

Therapists' Interventions as a Predictor of Clients' Emotional Experience, Self-Understanding, and Treatment Outcomes

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Clients' emotional experience (EE) and self-understanding (SU) are two clients' processes thought to play a key role in many therapeutic approaches, especially psychodynamic (PD) psychotherapy. Previous studies exploring client processes and the interventions assumed to promote them have found that both processes and interventions are related to a reduction in symptoms. However, the complex associations between the use of specific interventions, clients' processes and symptomatic outcomes have rarely been investigated. Using data collected on a session-by-session basis, we explored (a) the temporal associations between clients' processes (EE and SU) and treatment outcomes (clients' level of functioning), (b) the associations between therapists' AF and PD interventions and clients' processes, and (c) the direct and indirect associations among therapists' interventions, clients' processes, and clients' functioning. Clients ($N = 115$) undergoing PD psychotherapy reported their general functioning presession using the Outcome Rating Scale, and their EE and SU postsession using the Emotional Experience Self-Report and Self-Understanding Scale, respectively. Therapists reported their use of interventions postsession using the Multitheoretical List of Interventions. Longitudinal multilevel models indicated that higher EE and SU scores predicted subsequent change in functioning. Moderate (vs. high or low) use of AF interventions predicted an increase in clients' EE. Greater use of PD interventions predicted an increase in clients' SU, which also mediated improvement in functioning. These findings highlight the importance of adjusting therapists' use of interventions to promote clients' therapeutic processes and outcomes.

Public Significance Statement

Both emotional experience and self-understanding are therapeutic clients' processes associated with improved client functioning. Therapists' use of moderate levels of AF interventions may enhance clients' in-session emotional experience and greater use of psychodynamic interventions may facilitate better client self-understanding.

Keywords: emotional experience, self-understanding, interventions

Leading psychotherapy researchers have argued that to better understand the mechanisms underlying therapeutic change in psy-

chotherapy, studies should consider therapeutic processes as both outcomes and mediators. In other words, the direct link between therapists' interventions and therapeutic processes should be examined, as well as the indirect link between interventions and symptomatic outcomes that may be mediated by these therapeutic processes (e.g., Crits-Christoph, Connolly Gibbons, & Mukherjee, 2013; Kazdin, 2007). However, most studies have only investigated the associations between two sides of the conceptual triangle of interventions, processes, and outcomes, and have not explored the complex associations between the three vertices.

The current study focuses on two client processes considered to play a central role in many therapeutic approaches, and specifically in psychodynamic (PD) therapy: emotional experience (EE) and self-understanding (SU). EE refers to the extent to which clients are in touch with and engage their emotions within a treatment session (e.g., Greenberg & Pascual-Leone, 2006). SU can be

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defined as the awareness of one's recurring emotional, cognitive, behavioral, and interpersonal patterns (SU and insight are used interchangeably in the literature; Connolly Gibbons, Crits-Christoph, Barber, & Schamberger, 2007). In modern PD psychotherapy, therapists' interventions are often aimed at fostering these two processes, by allowing the clients to make contact with their emotions within a safe therapeutic environment and by providing their clients with opportunities to increase their SU (cf., Blagys & Hilsenroth, 2000; Levenson, 2010; Shedler, 2010). Briefly, the clinical rationale for targeting these processes is related to the fact that individuals tend to react and cope with various situations in their lives with consistent emotional, behavioral, cognitive, and interpersonal patterns (often called schemata; Safran, 1990). In most cases, clients enter therapy when some of these patterns are maladaptive, dysfunctional, and are accompanied by negative emotions. Reexperiencing these negative emotions within a supportive and safe environment can help reduce their painful effect and make the patterns themselves more amenable to change (Fosha, 2001; Levenson, 2010). Developing SU can give clients an opportunity to gain awareness of the ties between their present psychological problems and their past experiences, become more aware of current maladaptive patterns and at times, choose more adaptive ones (Hill et al., 2007; Summers & Barber, 2010). Thus, both EE and SU are likely to contribute to alleviating symptoms and distress (Messer, 2013).

Numerous studies have documented significant associations between improved treatment outcomes and increased EE (e.g., Fisher, Atzil-Slonim, Bar-Kalifa, Rafaeli, & Peri, 2016; Pos, Greenberg, & Warwar, 2009; for a review, see Whelton, 2004), as well as increased SU (e.g., Connolly Gibbons et al., 2009; Jennissen, Huber, Ehrenthal, Schauenburg, & Dinger, 2018). At least two studies have explored the associations between treatment outcomes and both processes simultaneously. McCarthy, Caputi, and Grenyer (2017) found that impactful segments within therapy sessions were characterized by both a greater EE and greater SU compared to less impactful segments. More recently, Høglend and Hagtvet (2019) demonstrated that the effect of transference work on long-term interpersonal functioning was mediated via the gain during treatment of both EE and SU. Katz and Hilsenroth (2018) reported that interventions aimed at fostering clients' EE and/or SU were associated with better treatment outcomes. These studies underscore the importance to therapeutic change of both EE and SU as well as interventions that aim to promote them. However, the associations between such interventions and their presumptive effect on EE and SU have rarely been investigated.

Therapeutic Interventions, Emotional Experience, and Treatment Outcomes

A variety of affect-focused (AF) interventions designed to orient clients toward their moment-to-moment experiences may be particularly effective in facilitating clients' in-session EE. These include encouraging clients to notice their emotions as they emerge in session, address the tendency to avoid emotions, label emotions and make connections between bodily sensations and specific emotional states (Diener & Hilsenroth, 2009; Greenberg, Rice, & Elliott, 1993). Previous studies have reported a positive association between such interventions and symptomatic improvement (Hilsenroth, Ackerman, Blagys, Baity, & Mooney, 2003;

Katz & Hilsenroth, 2018). More broadly, a meta-analysis by Diener, Hilsenroth, and Weinberger (2007) found a moderate effect size ($r = .30$) for AF interventions on symptom reduction.

