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## EMPIRICAL PAPER

# Focus is key: Panic-focused interpretations are associated with symptomatic improvement in panic-focused psychodynamic psychotherapy

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### ABSTRACT

**Objective:** This study examines whether, in panic-focused psychodynamic psychotherapy (PFPP), interpretations of conflicts that underlie anxiety (panic-focused or PF-interpretations) are specifically associated with subsequent panic disorder (PD) symptom improvement, over and above the provision of non-symptom-focused interpretations. **Method:** Technique use in Sessions 2 and 10 of a 24-session PFPP protocol was assessed for the 65 patients with complete outcome data randomized to PFPP in a two-site trial of psychotherapies for PD. Sessions were rated in 15-min segments for therapists' use of PF-interpretations, non-PF-interpretations, and PF-clarifications. Robust regressions were conducted to examine the relationship between these interventions and symptom change subsequent to the sampled session. Interpersonal problems were examined as a moderator of the relationship of PF-interpretations to symptom change. **Results:** At Session 10, but not at Session 2, patients who received a higher degree of PF-interpretations experienced greater subsequent improvement in panic symptoms. Non-PF-interpretations were not predictive. Patients with more interpersonal distress benefitted particularly from the use of PF-interpretations at Session 10. **Conclusions:** By the middle phase of PFPP, panic-focused interpretations may drive subsequent improvements in panic symptoms, especially among patients with higher interpersonal distress. Interpretations of conflict absent a panic focus may not be especially helpful.

**Keywords:** psychodynamic psychotherapy; panic disorder; psychotherapy process; adherence

**Clinical or methodological significance of this article:** Psychodynamic clinicians treating panic disorder should consider emphasizing the interpretation of those symptoms and associated dynamics as treatment progresses, supporting the contemporary psychodynamic trend to focus on symptoms in brief treatments. Research into specific therapeutic techniques and their fit for particular patients, such as intensive interpretation of panic symptoms for patients with greater interpersonal distress, may help clinicians empirically personalize psychotherapy.

### PFPP: Basic Assumptions and Prescribed Interventions

Panic-focused psychodynamic psychotherapy (PFPP; Busch, Milrod, Singer, & Aronson, 2012) is a 24-session, twice weekly brief psychodynamic psychotherapy (PDT) formulated for the treatment of panic disorder (PD) with and without agoraphobia. In several randomized controlled trials (RCTs),

PFPP has been shown to be equivalent in efficacy to various forms of cognitive-behavioral psychotherapy (CBT; Beutel et al., 2013; Keefe, McCarthy, Dinger, Zilcha-Mano, & Barber, 2014; Milrod et al., 2007; Milrod et al., 2016). The exception comes from one site of a two-site study at which PFPP was inferior to CBT (Milrod et al., 2016). Further trials are underway (Sandell et al., 2015).

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The PFPP treatment model is based on the assumption that the acute emergence of panic and the developmental vulnerability toward PD has underlying psychological meanings related to emotional-interpersonal conflicts and attachment dysregulation (Busch et al., 2012; Busch, Milrod, & Singer, 1999). For example, a patient who experiences ambivalence regarding a life-long romantic commitment to his partner may develop a PD shortly after announcing their engagement. The patient's panic attacks may be triggered by anxious moments of unacknowledged intolerable ambivalence toward his partner. He may either be unaware of or perhaps frightened to recognize this ambivalence and its potentially frightening consequences, such as breaking up with or losing the support of his partner, which could result in a vicious cycle of unrecognized conflicted feelings and anxious arousal leading to panic. Consistent with PFPP's etiological hypothesis, patients with PD report higher rates of alexithymia (i.e., difficulty verbalizing one's emotions and motives), experiential avoidance, and lack of emotional acceptance, compared to psychiatrically healthy controls and persons with simple phobias (Galderisi et al., 2008; Izi et al., 2014; Parker, Taylor, Bagby, & Acklin, 1993; Tull & Roemer, 2007).

One important intervention in PFPP, clarification, is the attempt by the therapist to help the patient become aware of the avoided and unconscious intrapsychic conflicts that give rise to panic (Busch et al., 2012). This process entails gathering information concerning the potential meanings of symptoms and actively helping the patient recognize, verbalize, and reflect on those meanings; the context of symptoms also helps to identify meanings. Successful clarifications along these lines lay the groundwork for accurate interpretations of conflicts. For example, clarification could help the aforementioned patient become aware that he habitually assigns frightful somatic sources (e.g., heart disease) to anxiety that emerges when he became engaged and works on wedding details, triggering intensely mixed feelings about his fiancée. This would enable the therapist to help the patient focus on specific causes for these feelings.

