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THEORETICAL ARTICLE

Beyond Acceptance and Commitment Therapy: Process-Based Therapy

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Abstract
This article describes process-based therapy (PBT) as a natural evolution toward more effective and efficient mental health care. Using acceptance and commitment therapy (ACT) as an example of an early prototype of PBT, the article explicates the broader features of PBT and the shift in mindset researchers and clinicians will need to take to fully embrace PBT with respect to assessment, conceptualization, and intervention. In addition, the article enumerates challenges to implementing the PBT model and proposes recommendations for circumventing these challenges in the areas of theory development, research methodology, and clinical practice. Finally, we make the argument that shifting to PBT is the logical next step for our field.

Keywords Process-based therapy · Acceptance and commitment therapy · Research methodology · Treatment planning · Case conceptualization

Introduction to Process-Based Therapy

Definition of Process-Based Therapy

Process-based cognitive-behavioral therapy or process-based therapy (PBT) is defined as the "contextually specific use of evidence-based processes linked to evidence-based procedures to help solve the problems and promote the prosperity of particular people" (Hofmann & Hayes, 2018, p. 2). There are three key parts of this definition. First, intervention occurs in a specific context, which means use of therapeutic processes and procedures cannot be applied in a rote fashion. Rather, the selection of processes and procedures must be sensitive to contextual variables including presenting concern, individual history, and situational stressors. Second, evidence-based processes must be linked to evidence-based procedures and vice versa. In other words, processes must be manipulable by available procedures and effective procedures must be able to shift processes of change. Without these links, processes of change and procedures are rendered useless because they cannot be moved or have no impact, respectively. Although research on PBT is nascent, extant data provide promising examples of what PBT procedures and processes could be: stimulus control, contingency management, interpersonal skills, addressing core beliefs, values, motivational strategies, and psychological acceptance (Hofmann & Hayes, 2018). Finally, PBT has a specific goal: to solve problems and promote prosperity. Thus, its objective is not merely to find empirical links between processes and symptoms, predict trajectories of processes and symptoms, or even to operationalize and classify these events; it is to have a meaningful impact on quality of life.

PBT and Acceptance and Commitment Therapy

Acceptance and commitment therapy (ACT) is a cognitive-behavioral therapy that aims to foster psychological flexibility through increasing acceptance, defusion, present moment awareness, self-as-context, committed action, and values clarification (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). In the ACT model, psychological flexibility is defined as "the process of contacting the present moment fully as a conscious human being and persisting or changing behavior in the service of chosen values" (Hayes et al., 2006, p. 9). Hence, psychological flexibility is inextricably tied to observable behavior and entails consistency between behavior and self-determined values. Psychological flexibility is the hypothesized process of change in ACT; the therapeutic procedures

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linked to it are varied and include experiential exercises, metaphors, exposures, and skills training (Hayes et al., 2006; Hayes, Strosahl, & Wilson, 2011).

PBT and ACT share overlapping features as does PBT with many other therapies given its inclusive stance. Similar to PBT, ACT has its own explicit goal against which its effectiveness should be evaluated: valued living. Furthermore, both approaches are concerned with improving wellbeing beyond other philosophical goals. ACT and PBT are also process-based models by design. That is, they are grounded in empirically supported change processes and any discussion of intervention theory and application necessarily involves these processes. In these ways, ACT can be seen as an incipient prototype of PBT: it posits its own theoretical framework and chosen philosophy of science, it uses empirically sound methods to test procedures and evaluate predetermined outcomes, and it advocates focusing on processes over presentation.

Still, in other ways, ACT is a rudimentary iteration of PBT because it is more exclusive than what PBT strives for. The ACT model specifies its own change process (comprised of six subprocesses) that do not encompass all possible empirically supported change processes. For example, ACT tends to focus on altering the function of verbal stimuli (e.g., thoughts, feelings, memories) rather than their form or frequency, which can be accomplished through practicing acceptance, defusion, present moment awareness, or self-as-context. In contrast, the PBT model is more inclusive with respect to procedures and change processes. For instance, cognitive restructuring (procedure) aims to change the content of thoughts through cognitive reappraisal (process; Hofmann & Asmundson, 2008) and is not formally used in ACT. However, cognitive restructuring has been found to be effective for decreasing subjective distress (Hofmann, Heering, Sawyer, & Asnaani, 2009; Wolgast, Lundh, & Viborg, 2011), making cognitive restructuring an empirically supported therapeutic procedure. Furthermore, cognitive restructuring shifts dysfunctional thinking (Cristea et al., 2015), which has been found to influence symptom outcomes (Wilhelm, Berman, Keshaviah, Schwartz, & Steketee, 2015). There is also evidence cognitive reappraisal influences positive affect (Brockman, Ciarrochi, Parker, & Kashdan, 2017), making it a relevant process of change with respect to emotional wellbeing. Thus, although ACT is a step toward PBT, there are still differences between the two.