Studies exploring the effectiveness of AF interventions assume that the therapeutic benefits (i.e., symptom reduction) that result from such interventions occur through increased EE. However, only a few studies have empirically tested this putative mediation or even the simpler association between such interventions and EE (Town, Hardy, McCullough, & Stride, 2012; Ulvenes et al., 2014). For example, Ulvenes and colleagues (2014) found that therapists' focus on clients' emotions predicted clients' EE in comparison to both other clients (i.e., the between-client effect) and to the client's typical level (i.e., the within-client effect). While this finding is promising, more research is needed to clarify the mediating effect of EE on the relationship between AF interventions and outcome.

Therapeutic Interventions, Self-Understanding, and Treatment Outcomes

PD-expressive interventions aimed at increasing the client's awareness of internal processes and patterns are often used to increase SU. These include exploration and identification of relationship patterns and interpersonal themes outside therapy (e.g., through free association or a selective focus on problematic patterns), clarification (i.e., drawing clients' attention to knowledge they already possess but viewing it in a new light), and interpretation (e.g., making meaningful connections between past and present experiences; Connolly Gibbons et al., 2007; Diener & Pierson, 2013).

Robust evidence from individual studies and meta-analyses has demonstrated that PD therapy (often referred to as insight-oriented therapy) as a whole is associated with symptomatic relief (Barber, Muran, McCarthy, & Keefe, 2013; Leichsenring & Rabung, 2008). However, studies examining the effectiveness of specific expressive interventions have produced equivocal results. Some have found that such interventions yielded favorable outcomes (e.g., Hendriksen et al., 2011; Katz & Hilsenroth, 2018; Kivlighan et al., 2019), especially for clients with negative representations of others (Høglend et al., 2008, 2011). However, other studies have failed to find a significant association between PD expressive interventions and treatment outcome (e.g., DeFife, Hilsenroth, & Gold, 2008; Ogrodniczuk & Piper, 1999; Owen & Hilsenroth, 2011), with one study suggesting that such interventions may lead to unfavorable outcomes (Barber et al., 2008).

Studies exploring the effectiveness of PD psychotherapy and its interventions assume that their efficacy is partially mediated by heightened SU (e.g., Minges, Solomonov, & Barber, 2017), but empirical investigations of this mediational assumption are scarce (see Barber et al., 2013). Several studies have reported that clients receiving dynamic therapy showed greater gains in SU (or insight) than in other forms of therapy (e.g., cognitive therapy: Connolly Gibbons et al., 2009; Kallestad et al., 2010). One study showed that the gain in SU acquired during PD therapy predicted better treatment outcomes (Kallestad et al., 2010). In contrast, McAleavey and Castonguay (2014) used the Multitheoretical List of Interventions (MULTI; McCarthy & Barber, 2009) to explore therapeutic interventions session-by-session and found that in treatment for mood and anxiety disorders, when therapists incor-

porated more exploratory techniques in session (i.e., PD, emotion-focused, and person-centered), clients' SU decreased.

Several explanations have been put forward for these mixed results concerning the associations between therapists' use of specific interventions, clients' processes, and symptomatic outcomes across different treatment modalities. One is that most studies have only assessed outcomes at termination, a time point that is too distal to account for fluctuations in use of techniques and outcome across treatment (Boswell, Castonguay, & Wasserman, 2010). This suggests that session-by-session analyses would be a promising direction, as they allow for an investigation of the immediate impact of specific techniques. Furthermore, most studies have only examined the linear associations between technique use and outcomes, under the assumption that the greater use of a technique is likely to predict improvement in outcome. However, it is reasonable to assume that in some cases there is a curvilinear relationship between techniques and outcomes, such that moderate use of a technique (rather than high or low) may be associated with better outcome (Barber, 2009). For example, Levy, Hilsenroth, and Owen (2015) found that moderate use of interpretations early on in dynamic treatment was associated with greater symptomatic improvement. Similarly, McCarthy, Keefe, and Barber (2016) reported that moderate use of PD interventions and AF interventions predicted symptomatic improvement in dynamic therapy for depression. These authors argued that moderate use of these techniques may perhaps be "just right" as it allows the client to feel challenged but not overwhelmed, which may possibly result in increased insight (Messer & McWilliams, 2007) or a greater experience of emotion (Greenberg & Pascual-Leone, 2006).

The Present Study

The main purpose of this study was to examine possible processes underlying therapeutic change within PD therapy. Specifically, we explored the associations between the three vertices of the therapeutic triangle presented above: the therapeutic interventions, client processes (i.e., SU and EE) and treatment outcomes. In our exploration, we addressed the limitations of current research by utilizing session-by-session data and by examining both linear and curvilinear models. Our hypotheses were as follows:

Hypothesis 1—Client Processes and Symptom Change: (a) A higher postsession EE would predict improvement in outcome (i.e., better functioning reported at the beginning of the next session controlling for functioning in the same session); (b) higher levels of postsession SU would predict subsequent improved functioning.

Hypothesis 2—Therapist Interventions and Client Processes: (a) Moderate levels of AF interventions would be associated with higher levels of EE in the same session; (b) moderate levels of dynamic interventions would be associated with higher levels of client SU in the same session.

Hypothesis 3—Therapist Interventions, Client Processes, and Symptom Change: (a) Level of EE in a given session would mediate the relationship between moderate levels of AF interventions and improvement in functioning; (b) level of SU in a given session would mediate the relationship between moderate use of PD interventions and improved functioning.

Method

Clients

The sample was composed of 122 clients who received individual therapy recruited consecutively from a university outpatient clinic between August 2015 and August 2016. Seven clients had fewer than three sessions with available data and were excluded from the analyses to enable the examination of lagged effects and ensure sufficient data to assess within-client variability. On average, the clients received 25 treatment sessions ($SD = 12.0$, range = 4–70). Approximately 83% ($N = 2,271$) of the sessions were available for analyses.

The clients were age 19 or older ($M_{age} = 40$ years, $SD = 13.7$, age range = 19–70 years), and the majority were female (58%). In the sample, 43% of the clients were single, 14% were divorced or widowed, and 43% were married or in a permanent relationship. In addition, 59% percent had at least a bachelor's degree, and 82% were employed (full or part-time). 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 ($k = 0.97$). 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. Of the total sample, 40% had a single diagnosis, 15% had two diagnoses, and 21% had three or more diagnoses. Most clients were diagnosed with affective disorders¹ (43%) or anxiety disorders² (23%) as the primary diagnosis. Additional primary diagnoses included obsessive-compulsive disorder (4%) or other disorders (7%).

