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BRIEF REPORT

Reflective Functioning and Its Potential to Moderate the Efficacy of Manualized Psychodynamic Therapies Versus Other Treatments for Borderline Personality Disorder

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Background: Impaired reflective functioning (RF) is common among patients with borderline personality disorder (BPD). Transference-focused psychotherapy (TFP) has been demonstrated to improve RF compared to other common BPD treatments. If RF reflects a treatment mechanism for TFP, differences in pretreatment RF may also serve as a prescriptive factor for TFP's effects. **Method:** A total of 194 patients with BPD were randomized across two clinical trials to receive TFP ($n = 83$), dialectical behavior therapy (DBT; $n = 31$), supportive psychodynamic therapy (SPT; $n = 28$), or an enhanced treatment as usual (eTAU; $n = 52$). A mixed-effects model was used to examine whether baseline RF interacted with treatment condition to predict slopes of change in the Brief Symptom Inventory, the shared symptom outcome between trials. Moderation of changes in RF was also examined. **Results:** Treatment interacted with baseline RF to predict BSI slopes ($p = .011$). In TFP/SPT, RF did not predict outcomes, $\beta = -0.00, p = .973$, while higher RF was associated with relatively better outcomes in DBT/eTAU, $\beta = -0.54, p < .001$. Patients with poor RF (scores of 0/1) benefitted more from TFP/SPT, while patients with relatively ordinary RF (score of 4) had better outcomes in DBT/eTAU. Treatment effects on RF change were also moderated by baseline RF ($p = .014$), such that TFP improved RF most strongly among poor RF patients, SPT only among very poor RF patients, and DBT/eTAU not at all. **Discussion:** Low RF may reflect a deficit that may be targeted by TFP and other manualized psychodynamic treatments for BPD, which may be especially helpful among patients presenting with low RF.

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John F. Clarkin, Diana Diamond, and Stephan Doering have all published manualizations of transference-focused psychotherapy—the therapy of focus for this study—and have received royalties from these publications.

John R. Keefe played lead role in formal analysis, methodology, project administration, software, validation, visualization, writing of original draft and writing of review and editing, supporting role in data curation and equal role in supervision. Kenneth N. Levy played supporting role in conceptualization, methodology and writing of review and editing and equal role in data curation, funding acquisition, investigation, resources and supervision.

Julia F. Sowislo played supporting role in conceptualization, data curation, project administration and writing of review and editing. Diana Diamond played supporting role in conceptualization and supervision and equal role in writing of review and editing. Stephan Doering played equal role in data curation, funding acquisition, investigation, resources and writing of review and editing. Susanne Hörz-Sagstetter played supporting role in data curation and writing of review and editing and equal role in investigation and resources. Anna Buchheim played supporting role in data curation, investigation and resources and equal role in writing of review and editing. Melitta Fischer-Kern played supporting role in writing of review and editing and equal role in data curation, investigation and resources. John F. Clarkin played lead role in funding acquisition and supervision and equal role in conceptualization, data curation, investigation, methodology, project administration, resources and writing of review and editing.

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What is the public health significance of this article?

Reflective functioning (RF) is an important facet of social cognition and self-knowledge, which is sometimes disrupted among patients with borderline personality disorder (BPD). Across two randomized clinical trials, patients entering treatment with poor RF had relatively better symptom and RF outcomes in manualized psychodynamic therapies (transference-focused psychotherapy; supportive dynamic therapy) compared to dialectical behavior therapy and clinical care in the community, and vice versa for normal RF. Manualized psychodynamic therapies that focus on improving RF may be an especially good first option for treating BPD among patients with poor RF, while patients with normative RF may be able to more easily take advantage of other treatment modalities.

Keywords: reflective functioning, borderline personality disorder, psychodynamic psychotherapy, moderation, treatment outcomes

Borderline personality disorder (BPD) is a prevalent, highly debilitating disorder characterized by unstable identity, affect dysregulation, insecure or disorganized attachment, and deficits in mentalization (Buchheim & Diamond, 2018). Reflective functioning (RF; also known as mentalization) refers to the capacity to understand the self and others in terms of intentional mental states, such as feelings, desires, wishes, attitudes, and goals (Fonagy et al., 2002). Impairments in RF contribute to difficulties navigating interpersonal relationships, regulating affect, and maintaining a coherent, stable sense of self (Katznelson, 2014; Luyten et al., 2020). RF is typically found to be lower among psychiatric patients with personality disorders, especially BPD, relative to patients without personality disorders and nonpsychiatric controls (Bora, 2021; Luyten et al., 2020). Improving RF has been proposed as a core mechanism of change in psychodynamic therapies for BPD (Levy, Clarkin, et al., 2006).

