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Beyond Acceptance and Commitment Therapy: Process-Based Therapy

Clarissa W. Ong, M.S.

Michael E. Levin, Ph.D.

Michael P. Twohig, Ph.D.

Department of Psychology

Utah State University

Corresponding author:
Clarissa W. Ong
Department of Psychology
Utah State University
2810 Old Main Hill
Logan, UT 84322-2810
(435) 797-8303
clarissa.ong@usu.edu

Abstract

This article describes process-based therapy (PBT) as a natural evolution toward more effective and efficient mental healthcare. Using acceptance and commitment therapy as an example of an early prototype of PBT, this paper 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 paper 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 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

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Introduction to Process-Based Therapy (PBT)

Definition of PBT

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, 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. 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 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 a nascent 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 mainly because it is more

exclusive than what PBT strives for. The ACT model specifies its own change process

(comprised of six subprocesses) that may not perfectly 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. Still, cognitive restructuring have 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. Yet, most ACT interventions do not make room for cognitive reappraisal. Thus, while 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 overarching philosophies. As mentioned earlier, the explicit goal of PBT is to solve problems and enhance wellbeing, the form of which depends on what is meaningful to the individual. In contrast, CBT tends to be more concerned with nomothetic outcomes that can be targeted and assessed with group-validated measures, permitting comparison of such generic indices across studies and populations. Moreover, these outcomes tend to focus on symptoms rather than wellbeing. 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.

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 is 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 very purpose of our work. Whereas the field of clinical psychology has historically been an outcome-focused endeavor (i.e., "*What* treatment packages work best to *reduce symptoms*?"), PBT demands process-focused efforts wherein the key question becomes, "*Which processes* should treatments target to *improve wellbeing*?"

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 clearly 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 underlying philosophical assumptions of PBT will clarify how PBT decides which change

processes are worth analyzing, which theories are useful, or which principles should guide

therapeutic 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 ultimately 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 (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 the sense that it does not pledge allegiance or disavow any one treatment

model and instead 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.

Still, PBT itself has a core epistemology underlying its methods: empiricism. This means

PBT relies on theory-driven, testable 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

underlying queries. With respect to elements to include in this taxonomy, we may emphasize

mid-level maladaptive (e.g., clinical perfectionism, rumination) 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 as they provide imprecise psychological targets that are difficult to generalize or apply

to 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 fully 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. In other words, we need processes that can do the work required in PBT as a

more flexible, idiographic model of evidence-based therapy. This requires developing a

systematic, progressive knowledge base with these processes and associated procedures that can

broadly, reliably and efficiently 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).

Difficulties with a PBT approach are likely to arise if we fail to better answer this question over time, are only able to answer this question in a limited set of circumstances, have wide variability across clinicians or researchers in how this question is answered, or require an impractical amount of effort to answer this question. These challenges are, in many ways, opportunities as they point to areas in which clinical psychology has stagnated and map out directions to move forward differently. Addressing these challenges may mean reconsidering how research is approached—from specific methods used and research questions asked to researchers' core scientific strategy and assumptions for knowledge generation.

Identifying an Adequate Set of Processes

PBT requires an organized 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). If a system includes multiple overlapping processes that account for the same clinical problem (e.g., experiential avoidance, anxiety sensitivity, distress intolerance, emotion dysregulation) or treatment methods (e.g., cognitive defusion,

decentering, mindfulness) then it becomes unclear which process to use when and how the associated research is to be organized to guide evidence-based practice.

That said, it can be equally problematic when a set of precise processes are excessively 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 notable 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, basic levels of analysis may be critical as they provide a common language that is precise and abstract enough to potentially encompass overlapping processes from different traditions.

Consistent with the reticulated approach to integrating basic and applied sciences in contextual behavioral science, 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, which often have less precision and scope than the abstract principles on which they are based. Ultimately, useful constructs have to be evaluated against our stated goal of supporting personal growth and wellbeing. 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 Measures

Measurement is an obvious and critical challenge for PBT. 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 over-reliance 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). All 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.

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 progressive if there is a reasonable degree of confidence in the measures used to assess these constructs. These issues are reflected, for example, in the observed challenges with measurement found in ACT. The Acceptance and Action Questionnaire—II (AAQ-II; Bond et al., 2011) represents 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 also validity concerns with the AAQ-II such as a high overlap with psychological distress (Tyndall et al., 2019; Wolgast, 2014), lack of precision with regards to measuring experiential avoidance or some/all aspects of psychological inflexibility (Gámez, Chmielewski, Kotov, Ruggero, & Watson, 2011), and notably 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 obscure.

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, particularly 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 more rigorously 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.

As measure development progresses, the field will have to grapple with the challenge of organizing and weeding through an increasing number of process 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 the 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 clarify procedures and processes linked to enhanced wellbeing. 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 to our stated goals and the inability to synthesize results across studies.

A final point to consider is whether we should revisit criteria used to determine reliability and validity of our measures. A common method for developing measures is to rely on how self-report items naturally relate to each other in samples outside the context of treatment. 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.

An alternative approach might be to place criteria like treatment sensitivity, discriminant validity, and incremental validity at the forefront of process measure validation such that 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. These measurement issues are critical to developing a progressive knowledge base about processes that can guide clinical decision making in PBT.