Another important PFPP intervention is interpretation—attempts to help the patient identify the specific dynamics and conflicts that underlie PD (Busch et al., 2012; Summers & Barber, 2010). Types of interpretations include: (a) *defense* (i.e., of a particular manner in which the patient avoids experiencing a particular distressing feeling or issue); (b) *dynamic/conflict* (i.e., of how a patient's experiences are the result of a conflict between unacceptable wishes and the defenses against these wishes); (c) *genetic* (i.e., of how early, formative

attachment relationships may have made the patient's approach to interpersonal situations fraught with specific, identifiable vulnerabilities); and (d) *transference* (i.e., how the patient's recurring underlying formative attachment patterns and conflicts emerge in the relationship with the therapist) (Busch et al., 2012). PFPP therapists should attempt to link, whenever possible, the specifics of the patient's panic symptoms to his/her specific underlying dynamics (Busch et al., 1999; Busch et al., 2012). A PFPP therapist who treats the engaged PD patient described above might interpret that he appears to be afraid of experiencing and expressing his anger with his partner. The therapist might cite the observation that the patient frequently talks about how much he loves his partner immediately after expressing his frustrations, thereby magically "undoing" his anger. The therapist could also point out that the unresolved and frightening feelings of anger and frustration seem to emerge as sensations of physical discomfort that trigger panic. By doing so, the therapist attempts to help the patient own and work through these conflicts, diminishing their power as panic triggers and helping the patient attribute any lingering anxiety to personal psychological meanings rather than, for example, somatic problems.

### Techniques Contributing to Efficacy in PDT for Anxiety

Previous studies have demonstrated that use of specific psychodynamic techniques is predictive of outcomes in depression and personality disorder treatment (Barber, Crits-Christoph, & Luborsky, 1996; Barber, Muran, McCarthy, & Keefe, 2013; Hoglend, Dahl, Hersoug, Lorentzen, & Perry, 2011; Levy et al., 2006; McCarthy, Keefe, & Barber, 2016). However, there is a lack of empirical evidence supporting the efficacy of specific psychodynamic therapy (PDT) techniques for anxiety disorders, with only one small sampled study ( $n = 20$ ) showing that patients whose therapists employed more interpretations across two sessions (3 and 9 out of an average of 20 sessions) of short-term PDT tended to have superior symptomatic outcomes at termination (Pitman, Slavin-Mulford, & Hilsenroth, 2014). However, because the authors were unable to establish temporal precedence (i.e., that technique use preceded symptom change), a plausible account of the finding is that, for instance, patients with better prognoses pulled for more interpretations from their therapists in this setting. Moreover, disorders were not diagnosed with a reliable measure. Further research is clearly required to investigate the efficacy of specific PDT techniques for anxiety.

When considering the active ingredients that characterize effective PFPP, it should be noted PFPP is distinguished from generic short-term PDT through its explicit emphasis on panic and its associated dynamics (Busch et al., 2012). Clinical trials in which PDTs have been operationalized without a specific focus on the primary symptoms, or in which such a focus was proscribed or discouraged, have generated some of the most disappointing findings regarding the efficacy of PDTs (Durham et al., 1994; Garner et al., 1993; Gilboa-Schechtman et al., 2010; Poulsen et al., 2014). The rationale behind PFPP is that by focusing on experiences proximal to panic and by linking interpretations coherently to panic vulnerability, patients gain insight as to the specific underpinnings of their panic attacks (Rudden, Milrod, Target, Ackerman, & Graf, 2006). In PDT and other therapies, gains in insight have been found in different investigations to both predict further functional improvements post-treatment as well as protection against relapse across follow-up (Barber et al., 2013; Gibbons et al., 2009; Johansson et al., 2010; Kallestad et al., 2010). However, the specific hypothesis that psychodynamic focus on symptoms promotes greater symptom relief (Summers & Barber, 2010) has never been addressed directly in empirical investigations.

In the context of a RCT of PD with and without agoraphobia evaluating manualized PFPP (Milrod et al., 2016), we measured the use of psychodynamic psychotherapy interventions in two sessions of psychotherapy taken from the early and middle phases of a 24-session treatment protocol (Sessions 2 and 10). Based on PFPP's conceptual model (Busch et al., 2012), we hypothesized that therapists' more frequent use of psychodynamic interpretations made with connections to symptoms of and/or vulnerabilities to panic, agoraphobia, or anxiety would predict greater subsequent symptom improvement in PFPP. In the PFPP manualization, therapists are expected to, on average, focus on clarification of panic meanings in the beginning of treatment, but to become progressively more interpretive as these meanings become clearer and the patient becomes socialized to psychodynamic treatment (Busch et al., 2012). We hypothesized that interpretations in the session taken from the middle phase of treatment (Session 10) would be more predictive of improvement than interpretations in the earlier session (Session 2), as by the middle phase of treatment the therapist has sufficient information about the patient to make meaningful and accurate interpretations (Andrusyna, Luborsky, Pham, & Tang, 2006; Crits-Christoph, Cooper, & Luborsky,

1988). We anticipated that interpretations made without reference to panic would *not* predict subsequent symptom improvement, when accounting for panic-focused interpretations.

In addition, we hypothesized that panic-focused clarifications made early on in therapy (Session 2) would contribute to the prediction of psychotherapy outcomes, as clarification in this phase can help the therapist gather information and can encourage initial exploration of dynamics underlying the patient's panic symptoms.

### Moderators of Technique–Outcome Relationships

Like many manualized psychotherapies, PFPP allows for therapist flexibility in focus and application of therapeutic techniques (Busch et al., 2012), but relatively little empirical data exist to help guide moment-to-moment judgments of how to respond to an individual patient. As specific therapeutic techniques can be more or less conducive of change among particular patients (Keefe, Webb, & DeRubeis, 2016; Sasso, Strunk, Braun, DeRubeis, & Brotman, 2015), we furthermore hypothesized that specific patients would be likely to evince apparent benefit from particular psychodynamic interventions.