PBT and Cognitive-Behavioral Therapies

PBT can be more easily differentiated from manual-based cognitive-behavioral therapies (CBT) given their discrepant intervention goals and underlying philosophies. As mentioned earlier, the explicit goal of PBT is to solve problems and enhance well-being, the form of which depends on what is meaningful to the individual (e.g., quality time with family, healthy eating). In contrast, CBT tends to be more concerned with nomothetic outcomes (e.g., depressive symptoms) that can be targeted and assessed with group-validated measures (e.g., Beck Depression Inventory II; Beck, Steer, & Garbin, 1988), permitting comparison of scores across studies and populations. Nomothetic comparisons allow researchers to conclude someone with a lower depression score is doing "better" than another person with a higher depression score; this interpretation rests on the assumption that self-reported depression scores define well-being or quality of life. Although CBT has historically noted the importance of global measures of improvement (Loerinc et al., 2015), symptom reduction is still considered the primary metric of treatment efficacy (e.g., Linardon, Wade, de la Piedad Garcia, & Brennan, 2017; Springer, Levy, & Tolin, 2018).

In addition, CBT is primarily developed and tested in the form of standardized manuals on a topographical level of analysis (Chambless & Hollon, 1998), whereas PBT is designed to be developed and tested on a process-based or functional level of analysis, jettisoning formulaic protocols for principle-guided flexibility. What this means is PBT cannot be defined by what it looks like. In fact, a course of PBT may even strongly resemble a manualized prescription of CBT. What differentiates PBT from non-functional therapies is its commitment to responding to in-the-moment processes, which are to be conceptualized based on the function they serve for the individual. On the other hand, nonfunctional therapies respond to content, which can be conceptualized in a variety of ways (e.g., as part of core beliefs in cognitive approaches). As an example, consider a client who expresses strong feelings of worthlessness. Latching on to content might lead clinicians to guide the client toward a more rational interpretation of their reality by confronting the implausibility of the statement. In contrast, orienting to function would first require clinicians to assess the effect on feelings of worthlessness on the client's behavior. A functional space makes room for the possibility that private events like thoughts and feelings do not actually influence behavior, and accordingly do not need to be altered. However, if the assessment indicates feelings of worthlessness are affecting behavior in an undesirable way, then clinicians can intervene on those feelings by selecting among a range of empirically supported techniques including cognitive restructuring. Therefore, an observer might reasonably assert the two approaches described above are essentially the same intervention. Although this is topographically true, the clinical decision making underpinning these approaches diverges from each other.

Orienting Toward the PBT Model

A Paradigm Shift

Moving toward PBT warrants a fundamental change in how psychologists understand and conceptualize clinically relevant behaviors and effective interventions. Although it is easy to call for such changes, envisioning and planning exactly what our next steps as a field are complicated because such a paradigm shift likely entails a steep learning curve for everyone—from graduate students to experienced clinicians and tenured professors. Furthermore, the PBT framework forces us to rethink the questions driving the work we do. Whereas the field of clinical psychology has historically focused on the "what" (e.g., "*What* treatment packages work?"), PBT leans toward the "how" (e.g., "*How* do treatments work?").

Changing the questions our field seeks to answer has practical ramifications because scientific and clinical methods and attention have to shift correspondingly. On a broader scale, there is a need for a functional taxonomy more suited to the complexity and challenges of diverse clinical conditions and individual goals. This means reorganizing and even reformulating psychological ideas and constructs in a way that aligns with the stated goals and principles of PBT. Thus, even the constructs we are used to studying and treating may change.

Philosophical Underpinnings of PBT

It seems prudent to preface the following discussion on research and clinical work in PBT with an explicit description of what we see as the philosophical stance of PBT. Understanding the philosophical assumptions of PBT will clarify how PBT decides which change processes are worth analyzing, which theories are useful, or which principles should guide clinical decision making.

One possible philosophical approach to clinical epistemology is ontological—like much of science—and concerned with coherence with what we perceive as reality. In this approach, the goal is to model all the parts, relations, and forces operating in a given case as they occur in the "real world." Although the unit of analysis is clearer in such a mechanistic approach, this degree of precision might require an insurmountable amount of research that would result in complex models with limited clinical utility.

The functional contextual assumptions underlying contextual behavioral science offers an alternative in which truth is defined as what works to enable prediction and influence of behavior with precision, scope, and depth (Hayes, Barnes-Holmes, & Wilson, 2012). From this perspective, clinical science is not simply about identifying processes that locally (i.e., in a limited set of currently relevant circumstances) permit prediction and influence; instead, it strives to identify processes that support progressive knowledge building, allowing us to make consistent steps toward our stated analytic goals of prediction and influence across people and settings. This a-ontological stance can provide selection criteria for deciding which processes to study, which levels of analysis to use, and how to address conflicting or overlapping processes without getting mired in concerns about coherence with "reality."

Acknowledging the plethora of theoretical frameworks in clinical psychology, PBT takes a universal stance in that it does not pledge allegiance or disavow any one treatment model; instead, it accepts coexistence of discrete sets of philosophical assumptions on the condition that they share an end goal (Hofmann & Hayes, 2018). Thus, PBT welcomes useful elements from various orientations so long as they serve the explicit objective of enhancing human wellbeing.