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 develop an adequate knowledge base to identify what procedures to use that are effective and efficient in moving the processes that will achieve personally meaningful gains for given clients and contexts. This means using methods that can answer the relevant questions that will guide clinical decision making in PBT. In part, the challenge is to integrate and organize our existing knowledge base across the range of evidence-based interventions in such a way that guides a more comprehensive PBT model and clinical decision making. This challenge is heightened due to overlapping processes developed in distinct traditions and the need to build bridges to avoid replicating competing, branded therapy packages.

We also need a wealth of additional research based on gaps identified in the literature. For example, what therapeutic procedures are most effective and efficient for engaging targeted change processes, what 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? The last unanswered question represents a whole host of other questions: how procedures and processes across therapies overlap and how are they distinct, when are particular biopsychosocial processes more critical than others, etc. Potentially this can demand 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 the research process 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 (Hayes et al., 2019). We want to 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 important 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? Rather, the question is: which procedures are necessary to engage which biopsychosocial processes for which clients? And this question 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 response to intervention (e.g., "What procedure should I use at which point to alter what process?"). The former is what is typically tested in a dismantling design where the effects of procedures targeting specific processes are examined before and after 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). A greater focus on dynamic effects over time substantially increases complexity, and this is needed to match the complexity of human experience to be addressed by an effective PBT model.

Ultimately, 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 sets of clients 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

Delivering PBT necessitates a different framework from the diagnosis-focused, manual-based approach clinical psychology has been using in the past few decades. Although the proliferation of empirically tested protocols has improved quality and accessibility of care (Chorpita et al., 2002; Morgenstern, Morgan, McCrady, Keller, & Carroll, 2001; Muñoz & Mendelson, 2005; Otto, Pollack, & Maki, 2000), 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. Conversely, behaviors that fall within the same diagnostic category can have different functions and histories.

The inadequacy of straightforward diagnosis-protocol matching warrants a need to ground 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 beauty of PBT is it does not require clinicians to start from a blank slate. PBT is Bayesian in the sense that it considers extant literature and uses available data to constantly shape and update its theoretical scaffolding (Hofmann & Hayes, 2018). For example, procedures reliably found to affect change processes like exposure and behavioral activation and change processes linked to valued

outcomes like cognitive reappraisal and psychological acceptance already have a place in the

PBT model (Hofmann & Hayes, 2018).

Another notable draw of PBT is 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 with which

to become familiar. Furthermore, because clients with the same diagnosis show significant

variability, clients present with comorbidities, and clients can be in need of 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 intervention 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 need to be updated as well.

Specifically, clinicians have to: (1) identify relevant change processes and behavioral outcomes

to assess, (2) determine methods for assessing those change processes and behavioral outcomes,

(3) administer assessments, (4) design treatment plans based on data from assessments, (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. Furthermore, the need for idiographic assessment cannot be

understated given therapeutic work frequently focuses on the individual. 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 wellbeing. 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. Similarly, behavior tracking can be useful

when the intervention target is overt and concrete (e.g., number of compulsions in obsessive-

compulsive disorder [OCD]).

Clinics and clinicians will need to develop and refine methods to routinely perform these

assessments. Automating these assessments can improve usability, decrease risk of human error,

leading to much 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 includes 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. Specifically, 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 nomothetic 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; Twohig, Hayes, & Masuda, 2006a, 2006b) 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 (cognitive distortions and psychological

inflexibility) and disorder severity measures (specific disorder measures, depression, and quality

of life). Assessment continues with week-long self-monitoring between the intake and first

session. Self-monitoring is circumscribed to easily trackable behaviors (e.g., compulsions in

OCD, skin picking in excoriation disorder, or hairs pulled in trichotillomania) and change

processes (e.g., responses to internal events) that will be explicitly targeted in therapy. Daily self-

monitoring is maintained 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. Generally, 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

four weeks. Collectively, 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 ultimately produce changes in the target behavior.

     Pivoting away from protocol-to-disorder matching and familiar theoretical orientations

adds complexity to treatment delivery. Implementing process-based assessment and intervention

requires clinicians to build up "big picture" skills with respect to becoming fluent in developing

context-specific case conceptualizations and individualizing treatment based on evidence-based

models of psychopathology and intervention. Furthermore, relinquishing the safety blanket of

clearly delineated manuals introduces potential for drift from evidence-based methods and loss

of benefits with actuarial decision making for those who stray from the PBT model. However,

this may be a training issue rather than an implementation issue. If clinicians receive solid

training in PBT, this vision can be readily realized. After all, applied behavior analysts have been

doing this type of work for decades. Our field will always struggle with adequately training

aspiring clinicians but that should not stop us from trying.

Conclusion

Ultimately, the goals of PBT with respect to increased theoretical and procedural

parsimony, broader applicability, and multidisciplinary coherence 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 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 paper 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 paper, the path ahead will be intellectually and pragmatically onerous.

Nonetheless, we believe the benefits to be accrued from embracing PBT will be worth the

journey. Namely, that PBT promises 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. After all, is that not why we got into this

field in the first place?

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