Therapists

The sample included 68 therapists (78% women). They were master's- or doctoral-level students at different stages of clinical psychology training (1–5 years of experience). Twenty-seven therapists were first-year graduate students, and had no previous clinical hours. The remainder had a range of 50–250 previous clinical hours. Thirty-three therapists treated one client, 28 therapists treated two clients, and seven therapists treated three or more clients. Therapists received one hour of individual supervision and four hours of group supervision on a weekly basis. They were asked to complete the questionnaire as part of the clinic routine, but they were blind to the study hypotheses. All therapy sessions were audiotaped for use in supervision. Supervisors were senior clinicians with expertise in PD models.

Individual psychotherapy consisted of one to two weekly sessions. The dominant approach in the clinic is a short-term PD

¹ The following *Diagnostic and Statistical Manual of Mental Disorders–IV* diagnoses were included in the affective disorders cluster: major depressive disorder, dysthymia, and bipolar disorder.

² The following *Diagnostic and Statistical Manual of Mental Disorders–IV* diagnoses were included in the anxiety disorder cluster: panic disorder, agoraphobia, generalized anxiety disorder, and social anxiety disorder.

psychotherapy treatment model based on a blend of object relations, self-psychology and relational theories (Kohut, 1971; Winnicott, 1971). The key features of the model include (a) a focus on affect and the experience and expression of emotions; (b) exploration of attempts to avoid distressing thoughts and feelings; (c) identification of recurring themes and patterns; (d) emphasis on past experiences; (e) focus on interpersonal experiences; (f) emphasis on the therapeutic relationship; and (g) exploration of wishes, dreams, and fantasies (e.g., Shedler, 2010; Summers & Barber, 2010). Treatment was open-ended in length; however, given that psychotherapy was provided at a university-based outpatient clinic, treatment lasted between 9 months to 1 year.

Measures

Outcome Rating Scale (ORS; Miller, Duncan, Brown, Sparks, & Claud, 2003). The ORS is a four-item visual analog scale developed as a brief alternative to the Outcome Questionnaire-45 (OQ-45). The scale is designed to assess change 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 ($\alpha = 0.87\text{--}0.96$) and moderate correlations between the ORS items and the OQ-45 subscale and total scores (ORS total – OQ-45 total: $r = .59$). The reliability levels in the current study were computed using procedures outlined by Cranford et al. (2006) for estimating reliabilities for repeated within-person measures, and was found to be excellent (within-client = 0.92, between-client = 0.96).

The Multitheoretical List of Therapeutic Interventions–30 items (MULTI-30; Solomonov, McCarthy, Gorman, & Barber, 2019). The MULTI-30 is a short form of the MULTI (McCarthy & Barber, 2009), which was developed to assess the use of interventions across therapeutic orientations. Therapists rated items on a 5-point Likert scale of 1 (*not typical of the session*) to 5 (*very typical of the session*) based on the intensity and frequency of the use of interventions at the end of each session. For the purposes of the current study, we included mean scores of all items from the PD and process-experiential MULTI subscales which were relevant to our hypotheses. The process-experiential subscale includes AF interventions that focus on client's affect and moment-to-moment experiences, such as "I encouraged the client to focus on his/her moment-to-moment experience." Items in the PD subscale include descriptions of expressive interventions, for example, "I made connections between the client's current situation and his/her past." The subscales showed good to excellent intrarater reliability in this sample ($0.7 \leq$ intraclass correlation coefficient [ICC] ≤ 0.8).

Emotional Experience–Self-Report (EE-SR; Fisher et al., 2016). The EE-SR is a bipolar scale used to assess clients' estimates of their own EE during a session. Clients were asked to use the cursor 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 emo-*

tions). The EE-SR has demonstrated high validity when tested against the Affective Experiences subscale of the Session Report (Flückiger, Grosse Holtforth, Znoj, Caspar, & Wampold, 2013) and the therapists' version of the questionnaire (Fisher, Atzil-Slonim, Bar-Kalifa, Rafaeli, & Peri, 2019). ICC estimates indicated that 55.34% of the variance on this item was accounted for by differences between clients, whereas 44.65% of the variance was accounted for by between-session changes. These estimates are similar to the estimates reported in previous studies (Fisher et al., 2016, 2019), suggesting that the EE-SR is both stable (in measuring the same person over time) and sensitive (in detecting within-person changes; Hoffman, 2015).

Self-Understanding Scale (SUS). The SUS is a bipolar scale measuring clients' estimates of new understandings they acquired during a session. Developed specifically for the purposes of this study, this scale is based on Penn State's definition of the criteria comprising new understandings as they relate to the self, others, and emotions (Hill et al., 2007). Clients use the cursor to mark the extent to which they acquired new understandings on a scale ranging from 0 (*In today's session, I did not learn something new about myself, my emotions, or my relationships with others*) to 7 (*In today's session, I learned something new about myself, my emotions, or my relationships with others*). ICC estimates indicated that 51.92% of the variance on this item was accounted for by differences between clients whereas 48.08% of the variance was accounted for by between-session changes.

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 in the voluntary study, and they 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 OQ-45 and Beck Depression Inventory were administered to clients as part of the intake procedure. The clients and their therapists completed the session questionnaires electronically using computers located in the clinic rooms. The ORS was completed before each therapy session, and the EE-SR, SUS, and MULTI were completed immediately after each therapy session.