At the same time, PBT has a core epistemology underlying its methods: empiricism. This means PBT relies on theory-driven, testable, and falsifiable hypotheses and methodologically sound means of data collection and interpretation to advance its scientific agenda. These investigations may be performed on various levels of analysis (e.g., neurological, physiological, behavioral), with nomothetic or ideographic methods (e.g., randomized controlled trials, single-subject designs), and in basic or applied settings. The parameters matter less than the scientific rationale behind queries. With respect to elements to include in this taxonomy, we may emphasize mid-level maladaptive (e.g., clinical perfectionism, rumination, impulsivity) and adaptive processes (e.g., perspective taking, cognitive reappraisal) given their utility in research, clinical, and translational work. Sticking to processes that are too narrowly defined or too general can end up being unhelpful because they provide imprecise psychological targets that are difficult to generalize or apply to excessively specific contexts.

Research in the PBT Model

Although PBT has clear advantages conceptually, it poses practical challenges for research that need to be overcome to meet the promise of PBT. PBT requires identifying a set of evidence-based processes with adequate precision, scope, and depth that can be (1) systematically applied to conceptualize relevant cases and (2) reliably linked to procedures to treat such cases. The overarching objective of PBT research is to better answer the clinical decision-making question of "What core biopsychosocial processes should be targeted with this client given this goal in this situation, and how can they most efficiently and effectively be changed?" (Hofmann & Hayes, 2018, p. 47). Within this question, several pieces distinguish PBT from other models. "Biopsychosocial" points to

consideration of multiple levels of analysis, elements of which are only relevant if they are malleable. "This client" underscores clinical regard for idiosyncratic variables as they relate to personal goals in specific contexts; this means different moves may be indicated if the context shifts even if working with the same person with the same goals. It must be admitted pursuing efficiency and effectiveness are not unique to PBT, and they do not have to be. As discussed in preceding paragraphs, PBT does not claim or desire to be a radically new therapeutic model. PBT is an attempt to synthesize and distill existing data, organize them into a scientifically coherent model, enumerate areas on which to focus (e.g., context, basic research), and call for renewed fervor for elements that may have fallen out of favor over time (e.g., idiographic analysis)—all while orienting clinical psychology toward the goal of promoting prosperity.

Perhaps none of the ideas in PBT are new, in which case the contribution of PBT may be its development of a public rubric to which clinical scientists can refer to ascertain if their work truly lines up with their goals and values. In other words, besides a clinical taxonomy informed by evolutionary science (Hayes et al., 2019), what distinguishes PBT from existing models is its willingness to make explicit the standards against which it should be judged, ergo its willingness to fail in the service of improving science.

Identifying an Adequate Set of Processes

PBT requires a set of processes that can be reliably and practically applied to conceptualize cases seen in practice and to guide decision making with regard to therapeutic procedures. Without such a system, we risk problems like lack of clear, evidence-based guidelines for delivering PBT; high degree of variability in clinical practice that diverges from existing research; and barriers to adoption of PBT (e.g., complexity to learn and implement, perceived lack of applicability to cases).

One way to avoid these problems is to ensure PBT processes have high precision (i.e., avoiding excessive overlap among processes such that each accounts for distinct phenomena) and scope (i.e., relevant to a range of cases and presentations such that the process is practically useful to learn and apply within practice). Low precision means processes with different labels (e.g., experiential avoidance, anxiety sensitivity, distress intolerance, emotion dysregulation) have significant shared variance, making distinguishing among low-precision processes difficult. The same consideration applies to treatment methods; low-precision procedures overlap with each other with respect to how they work and what they target (e.g., cognitive defusion, decentering, mindfulness). The primary issue with low precision is it becomes unclear which process to target when—because the situations to which a process is relevant are diffuse—and how the associated research is to be organized to guide evidence-based practice. An analogy is the low-precision recommendation to "eat more vegetables." Although this may be healthful in general, a more precise recommendation would be to eat a specific vegetable—or class of vegetables—to address a specific vitamin deficiency.

That said, it can be equally problematic when a set of precise processes are too narrowly defined, especially in relation to topography rather than function (e.g., discomfort intolerance, intolerance of uncertainty, tolerance of ambiguity; Leyro, Zvolensky, & Bernstein, 2010). The lack of parsimony associated with high-precision, narrow-scope processes can lead to difficulty in creating a progressive knowledge base or practically useful clinical guidelines. We need theoretical constructs that match the precision and scope of the clinical decision-making framework for PBT especially if such an approach aims to integrate processes and procedures across existing treatment models.

With respect to integration across models, a common language that is simultaneously precise and abstract enough to encompass overlapping processes from different traditions is needed. One approach is to appeal to a more fundamental science that transcends disagreement within psychology: Hayes et al. (2019) proposed a conceptual model for change processes informed by evolutionary science. In this model, processes are organized along dimensions (e.g., cognitive, affective, behavioral) and levels (e.g., variation, selection, retention, contextual sensitivity). For instance, cognitive reappraisal in cognitive therapy could be considered a form of cognitive variation if it adds to the client's cognitive response repertoire. Likewise, emotion regulation in dialectical behavior therapy could be considered a form of affective variation and potentially affective contextual sensitivity if functionally applied to a specified set of circumstances.

