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MECHANISMS OF CHANGE IN TREATMENTS OF PERSONALITY DISORDERS: COMMENTARY ON THE SPECIAL SECTION

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Personality disorders (PDs) come in a large variety of presentations, severely affect the individual's social and emotional functioning, and are notoriously complex to treat. To make treatments for individuals with PDs more potent, there is a need to better understand how and why these treatments work. The articles assembled for this special section propose potential mechanisms of change within PD patients that may be addressed in future process-outcome research. Although the studies are exploratory and were limited by their scope and heterogeneity of their samples, they illustrate the importance of process research as nomothetic and idiographic building blocks toward a multifaceted understanding of change processes in PDs and their treatment. In this discussion, the authors aim to foster interest in the potential mechanisms of change in PD treatments and inspire further research by providing several methodological considerations for future process-outcome research and its potential clinical implications.

Historically, individuals with personality disorder (PD) symptomatology have been considered to be "resistant to change." However, in the past few decades several evidence-based interventions have been developed and tested even for the difficult-to-treat borderline PD (BPD; e.g., Cristea et al., 2017), including dialectical behavior therapy (DBT; Linehan, 1993) and psychodynamic treatments such as transference focused psychotherapy (TFP; Kernberg, Clarkin, & Yeomans, 2006) and mentalization based treatment (MBT; Bateman & Fonagy, 2006). These treatments represent different therapeutic models based on different theories of change. Nevertheless, in their review, Schnell and Herpertz (2018) posit that most PD treatments share a focus on the therapeutic alliance, improving dysfunctions of emotion regulation, social cognition, and interpersonal behavior.

Despite the data supporting the efficacy of these existing treatments (e.g., Barber, Muran, McCarthy, & Keefe, 2013), effects tend to be small and particularly unstable in the longer term (Cristea et al., 2017). PD patients are notoriously hard to treat because, in addition to the within-diagnosis heterogeneity and comorbidities, they often have histories of complex trauma that lead to insecure attachment patterns and to earlier dropout (Barnicot et al.,

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2012). Therefore, patients diagnosed with PD tend to have a reduced likelihood of treatment success (e.g., Fonagy et al., 1996). Finally, PD patients are more likely to trigger strong feelings in the therapist (Gazzillo et al., 2015), exacerbated by the frequent threat of immediate danger (e.g., risk of self-harm and suicide) and the intensive use of mental health services (Cristea et al., 2017).

PROCESS-OUTCOME RESEARCH

Given that PDs severely affect the individual's social and emotional functioning and are notoriously complex to treat, it is important to make PD treatments more potent, enhancing the effective elements while discarding those elements found to be redundant (Kazdin, 2009). A first step in improving PD treatments is to focus our attention on the process of change (Kramer, 2018), on what it is that underlies, enables, or drives therapeutic change, to clarify "how," "when," and "why" these treatments work. In contrast to the many outcome studies, relatively little empirical research has been done to investigate probable effective processes within PD treatments (e.g., Fernandez-Alvarez, Clarkin, Salgueiro, & Critchfield, 2006; Smith, Barrett, Benjamin, & Barber, 2006). Previous process research often focused on therapist interventions rather than on patient experiences or changing features of the therapeutic relationship (Hardy & Llewelyn, 2015).

The articles in this special section propose five potential mechanisms of change within the patient/therapist relationship that may be addressed in future research (i.e., self-concept clarity, attachment insecurity, cognitive bias, overall coping functioning, and patient ruptures). We review and discuss this exploratory research as building blocks toward a comprehensive understanding of change processes in PD and its treatment.

ESTABLISHING PROCESSES OF CHANGE

Although the exploratory process studies reported in this Special Section do not tell us how change occurs in PD treatment, or how to improve therapy or therapist training, these studies help us develop hypotheses about possible change processes that may be more fully tested in future process-outcome research (Hardy & Llewelyn, 2015). Identifying possible change processes and establishing if these processes change over treatment is a first step toward identifying mediators that can account for some of the changes in treatment outcome (e.g., Kramer, this 2018). To be a mediator, a variable must change during treatment, be associated with treatment, and affect outcome. This means that the mediator variables need to be assessed at least twice, if not three times, to establish change (baseline, during, and after), and the outcome measures should be assessed at least at pre-post treatment and when the mediator is measured. Mediators can also be viewed as intermediate outcomes (Garfield, 1990), outcomes "with a little o" (Greenberg & Pinsof, 1986, p. 7), or treatment goals, because they give an indication on how the treatment is progressing. If the effects of treatment are mediated by a variable, this suggests that the