Specifically, we hypothesized that panic-focused interpretations would be more important to outcomes when patients entered the trial with more interpersonal problems as measured by the Inventory of Interpersonal Problems (IIP; Horowitz, Alden, Wiggins, & Pincus, 2000). Interpersonal conflicts and transitions are frequently stressors surrounding the onset of PD (Klass et al., 2009; Scocco, Barbieri, & Frank, 2007), and couples in which one patient has PD often exhibit relational distress and avoidant conversational and cognitive styles (Chambless, 2010). As unresolved and/or unconscious interpersonal conflicts such as intolerable dependency and anger can be viewed as a trigger for panic in PFPP, we hypothesized that individuals with more interpersonal problems might be more likely to have such conflicts or to have relatively more pervasive conflicts, and thus would benefit relatively more from panic-focused interpretations addressing those conflicts. In addition, the dynamics associated with panic, including difficulties with separation, dependency, and anger could contribute to both panic and interpersonal problems. In other words, our hypothesis was based on the notion that patients with more interpersonal problems may be more likely to have the dynamic-interpersonal contributions to panic that panic-focused interpretations may specifically help reveal and resolve.

## Method

### Participants

**Patients.** The present study is a secondary analysis of patients randomized to the PFPP condition ( $N = 80$ ) of a two-site RCT comparing PFPP, CBT, and applied relaxation training among patients with primary DSM-IV panic disorder with or without agoraphobia. Treatment took place twice a week for 12 weeks. Patients were recruited at New York Presbyterian/Weill-Cornell (hereafter, “Site A”) and the University of Pennsylvania (hereafter, “Site B”). Participants received study treatment *gratis*. Participants gave informed written consent. Both sites’ institutional review boards approved the protocol, and the study is registered with ClinicalTrials.gov (identifier: NCT00353470).

Patients were included in the trial if they had the spontaneous occurrence of one or more panic attacks for the month before trial entry, and qualified for DSM-IV panic disorder diagnosis determined as per the ADIS-IV (DiNardo, Brown, & Barlow, 1995). Cross-site agreement on ADIS ratings for panic severity (with a “4” indicating the diagnostic threshold) was excellent ( $ICC = 1.00$ ). See Milrod et al. (2016) for further details.

Non-study psychotherapy was prohibited. Medications were permitted if stable for at least two months at presentation, and were recorded, held constant, and monitored during the trial. Exclusion criteria were active substance dependence (less than 6 months’ remission), a history of psychosis or bipolar disorder, acute suicidality, and organic mental syndrome. Additional details on trial design, independent evaluator training, and therapy adherence can be consulted in the primary outcome paper (Milrod et al., 2016).

Of the 80 randomized patients, 65 ( $n = 30$  Site A,  $n = 35$  Site B) provided the necessary data to be included in the present study (see section on missing data). Descriptive data on patients’ demographics may be found in Table I.

**Therapists.** Sixteen doctoral-level therapists (11 M.D., 5 Ph.D.) administered PFPP across the two sites. Therapists had an average of 15 years of post-graduate experience ( $SD = 8.2$ ), and an average of 5 years’ experience in some form of time-limited PDT ( $SD = 6.3$ ). The average total caseload was 4 (median = 3.5, range = 1–11) for therapists whose patients were included in the present analyses. All therapists were experienced therapists who were specifically trained in PFPP over the span of a 2-day, 10-hr course. Therapists participated in monthly group supervision and received regular

individual supervision from senior clinicians. For the primary outcome paper, basic adherence to PFPP was established (Milrod et al., 2016).

### Outcome Index

**Panic Disorder Severity Scale (PDSS; Shear et al., 1997).** The PDSS is a widely used diagnosis-based, composite, global rating of panic disorder severity, with acceptable psychometric properties. The PDSS was administered by trained, master’s-level independent evaluators who were uninformed as to treatment condition. Interrater reliability on the PDSS was excellent ( $ICC[2,1] = 0.95$ ). The PDSS was administered five times during treatment: at baseline (Week 0), Week 1, Week 5, Week 9, and termination (Week 12).

### Moderator Measures

**IIP—circumplex (IIP; Horowitz et al., 2000).** The IIP-Circumplex is a 64-item self-report measure of maladaptive interpersonal problems that is a shorter version of the full 127-item IIP. The sum score of the IIP reflects an individual’s degree of interpersonal distress. The IIP exhibits adequate internal reliability and 10-week test–retest reliability (Alden, Wiggins, & Pincus, 1990), and exhibited excellent internal reliability in this sample ( $\alpha = 0.95$ ).

Table I. Descriptive data for baseline characteristics and for symptom change.

Baseline measure	Mean (SD) or # (%)
Baseline PDSS	13.9 (3.2)
PDSS Change Weeks 1–5	–1.7 (3.9)
PDSS Change Weeks 5–9	–1.3 (3.8)
SDS	16.1 (6.3)
HAM-D	10.6 (4.8)
IIP	1.2 (0.5)
Agoraphobia diagnosis	53 (81.5%)
Age	39.5 (14.0)
Gender (Female)	44 (67.7%)
Ethnicity (Hispanic)	8 (12.3%)
Race (Black, other non-Caucasian)	11 (16.9%), 4 (6.2%)
Concurrent psychopharmacology	16 (24.6%)
Age of panic onset (years)	27.5 (11.4)
SCID-II PersD diagnosis	32 (49.2%)
Cluster A PersD traits	1.4 (1.9)
Cluster B PersD traits	2.7 (3.2)
Cluster C PersD traits	4.0 (3.1)
Total PersD traits	8.0 (6.3)

Notes: HAM-D: Hamilton Rating Scale for Depression; IIP: Inventory of Interpersonal Problems; PDSS: Panic Disorder Severity Scale; SCID-II: Structured Clinical Interview for the Diagnosis of Axis-II Disorders; SDS: Sheehan Disability Scale.