Consistent with the reticulated approach to integrating basic and applied sciences in contextual behavioral science (Hayes et al., 2012), high-precision and wide-scope processes may be best achieved by developing and refining processes at multiple levels of analysis, with developments in basic and applied areas informing the other, and emphasizing coherence across levels (i.e., depth). Basic research often focuses on highly abstracted and precise principles and processes that can account for a range of phenomena (e.g., reinforcement, inhibitory control). In applied work, middle-level terms are typically developed for targeted contexts in ways that guide clinical decision making (e.g., activity scheduling in behavioral activation), which often have less precision and scope than the abstract principles on which they are based. A marriage between basic and applied methods is needed to nurture a science that remains grounded in theory and empiricism while it strives to be relevant to the range of the human condition. Thus, this iterative approach is needed to fulfill the vision of PBT. Of course, useful constructs eventually have to be evaluated against our stated goal of supporting personal growth and well-being. Varying constructs we study, selecting

based on clearly defined objectives, and retaining ones that work are all necessary steps of advancing clinical science.

Developing Adequate Process of Change Measures

Measurement is an obvious and critical challenge for PBT given its necessary reliance on functional idiographic assessment. On a more fundamental level, even a perfectly specified theoretical model of processes is unlikely to be useful over time if we are not able to measure these processes reliably and accurately. There are common, well-known measurement challenges related to overreliance on self-report, global recall insensitive to context, and group designs that only consider aggregate data (e.g., Shull, 1999; Sidman, 1960; Trull & Ebner-Priemer, 2013). Because these issues reduce sensitivity to detecting more precise phenomena of interest when examining which pathological processes are relevant for a given case and how procedures engage processes to produce clinically meaningful change, they particularly undercut the ability of PBT to meet its aims.

We need measures that can distinguish between highly correlated and overlapping but distinct processes. Real-world decisions based on how processes and associated procedures function in research are much more likely to be helpful if there is a reasonable degree of confidence in the measures used to assess these constructs. These issues are reflected, for example, in the challenges with measurement in ACT. The Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011) is the most established process of change measure for ACT. The AAQ-II has been found to predict a range of mental health problems (Levin et al., 2014) and mediate treatment outcomes for ACT (e.g., Pots, Trompetter, Schreurs, & Bohlmeijer, 2016; Yadavaia, Hayes, & Vilardaga, 2014). However, there are validity concerns with the AAQ-II: high overlap with psychological distress (Tyndall et al., 2019; Wolgast, 2014), lack of precision with regard to measuring experiential avoidance or some/all aspects of psychological inflexibility (Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011), and high correlations with other ACT processes such as cognitive fusion (Gillanders et al., 2014). The AAQ-II has also been found to be less sensitive to detecting effects than domain-specific measures of psychological inflexibility (Ong, Lee, Levin, & Twohig, 2019). These issues create challenges for developing a more precise model of clinical decision making that could inform PBT as the role of psychological inflexibility in presenting problems and the unique effects of ACT procedures designed to target specific aspects of psychological inflexibility are obfuscated.

One potential solution is to use other sources of information beyond self-report. Yet, multimethod assessment may introduce other auxiliaries and conditions that affect reliability and validity because of methodological noise that is necessarily incurred when multiple means are used to indirectly measure a construct (e.g., behavioral tasks, GPS data). Algorithm-based methods could potentially overcome these challenges, in particular when used to combine across data sources, but developing such algorithms depends on already having a reliable and valid criterion, which returns to existing measurement challenges.

Another solution is to develop self-report measures designed to more precisely measure specific change processes. Examples of such measures include the Multidimensional Experiential Avoidance Questionnaire (Gámez et al., 2011), Cognitive Fusion Questionnaire (Gillanders et al., 2014), and Multidimensional Psychological Flexibility Inventory (Rolffs, Rogge, & Wilson, 2018). However, these measures are still susceptible to the inevitable disadvantages of self-report measures related to subjective perception and recall ability.

Using temporally proximal assessment à la ecological momentary assessment (EMA) may circumvent inaccurate reports due to later recall and increase the ecological relevance of data collected (Shiffman, Stone, & Hufford, 2008). However, these data are still vulnerable to subjective bias—as is true for almost all self-report measures. Furthermore, giving these assessments too frequently runs the risk of overburdening respondents while decreasing number of items administered compromises the comprehensiveness of data collected.

It is clear that creating perfect measures for constructs as amorphous as those we inevitably study in psychology is an impossible task—not just because we currently lack the psychometric technology to develop precise and accurate measures, but also because there is no way to objectively verify the precision and accuracy of our assessments from an ontological perspective. If the measures available to us—be it self-report, behavioral, cognitive, physiological, or neurological—cannot measure constructs like anxiety exactly as we qualitatively experience them, then perhaps it is worth orienting to a different purpose of measurement entirely: to produce data that directly shapes treatment planning and outcome monitoring to improve subjective well-being. That is, the goal is to produce useful rather than accurate data. For instance, even if EMA is the best way to accurately measure what is happening in the moment for a specific person in a specific situation, such data may not be useful if they do not tell us how to intervene or do not actually reflect changes in well-being.