Data Analysis Strategy

We employed a multilevel models approach which is optimal for data with a hierarchical structure (Raudenbush & Bryk, 2002) using SAS PROC MIXED. To determine whether there was a need for three level analyses, with session at 1, clients at Level 2 and therapists at Level 3, we first specified a three-level intercept only model to determine the proportion of variance accounted for by each level in each of the three dependent variables (ORS, EE, and SU). Results from these null models provided estimates of random effects variance components, which were used to calculate ICCs that indicated the percentage of variance in ratings explained at each level. Then, we followed the recommendations in Peugh (2010) and Muthén and Satorra (1995) to use design effects of 2.00 as the threshold for the need for estimating random effects at each level. The clients' ICC for ORS was $\rho = 0.12$ (*est.* = 7.68, *SD* = 4.98, $p = .06$) and the design effect = 1.08. The clients' ICC for

EE was $\rho = 0.13$ ($est. = 0.18, SD = 0.10, p = .04$) and the design effect = 1.09. Finally, the clients' ICC for SU was $\rho = 0.12$ ($est. = 0.22, SD = 0.14, p = .06$) and the design effect = 1.08. Because the design effects of all three dependent variables were <2 , we opted for a two-level multilevel modeling (sessions nested within clients). To disentangle the within-person from the between-person effects, the predictor variables in all models were centered on each client's mean (including the variables aimed at controlling for previous session level of the outcome variables). Standardized effect sizes for each variable in the model were calculated by standardizing the raw variables and rerunning the models, and may thus be regarded as an approximation of standardized betas (see Baldwin, Imel, Braithwaite, & Atkins, 2014). Descriptive statistics for all the variables are shown in Table 1.

Results

Clients' Emotional Experience and Self-Understanding as Predictors of Functioning

To test whether EE and SU predicted the clients' functioning in the next session (assessed using the ORS), the following Level 1 equation was estimated:

$$ORS_{sc} = \beta_{0c} + \beta_{1c} \times EE_{(s-1)c} + \beta_{2c} \times SU_{(s-1)c} + \beta_{3c} \times ORS_{(s-1)c} + e_{sc}$$

where functioning reported at the beginning of session s by client c was predicted by (a) client's intercept (β_{0c}), (b) postsession client-reported EE at session $s - 1$ (β_{1c}), (c) postsession client-reported SU at session $s - 1$ (β_{2c}), (d) pre-session client-reported functioning at session $s-1$ (β_{3c}),³ and a Level 1 residual error (e_{sc}). A first-order autoregressive structure was imposed on the Level 1 residual covariance matrix.

At Level 2, all effects were considered to be random (i.e., effects were allowed to vary between clients), yielding the following Level 2 equations:

$$\beta_{0c} = \gamma_{00} + u_{0c}; \beta_{1c} = \gamma_{10} + u_{1c}; \beta_{2c} = \gamma_{20} + u_{2c}; \beta_{3c} = \gamma_{30} + u_{3c}$$

The results of this model are presented in Table 2. Consistent with Hypotheses 1a and 1b, clients' EE and SU were associated with reports of higher levels of clients' functioning at the beginning of the following session.

Therapists' Interventions as Predictors of Emotional Experience and Self-Understanding

To test whether therapists' interventions (AF or PD) predicted same session clients' process variables (EE or SU), the following Level 1 equation, which included both linear and quadratic terms for the therapist interventions variables, was estimated⁴:

$$\begin{aligned} \text{Clients' Process Variable}_{sc} = & \beta_{0c} + \beta_{1c} \times \text{Therapists' AF}_{sc} \\ & + \beta_{2c} \times \text{Therapists' AF}_{sc}^2 \\ & + \beta_{3c} \times \text{Therapists' PD}_{sc} \\ & + \beta_{4c} \times \text{Therapists' PD}_{sc}^2 + e_{sc} \end{aligned}$$

where the process variable (EE or SU) reported at the end of session s by client c was predicted by (a) this client's intercept (β_{0c}), (b) the linear (β_{1c}) and quadratic effects (β_{2c}) of his or her

therapist's AF interventions in this session, (c) the linear (β_{3c}) and quadratic effects (β_{4c}) of his or her therapist's PD interventions at this session, and (d) a Level 1 residual error (e_{sc}). A first-order autoregressive structure was imposed on the Level 1 residual covariance matrix. At Level 2, all effects were considered to be random yielding the following Level 2 equations⁵:

$$\begin{aligned} \beta_{0c} = \gamma_{00} + u_{0c}; \beta_{1c} = \gamma_{10} + u_{1c}; \beta_{2c} = \gamma_{20} + u_{2c}; \\ \beta_{3c} = \gamma_{30} + u_{3c}; \beta_{4c} = \gamma_{40} + u_{4c} \end{aligned}$$

Note that in the current analyses the interventions and processes (EE and SU) were measured at the same time point, consistent with the methodology used in other similar studies that have investigated intervention-process associations using session-by-session data (e.g., McAleavey & Castonguay, 2014; Ulvenes et al., 2014). The rationale for investigating this association within the same time point is the premise that interventions exert their effect on clients' moment-to-moment EE/SU immediately after they appear in a session. However, to ensure temporal precedence, we also reran the analyses with interventions at session s predicting clients' processes at session $s + 1$ and controlling for clients' processes at session s . These analyses yielded a similar pattern of results, thus reducing the threat of reverse causation. The results of these analyses are not reported in this article due to space limitations but are available upon request.

The results of the model with EE as the outcome are presented in the left column of Table 3. Therapists' AF interventions showed a quadratic association with clients' EE. As depicted in Figure 1, and in line with Hypothesis 2a, moderate levels of AF interventions were associated with higher levels of clients' EE. The results of the model with SU as the outcome are presented in the right column of Table 3. Partially supporting Hypothesis 2b, therapists' PD interventions showed a linear association with clients' SU.⁶

³ Recently, there has been a growing debate about the inclusion of the lagged dependent variable as a covariate in multilevel models. Inclusion has several advantages (ensuring the direction of causality and allowing outcomes to be interpreted as change scores) and has been recommended by certain methodologists (e.g., Sened, Lazarus, Gleason, Rafaelli, & Fleeson, 2018; Shrout et al., 2010), but it also results in what is known as endogeneity, which violates some basic assumptions of regression analyses (Baltagi, 2008), and may lead to a potential bias in the estimation of model parameters. To address this concern, we reran our analyses without controlling for previous session ORS, and found identical patterns of results (see <https://osf.io/egnvc/> for the complete results).