treatment works by modifying this variable (the mediator). Once mediation is established, the next step in determining how the treatment works is to test for a causal relationship by manipulating any identified mediators (see Kazdin, 2009). Thus, identifying potential change processes in PD treatment narrows down the search for mediators and causal mechanisms of change (Murphy, Cooper, Hollon, & Fairburn, 2009). Given the current lack of knowledge about mechanisms at play in PD treatment, uncovering mediators is arguably one of the best investments for improving clinical practice (Kazdin, 2007).

The authors of this Special Section have taken two routes to identify possible change processes in PD treatment: (a) examining characteristics of functional systems underlying the development of psychopathology, as done in the review by Schnell and Herpertz (2018) and the empirical studies by Ehrenthal, Levy, Scott, and Granger (2018) and Scala and colleagues (2018); (b) examining change processes throughout PD treatment, as done by Boritz, Barnhart, Eubanks, and McMain (2018), Keller and colleagues (2018), and Starrs and Perry (2018).

PSYCHOPATHOLOGY PROCESSES

Schnell and Herpertz emphasize the translation of basic research to determine the specific essence of the psychopathology in those patients. In line with the NIMH Research Domain Criteria Initiative (RDoC; Insel et al., 2010), the studies in this special section tap into specific social process systems (self-concept in Scala et al.; attachment in Ehrenthal et al.; cognitive biases in Keller et al.), valence systems (valence of cognitive bias was measured by Keller et al.), as well as arousal and regulatory systems (cortisol reactivity as stress response in Ehrenthal et al.).

Those pathological processes are then posited as possible targets for treatment. In other words, an effective treatment process should be connected to an understanding of the nature of processes that underlie the etiology and maintenance of the clinical dysfunctions of PD (Kazdin, 2007). Ehrenthal et al. (2018) reported that BPD patients' level of attachment security, specifically anxious and avoidant attachment, moderates the influence of adverse childhood experiences on stress regulation. Scala et al. (2018) showed that self-concept clarity rather than negative affect was predictive of self-reported self-harm urges in the daily lives of BPD patients. It remains to be tested if these traits (attachment security and self-concept clarity) are amenable to change through psychotherapy (i.e., if they could potentially function as mediators of PD treatment), or if these are final outcomes. Some preliminary research suggests that increases in attachment security may be observed in PD treatment (e.g., TFP; Levy et al., 2006); however, it is unclear whether these attachment changes precede symptom change.

CHANGE PROCESSES THROUGHOUT PD TREATMENT

Exploring psychotherapy processes in actual PD treatments is another approach to identifying possible mechanisms of change. Keller et al.'s (2018) process-outcome study in a 10-session treatment for BPD found a significant decrease

of observer-rated cognitive bias over time. In-depth case studies by Starrs and Perry (2018) and Boritz et al. (2018) reported on observer-rated, session-by-session change in (un)recovered patients. More specifically, Starrs and Perry showed that although overall coping functioning improved over time in their three patients with PD and comorbid depression, this pattern appeared less prominent in the patient with the most severe PD symptoms. Boritz et al. (2018) reported more withdrawal ruptures and, less effectively, rupture resolutions in the three unrecovered BPD patients compared to the three recovered patients.

A general strength of the selected studies is its integrative perspective; that is, including different therapy models (e.g., TFP, DBT), PD diagnoses (e.g., BPD), and common comorbidities (e.g., depression); perspectives from researchers, patients, and therapists; a broad range of designs (e.g., case studies, process-outcome research) and measures (e.g., self-report, physiological, neuroimaging); and the combination of basic research on psychopathology development and observed processes in existing PD treatments. This integrative perspective is important for all research into mechanisms of change, and is specifically relevant for PD treatments.

This collection of studies not only illustrates the wide-ranging opportunities for process research, but also underlines the importance of an open dialogue among therapists and researchers, a scientific space to build a comprehensive picture of the change process. The elusive nature of change processes requires creative and diverse perspectives and designs, unifying the strengths of different studies. In other words, each approach, addressing some of the methodological limitations of other studies, brings its own strengths and weaknesses and therefore answers different pieces of the puzzle.