Part of a reorientation of purpose entails revising the criteria used to determine reliability and validity. A common method for developing measures is to evaluate how self-report items relate to each other in samples outside the context of treatment, with the unstated goal of measuring constructs accurately. This may fit with the cross-sectional use of such measures to identify relevant baseline pathological processes in clinical samples that might inform case conceptualization. At the same time, it may be less helpful with regard to using these process measures to assess and compare the effects of different procedures designed to engage distinct processes.

Given the pragmatic stance of PBT, we propose an alternative approach in which treatment sensitivity, discriminant validity, and incremental validity are at the forefront of process measure validation, and measures are created with the intent of clarifying distinct processes that may or may not apply to a given client and distinct procedures that engage these processes differentially. For example, a good measure of cognitive flexibility might not be the set of items that most highly relate to each other and account for the largest amount of variance in an outcome but rather a measure that can identify the unique effects of a procedure aimed to increase cognitive flexibility relative to other procedures. Such data would indicate if the procedure performs with the precision it is theorized to have and, therefore, has theoretical and clinical implications.

As measure development progresses, the field will have to grapple with the challenge of organizing and weeding through an increasing number of process of change measures. Similar to the intellectual distillation of overlapping theories and procedures to empirically supported components, a parallel process should occur with corresponding measures—bearing in mind the overarching objective of promoting prosperity among individuals. This means measures have to contribute to the development of a coherent and parsimonious knowledge base that clarifies procedures and processes linked to enhanced well-being. Furthermore, measures retained in the field need to meet the demands of capturing context-sensitive, idiosyncratic data from which treatment planning and clinical decision making can proceed. Otherwise, we risk forming a fragmented knowledge base disconnected from our stated goals and an inability to synthesize results across studies.

Researching Procedures Linked to Processes

Assuming an adequate set of processes have been identified with an adequate set of measures, the next task is to identify effective and efficient procedures for moving processes that will achieve personally meaningful gains for given clients and contexts. Part of the challenge is integrating our existing knowledge base across the range of evidence-based interventions and theoretical orientations to outline key features of commonly effective procedures. We also need additional research based on gaps in the literature. For example, which therapeutic procedures are most effective and efficient for engaging targeted change processes, which contexts and client characteristics moderate these effects, to what degree are procedures and processes additive and overlapping in producing changes in processes, and how do we combine these specific therapeutic procedures and processes into a broader PBT model of care that integrates other biopsychosocial processes and procedures? Answering these questions fully demands an unrealistic amount of research given the potential of evaluating countless procedures, processes, clients, and contexts across levels and types of empirical support. Therefore, we need to be strategic to maximize efficiency of research and outputs that can be generalized to clinical decision making. Other publications have provided excellent primers on the range of promising methodologies that can help meet the goals of PBT (e.g., Hayes et al., 2019; Hofmann, Curtiss, & Hayes, in press).

In this article, we emphasize one particularly critical implication of PBT, which resonates with clinical behavior analysis and its roots: a need to return to more idiographic analyses of individual subjects. The numerous limitations of group designs studying aggregated data across individuals has been explicated from behavior analytic viewpoints (Shull, 1999; Sidman, 1960). These issues become especially prominent as the focus shifts from protocols for syndromes to processes for individuals. The precision required from PBT in matching procedures to processes for individual clients and contexts will continue to elude us if treatment effects are always aggregated into groups assuming homogeneity among participants. This is particularly problematic if homogeneity is based on overly simplistic categories such as topography of clinical presentations (e.g., panic disorder, major depressive disorder). This group-level approach obfuscates the heterogeneity in treatment response in which we are interested for clinical decision making in PBT (i.e., who did this work for and how did it work?). The "right" question is unlikely to simply be: which collections of procedures are necessary and sufficient to produce improvements among clients in general? The more helpful question is: which procedures are necessary to engage which biopsychosocial processes for which clients? Although realization of the PBT model does not eradicate the need for nomothetic data, it certainly warrants closer inspection of individual patterns.

To ensure relevance to clinical work, there is a need to model the complexity of change processes and contexts that moderate their effects. This fits with typical idiographic approaches in which a much more precise and intensive assessment procedure over time is typically used to support causal interpretations of effects rather than group randomization. This intensive assessment approach is more likely to capture the complex, dynamic ways that procedures, processes, and contexts interact over time. It is also better suited to match the process of clinical decision making, which is typically based on more data than those provided at baseline. Rarely is the question a static one of "what set of procedures should I use for the whole course of treatment?" Rather, clinical decision making evolves over time in response to client behavior and effect of the intervention (e.g., "What procedure should I use at which point to alter what process?"). A dismantling design typically uses time-invariant interventions where the effects of procedures targeting specific processes are examined before and after treatment—but not during treatment. In contrast, more dynamic approaches might test the proximal effects of matching particular procedures to engage particular processes

based on in-the-moment variables that match routine clinical decision making (e.g., "When is it more effective to target acceptance versus values?"; Levin, Haeger, & Cruz, 2019).