Transference-focused psychotherapy (TFP; Yeomans et al., 2015), an evidence-based, manualized therapy for BPD focusing on interpretation and integration of split-off, polarized, affectively charged representations of self and others, has marshaled evidence for specifically targeting RF in the treatment process. Across two clinical trials of TFP for BPD (Clarkin et al., 2007; Doering et al., 2010), patients treated with TFP had greater gains in RF as measured by the Reflective Functioning scale (Fonagy et al., 1998) as compared to patients receiving dialectical behavior therapy (DBT), supportive psychodynamic therapy (SPT) for BPD (Levy, Meehan, et al., 2006), and treatment by community experts (an enhanced treatment as usual group, eTAU; Fischer-Kern et al., 2015). Gains in RF were also associated with improvement in personality organization measured by the Structured Interview of Personality Organization ($r = 0.41$; Fischer-Kern et al., 2015). Amelioration of self-reported RF has also been demonstrated and found to correlate with greater symptom improvements in mentalization-based therapy for BPD (De Meulemeester et al., 2018; Rossouw & Fonagy, 2012). In addition, therapist focus on reflection on mental states was found to predict greater RF change and lower acoustically coded in-session emotional arousal in psychotherapies for BPD, with higher levels of therapist bids for reflection noted in TFP compared to other treatments (DBT and SPT; Kivity et al., 2021).

Since RF may constitute a primary mechanism of change in TFP, a patient's pretreatment RF could be a prescriptive factor or moderator that predicts its clinical effects. In a *compensation* framework (Cheavens et al., 2012), we might expect TFP to be

especially effective among patients with low RF, inasmuch as TFP helps patients resolve this deficit by encouraging mentalization through identifying and understanding the motivations, thoughts, and feelings underpinning different self- and other mental states. Alternatively, patients with higher RF could be expected to *capitalize* on their better RF and engage more productively in a treatment that focuses on the use and refinement of this capacity to make changes in personality organization and interpersonal functioning. Differences in RF may also speak to the relative appropriateness of TFP for a given patient compared to alternative BPD treatments like DBT (Linehan, 1993), which may work through other mechanisms such as building concrete cognitive-behavioral skills to help regulate affect and navigate interpersonal situations (Neacsiu et al., 2010).

We examined whether and in what manner baseline RF served as a moderating factor for symptom and RF treatment outcomes across two randomized trials of TFP for BPD (Clarkin et al., 2007; Doering et al., 2010) as compared to DBT, SPT, and eTAU. We hypothesized that TFP would follow a compensation framework, wherein patients with low RF may experience greater relative improvements in TFP as compared to the other therapies.

Method

Patients

Patients were ascertained from two independent clinical trials of TFP for BPD (Clarkin et al., 2007; Doering et al., 2010). Both clinical trials were approved and monitored by local Institutional Review Boards at Weill Cornell Medical College and Medical University Innsbruck, and patients provided informed consent for research. All patients were diagnosed with *Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV)* BPD using a structured clinical interview (the International Personality Disorders Examination or Structured Clinical Interview for the Diagnosis of Axis-II Disorders). Common exclusion criteria between the two trials included the following: schizophrenia/psychotic disorders, bipolar disorder, current substance dependence (but not abuse), and organic pathology/cognitive disorders (e.g., intellectual disability). The Doering et al. (2010) trial additionally excluded antisocial personality disorder. Baseline demographic and clinical differences between the two samples are reported in Table 1, and more specific details about patient ascertainment can be found in their respective primary publications.