## Process Measure

**Panic-Focused Psychodynamic Psychotherapy Rating Scale (PFPP-RS; Keefe, Phillips, Busch, & Milrod, 2016).** The PFPP-RS is an observer-rated scale developed to assess the degree to which therapists used general psychodynamic interpretive techniques, as well as more specific panic-focused psychodynamic techniques. It was developed by authors JRK and AP in conjunction with PFPP developers Fred Busch and Barbara Milrod. The use of each technique was rated on a 5-point Likert scale ranging from 0 (*technique not present in section*) to 2 (*at least one clear example of the technique in section*) to 4 (*technique applied fully and comprehensively in section*). Scores reflected the degree to which a technique was prototypic to the rated segment (i.e., adherence), not whether the raters believed the therapist applied the technique in a particularly apt way (i.e., competence). For items measuring the use of interpretation, a score of 2 would indicate that the therapist made at least one clear, identifiable interpretation. A score of 4 could represent either multiple individual interpretations made within a rating segment, or a single, continually developed interpretation over an extended period of time. Sessions were divided into 15-min segments, with each segment rated for each technique. A single rating per session was calculated by averaging ratings made across the three 15-min segments.

Scores of the PFPP-RS items were summed to produce the following subscales: (a) Psychodynamic Interpretations—the degree to which the therapist used any of the four types of interpretations (defense, genetic, dynamic, and transference); and (b) Panic-Focus: the degree to which the therapist focused on panic, agoraphobia, and anxiety symptoms and made connections between these symptoms and panic dynamics, including underlying conflicts. For Panic-Focus items, to score a 2 or higher on any given item, a therapist had to make a clear, unambiguous reference to panic, agoraphobia, or anxiety in relation to the intervention. This subscale includes two items assessing use of clarification with regard to panic symptoms and their personal meaning (PF-Clarification), and three items assessing interpretations that address the emergence of and vulnerability to experiences of panic, agoraphobia, and anxiety (PF-Interpretation). Examples of therapist interventions qualifying as clarifications and interpretations can be found in Supplemental Table 1. To separate panic-focused interpretations from non-panic-focused interpretations, the PF-Interpretation subscore was subtracted from the total Psychodynamic Interpretations score, as PF-Interpretations reflect a subset of Psychodynamic Interpretations. This score will be referred to as Non-Panic-Focused Interpretations.

Video-recorded sessions were rated using the PFPP-RS by six advanced undergraduate psychology majors at the University of Pennsylvania who each received approximately 20 hrs of training by the developers of the scale. Two authors who were PFPP developers (FB & BR), and a graduate student author familiar with the model (NS) provided additional consultation as to the validity and reliability of ratings during training. Training included a review of the rater manual, the PFPP therapy manual (Busch et al., 2012), and rating of several training tapes of PFPP. Training was continued until raters consistently rated single items within a point (+/–) of their graduate student trainer. Additionally, raters met approximately every other week with the study leader JRK to rate a tape collectively and discuss rating challenges and questions.

All available Sessions 2 and 10 were rated for each PFPP patient. Sessions 3 and 9 were rated in cases wherein Session 2 or 10 (respectively) was not available. Sessions were randomly assigned to raters, who were uninformed of the outcome data. Two raters rated each tape, and ratings were averaged across raters.

Random effects ICCs were calculated using variance estimates from an REML mixed model in the R package “lme4” (Bates et al., 2016; Shrout & Fleiss, 1979). Interrater reliability per 15-min segment was good for all Psychodynamic Interpretations ( $ICC[2,2] = 0.80$ ) and adequate for Panic-Focused Clarification ( $ICC[2,2] = 0.71$ ), Panic-Focused Interpretations ( $ICC[2,2] = 0.70$ ), and the difference score reflecting Non-Panic-Focused Interpretations ( $ICC[2,2] = 0.68$ ).

## Statistical Analyses

All analyses were conducted using the R statistical programming language (R Core Team, 2017) and run using robust regressions as implemented in the R package “Robustbase” (Maechler et al., 2016). Given the effective sample size ( $n = 65$ ), robust regression was selected over standard regression for its superior properties of robustness against multivariate outliers and deviation from homoscedasticity (Huber & Ronchetti, 2009). A robust regression (a) retains full information on all observations in an initial estimate of parameters; (b) iteratively determines weights for each observation based on a particular estimator function from this initial estimate, such that points much farther from model predictions in the previous iteration are given lower weight; and (c) recalculates final parameter estimates based on the final weighting when the values of the coefficients converge within a specified tolerance (Koller &

Stahel, 2011). Semi-partial correlation effect sizes ( $sr$ ) were estimated for parameters of interest from linear regressions.

**Missing data.** In the primary trial, a not missing at random (NMAR) pattern of treatment dropout was detected, such that patients with worse PDSS symptom trajectories were more likely to terminate from treatment prematurely (Milrod et al., 2016). When outcomes for treatment noncompleters are imputed in the NMAR context, imputation and other missing data methods can lead to biased estimates and confidence intervals (Graham, 2009). As such, only individuals who provided data up to the Week 9 assessment point were included in our analyses ( $n = 65$ ; 81.3% of the intention-to-treat sample).