Sooner or later idiographic findings must be scaled back up and generalized into models that guide clinical decision making. These are unlikely to be based on the silos provided in diagnostic manuals. Thus, we also need to find useful ways to organize presentations that will support prediction and influence. One way to do this might be to work backwards from idiographic analyses, inductively identifying characteristics and generalizable processes that guide clinical decision making. A number of promising examples exist in the literature that orient to pathological processes that span across presentations and guide responses to particular procedures targeting particular processes (e.g., clinical perfectionism, impulsive decision making; Egan et al., 2014; Fairburn et al., 2015; Gros, Szafranski, & Shead, 2017; Morrison et al., 2019; Newby, McKinnon, Kuyken, Gilbody, & Dalgleish, 2015).

Clinical Work in the PBT Model

Clinical Advantages of a Process-Based Intervention Model

Although the proliferation of empirically tested protocols has improved quality and accessibility of care (e.g., Chorpita et al., 2002; Morgenstern, Morgan, McCrady, Keller, & Carroll, 2001), the almost exclusive topographical analysis of intervention and presentation has constrained our ability to perform functional case conceptualization and design treatment plans accordingly. That is, the "how" of intervention has been inadvertently sacrificed for the "what" of intervention. One limitation of a topographical or symptom-based approach to therapy is the same diagnostic label can be assigned to vastly different presentations. On the other hand, behaviors with similar functions may be ascribed different diagnoses.

The inadequacy of straightforward diagnosis-protocol matching warrants grounding intervention in theoretically consistent principles of change and corresponding idiographic assessment. The shift from cookbook manuals to a context- and individual-sensitive principles-informed approach to care is undoubtedly intimidating. However, the advantage of PBT is it rests more on a theoretical reorganization of therapeutic procedures and change processes with which clinicians may already be familiar (Hayes et al., 2019) than on an overhaul of psychotherapeutic foundations. The PBT model is differentiated by its emphasis on evidence-based procedures and processes (as opposed to entire protocols) applied in a context-sensitive (as opposed to rote) fashion. Thus, empirically supported cognitive-behavioral procedures (e.g., exposure, behavioral activation) and change processes (e.g., cognitive reappraisal and psychological acceptance) already have a place in the PBT model (Hofmann & Hayes, 2018). In other words, PBT affects *how* clinicians approach therapy more than *what* they do in therapy.

Another notable draw of PBT is that the number of overlapping change processes and therapeutic procedures in empirically supported treatments is considerably smaller than the number of identified disorders and various protocols designed for them. Thus, although process-based treatment would involve stepping away from the familiarity of manualized interventions for specific diagnoses, it may ultimately be simpler because there are fewer elements to learn. Furthermore, because clients with the same diagnosis show significant variability, clients present with comorbidities, and clients can need clinical services even without meeting diagnostic criteria, focusing on function or processes—as opposed to diagnostic labels—may provide a more helpful means of case conceptualization and treatment planning.

Assessment and Outcome Monitoring

In line with the shift from diagnoses and manuals to functionally defined behaviors and change processes, assessment and outcome monitoring practices also need to be updated. In particular, clinicians need to: (1) identify relevant change processes and behavioral outcomes to assess; (2) determine methods for assessing those change processes and behavioral outcomes; (3) administer idiographic and nomothetic assessments; (4) design treatment plans based on assessment data; (5) continuously monitor change processes and behavioral outcomes to determine if treatment is working as expected; and (6) adjust treatment as needed.

To date, behavioral, cognitive, emotional, and neurological change processes applicable across diagnoses have been identified as logical targets in PBT (Hayes & Hofmann, 2017). Clinicians may choose to measure these more global change processes in addition to outcomes specific to client presentations. The key idea behind idiographic assessment is to identify and accurately and reliably track change processes specific to the client's presentation, treatment goals, and perception of well-being. For example, when working with a client who catastrophizes commonly encountered problems and avoids situations that elicit anxiety, clinicians may choose to measure perceived power of cognitive distortions, frequency of behavioral avoidance of anxiety, or even anxiety severity with a standardized measure. In certain cases, a standardized measure will work well, but in other cases a brief face-valid question (e.g., "On a scale from 1 to 10, how much did you push the thought away today?" or "On a scale from 1 to 10, how content are you with the way you are living your life right now?") will be the easiest way to conduct assessment. Likewise, behavior tracking can be useful when the intervention target is overt and concrete (e.g., number of compulsions in obsessive-compulsive disorder [OCD]).

In response to this, clinicians will need to develop and refine methods to routinely perform these assessments. Automating assessments can improve usability and decrease the risk of human error, leading to greater adoption. Furthermore, with technological advances, it may be easy to incorporate client self-report data into treatment notes and to design systems that allow for individualized assessment. For example, web- and app-based assessments can provide more individualized and time-specific assessments. In our research, we have found mobile apps can assess processes in the moment, which can be used to characterize changes in processes over time (Levin, Navarro, Cruz, & Haeger, 2019; Levin, Pierce, & Schoendorff, 2017) or even to guide individualized tailoring of what procedures to apply to clients in the moment based on time-specific assessments (Levin, Haeger, et al., 2019).

Treatment Delivery

As clinicians start to understand clinical presentations in terms of processes, they need to: (1) clarify key change processes for clients; (2) identify procedures that will move relevant change processes; and (3) explicate clinical decision-making rules based on potentially unfamiliar theoretical frameworks and philosophies of science. The latter may be uniquely challenging in the absence of manuals that sequentially organize steps within sessions or context-sensitive data on the effectiveness of therapeutic procedures.