⁴ To test whether the quadratic effects indeed improved the model fit for each dependent variable (EE and SU) we also ran a reduced longitudinal unconditional model without the quadratic effects. Adding quadratic effects improved the model predicting EE, $\chi^2(2) = 5.8, p = .03$. Adding quadratic effects for the model predicting SU failed to improve the model and indeed made it worse, $\chi^2(2) = 6.1, p = .02$.

⁵ These models have shown convergence problems when residuals were allowed to correlate. Therefore, in these models residuals were not allowed to correlate.

⁶ To address the concern that the therapists' experience may have influenced the results, we reran all models with therapists' years of experience as a covariate. The results remained unchanged. See <https://osf.io/zyj4t/>.

Table 1
Means, Standard Deviations, Intercorrelations and Distribution of Variables

Variable	1	2	3	4	5	6	<i>M</i> (<i>SD</i>)	Range ^a	Skew	Kurtosis
ORS	—						24.48 (8.06)	0–40	–.43	–.30
EE	.39**	—					5.66 (1.13)	1–7	–.89	.81
EE (c)	.05**	.67**	—				0 (.76)	±4.5	–1.42	6.47
SU	.39**	.57**	.28**	—			5.39 (1.31)	1–7	–.85	.30
SU (c)	.08**	.27**	.40**	.70**	—		0 (.92)	±4.5	–1.09	2.86
AF (c)	–.00	.00	–.01	.05*	.08**	—	0 (.23)	±2	–.03	.61
PD (c)	.01	.02	.03	.14**	.10**	.43**	0 (.55)	±2	.02	.47

Note. ORS = Outcome Rating Scale; EE = emotional experience; SU = self-understanding; AF = affect-focused interventions; PD = psychodynamic interventions. (c) = person-mean centered variables.

^a Possible range of responses.

* $p < .05$. ** $p < .01$.

Mediation Analysis: Therapists' AF Interventions → Clients' EE → Clients' Functioning

The results reported above indicated that therapists' AF interventions had a quadratic effect on clients' EE, which in turn had a linear effect on clients' next session functioning. To test the significance of this indirect effect, we followed Zhang, Zyphur, and Preacher's (2009) recommendations for testing a Level 1 predictor/mediator/outcome multilevel mediational model. Specifically, the *a* path (i.e., the association between therapists' AF interventions and clients' EE) was estimated using the following Level 1 equation, which included both the linear and the quadratic effects of the therapists' AF:

$$EE_{sc} = \beta_{0c} + \beta_{1c} \times \text{Therapists' AF}_{sc} + \beta_{2c} \times \text{Therapists' AF}_{sc}^2 + e_{1sc}$$

The *b* path (i.e., the associations between clients' EE and functioning) and *c'* path (i.e., the associations between therapists' AF interventions and clients' functioning) were estimated using the following Level 1 equation:

$$\text{Functioning}_{(s+1)c} = \beta_{3c} + \beta_{4c} \times \text{AF}_{sc} + \beta_{5c} \times \text{AF}_{sc}^2 + \beta_{6c} \times EE_{sc} + \beta_{7c} \times \text{Functioning}_{sc} + e_{2(s+1)c}$$

To assess the confidence interval for indirect effects (*a* × *b*), these two mixed models were run simultaneously (Bauer, Preacher, & Gil, 2006), and Monte Carlo simulations with 20,000 samples were used (Selig & Preacher, 2009). Because the association between the predictor and the mediator involves a nonlinear (i.e., quadratic) association, we followed Hayes and

Preacher's (2010) method for computing instantaneous indirect effects, allowing us to quantify the effect of the predictor (AF) on the outcome (functioning) through the mediator (EE) at specific values of the predictor. Specifically, we estimated the instantaneous indirect effect using the mean of AF as well as its values at one standard deviation above or below the mean. Table 4 presents the results when AF was set to its mean. As can be seen, therapists' AF interventions had a quadratic effect on clients' EE (*a* path), which in turn had a linear effect on clients' functioning (*b* path). However, in contrast to Hypothesis 3a, the indirect effect when AF level was moderate was not significant (*est.* = –0.06, 95% confidence interval [CI] [–0.157, 0.280]). Of note, the indirect effect when AF levels were low (–1 *SD*) or high (+1 *SD*) were also not significant (Low: *est.* = –0.08, 95% CI [–0.25, 0.25]; High: estimate = 0.06, 95% CI [–0.17, 0.44]).

Mediation Analysis: Therapists' PD Interventions → Clients' SU → Clients' Functioning

The results reported above indicated that therapists' PD interventions had a linear effect on clients' SU, which in turn had a linear effect on clients' next session functioning. To test the significance of this indirect effect, we used the same method as described above. Specifically, the *a* path (i.e., the association between therapists' PD interventions and clients' SU) was estimated using the following Level 1 equation, which only included the linear effect of the therapists' PD:

Table 2
Parameter Estimates for Clients' Emotional Experience and Self-Understanding Predicting Next Session Functioning

Effect	<i>b</i> (<i>SE</i>)	95% CI	<i>p</i>	Effect size	Random effects ^a				
					1	2	3	4	
Intercept	25.08 (.63)	[23.82, 26.33]	<.0001		39.9 (5.87), $p < .001$				
Lagged client's functioning (γ_{30})	–.15 (.03)	[–.22, –.09]	<.0001	.32	.22 (.22), $p = .32$.04 (.01), $p = .001$			
Emotional experience (γ_{10})	.25 (.13)	[.00, .51]	.046	.053	.39 (.89), $p = .66$	–.03 (.04), $p = .48$	0		
Self-understanding (γ_{20})	.30 (.14)	[.02, .59]	.035	.074	1.35 (.90), $p = .13$.05 (.04), $p = .16$.20 (.16), $p = .21$.50 (.23), $p = .012$	

Note. CI = confidence interval. For fixed effects, *p* values were based on two-tailed *t* tests using the Satterthwaite method for computing *df*. Effect size was obtained by standardizing the raw scores and rerunning the model (Baldwin, Imel, Braithwaite, & Atkins, 2014).

^a Variances (on the diagonal) and covariances (below the diagonal) of random effects.