Several trial completers were missing videotapes of one of the two sessions due to technical issues or therapist/research assistant error ( $n = 27$ ), but not treatment dropout. Process ratings for completers missing a video-recording of a session can be presumed to be missing at random in relation to panic symptom outcomes (Rubin & Little, 2002). This degree of missingness is not considered prohibitive in the missing data literature (White, Royston, & Wood, 2011), and process ratings have been successfully imputed in the past (e.g., Forand et al., 2018; Lorenzo-Luaces et al., 2017). Accordingly, random forest imputation (Stekhoven & Bühlmann, 2011) was used to impute missing data for completers, using all baseline data, in addition to all PDSS scores and termination and pre-to-post-treatment change scores on the Sheehan Disability Scale, Inventory of Interpersonal Problems, and Hamilton Rating Scale for Depression. Furthermore, all rated technique process ratings from observed sessions (the non-missing session and Session 5, which was rated but not used in this manuscript) were included in the imputation model, such that all patients had observed session process during their therapy contributing to the imputation of their missing session ratings. For this data set, a normalized root mean square error of prediction was estimated at 0.28, indicating that imputation accuracy was adequate (Stekhoven & Bühlmann, 2011). Analyses for patients with complete data for a given session were also run and compared to imputed data. No changes in patterns of statistical significance were detected.

**Analytic strategy.** Two sets of analyses were performed. Within a robust linear regression framework (Koller & Stahel, 2016), technique use at Session 2 (end of Week 1) was used to predict PDSS symptom change between Weeks 1 and 5 of treatment, while technique use at Session 10 (end of

Week 5) was used to predict symptom change between Weeks 5 and 9 of treatment. For two reasons, we examined change in the symptom measurement interval following the sampled session rather than the entire remainder of the therapy: (a) This permitted establishment of closer temporal precedence between techniques and outcomes than is often performed in “long reach” studies that sample from an early session to predict change throughout the entire treatment (e.g., Keefe et al., 2016); and (b) as improvement in the trial was linear and technique use following the sampled session may also influence symptom change, using too large a prediction interval may obfuscate the signal of how technique use occurring in the sampled session *per se* relates to subsequent symptom change.

Three process terms were included in each regression unless otherwise specified: PF-Interpretation, PF-Clarification, and Non-PF-Interpretation. In each analysis, baseline PDSS symptom score and PDSS change prior to the measured session were included as covariates. Prior panic symptom levels were included as a covariate to allay the possibility that patients who were low severity or getting better could have “pulled” for more or fewer techniques, generating an epiphenomenal relationship. Due to a site by treatment interaction reported in the primary outcome paper across the three tested treatments (Milrod et al., 2016), we also examined whether any process measures interacted with site to predict outcomes, and we planned to report any such interactions if they were found at least at trend level ( $p < .10$ ). However, no such interactions with site were detected, suggesting that process relationships were not detectably different across sites.

Furthermore, IIP scores were examined as a moderator of the relationship of Session 10 panic-focused interpretations to subsequent change, tested by specifying an interaction between the two variables. The Johnson–Neyman technique was applied to probe the regions of the significance of the interaction (Johnson & Fay, 1950).

Given that we conducted seven statistical tests, we adjusted  $p$ -values using the Benjamini–Hochberg correction to control for the false discovery rate at an alpha of .05 (Benjamini & Hochberg, 1995), employing the core  $R$  function “p.adjust.” These are reported as adjusted  $p$ -values.

In addition, we conducted two secondary, *post-hoc* statistical checks on the robustness of our obtained findings. In the first, we employed a mixed model to estimate therapist-level variance simultaneously with our model estimates, which did not result in substantively different conclusions. In the second, we analyzed whether the technique variables related to pre-to-post-treatment functional and interpersonal



Table II. Descriptive statistics for technique process measurements (average per 15-min segment).

Process measurement	Session 2 M (SD)	Session 10 M (SD)	Stability coefficient	Change in technique use
Panic-focused interpretation	0.9 (0.6)	1.2 (0.7)	$r = 0.50^{***}$	$d = 0.55^{***}$
Panic-focused clarification	2.3 (1.0)	2.3 (1.1)	$r = 0.09$	$d = 0.11$
Non-Panic-focused interpretations	0.3 (0.4)	0.5 (0.6)	$r = 0.03$	$d = 0.53^{**}$

Notes: Cohen's  $d$  for paired  $t$  test calculated using formula  $t_c$  (Dunlap, Cortina, Vaslow, & Burke, 1996).

\* $p < .05$ .

\*\* $p < .01$ .

\*\*\* $p < .001$ .

outcomes. Both analyses are reported in the Online Supplement.

## Results

### Descriptive Statistics

The average patient in this study had a baseline PDSS score of 13.9 (range 7–20), considered to be in the moderately-ill severity range for patients with comorbid agoraphobia (Furukawa et al., 2009). More than three-quarters of patients ( $n = 53$ ; 81.5%) qualified for a co-morbid DSM-IV diagnosis of agoraphobia. The average patient reported interpersonal problems in the high-normal range of severity (approximately +0.64 SD over the normative mean). Other baseline demographic and clinical information can be found in Table I.