An example of treatment based on the PBT model follows. At baseline, the clinician conducts a typical intake assessment that entails collecting data on demographic variables, individual history, clinical presentation, diagnoses, and nomothetic assessment of likely change processes. This information would be integrated with the client's treatment goals. In other words, the clinician forms a case conceptualization of processes that need to change to increase probability of behavioral change, which will, in turn, allow clients to achieve their therapeutic goals. These choices should be influenced by client history and individual characteristics and based on research that suggests changes in particular processes will positively influence changes in behavioral outcomes related to treatment goals. Then, using evidence-based decision making, the clinician would present a treatment plan to the client. However, instead of describing the manual they would use, the clinician would focus on skills that need to be developed to address the presenting issue. Idiographic assessment would be used to track client goals and key change processes. Movement in change processes and target behaviors will clarify the effectiveness of treatment.

Twohig and colleagues (Crosby, Dehlin, Mitchell, & Twohig, 2012; Twohig & Crosby, 2010) have utilized some of these principles in their work with obsessive-compulsive and related disorders. At baseline, clients complete a battery of standardized assessments that include change process (e.g., cognitive distortions, psychological inflexibility) and outcome measures (e.g., specific-disorder measures, depression, quality of life). Assessment continues with week-long self-monitoring between intake and the first session. Self-monitoring is circumscribed to easily trackable behaviors (e.g., compulsions in OCD, skin picking in excoriation disorder, hairs pulled in trichotillomania) and change processes (e.g., responses to internal events) that will be explicitly targeted in therapy. Daily self-monitoring continues over the course of treatment. It can be completed on paper or via texts, websites, or apps depending on what makes sense for the client.

These data are graphed and used to inform treatment decisions. In general, we look for relationships between change processes and target behaviors wherein a decrease in the process predicts a decrease in the target behavior (or other relevant outcome). If the target behavior is decreasing much faster than the target process of change, there is a disconnect. Such a pattern indicates the hypothesized key change process is not contributing to behavioral improvement—assuming measures used are reliable and valid—and the treatment plan should be refined accordingly. The standardized measures are typically administered approximately every 4 weeks. Used together, these methods allow us to conceptualize the case in terms of change processes, move processes using evidence-based procedures, and verify that we are shifting key change processes that will eventually produce changes in the target behavior.

The reciprocal relationship between assessment and intervention outlined above is not necessarily unique to PBT. In fact, the very formulation of PBT rests on drawing from the wealth of knowledge and data already generated by clinical researchers. However, the points we emphasize include using idiographic measures focusing on outcomes relevant to the client, developing a functional case conceptualization across multiple levels of analysis, identifying malleable dependent variables, and planning treatment based on theoretical principles and ongoing assessment rather than diagnosis-specific manuals.

Pivoting away from protocol-to-disorder matching and familiar theoretical orientations adds complexity to treatment delivery because doing so precludes formulaic application of clinical techniques. Rather, implementing process-based assessment and intervention requires clinicians to build up "big picture" skills with respect to understanding relevant theories and principles, staying apprised of clinical research, becoming fluent in developing context-specific case formulation, and adapting treatment across and within individuals (i.e., over the course of treatment). Furthermore, relinquishing the safety blanket of manuals introduces potential for drift from evidence-based methods and loss of benefits accrued from actuarial decision making. The tradeoff is obvious: prescriptive protocols can increase treatment adherence and consistency in delivery, yet the very consistency that is viewed as

a critical element of evidence-based adoption of therapies undermines the flexibility of modifying treatment to account for context. Of course, this is a practical concern; in theory, evidence-based protocols are intended to be applied flexibly according to client needs and goals. However, basic issues with adoption and implementation (Reid et al., 2017; Shafran et al., 2009) suggest these are lofty expectations.

What PBT offers to circumvent this issue is a rubric elucidating how and when to use specific procedures to address specific maladaptive processes. Thus, it not only acknowledges inevitable individual variability but attempts to account for it in its iteration of psychological intervention. In other words, PBT codifies the therapeutic drift that typically subverts empirically supported interventions and delineates principles that inform adaptions in treatment delivery. Thus, the downside of PBT is not the increased risk of arbitrary decision making per se but the difficulty of training clinicians to think in terms of function and context when most of the world has pushed us to think in terms of topography. For example, when was the last time someone around you ascertained that your sadness or frustration was unhelpful before providing advice?

The successful adoption and implementation of PBT may ultimately rest on the ability of institutions and experts to adequately train current and future clinicians to (1) conceptualize thoughts, feelings, and behaviors functionally and (2) link case formulation to assessment and intervention in order to improve client well-being. If this pedagogical barrier is insurmountable, the practicality of PBT will be grossly compromised. However, the widespread success of the field of applied behavior analysis shows effective training in the application of PBT is attainable. Furthermore, the partial reliance of PBT on principles governing human behavior renders it more resistant to changes in therapeutic recommendations based on limited data because, although data can point us in different directions, principles tend to be stable over time. Providing quality clinical training is not a new struggle and certainly not one unique to PBT. The onus is on educators to provide the context necessary for skills acquisition because the alternative of allowing poorly trained clinicians to work with vulnerable populations under the guise of evidence-based practice jeopardizes the validity of the entire field of clinical psychology.

