaning was associated with all the therapy process and outcome measures in the expected direction. These results are in line with the view that understanding the meaning of emotions is a sign of effective processing and therefore is more closely related to better outcome (Kennedy-Moore & Watson, 2001). Taken together, the results of the third study lend weight to the hypothesis that the EP-SR measures three distinct and well-differentiated processes, and that the combination of these three processes has a greater impact on the client than each process alone ("the whole is greater than the sum of its parts").

Despite these consistent results and the three complementary studies that were carried out, this study has several limitations of note. First, the therapists in this study were trained in a psychodynamic model, which emphasizes affect, and the experience and expression of emotions. This focus may lead clients to express their experiences more through an emotional lens, reflecting the treatment's emphasis. The role of emotional processing varies significantly between therapeutic approaches. For example, affect-oriented therapies like emotion-focused therapy emphasize facilitating in-session emotional experiences using systematic methods for deeper emotional experience, while structured interventions focus more on psychoeducation and cognitive control strategies. Even within affect-oriented therapies, differences emerge—for instance, psychodynamic approaches, unless using intensive short-term dynamic psychotherapy, may prioritize therapist empathy and relational processes over the more active, bodily experienced emotional expression characteristic of emotion-focused therapy (Iwakabe et al., 2023). Given these distinctions, it would be particularly valuable to investigate the relationships between emotional processing, other change mechanisms, and treatment outcomes across various therapeutic orientations. Such comparative studies could shed light on how emotional processing functions within different therapeutic frameworks and potentially identify common or distinct pathways of change. A related limitation of the EP-SR is its general assessment of emotional processing without differentiating between types of emotions, particularly the critical distinction between primary emotions (e.g., core sadness, anger) and secondary-defensive emotions (e.g., shame, anxiety). This differentiation is central in therapies like emotion focused therapy and short-term dynamic

psychotherapy, where primary and secondary emotions are processed differently and may have distinct impacts on therapeutic outcomes. Future research should expand the measure to capture these important distinctions.

Second, the original items were written in English and were translated into Hebrew after the experts rated them. Future studies are needed to validate the test score interpretations of the EP-SR in other languages, countries, cultural contexts, and in different subpopulations. Third, in the second study, based on the results of the first study, we retained nine items, which resulted in some factors being represented by only two items. This is not optimal for a robust psychometric evaluation. However, recent work by Allen et al. (2022) argued that even very short scales, like single-item measures, can be effective if they meet certain criteria, such as being unambiguous, narrow in scope, and demonstrating face and predictive validity. In our three studies, we were able to support these criteria, demonstrating the effectiveness of the EP-SR despite its brevity. Nonetheless, to address this limitation, future research should investigate the psychometric properties of the scale with varying numbers and combinations of items. Future studies would also benefit from testing the validity of this scale against additional closely related measures such as the Emotional Processing Scale or external ratings. Furthermore, in our study, we initially included both positive and negative items for emotion regulation; however, the final version of the scale retained only negative items. This shift may have led to a different quality in this factor compared to the other two, which include positive items (see, e.g., Roseman et al., 2019). This discrepancy could affect the interpretation of emotion regulation. Future research should explore whether including both positive and negative items impacts the psychometric properties and structure of the scale. Relatedly, interpreting the convergent results with the DERS requires caution, as the three-item emotion regulation subscale of the EP-SR is narrower in scope compared to the DERS, which encompasses six subscales capturing a broader range of emotion regulation aspects. Future studies should actively investigate the specific aspects of emotion regulation measured by the EP-SR.

With regard to future directions, recent advances in technology have enabled innovative methods for studying emotional processes in therapy. For example, Fisher et al. (2024) used automatic coding of facial expressions and found that temporary increases in negative emotions during a session predicted decreases in depressive symptoms. Future research could leverage such measures to further validate the EP-SR and explore how the interaction between objective measures, like facial expressions, and subjective self-report predicts therapeutic outcomes. For example, the coherence between high objective expression and high subjective expression might better predict outcomes than either measure alone.

Finally, developing this scale involved a trade-off between keeping it short and user-friendly, while maintaining high consistency, and preserving the multidimensionality of the construct. While each dimension of the scale is complex and could be explored in greater depth, the EP-SR offers a practical and efficient tool for intensive assessment and for assessing therapeutic processes in health care settings. The EP-SR can contribute to a better understanding of the processes that lead to positive change in psychotherapy. Given its strong correlations with symptoms, the EP-SR can also guide clinical work, including treatment planning and the evaluation of psychopathological symptoms. Clinicians and

therapists can use the results to design targeted treatments focused on the specific dimensions of emotional processing where clients have the most difficulty.

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Received March 12, 2024

Revision received December 28, 2024

Accepted February 7, 2025 ■