Table 3

Parameter Estimates for Therapists' Interventions Predicting Emotional Experience (Model 1) and Self-Understanding (Model 2)

Effect	Model 1				Model 2			
	Outcome: Emotional-experience				Outcome: Self-understanding			
	<i>b</i> (<i>SE</i>)	[95% CI]	<i>p</i>	Effect size	<i>b</i> (<i>SE</i>)	[95% CI]	<i>p</i>	Effect size
Fixed effects								
Intercept	5.69 (.09)	[5.52, 5.86]	<.001		5.35 (.10)	[5.15, 5.54]	<.0001	
Affect-focused (γ_{10})	-.06 (.04)	[-.14, .03]	.18	-.026	.06 (.05)	[-.05, .16]	.28	.022
Affect-focused ² (γ_{20})	-.17 (.05)	[-.28, -.06]	.003	-.070	-.07 (.05)	[-.18, .03]	.18	-.024
Psychodynamic (γ_{30})	.06 (.04)	[-.03, .13]	.13	.031	.10 (.05)	[.01, .23]	.026	.051
Psychodynamic ² (γ_{40})	.03 (.04)	[-.05, .11]	.43	.013	-.01 (.05)	[-.11, .09]	.82	-.004
Random effects								
Intercept	.75 (.11)		<.001		.94 (.14)		<.001	
Affect-focused (γ_{10})	.02 (.02)		.17		.05 (.04)		.09	
Affect-focused ² (γ_{20})	.05 (.04)		.09		0			
Psychodynamic (γ_{30})	.04 (.03)		.07		.07 (.04)		.04	
Psychodynamic ² (γ_{40})	0				0			

Note. Superscript 2 means that this is a squared variable.

$$SU_{sc} = \beta_{0c} + \beta_{1c} \times \text{Therapists' PD}_{sc} + e_{1sc}$$

The *b* path (i.e., the associations between clients' SU and clients' functioning) and *c'* path (i.e., the associations between therapists' PD interventions and clients' functioning) were estimated using the following Level 1 equation:

$$\text{Functioning}_{(s+1)c} = \beta_{2c} + \beta_{3c} \times \text{PD}_{sc} + \beta_{4c} \times \text{SU}_{sc} + \beta_{4i} \times \text{Functioning}_{sc} + e_{2(c+1)i}$$

As depicted in Table 5 (and presented graphically in Figure 2), therapists' PD intervention had a linear effect on clients' SU (*a* path), which in turn had a linear effect on clients' functioning (*b* path). In addition, this indirect effect (*a* × *b*) was significant (estimate = 0.10, 95% CI [0.184, 0.531]). The direct association (*c* path) between therapists' PD intervention and clients' next session functioning was negative and marginally significant. This can be interpreted as indicating that therapists' PD had a dual effect on clients' functioning: a positive one through its effect on the clients'

understanding variable and a negative one through its effect on an unmeasured variable. In line with this interpretation, the total association (*c* path) between therapists' PD intervention and clients' next session functioning (i.e., without partialing out the indirect effect through clients' SU) was not significant (*est.* = 0.08, *SE* = 0.22, *p* = .71).

Discussion

Identifying which therapist interventions increase the occurrence of salutary client processes and, by extension, improve treatment outcomes, is a central aim of psychotherapy research (Barber, 2009). Consistent with this broad aim, the goal of this study was to examine which therapists' interventions promote clients' EE and SU, and whether changes in these processes contribute to symptomatic improvement.

Our first hypothesis was based on the theoretical PD assumption that symptomatic change is facilitated by providing clients with an

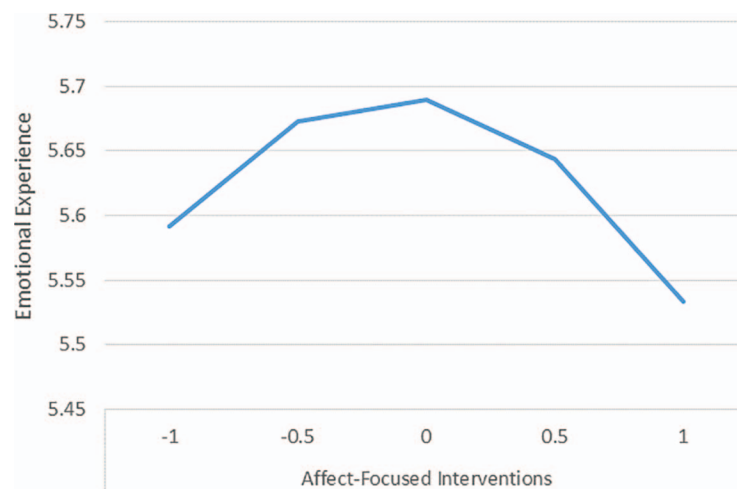


Figure 1. The association between affect-focused interventions and clients' emotional experience. See the online article for the color version of this figure.

Table 4

Results of Conditional Mediation Analyses (i.e., Affect-Focused Intervention [AF] Set on Its Mean) With Emotional Experience (EE) as the Mediator

Path	<i>b</i> (<i>SE</i>)	95% CI	<i>p</i>	Effect size	Random effects ^a		
					1	2	3
<i>a</i>							
AF → EE	-.02 (.04)	[-.11, .07]	.61	-.010	.06 (.03), <i>p</i> = .013		
AF ² → EE	-.16 (.06)	[-.28, -.04]	.008	-.066			
<i>b</i>							
EE → Functioning	.40 (.17)	[.06, .74]	.021	.038	.05 (.03), <i>p</i> = .074	.09 (.04), <i>p</i> = .023	
<i>c</i>							
AF → Functioning	-.14 (.19)	[-.52, .24]	.48	-.009			
AF ² → Functioning	-.13 (.24)	[-.61, .34]	.58	-.007	.07 (.08), <i>p</i> = .32	.13 (.10), <i>p</i> = .23	.65 (.35), <i>p</i> = .033

Note. CI = confidence interval.

^a Variances (on the diagonal) and covariances (below the diagonal) of random effects.

opportunity to explore and experience emotions within a safe therapeutic environment in which they can gain greater awareness of their maladaptive patterns related to self, others, and emotions (Hill et al., 2007). The results fully supported this hypothesis (Hypothesis 1a). Clients who rated their in-session EE as higher at the end of one session experienced improvement in functioning at the beginning of the next session. This result is in line with previous studies that found positive associations between EE and outcomes at the between-client level (e.g., Pos et al., 2009) as well as more recent studies that have reported this same association at the within-client level (e.g., Fisher et al., 2016; Rubel, Rosenbaum, & Lutz, 2017).