Table 1*Baseline Demographic and Clinical Descriptions of Patients in Constituent Clinical Trials (M/SD or % Yes)*

Variable	Clarkin et al. (2007), <i>n</i> = 90	Doering et al. (2010), <i>n</i> = 104
Age**	30.9 (7.8)	27.3 (7.1)
Gender (male)	7 (7.8%)	0 (0%)
Employed or student	60 (66.7%)	77 (74.0%)
Bachelor's degree or higher	46 (51.1%)	55 (52.9%)
Married or cohabitating***	17 (18.9%)	48 (46.2%)
Past year suicide attempt	20 (22.2%)	30 (28.8%)
Past year self-harm***	31 (34.4%)	73 (70.2%)
BSI-GSI***	1.8 (.7)	1.4 (.7)
RF*	3.1 (1.1)	2.7 (1.1)
Borderline PD criteria	6.7 (1.3)	6.7 (1.3)
Narcissistic PD criteria**	2.4 (2.2)	1.6 (1.8)
Antisocial PD criteria***	3.6 (3.5)	1.8 (2.3)
Histrionic PD criteria**	2.7 (2.1)	1.9 (1.9)
Avoidant PD criteria	2.4 (1.9)	2.3 (1.7)
Obsessive-compulsive PD criteria***	1.8 (1.6)	2.4 (1.5)
Dependent PD criteria	2.0 (1.8)	2.2 (1.5)
Paranoid PD criteria	2.4 (1.8)	2.4 (1.5)
Schizoid PD criteria*	.4 (.8)	.8 (1.1)
Schizotypal PD criteria	1.1 (1.4)	1.1 (1.0)

Note. BSI-GSI = Brief Symptom Inventory-Global Severity Index; PD = personality disorder; RF = reflective functioning coded from the adult attachment interview.

p* < .05. *p* < .01. ****p* < .001.

Treatments

Patients were seen for treatment for 1 year. In the Clarkin et al. (2007) trial, patients were randomized to TFP (*n* = 29; dropout 20.7%), DBT (*n* = 31; dropout 45.2%) or SPT (*n* = 28; dropout 21.4%), while in the Doering et al., 2010 trial, patients were randomized to TFP (*n* = 52; dropout 25.0%) or eTAU (*n* = 52; dropout 42.3%). TFP, DBT, and SPT were all manualized, and adherence checks were performed on taped sessions and found to be adequate. Additional information about adherence checks and other aspects of the psychotherapies delivered (e.g., supervision) can be found in primary publications.

TFP (Yeomans et al., 2015)

TFP is a structured, twice-weekly manualized psychodynamic treatment focusing on identifying and working with the dominant, polarized, affectively charged representations of self and other as they emerge in the here-and-now of the treatment, especially in the therapeutic relationship. TFP begins with establishing an orienting treatment contract outlining the frame of therapy, the roles of patient and therapist, patient goals, and ways of dealing with threats to the patient and treatment (e.g., suicidal, self-destructive, and destructive acting out). It uses techniques of clarification, confrontation, and interpretation to elucidating disparate self-other representations and their dynamics; for example, interpreting role reversals in how patients may act out dominant object relations, alternately identifying with one aspect of the internal world while enacting or projecting another (e.g., as a victim in one circumstance but a persecutor in the other), or observing instability of these representations over time.

DBT (Linehan, 1993)

DBT was full model, including weekly individual therapy, skills training group, as-needed emergency phone consultation sessions, and consultation/supervision group for the therapists. DBT blends strategies from cognitive-behavioral therapy (CBT), including psychoeducation, commitment, problem-solving, behavioral analysis, contingency management, and skills training techniques, with an emphasis on acceptance and validation techniques.

SPT (Applebaum, 2005)

SPT was conducted once or twice weekly, with the focus of establishing a therapeutic alliance, providing a supportive therapeutic environment, enhancing adaptive defenses, and helping patients to better tolerate intense, self-destructive affects by transforming them into verbal expressions of conflicts. Techniques used included verbalizing the patient's tendencies to act out feelings, describing significant aspects of the self, and providing advice and emotional support. Therapists tracked the development of transference, but were proscribed from making transference interpretations.

eTAU

Treatment by community experts, referred to throughout as an enhanced treatment as usual (eTAU), was the control condition in the Doering et al. (2010) trial, and entailed treatment by therapists identified by local health administrators in Austria as being experienced in treating BPD, although no therapists endorsed training in a manualized BPD psychotherapy. Therapists identified as psychoanalysts (41.3%), behavior therapists (39.1%), client-centered

therapists (8.7%), systemic therapists (8.7%), and with one Gestalt therapy (2.2%).