Moreover, by embracing the complexity of mechanisms of change in PD treatments, this Special Section presents a high level of clinical relevance. Its integrative perspective reflects the multidimensional phenomena of PD, as well as the heterogeneity in symptomatology, patients, and therapists. Also, PD treatments address different problem areas across multiple domains of functioning (e.g., affect regulation, metacognition, mental representations of self and others, and behavior) and differ substantially in different treatment settings and services and therefore require research studies that encompass this complexity.

As Kramer (2018) states in his introduction, observing the process of change from multiple integrative-transtherapeutic perspectives provides possible explanations of what is occurring in therapy sessions, which are empirically generic and patient-near. Treatment outcome is dependent on the unique patient and therapist interactions, and to disentangle these influences a diversity of methods is appropriate and required.

FUTURE RESEARCH

Nevertheless, the studies reported in this Special Section are *exploratory*, meaning the processes examined are likely to benefit from future research. The study of mechanisms of change in psychotherapy, and particularly in PD treatment,

is a vast, complex, and fascinating field with so many unanswered questions. We will now focus on just a small number of suggestions for future research, building on the exploratory studies in this Special Section as well as on the broader PD process-outcome literature.

FURTHER EXAMINATION OF PROCESSES IDENTIFIED IN THIS SPECIAL SECTION

Several specific change processes were proposed (e.g., cognitive bias, attachment insecurity, coping, and self-concept), leading to questions such as: how could the development of the patient's sense of self best be supported, and whether it needs to be targeted in PD treatment before symptoms of emotional instability and impulsive behavior are addressed. Also, given that PD is characterized by troubled connection with others, insecure attachment styles, and lack of resolution of traumatic experiences (Fonagy et al., 1996), breakdowns of the alliance in-session might lead to dropout in PD treatment. Further exploration of the (in)effectiveness of therapist rupture resolutions (see Boritz et al., 2018) and dropout rates seems warranted. Should therapists' interventions first address the PD patient's underlying attachment style or should the initial focus be on the patients' "surface" symptoms? Furthermore, is change in attachment style a mediator (i.e., occurring before the change in personality disturbance) or a co-occurring phenomenon (changes in both are highly correlated), and/or is attachment style a moderator (i.e., a pretreatment variable, not influenced by the treatment process, that is differentially correlated to outcome in different treatments)? The latter has implications for whether we should treat people with different attachment styles (or different levels of attachment style) differently. Keep in mind that a variable can be both a moderator and a mediator!

SAMPLE

Regardless of the particular research question, future research should aim to capture the heterogeneity of PD patients. Not only diagnostic heterogeneity, gender, and race but also dimensions of psychopathology, both in range as well as in intensity (as done by Ehrenthal et al., this 2018), need to be considered. The samples described in this special section included patients with several comorbid Axis I and Axis II diagnoses; some studies were originally designed to report on depression pathology (Schnell et al., 2018; Starrs & Perry, 2018), whereas the other studies had a narrower scope of only BPD (e.g., Boritz et al., this 2018; Keller et al., 2018). Although this heterogeneity is likely to be representative of clinical practice in most settings, it makes it difficult to determine whether the findings reported in these studies are specific to PD and PD treatments. The question of generalizability was amplified by the very limited diversity of patients included in these studies, as the majority of patients identified as female and White. Using more demographically diverse samples might provide information on what, what level, when, and how these patient and relationship processes change for particular subgroups of patients. Moreover, we expect that the diagnostic heterogeneity in PD will

be further reduced and explained by transdiagnostic research frameworks, such as the proposed RDoC subsystems (Insel et al., 2010). Adding RDoC-oriented process measures (at genetic, molecular, neural, physiological, and behavioral levels of analyses) to existing paradigms of psychopathology can help to clarify pathology mechanisms and mechanisms of change as targets for psychotherapy interventions and are likely to lead to fundable research projects, at least in the United States.