Technique scores at Sessions 2 and 10, as well as indices of their consistency over time, are presented in Table II. Reliable within-patient stability between sessions was observed only for panic-focused interpretations. Within a given case, mean levels of panic-focused and non-panic-focused interpretations increased from Session 2 to Session 10.

Prior to data analysis, the correlations between every process measurement and baseline PDSS severity and our proposed moderator variable (IIP scores) were examined. As displayed in Table III, there were no significant correlations between

baseline panic and interpersonal problem severity and any of the technique variables at either time point.

### Early Panic Symptom Change (Weeks 1–5)

There was no significant relationship between panic-focused clarifications at Session 2 (end of Week 1) and symptom change between Weeks 1–5 ( $B = 1.16$  [95% CI:  $-0.20, 2.52$ ],  $SE = 0.68$ ,  $t[59] = 1.71$ ,  $p = 0.092$ , adjusted  $p = 0.184$ ,  $sr = 0.21$ ). Neither panic-focused interpretations ( $B = -1.34$  [95% CI:  $-3.32, 0.64$ ],  $SE = 0.99$ ,  $t[59] = -1.35$ ,  $p = 0.181$ , adjusted  $p = 0.290$ ,  $sr = -0.15$ ) nor non-panic-focused interpretations ( $B = -0.60$  [95% CI:  $-2.88, 1.68$ ],  $SE = 1.14$ ,  $t = -0.53$ ,  $p = 0.599$ , adjusted  $p = 0.599$ ,  $sr = -0.09$ ) yielded significant predictions of symptom change in the subsequent measurement interval.

### Later Panic Symptom Change (Weeks 5–9)

Higher levels of panic-focused interpretations at mid-treatment (Session 10, end of Week 5) predicted greater panic symptom improvement between Weeks 5 and 9 ( $B = 1.79$  [95% CI:  $0.61, 2.97$ ],  $SE = 0.59$ ,  $t = 3.04$ ,  $p = 0.004$ , adjusted  $p = 0.016$ ,  $sr = 0.37$ ), subsequent to the measured session. By contrast, non-panic-focused interpretations were unrelated to subsequent outcomes ( $B = -0.47$  [95% CI:  $-1.54, 0.60$ ],  $SE = 0.54$ ,  $t[59] = -0.88$ ,  $p = 0.382$ , adjusted  $p = 0.437$ ,  $sr = -0.09$ ). Panic-focused clarification at this session was also unrelated to outcomes ( $B = -0.56$  [95% CI:  $-1.37, 0.25$ ],  $SE = 0.41$ ,  $t[59] = -1.38$ ,  $p = 0.175$ , adjusted  $p = 0.351$ ,  $sr = -0.20$ ). Figure 1 summarizes all technique-outcome relationships for early and later panic symptom change.

Table III. Correlations between technique process measurements and baseline characteristics.

Baseline characteristic	Panic-focus interpretation (S2/S10)	Panic-focus clarification (S2/S10)	Non-panic-focused interpretations (S2/S10)
PDSS	$r = -0.06/-0.00$	$r = -0.13/0.08$	$r = -0.12/0.07$
IIP	$r = 0.19/0.06$	$r = -0.07/-0.02$	$r = -0.03/0.24$

Notes: All  $ps > .05$ . IIP: Inventory of Interpersonal Problems; PDSS: Panic Disorder Severity Scale.

### Interpersonal Problems as a Moderator of Technique–Outcome Relationships

The higher the patient's score on the IIP at intake, the stronger the relation of panic-focused interpretations

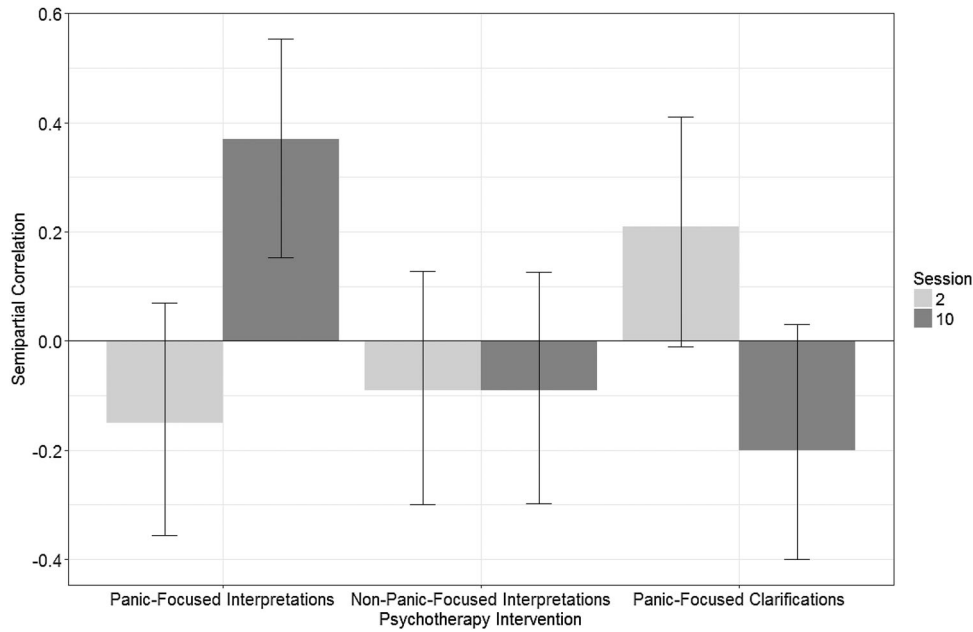


Figure 1. Estimated effect sizes for the relationship between psychotherapy technique use at a given session and subsequent improvement in panic symptoms as measured by the PDSS. Positive semi-partial correlations indicate that higher levels of the intervention are associated with more subsequent symptom improvement. Bars are 95% confidence intervals.