RF

RF was coded reliably within each study using standardized coding of the RF scale applied to the adult attachment interview (AAI; Clarkin et al., 2007; Fonagy et al., 1998, intraclass correlation = 0.86; Doering et al., 2010, $\kappa = 0.79$). RF scores range from -1 (repudiation or hostility to reflection on mental states) to 9 (exceptional capacity to recognize and articulate the mental states of self and others), with scores of 5 indicating ordinary RF. In each study, AAI interviewers and RF coders were not aware of treatment condition. Baseline RF scores were our primary moderator of interest for this investigation. As a secondary outcome, we also examined moderation of change in RF pre- to post-treatment. Baseline RF was available for 177/194 (91.2%) of patients, while termination RF was available for 123/194 (63.4%) of patients.

Symptom Outcome

The Brief Symptom Inventory (BSI; Derogatis & Melisaratos, 1983) was the common outcome of symptoms across the two trials and was used as our primary outcome. The BSI is a self-report measure of general psychopathology, including subscales reflecting experiences common in BPD (e.g., interpersonal sensitivity and suspiciousness; anger). We used the Global Severity Index reflecting the general psychopathology level. In a previous moderation investigation in a BPD clinical trial, change in BSI was found to correlate highly ($r_s > 0.80$) with change in BPD symptoms, psychosocial functioning, and interpersonal problems (Keefe et al., 2021). In the Clarkin et al. (2007) trial, this measure was collected every 4 months up to Month 12 for four measurements, whereas in the Doering et al. (2010) trial, it was collected pre- and post-treatment.

Statistical Analysis

The R packages “lme4” (Bates et al., 2015) and “lmerTest” (Kuznetsova et al., 2017) were used to fit linear mixed models of slopes of BSI change. Our analyses followed the logic of an individual patient data meta-analysis to analyze and aggregate the moderation effects across the two included trials while accounting for potential differences between studies (Riley et al., 2010). A three-level random-effects model structure was established, of time occasions (Level 1) within patients (Level 2) within study (Level 3). All available BSI and RF measurements were included in analyses in an intention-to-treat manner. For the BSI, a linear term of time was used. A significant interaction between treatment condition, baseline RF, and time indicated that baseline RF-moderated treatment differences in change in BSI.¹ Our primary contrast of interest reflecting our main hypothesis was between TFP and the other psychotherapies for BPD. After testing this contrast, we planned to explore the moderating effects of individual treatments to examine if there was any heterogeneity between the three other treatments (SPT, DBT, eTAU) in the overall moderation effect (if detected).

To model RF changes, we examined posttreatment RF scores in a linear regression as predicted by pretreatment RF and its interaction

with treatment, covarying for a fixed effect of study. We used a linear regression rather than a mixed linear model for this outcome as including the baseline RF in the mixed model led to model convergence issues.

Results

Symptom Outcome

Baseline RF score significantly moderated treatment differences between TFP and other therapies, $\beta = 0.34$, 95% CI [0.04, 0.64], $t(268) = 2.19$, $p = .029$. As patients entered the trials with relatively more impaired RF scores, they exhibited relatively more BSI change in TFP as compared to other treatments. This moderation effect did not differ across studies, interaction, $F(1, 291) = 0.00$, $p = .974$.²

We furthermore broke down these finding into the constituent treatment groups to better interpret the moderation effect for TFP relative to other therapies. There were significant differences between individual treatment groups in how baseline RF-predicted BSI outcomes, $F(3, 270) = 3.76$, $p = .011$. In particular, baseline RF-moderated slopes of BSI change in both TFP relative to DBT and eTAU, $\beta = 0.50$, 95% CI [0.17, 0.83], $t(199) = 2.96$, $p = .003$, and in SPT relative to both DBT and eTAU, in the same direction and similar magnitude as TFP, $\beta = 0.67$, 95% CI [0.17, 1.18], $t(157) = 2.60$, $p = .010$. We used this combined group of psychodynamic treatments to describe and probe the interaction, which was itself significant when grouping treatments into TFP/SPT and DBT/eTAU, $F(1, 272) = 10.3$, $p = .002$. In the psychodynamic treatments (TFP/SPT), baseline RF did not predict outcomes, $\beta = -0.00$, 95% CI [-0.17, 0.16], $t(257) = -0.03$, $p = .973$, while in DBT/eTAU patients higher RF was associated with more BSI change over time, $\beta = -0.54$, 95% CI [-0.82, -0.26], $t(275) = -3.74$, $p < .001$, see Figure 1.

