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Process-Based Therapy: A Common Ground for Understanding and Utilizing Therapeutic Practices

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This article critiques the "protocol-for-syndrome" model in mental health research, highlighting two primary concerns: the complexity of protocols that include change processes irrelevant to many individuals, and the inadequacy of *Diagnostic and Statistical Manual of Mental Disorders* syndromes to capture the nuances of individual well-being and suffering. Advocating a shift to a process-based therapy (PBT) approach, the article proposes a coherent integration of diverse change processes and interventions to enrich therapy practices. It introduces a slightly revised extended evolutionary metamodel (EEMM) as a comprehensive framework that provides a consistent language for discussing change processes, focusing on the key drivers of variation, selection, and retention, and categorizing these into dimensions (such as cognition, emotion, self, motivation) and levels (from biology/physiology to psychology and social relationships/culture). The article details the application of EEMM in classifying therapeutic processes, validated through both human and artificial intelligence (AI) ratings. Furthermore, we developed an AI tool built on Distilled Bidirectional Encoder

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Representations from Transformers (distilBERT) models for categorizing therapeutic content, proving effective and accessible for community engagement and ongoing enhancement. The article also explores network theory and new analytics as tools for therapists to customize therapy to individual client needs. In summary, PBT supports therapeutic diversity while establishing common ground among different methods and approaches. This enhances communication, cooperation, and comparison, fostering the development of tailored and effective therapy strategies. It also opens the door to the potential unification of psychotherapy.

Public Health Significance Statement
The article presents an innovative approach to mental health treatment, advocating for process-based therapy (PBT) over traditional models. PBT offers a personalized framework, aligning various therapeutic methods to an individual's unique mental health needs. By leveraging an artificial intelligence tool for categorizing therapy content and utilizing network theory for tailored treatments, PBT aims to enhance the effectiveness of therapy and client well-being.

Keywords: process-based therapy, evidence-based processes, mediational analysis, network theory, artificial intelligence rating of processes

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Intervention science has set itself a noble goal: How can we reduce suffering and inspire individuals to adopt behaviors that are beneficial to themselves and their communities? Over decades, the scientific community has invested immense resources in exploring these questions. In one sense, the results are encouraging. Extensive research, including numerous meta-analyses, demonstrates the effectiveness of psychological interventions in reducing mental illness (Hofmann et al., 2012), boosting well-being (Koydemir et al., 2021), promoting prosocial behavior (Berry et al., 2020), and increasing healthy behavior (C. Li et al., 2017).

In another sense, the results are concerning. Much of this past research has utilized randomized controlled trials to assess complex protocols focused on collections of signs and symptoms—*Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (*DSM-5*) disorders or "syndromes"—in the hopes of eventually discovering the latent diseases that might explain their etiology, course and response to treatment (Hayes & Hofmann, 2020; Hofmann & Hayes, 2019). After more than half a century of such research, it is becoming apparent that the protocol-for-syndromes approach may no longer be making progress (Hayes, Hofmann, & Ciarrochi, 2020; Hofmann, 2020). Not only is psychotherapy's effectiveness relatively modest, with effect sizes around .30 (Leichsenring et al., 2022), but also the effects of psychotherapy appear to have stagnated over the last few decades (Bhattacharya et al., 2023; Cristea et al., 2017). The developers themselves agree that no latent diseases have been discovered by this analytic strategy (Kupfer et al., 2002).

This presents the field with a choice. Do we keep following this traditional approach to intervention research, or do we, as a field, try something new?

A relatively well-developed alternative is to focus on fundamental units of behavioral influence ("kernels") that target processes of change, the drivers of behavioral transformation (Embry & Biglan, 2008; Greenberg & Newman, 1996; Hayes, Hofmann, & Ciarrochi, 2020, Hayes et al., 2022; Hofmann, 2022; Jones et al., 1988; Krebs et al., 2018; Nuttgens, 2023; Rosen & Davison, 2003; Tedeschi & Moore, 2021). Although this alternative is not new, recent empirical and statistical advances have made it substantially more viable. We believe that the time has come to embrace this alternative fully. In our article, we initially outline the limitations of the traditional protocol for the disease approach. Following this, we present a process-based therapy (PBT) approach grounded in a metamodel that can be integrated with all process-focused, evidence-based therapies, thereby unifying the field. PBT provides a unified language and analytical framework that is designed to allow different research and clinical traditions to communicate better and cooperate, speeding the shift from static protocols to dynamic processes of change, and bridging the gap between scientific inquiry and clinical practice.