at Session 10 was to subsequent symptom improvement ( $B = 3.65$  [95% CI: 1.24, 6.05],  $SE = 1.20$ ,  $t[57] = 3.04$ ,  $p = 0.004$ , adjusted  $p = 0.016$ ,  $sr = 0.29$ ). The Johnson–Neyman technique identified an IIP score of 1.0 as the cutoff for exhibiting a significant, positive relationship between panic-focused interpretations and subsequent improvement ( $n$  of individuals with  $IIP \geq 1.0 = 38$ , 58.5%; see Figure 2). For patients with scores greater than or equal to 1.0, indicating higher levels of interpersonal problems at baseline, there was a significant relation between panic-focused interpretations and subsequent symptom improvement ( $sr = 0.41$ ,  $p = .001$ ), whereas for patients with less interpersonal distress the association was not significant ( $sr = 0.11$ ,  $p = .255$ ), in large part because patients with lower interpersonal distress did well symptomatically regardless of interpretation level (see Figure 2).

## Discussion

We investigated the relation between use of specific PFPP techniques and symptomatic outcomes in the treatment of panic disorder. Our first important finding suggests that at mid-therapy (Session 10), panic patients receiving a high level of panic-focused interpretations exhibited greater subsequent symptom improvement. However, non-panic-focused interpretations did not predict subsequent symptom improvement during either the earlier or

later periods of treatment. Moreover, panic-focused interpretations at Session 10 also predicted to pre-to-post improvements in interpersonal functioning (see Online Supplement). These findings lend support to the importance of taking a symptom-focused approach in short-term psychodynamic therapies for anxiety (Busch et al., 2012; Tasca, Hilsenroth, & Thompson-Brenner, 2014; Yulish et al., 2017). Past process findings demonstrating a positive relationship between interpretations and symptom change (Pitman et al., 2014) could reflect that many interpretations in short-term psychotherapy, in fact, are symptom-focused, even when that is not the specific intent of the study.

On the other hand, interpretations in an early session, whether or not they were related to panic symptoms, did not predict subsequent panic symptom improvement over the following four weeks. Possibly, early interpretations are not as accurate as those made after the therapist has learned more about the patient. In previous psychodynamic process studies, the observer-rated accuracy of interpretations derived from themes coded from early session transcripts or pre-treatment history interviews predicted greater symptom improvement and the likelihood of having a “sudden gain” (Andrusyna et al., 2006; Crits-Christoph et al., 1988). Alternatively, interpretation at a very early stage may sometimes be experienced by the patient as overwhelming (McCarthy et al., 2016). At an early stage of therapy, it is also potentially less likely that patients have been

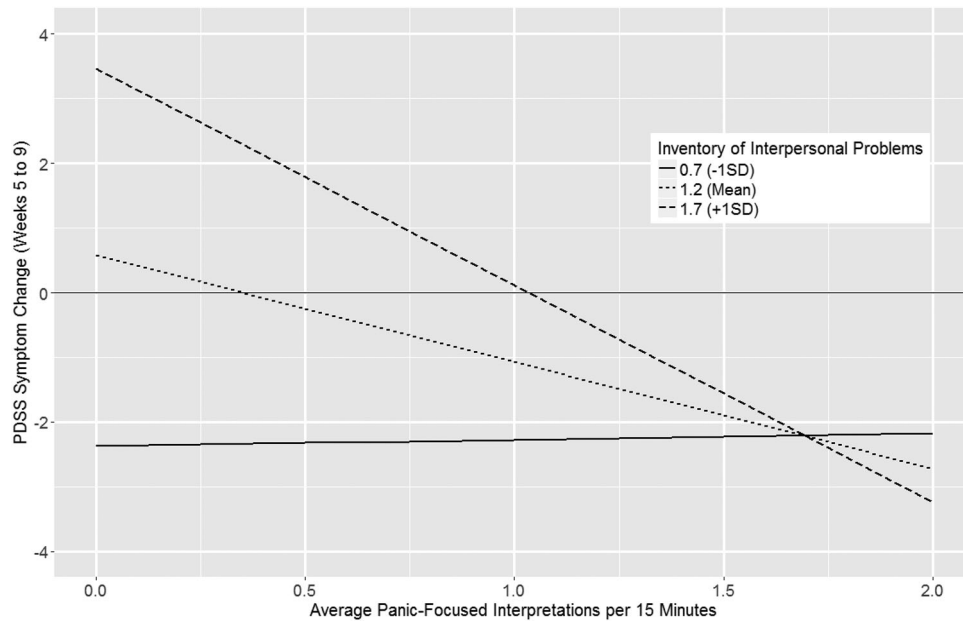


Figure 2. Estimated change in panic symptoms as measured by the PDSS between Weeks 5–9, as a function of the degree of interpersonal problems as measured by the IIP and their interaction with use of panic-focused interpretations at session 10. Positive values represent predicted symptom worsening, while negative values represent predicted symptom improvement. All regression variables not displayed in the figure were set to the sample means.

fully socialized to both the structure and tasks and goals of PDT (Luborsky, 1984), which may make it harder for them to build on therapists' interpretations with further personal exploration and development of insight.