Using the Johnson–Neyman technique, we estimated that TFP/SPT had significantly superior BSI improvements to DBT/eTAU when patients had a very poor baseline RF of 0, $\beta = -1.19$, 95% CI [-2.10, -0.29], $p = .011$, or 1, $\beta = -0.72$, 95% CI [-1.36, -0.08], $p = .029$. By contrast, DBT/eTAU was superior to TFP/SPT when patients had a relatively ordinary RF of 4, $\beta = 0.71$, 95% CI [0.29, 1.12], $p = .001$.

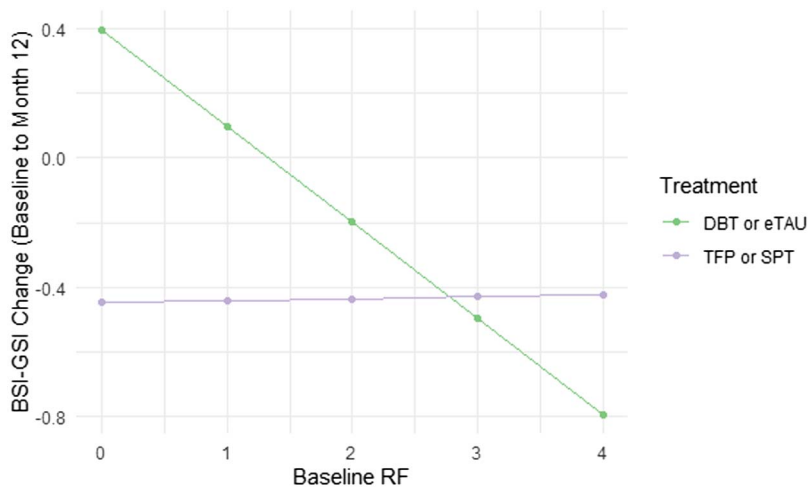
RF Outcome

RF itself was examined next as a secondary, observer-rated outcome. Baseline RF interacted with receiving TFP versus other therapies to predict RF changes, $B = -0.48$, 95% CI [-0.84, -0.13], $t(118) = -2.72$, $p = .008$, and this moderation did not significantly

¹ We also examined imputation of baseline RF score using a single data set random forest algorithm (Stekhoven & Bühlmann, 2012), but did not find imputation substantively altered results (results available upon request). We did not use imputation for outcomes, as for the Doering et al. (2010) trial only pre- and post-measurements were collected, which precluded exploration of potential not missing at random missingness patterns over time.

² As a secondary check on our results suggested by a reviewer, we further report the findings for the BSI and RF moderations by the individual trials in the Online Supplement to this article. While baseline RF was a significant moderator of BSI outcomes only in the Clarkin et al. (2007) trial but not the Doering et al. (2010) trial (although the direction was similar and confidence intervals overlapped with the Clarkin trial), for RF as an outcome baseline RF was a significant moderator in both individual trials.

Figure 1
Interaction Between Baseline Reflective Functioning and Treatment Group in Predicting BSI Change During Treatment



Note. Baseline RF interacted with treatment condition to predict pre–post slopes of BSI change, $F(3, 270) = 3.76, p = .011$, with TFP/SPT and DBT/eTAU exhibiting similar moderation effects, $F(1, 272) = 10.3, p = .002$. TFP/SPT was significantly superior to DBT/eTAU at low RF (0, 1), while DBT/eTAU was significantly superior to TFP/SPT at a relatively ordinary RF (4). DBT = dialectical behavior therapy; RF = reflective functioning; BSI-GSI = Brief Symptom Inventory–Global Severity Index; TFP = transference-focused psychotherapy; SPT = supportive psychodynamic therapy; eTAU = enhanced treatment as usual. See the online article for the color version of this figure.

differ by study, interaction, $F(1, 115) = 2.26, p = .136$. We once again found moderation between treatments, $F(3, 114) = 3.64, p = .015$, that exhibited similar pattern as in the BSI outcome. Due to the main effects of TFP treatment, the interpretation of this interaction differed across the two treatments (see Figure 2), such that TFP ranged from predictions of large RF improvements at very poor RF (score of 0) to no improvements for patients with a relatively ordinary RF (score of 4), whereas in SPT improvements in RF were only observed among individuals with very poor RF (see Figure 2). There was no level of baseline RF at which DBT/eTAU patients were estimated to exhibit RF improvements.