The results also showed that greater SU predicted improved functioning at the beginning of the following session (Hypothesis 1b). Previous studies have indicated that an increase in SU was associated with positive treatment outcomes (for a review, see Jennissen et al., 2018). The current study expands previous work documenting this association at the between-client level (for a review see Jennissen et al., 2018) by examining it at the within-client level. Although the between-client association (e.g., between SU and functioning) may be important, exploring such associations at the within-client level has several advantages. First, a within-client association cannot be explained by differences in stable trait-level client characteristics (e.g., Falkenström, Ekeblad, & Holmqvist, 2016). Second, within-client associations provide a better test of clinically relevant hypotheses and can be directly translated into clinical recommendations; for example, if a partic-

ular client engages in positive therapeutic activities, this client should experience subsequent symptom improvements (e.g., Hofart, 2016). Relatedly, examining this association on a session-by-session basis also allowed us to account for previous levels of functioning, thus controlling for reverse causation (cf. Curran & Bauer, 2011).

The second goal of the current study was to examine which therapist interventions facilitated clients' therapeutic processes (i.e., EE and SU). We found a curvilinear association between therapists' AF interventions and clients' EE (Hypothesis 2a). That is, moderate use of AF interventions, as reported by the therapists, predicted clients' greater EE. This result is in line with recent findings by McCarthy et al. (2016) who used external judges to rate therapists' interventions and found a curvilinear association between AF interventions and treatment outcomes. These authors suggested that the association between interventions and outcome may be mediated by clients' increased EE. It is possible that high use of AF interventions leaves clients overwhelmed by emotions, which may result in further fear and avoidance of negative feelings. On the other hand, when therapists use low levels of AF interventions, clients may not feel sufficiently challenged, and in turn may only experience a limited increase in their capacity to be in contact with emotions.

In the current study, we reduced the risk of reverse causation by ensuring the temporal precedence of therapist interventions. However, a reverse association (EE leading to therapists' intervention) is also plausible in that therapists may choose interventions in

Table 5

Results of Mediation Analyses With Self-Understanding (SU) as the Mediator

Path	<i>b</i> (<i>SE</i>)	95% CI	<i>p</i>	Effect size	Random effects ^a	
					1	2
<i>a</i>						
PD → SU	.19 (.05)	[.09, .30]	.0006	.081	.10 (.04), <i>p</i> = .28	
<i>b</i>						
SU → Functioning	.52 (.15)	[.21, .82]	.0011	.059	.25 (.07), <i>p</i> < .001	.80 (.30), <i>p</i> = .003
<i>c</i>						
PD → Functioning	-.36 (.19)	[-.73, .00]	.053	-.025		

Note. CI = confidence interval; PD = psychodynamic intervention.

^a Variances (on the diagonal) and covariances (below the diagonal) of random effects.

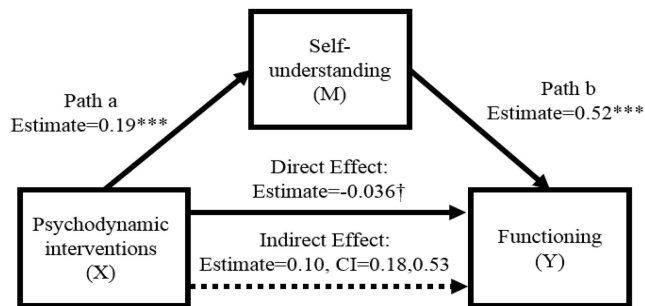


Figure 2. The estimated treatment parameters effects in the mediation model. *** $p < .001$. † $p < .10$.

response to their clients' increased or decreased EE.⁷ For example, when clients are relatively comfortable with the activation of emotions, therapists may use moderate levels of AF techniques. With more avoidant clients, therapists may attempt to increase the use of such techniques (to challenge the client's avoidance); conversely, they may decrease their use of such techniques, and instead choose to maintain a gentle stance toward their clients. Future studies could further examine this possibility by incorporating within-session microanalyses which allow for the examination of moment-to-moment associations.

The curvilinear association between AF interventions and clients' EE contrasts with findings reported by Ulvenes and colleagues (2014), who found a linear association between AF interventions and clients' EE. However, Ulvenes et al. did not report whether they tested a curvilinear relationship in their data. In addition, in their study, therapists' interventions and clients' emotional responses were coded by independent raters, whereas in our study interventions were reported by the therapists and EE was reported by the clients. Thus, further research is needed to clarify the nature of this association.

The results of the present study partially supported Hypothesis 2b by revealing a linear (rather than curvilinear) association between therapists' PD interventions and clients' SU. That is, greater use of PD interventions, as reported by therapists, predicted greater client-reported levels of SU. These results are consistent with studies reporting that greater gains in insight (or SU) were achieved in dynamic therapy compared to other therapies (Connolly Gibbons et al., 2009; Kallestad et al., 2010). However, these results also go beyond previous work by showing that PD therapy as a whole exerts an effect on clients' SU, because here, we demonstrate that the extent to which therapists used specific PD interventions in particular sessions had an immediate effect on clients who left these sessions with the sense of having gained new understandings. Again, our data do not rule out the possibility that a reverse association may also have taken place where therapists also responded to their clients' increased SU by greater use of PD interventions. One study that supports this type of reverse association indicated that greater client pretreatment insight predicted more frequent dynamic exploratory interventions on the part of therapists (Lehmann et al., 2015). This possibility of bidirectionality certainly merits further study.

The third goal of the current study was to examine whether therapist interventions would exert an indirect effect on client functioning through their contribution to client processes. Contrary

to our prediction (Hypothesis 3a), clients' EE did not mediate the association between moderate use of AF interventions and client functioning. One potential explanation for the null findings may involve the presence of an additional factor, such as clients' emotion regulation capacity, which may be related to all three variables and could better explain any common variance among them. Previous studies have documented significant associations between clients' EE during treatment and improvement in clients' emotion regulation ability (Fisher et al., 2019) and between emotion regulation and treatment outcome (Radkovsky, McArdle, Bockting, & Berking, 2014). Future studies collecting session-by-session data would benefit from assessing emotion regulation and including it as a possible alternative mediator in the model.