PROCESS MEASUREMENTS

In addition to the heterogeneity of the PD sample, the psychotherapy process measurements need to be carefully chosen. Session-by-session measurements, for example, provide an overall score per session, and thus give information on the change between sessions (as reported by Boritz et al., 2018; Keller et al., 2018; Starrs & Perry, 2018), which is important. However, to perhaps obtain a more comprehensive picture of the change process and given the temporal instability and fluidity in affective states in many PD patients, it will also be important to examine the patient's in-session pattern of change. This may be measured by moment-by moment change processes within the session itself and its direct effect on intermediate outcome. Future research could, for example, include different computerized or psychophysiological measurements that provide moment-by-moment in-session information on patients' unconscious internal processes (e.g., Ehrenthal et al., 2018).

Also, it will be important to consider different perspectives on the therapeutic process: from the therapist, the patients, an observer, or a computer program. Researchers are often engaged in either case studies or RCT-like research. However, a greater understanding of mechanisms is likely to require the integration of findings from both research perspectives (e.g., Chui, Bloch-Elkouby, & Barber, 2017). Case studies, for example, might lend themselves particularly well to detailed process coding of video-recorded sessions by independent raters, due to the time-consuming nature of the coding. In contrast, RCTs might provide relevant self-report data from large samples of patients nested in groups of therapists and different services.

OUTCOME MEASUREMENTS

Following the identification of change processes, the obvious next step is to establish whether these processes are in fact mediators or mechanisms of change in PD treatment. Therefore, the process measurements should be related to treatment outcome as studied by Keller et al. (2018), who analyzed the relation of change in cognitive bias to pre-post treatment change. However, they did not find that those two processes co-occurred or were correlated. Boritz et al. (2018) and Scala et al. (2018) used pre-post treatment change to determine effective and ineffective treatments and conducted post hoc comparisons of the therapy processes in these cases.

Future process-outcome research would benefit from careful planning of the timing of the mediator/process and outcome measurements. Repeated and frequent measurements are preferable because they allow for examining the

relation of in-session processes to intermediate session-by-session outcomes, such as alliance, therapists' interventions, and symptom severity, that have been shown to predict PD treatment outcome (Barnicot et al., 2012; Smith et al., 2006). Measuring both the potential mediator and the outcome variable at frequent intervals throughout the treatment, will allow for rigorous testing of the role of temporal precedence and for increasing our confidence in the causative role of mediators/mechanisms/processes that are studied (see, for example, Zilcha-Mano, Dinger, McCarthy, & Barber, 2014, regarding the alliance).

Also, given the complexity and long-standing nature of personality pathology, it will be relevant to include several follow-up measurements after the treatment has ended. Future research could then establish if intermediate or posttreatment changes are sustainable in different situations in the patient's life over time.

In short, we believe that embracing the complexity of mechanisms of change with an attitude of methodological pluralism, including mixed-method approaches that unify the strengths of different types and timings of measurements, methods, and analyses, will be indispensable in future research.

CLINICAL IMPLICATIONS

The studies in this Special Section illustrate that clarifying and operationalizing those mechanisms of change is a huge task that deserves much more effort. In our view, it will be crucial for therapists and researchers to work together on developing, testing, and revising hypotheses concerning the likely mechanisms of change in PD treatment. Hypotheses could not only be derived from the theory underpinning pathology and treatment and the findings of prior research (top-down), but may also be generated by therapists in the field (bottom-up). The implementation and precise timing of interventions in PD treatments, as in any other psychological treatments, is tailored to the individual patient and differs from patient to patient and from moment to moment (Murphy et al., 2009). Therefore, therapists are in the ideal position to develop hypotheses based on the unique sequences of processes in their individual cases. From those combined efforts, we hope to generate hypotheses that could be empirically tested in larger samples and that might lead to clinical suggestions on how assessments and interventions may be adapted to create optimal levels of change processes in-session. For example, clinically suitable assessment protocols for process and outcomes may be devised by operationalizing the treatment, the putative mediators, and the outcomes in PD treatments (Murphy et al., 2009). Also, the mechanisms of patient change could be conceptualized as functional treatment targets in-session and translated into different modules (as is done in DBT [Linehan, 1993] and MBT [Bateman & Fonagy, 2006]) that can be applied as part of formulation-based treatment (Schnell & Herpertz, 2018). Instead of treating comorbid disorders sequentially, a therapist may select a collection of interventions that target different underlying functional impairments, tailored to

the patient's individual needs in the moment (Kramer, 2018). Thus, identifying possible mechanisms of change in PD treatment may help refine our treatments and make them more potent, and help toward the development of empirically grounded therapist training.

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