Issues With PBT

As much as we have extolled the virtues of PBT, we recognize that no innovation is immune from criticism. We have collated a few important ones and address them in the following paragraphs.

First, there is no consensus as to what measures, procedures, or processes qualify for the PBT model. Although numerous examples have been provided in a book on the topic (Hayes & Hofmann, 2018), they are not exhaustive. Nonetheless, this may be an empirical rather than theoretical limitation in that supporting evidence—that has yet to be accumulated—is needed for measures, procedures, or processes to qualify for the PBT model. Given that research from a PBT framework is emergent, resolving this concern may only be a matter of time.

Second, the criteria that need to be met to make the cut beyond "evidence-based" is unclear. Although concrete criteria have been helpful for guiding clinical research (e.g., Chambless & Hollon, 1998), they have also had the iatrogenic effect of stultifying scientific endeavors as evidenced by the proliferation and prioritization of randomized controlled trials over other clinical study designs in the past few decades (Carey & Stiles, 2016). PBT instead points to function as the criterion for evaluating the goodness of procedures and processes: procedures and processes are worth studying if they are empirically found to be relevant to and able to foster meaningful outcomes. This orientation is grounded in the chosen pragmatic philosophical stance of PBT and is not logically defensible (Hayes, Hayes, & Reese, 1988; Hofmann & Hayes, 2018). However, we argue—even if not explicit and even if their means vary—most clinical psychologists have promoting prosperity as their overarching professional goal, and the choice between functional and concrete but topographically defined criteria is easy.

Third, PBT seems to take so broad a stance that it is difficult to disagree with its assertions. The common factors model has similarly been criticized as "tautological [and] untestable" (Laska & Wampold, 2014, p. 519). Because PBT includes evidence-based procedures and processes by definition, it appears to conveniently take ownership of everything that works. Moreover, everything that works becomes by definition part of PBT. Yet, we posit this criticism is only valid at the superficial level on which it is stated because PBT provides specific answers for what gets to count as "evidence" (if obtained through rigorous empirical means) and what "working" is (if meaningful individual outcomes are achieved). Furthermore, PBT researchers must have control over the independent variable of interest so causality can be established. Hence, interventions that are tested with poor methodology, only improve symptoms but not other crucial indices of wellbeing, or cannot be manipulated do not belong in the PBT model. In addition, PBT demands falsifiable hypotheses linked to theory to refine its intellectual foundation. For example, if procedure X is hypothesized to move process Y, then data showing it moves both process Y and Z indicate it is not precise whereas data showing it does not move process Y indicate procedure X is impotent. In both cases, the theory must be revised.

Finally, what does PBT add or how is PBT different from existing evidence-based therapies? Although individual pieces of PBT assessment and intervention may not be unique, we argue the lack of uniqueness is by design because PBT intentionally draws from extant knowledge and data in the spirit of

parsimony. After all, our ability to see further is not accrued to entirely novel thinking but to standing on the shoulders of giants. Thus, the contribution of PBT may simply be its articulation of a metatheoretical model of assessment and intervention that organizes what we already know as a field into a integrative framework—in an effort to bridge gaps across distinct traditions and refocus our resources into building better therapies overall rather than differentiating among similar ones.

As PBT continues to grow beyond an abstract idea, new criticisms related to inadequate methodology, poor measurement quality, theoretical dilution, clinical complexity, and low adoption rates will rightfully surface. We hope clinicians and researchers who embrace the PBT model will likewise embrace its criticisms and use them to improve the state of psychological science.

Conclusion

Ultimately, the goals of PBT with respect to increased theoretical and procedural parsimony, broader applicability, and coherence across scientific disciplines need to be met by appropriate methods in research and clinical settings. The utility of pontification is limited if psychologists fail to test falsifiable hypotheses with sound methodology or idiographically track change processes following implementation of specific therapeutic techniques.

Much has been written on the advantages and recommendations of the PBT model (see for e.g., Hayes et al., 2019; Hofmann & Hayes, 2018). This article echoes the call for sincere efforts to move toward practicing PBT. At the same time, it highlights realistic challenges that may hinder the transition and provides concrete suggestions for possible next steps. As we have discussed in this article, the path ahead will require considerable intellectual and practical effort. Nonetheless, we believe the benefits of embracing PBT will be worth the journey. Namely, the promise of PBT encompasses a single organizing framework in clinical psychology that bridges theoretical factions, a core set of empirically tested procedures that move useful change processes related to meaningful outcomes, theoretically informed principles to guide context-sensitive clinical decision making, and, most important, advancement of quality and accessibility of care in the service of promoting client wellbeing. Ultimately, is that not why we got into this field in the first place?

Availability of Data and Materials This manuscript has no associated data.

Compliance with Ethical Standards

On behalf of all authors, the corresponding author states that there is no conflict of interest. This manuscript does not report research involving human participants and/or animals; informed consent was not required.

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