In line with our final hypothesis (3b), clients' SU mediated the association between the use of PD interventions and clients' functioning. These findings are consistent with studies reporting such mediation at the between-client level (Johansson et al., 2010; Kallestad et al., 2010), and demonstrate that this mediation occurs at the within-client level as well. Specifically, when therapists use more PD-expressive interventions than usual with a given client, this client is likely to respond with a relatively greater SU, which may in turn lead to improvement in the functioning reported in the next session.

Interestingly, our mediation analyses indicated that after accounting for the effect of SU on treatment outcome, the use of PD interventions was negatively associated with client functioning reported in the subsequent session.⁸ These results suggest a possible explanation for the mixed results found in previous studies as to the association between PD interventions and treatment outcome (e.g., DeFife et al., 2008; Kivlighan et al., 2019). Specifically, these interventions may positively contribute to better treatment outcome by promoting clients' SU, while negatively affecting treatment outcome through other pathways (Connolly Gibbons et al., 2007). This explanation is consistent with Gabbard and colleagues' (1994) high risk–high gain hypothesis. That is, some PD interventions (e.g., transference interpretation) tend to have a greater impact on clients, both positive and negative, than other interventions. Therefore, one can reasonably assume that high quality PD interventions are likely to elicit more client SU whereas poor quality interventions may increase negative emotions toward therapy and increase symptoms. This theoretical premise is in line with studies that have shown that the quality and appropriate timing of dynamic interventions affect therapeutic outcomes (e.g., Junod, de Roten, Martinez, Drapeau, & Despland, 2005).

⁷ Notably, the possibility of reverse association does not undermine the results of the current study. Ensuring time precedence reduced the risk that reverse causation explains the results of the current study, but the reverse association may still co-occur (as a bidirectional association). For example, Bugas and Silberschatz (2000) suggested that therapists not only intervene to help their clients, but clients may (consciously or unconsciously) prompt and guide therapists to choose interventions that are more helpful.

⁸ It is important to note that the negative association between PD interventions and subsequent clients' functioning, though suggestive, was nonsignificant ($p = 0.053$). Therefore, more research is needed to replicate and explain this result.

Study Limitations

The merits of the current study should be interpreted along with its methodological limitations. This study was carried out in an outpatient training clinic where graduate trainees conduct therapy. Thus, the limited clinical experience of the therapists in our sample may have affected the skill with which techniques were applied. Thus, results should be replicated in samples with more experienced therapists. Additionally, we relied on therapists' perceptions of the therapeutic techniques used, which could be affected by their limited clinical experience. Importantly, this limited experience reflects the common state of affairs in many community-based mental health settings, where the vast majority of patients are seen by trainees. In addition, the MULTI item are worded in descriptive simple language and require therapists to merely report their actions without reflecting on their theoretical underpinning. It has been shown to be reliable in similar samples of community therapists. For example, Castonguay et al. (2017) showed that therapists in community settings were able to accurately predict and recall techniques used with specific clients on the MULTI therapist self-report. Finally, the use of therapist reports helped this study avoid the pitfall of common source variance by using both clients' and therapists' reports. Still, future studies could use objective observer-based measures, instead or in addition to therapist reports, to investigate technique use.

Second, the EE-SR assessing clients' EE and the SUS assessing clients' SU are both single-item measures. Although the use of longer instruments is superior in terms of reliability and validity in most circumstances, substantial evidence suggests that measuring a construct with a single item can be valid and reliable as well (Bergkvist & Rossiter, 2007; Wanous, Reichers, & Hudy, 1997). The major advantage of using a single question is that it is minimally burdensome and therefore feasible for session-by-session data collection in naturalistic settings. As a result, single-item scales have been employed quite frequently across different domains, such as anxiety (Anxiety Likert Scale and Anxiety Visual Analog Scale; Davey, Barratt, Butow, & Deeks, 2007), self-esteem (Single-Item Self Esteem Scale; Robins, Hendin, & Trzesniewski, 2001), and narcissism (Single Item Narcissism Scale; Konrath, Meier, & Bushman, 2014). However, future studies might benefit from replicating our findings on longer measures.

The issue of effect sizes in the context of multilevel modeling is a complicated one, and currently there is no consensus regarding the optimal way to compute effect sizes. In the current study we adopted Baldwin et al.'s (2014) method of standardizing the raw scores and rerunning the models; using this approach, we obtained small to medium effect sizes. Finally, it is important to note that many of the effects found in this study can be explained through other mechanisms than those suggested in this discussion. In particular, life events, both great and small, may occur outside the therapy room and exert strong effects on the clients' functioning (outside therapy) as well as on their subsequent therapeutic processes.

Future Directions

Our results point to several future directions, beyond those noted earlier. First, in the current study, we expected a nonlinear association between therapists' interventions and clients' processes. However, nonlinearity may also characterize the association be-

tween client processes and session outcome. For example, Carryer and Greenberg (2010) reported that moderate amounts of highly aroused emotional experiencing in one session were related to better treatment outcomes; deviations from this optimal frequency (both up and down) were associated with poorer outcomes. Future studies should revisit this issue.

In addition, several PD theoreticians and researchers have distinguished between intellectual understanding and emotional understanding (i.e., SU accompanied by EE) and suggested that therapeutic change occurs mostly from emotional understanding (Gelso & Harbin, 2007). In the current study, exploring EE and SU simultaneously allowed us to demonstrate that EE exerts its effect on clients' functioning even when controlling for the effect of SU and vice versa. Future studies may wish to further explore the synergistic way in which these two determinants contribute to therapeutic change.

Finally, although we focused on EE and SU in the context of PD therapy, these processes are likely to play central roles in other forms of psychotherapy as well (Grosse Holtforth et al., 2007). We encourage future studies to explore these processes as they relate to therapist interventions in different therapy approaches.

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