The Protocol-for-Syndrome Era

Perhaps drawing inspiration from the success of the "pill-for-disease" model in medicine, mental health researchers have endeavored to develop protocols to treat *DSM*-defined disorders in hopes of matching the progress that intervention science has made with various biological disorders. Yet, these protocols are not as straightforward as pills. In addition, *DSM* disorders are not necessarily characterized by a latent common cause responsible for the manifestation of symptoms (Aristodemou et al., 2023; Kendler et al., 2011), prone to be effectively treated by the psychological equivalent of a pill (e.g., protocol).

Consider the notion that mental disorders might be akin to diseases with a common identifiable cause. The *DSM*'s categorization of disorders lacks distinctiveness. The most common diagnostic category is "not otherwise specified" (Rajakannan et al., 2016). High levels of so-called "comorbidity" suggest that clusters of signs and symptoms are not linked to discrete functions (Kupfer et al., 2002). The system's complexity is staggering, with over 10 million possible combinations of signs and symptoms possible for a *DSM* disorder (Borgogna et al., 2023). Studies of the general population suggest it is normal to have unusual combinations of symptoms (van Tilburg, 2019). Minimal progress has been made in identifying distinct underlying biological conditions separate from the symptoms themselves for *DSM* disorders (Hayes & Hofmann, 2020). The treatment utility of *DSM* diagnosis is unproven (Kupfer et al., 2002). Taken together, this collection of facts can only be considered as evidence of failure, not progress.

Consider protocols. Unlike a single pill, protocols are multifaceted, incorporating a range of specific and nonspecific components (Amole et al., 2017). Their effectiveness varies based on individual and situational factors; not all components benefit everyone (Ciarrochi et al., 2024; Hayes et al., 2019, 2022). The variability in process effectiveness is reflected in differing dropout and response rates from standardized protocols (Imel et al., 2013). In some cases, clients may find a single session satisfactory (Hoyt et al., 2020), challenging the concept that one needs the full "treatment dose." Furthermore, clinicians often deviate from standardized protocols, partly because these do not adequately address the complexities encountered in real-world clinical settings, such as clients with multiple issues (Goldfried & Wolfe, 1996). Moreover, randomized controlled trials for these protocols frequently exclude the very types of clients that clinicians commonly see Tully et al. (2014).

Protocols are composed of various components, each purportedly aimed at specific change processes thought to yield positive outcomes, such as mindfulness or self-compassion. These components are assumed to be universally beneficial based on group-level statistics that suggest a correlation between engagement in these processes and improved well-being. However, our within-person analysis challenges this assumption, revealing numerous instances where a change process has no significant effect on average but can have substantial positive or negative impacts on certain individuals (Ciarrochi et al., 2024).

Change processes of this kind are particularly important because our current nomothetic ("group") methods of detecting processes of change, such as mediational analysis or between-person correlations, will reject these processes as being relevant, at the very same time that practitioners regularly see them as being important, both positively and negatively, across individual cases. That is an especially dangerous and toxic situation for evidence-based practice because it perpetuates a disconnection between science and practice based purely on the normative assumptions of the vast majority of intervention science and the idiographic focus of the vast majority of practice.

A new term is needed for such a situation so that more research and practical attention can be brought to it. We will here use the term "equisyncratic" to describe process variables with a neutral point of equilibrium on average, and both significant negative and positive idiosyncratic impact. For instance, within-person variations in assertiveness generally do not significantly affect loneliness; however, they are strongly linked to reduced loneliness in about 11% of the sample ($r < -.30$) and to increased loneliness in about 8% of the sample ($r > .31$; (Ciarrochi et al., 2024). Another example of an equisyncratic process is sticking to previously successful strategies (Ciarrochi et al., 2022). This process has a nonsignificant positive correlation with well-being ($r = .06$), yet for 14% of individuals, it is strongly linked to higher well-

being, while for 7% it is strongly associated with lower well-being.