Discussion

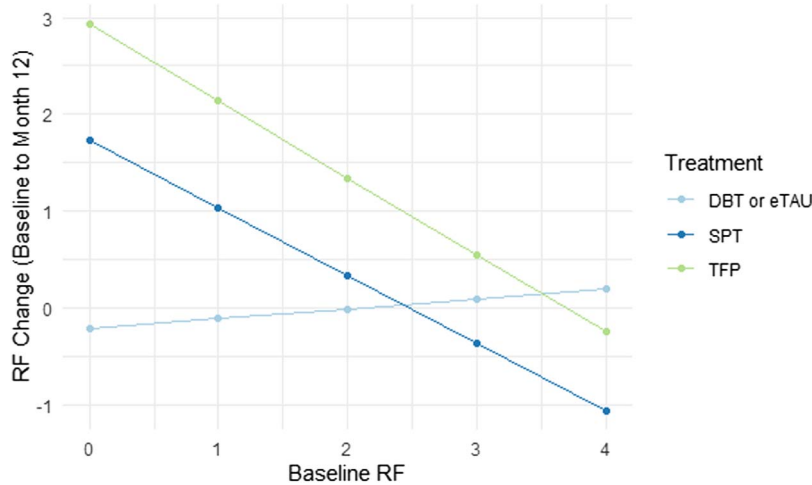
Partially congruent with our hypotheses, we found that a patient's baseline RF-moderated improvements on the GSI and RF scales for patients in both psychodynamic therapies, not just TFP, in the same direction of effect. Generally, patients with lower RF had superior outcomes in psychodynamic treatments relative to DBT and eTAU, and vice versa. This moderation effect was present across both included trials, and it was found in two disparate outcomes (general psychopathology, RF) collected via self-report and rater coding. That this improvement in RF was particularly strong in TFP may be attributed to the fact that TFP emphasizes the therapist's bid for reflection on disparate mental states as the dominant object relations of BPD patients are mobilized in the transference (Kivity et al., 2019; Levy, Clarkin, et al., 2006).

TFP and SPT exhibited similar BSI change regardless of RF, while patients receiving DBT or eTAU had increasingly better

outcomes as they entered treatment with higher RF. Patients with normative RF may be able to take better advantage of the skills-focused approach of DBT (or CBTs reflected partly in eTAU). Without adequate RF, it may be more difficult for an individual to effectively apply certain DBT skills—for example, in applying interpersonal effectiveness skills, normative RF may be helpful to accurately identify one's own goals and the likely responses of others to best plan an effective communication to get one's needs met. Patients with more normal RF may also not need as much the interpretive, mentalizing focus of the psychodynamic treatments, as factors other than RF may underlay their BPD.

Some of the included treatments (DBT, eTAU) had high dropout rates, which may have biased slope estimates. While all available measurements were included in an intention-to-treat manner, one of the two trials only collected BSI outcomes pre- and post-treatment (Doering et al., 2010), such that dropouts from that trial were unrepresented in slope estimates. The sample sizes for the non-TFP groups were relatively small, and examination of RF as a predictor of symptom change in DBT trials would be worthwhile. In addition, the eTAU group was comprised of psychodynamic as well as CBT clinicians, but it is noteworthy that regardless of theoretical orientation there was no adherence to a manual, while both specific psychodynamic treatments for BPD investigated were manualized. It may be that a key factor in improving RF is adherence/competence in a structured treatment for BPD—for example, Kivity and colleagues (Kivity et al., 2019) found that adherence to a TFP therapy prototype in TFP and a mentalizing prototype in SPT predicted greater RF improvement in BPD patients. We also did not examine other outcomes (e.g., personality

Figure 2
Interaction Between Baseline Reflective Functioning and Treatment Group in Predicting Reflective Functioning Change During Treatment



Note. Baseline RF moderated the impact of treatment condition on pre- and post-treatment RF improvements, $F(3, 114) = 3.64, p = .015$. TFP was associated with RF improvement across most baseline RF levels, SPT only at very low RF levels, and DBT/eTAU not at all. DBT = dialectical behavior therapy; RF = reflective functioning; TFP = transference-focused psychotherapy; SPT = supportive psychodynamic therapy; eTAU = enhanced treatment as usual. See the online article for the color version of this figure.

organization) as measures were not shared between the two trials. Differences in improvements in RF may mediate the relative advantage of psychodynamic therapies for low-RF patients (cf. Rudden, 2017), but we cannot assess this possibility with the present data as RF was only collected pre- and post-treatment.

Conclusion

RF may be a relevant prescriptive factor in matching BPD patients to treatments, such that TFP and SPT may be especially helpful for patients with low RF.

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