Taken together, it is possible that early interpretations are both less accurate to the patient's dynamics, and less likely to be perceived by the patient as well-timed, which may be considered matters of intervention competence. Future process studies on interpretation accuracy and the role of supportive techniques and alliance in PFFP would help distinguish between these and other hypotheses explaining our findings. However, our findings do not support the conclusion that the other types of dynamic techniques assessed are necessarily without use or are counterproductive, but rather that panic-focused interpretations are the only statistically reliable signal of positive process for the average patient in this sample. It is also plausible that more complex process relationships exist (e.g., interactions between early and mid-technique use; levels of clarification and interpretation), but we did not explore these possibilities due to our need to limit the number of tests performed in this small sample.

As we hypothesized, patients with more interpersonal problems at baseline exhibited a stronger relationship between mid-therapy panic-focused interpretations and subsequent improvements. This finding is consistent with PFFP's theoretical model, which proposes that unconscious conflict in the

context of relationships may contribute to experiences of panic, such that patients with more interpersonal distress may need a more intense focus on the emotions and conflicts underlying this distress (Busch et al., 2012). Panic dynamics are typically interwoven with the interpersonal problems that these patients struggle with. For example, many panic patients are prone to being in relationships where they struggle to assert their own needs (Zilcha-Mano et al., 2015). This linkage may allow for more readily identifiable dynamics and conflicts, and more opportunities to identify them in relation to interpersonal difficulties, compared to patients with relatively fewer interpersonal problems. Ergo, it may be the case that therapists were more accurate in their interpretations for patients with stronger interpersonal issues.

However, patients with lower levels of interpersonal problems had good symptom improvement in this interval (i.e., between Weeks 5–9) regardless of panic-focused interpretations, whereas increasing interpersonal distress was more predictive of poor symptom improvement in less panic-focused interpretive therapies (see Figure 2). We would argue that this pattern of results is concordant with the perspective that patients with more interpersonal problems particularly need a more panic-focused, interpretive therapy. Past psychodynamic process-outcome research has rarely sought to identify beneficial matches between techniques and patient characteristics, with one exception being the body

of literature suggesting an important role for transference interpretations in treating personality disorder (Hoglend et al., 2011; Keefe & DeRubeis, 2018). Overall, our finding is consistent with a perspective wherein patients with more complicated or treatment-resistant presentations may require more active or skillful approaches, and may reveal more about process-outcome relationships than those DeRubeis and colleagues (2014) have called “easier” (or more straightforward) patients (DeRubeis, Gelfand, German, Fournier, & Forand, 2014; Keefe et al., 2016).

### Limitations and Future Directions

Fifteen cases (18.8%) were unable to be used for the present analyses due to dropout, which was nonrandom and related to poorer symptom trajectories in the parent trial (Milrod et al., 2016). The remaining patients included in our study represent a subsample of individuals who improved relatively more symptomatically. It is possible that the observed technique-outcome relationships would not be obtained among the dropout patients; alternatively, relatively less efficacious therapy process may have led to worse symptom trajectories, promoting dropout. Examining the relationship between technique use and treatment dropout would be an interesting way to disambiguate these possibilities, although this effort would be poorly powered in our sample due to the low base rate of dropout and lack of early therapy tapes due to dropout. In addition, several sessions were not available to be rated due to protocol error. However, we employed a standard, validated method for imputing the missing ratings (Stekhoven & Bühlmann, 2011), and results obtained with data only from cases with complete data mirrored those obtained when the imputations were included.

The patterns obtained using ratings from early and middle sections of therapy were observed using only one session from each phase. A better approach would be to sample multiple sessions from each phase (Dennhag, Gibbons, Barber, Gallop, & Crits-Christoph, 2012). Unfortunately, at one of the two treatment sites, only recordings of Sessions 2, 5, and 10 were available on a systematic basis. Future studies that include ratings of multiple recordings within the same interval would allow for the investigation of more complex patterns of the relation between process and symptom change, such as variability in technique use across sessions (Owen & Hilsenroth, 2014). In addition, the average therapy was not intensely interpretive (e.g., at session 10, less than one panic-focused interpretation per 15 min), indicating that we could not meaningfully examine hypotheses that that intensities of interpretations in

between the extremes is more effective than very low or very high intensities (see McCarthy et al., 2016).

Finally, our findings suggest but cannot confirm the presence of a causal relationship between the intensity of panic interpretations and symptom change. A stronger test of the causal hypothesis would require experimental manipulation of the causal variable, in a manner like Hoglend et al.’s (2008) randomized comparison of PDT with versus without transference interpretations.

### Conclusions

Psychodynamic therapists implementing PFPP should focus on the interpretation of the possible conflicts underlying panic as they enter the middle phase of therapy. Particularly tying the patient’s dynamics to experiences of panic, anxiety, and agoraphobia—rather than making general interpretations concerning relational or personal patterns—may be especially important for effective short-term treatment of panic. For patients presenting with higher levels of interpersonal distress, an emphasis on panic-focused interpretations may be particularly indicated to promote remission from panic disorder.

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### Supplemental data

Supplemental data for this article can be accessed <http://doi.org/10.1080/10503307.2018.1464682>.

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