Even variables that are not equisyncratic and have a positive average effect still exhibit substantial within-person variability in their benefits (Ciarrochi et al., 2024; Sahdra et al., 2023, 2024). For instance, while focusing on important moments in day-to-day life is generally beneficial for most people, it has little or no effect on the well-being of about 32% of people (Ciarrochi et al., 2024). The key takeaway from this discussion is that if a process does not universally benefit everyone, a protocol that consistently targets the same processes is unlikely to be effective for everyone. This underscores the importance of tailoring interventions to accommodate individual differences in response to specific processes.

The Call for a Process-Based Approach

Given the problems of the protocol-for-syndrome model, there have been many attempts at integrative models that focus on processes of change (Greenberg, 1986; Jones et al., 1988; Prochaska & DiClemente, 1983; Tedeschi & Moore, 2021). These approaches are a potential step forward in that they focus on processes that potentially cut across therapeutic islands. For example, the transtheoretical model (Krebs et al., 2018) suggests that people progress through different stages when changing behavior, from precontemplation (not considering change) to maintenance (sustained change over time). These change processes are presumably relevant to all types of psychotherapy.

Integrative approaches, while progressive, sometimes struggle to fully harmonize with each other due to their reliance on unique terminology and underlying theories. For instance, the transtheoretical model emphasizes stages like "contemplation" and "action" (Krebs et al., 2018); Jones's process model focuses on therapist–client behavioral observations, which can be categorized as "expressive" or "supportive" (Jones et al., 1988); Tedeschi and Moore's posttraumatic growth model uses concepts like "personal strength" and "spiritual growth" (Tedeschi & Moore, 2021); the Vanderbilt Psychotherapy Process Scale (Suh et al., 1989) focuses on processes labeled as patient hostility, patient distress, therapist negative attitude, and therapist warmth. We argue that these diverse approaches, each offering valuable insights into the therapeutic process, collectively fit within the broader framework of PBT.

PBT seeks to enhance therapeutic approaches and invite a range of intervention methods into a new kind of conversation about evidence-based treatment. As a meta-approach, its aim is not to replace existing therapies, but to enrich them by encouraging healthy discussions between dissimilar perspectives. PBT provides a framework for integrating a variety of processes of change and intervention methods coherently linked to them, without demanding adherence to a specific theory. Its focus extends beyond mere technique compilation, as seen in eclecticism, to a theoretical harmonization and unification of different methods. This enables therapists to leverage the strengths of each therapeutic style effectively and cohesively.

To be effective, this PBT agenda must recognize the diversity of therapeutic approaches, find common ground upon which those approaches can communicate, and find a way to test a range of ideas validly so that some ideas can prove themselves more useful than others. We begin by examining diversity.

Recognizing Diversity

Diverse Therapy Worldviews

Worldviews can be understood as preanalytic assumptions, akin to choosing a specific vantage point from which to observe and interpret events (Hayes et al., 1988; Pepper, 1942). These assumptions are foundational in nature, shaping how we perceive, understand, and engage with our surroundings and experiences. As such, they are not in direct competition with each other; they cannot refute one another because they represent different fundamental approaches to understanding. Each worldview offers a unique lens, contributing its own insights and limitations to our comprehension of reality. Just as with a camera, one lens isn't more true than another. Rather, each lens allows different pictures to be taken. This diversity of perspectives can be valuable, as it allows for a more comprehensive and multifaceted understanding of our complex world. We discuss four worldviews using common sense names (with formal names, as used by Pepper, 1942, in parentheses).

The pattern recognizer (formism worldview) perceives our surroundings as an assortment of named forms or patterns, distinguished and understood by

their similarities and differences. Insight is gained through categorizing these patterns and drawing analogies, such as "a ruminator is like a computer stuck in a loop." Truth in this perspective hinges on the precision of these analogies and classifications in reflecting real-world parallels. Formism is built on the importance of having clear categories that allow us to recognize and classify patterns to comprehend our environment. For instance, when being a pattern recognizer, people might utilize the *DSM-5* (American Psychiatric Association, 2013) to catalogue mental health patterns or view personal characteristics like having attention deficit hyperactivity disorder, being perfectionist, or being extraverted as akin to unique forms that need to be understood in their own right.

The transformational coach (organicism worldview) perceives our surroundings as an integrated, living entity, constantly undergoing organic development. Change and development are inherent, while stability and "stagnation" require explanation. The truth is determined by coherence within an entire system of thought, contributing to a unified, dynamic understanding of the world. This view recognizes the world as a dynamic, interdependent network.

This transformational coach sees people as evolving yet often not achieving their potential as conscious, caring beings. Personal struggles or life stages, like a midlife crisis or feeling unfulfilled, are often viewed as necessary phases in an individual's developmental journey toward self-actualization. Humanistic therapy, exemplified by Carl Rogers' client-centered therapy, emphasizes personal growth and the realization of full potential, considering individuals as wholes in a continual process of becoming and evolving (Rogers, 1995).

The mechanic (aka mechanism or "elemental realism" worldview) perceives our surroundings as a machine composed of discrete parts assembled into a whole. While transmitting energy to produce predictable outcomes, the interactions of these parts do not alter their nature. The truth is gauged by how well our understanding of this "world machine" aligns with reality. In this perspective, personal traits or mental health issues like depression might be attributed to brain, chemical, or genetic issues (Buch & Liston, 2021), or dysfunctional thoughts might be seen as causing depression (Beck et al., 1979). Thus, to reduce depression, one would need to reduce dysfunctional thoughts.

The pragmatic navigator (functional contextualist worldview) is action-oriented and views behaviors and thoughts more as purposing verbs, such as hunting or shopping, emphasizing their dynamic and intentional nature. These actions do not have inherent meaning independent of context (Ciarrochi & Bailey, 2008). No thought is inherently "negative." From this perspective, truth is defined not by absolute correctness but by its effectiveness in context. Thoughts, feelings, and behaviors hold no inherent meaning; their significance lies in their role, function, and usefulness in achieving specific goals. These ideas apply to scientists as well. The focus is on the practical outcomes and adaptability of actions and thoughts within their respective environments. As that applies to knowledge developers, it means goals have to be publicly stated (see Hayes et al., 2023), but because scientists can have different publicly stated goals, there are a variety of types of scientific contextualism (Hayes et al., 1993). Descriptive contextualists want to appreciate how context and action participate in the whole event; functional contextualists want to use conceptual tools to predict and change things (Hayes et al., 1993). In this article, we will focus on functional contextualism.

The pragmatic navigator views thoughts as tools, assessing them based on their utility in achieving desired outcomes. Emotions and beliefs are evaluated for their functionality rather than their correctness. The meaning of experiences is seen as variable, changing with context and objectives. Anxiety, for example, is not inherently negative but is considered useful or not based on the situation. Acceptance and commitment therapy (ACT) and other mindfulness-based approaches embody functional contextualism when they encourage clients to accept their thoughts and feelings as transient, context-dependent experiences and to focus on actions that align with their values and goals (Hayes et al., 1999).

Understanding these worldviews helps mitigate unproductive debates by recognizing that each perspective offers a unique approach to understanding human behavior and mental health, rather than competing for a singular truth. For instance, consider a debate between a proponent of the mechanistic worldview and one of the functional contextualist worldview regarding treating anxiety. From the mechanistic perspective, anxiety might be attributed to neurological factors. A mechanist might argue for medication, viewing anxiety as a malfunction

in the brain's machinery. In contrast, a functional contextualist might view anxiety as a natural and potentially useful response, depending on the context. They might argue for therapy methods like ACT, focusing on how anxiety functions in the individual's life and how changing their response to anxiety can be more beneficial than trying to eliminate it.

An unproductive debate arises when each side insists their view is the only correct approach, dismissing the other's perspective. However, understanding these as different worldviews shows that both perspectives may have their place. The mechanistic approach can be effective in cases where certain elements dominate over others (e.g., biological factors significantly contribute to anxiety), and a field that works exclusively on those elements can contribute without considering the whole system; a functional contextual approach can be more beneficial in cases where understanding the role and function of anxiety in a person's life is key to understanding the role of disparate elements and how they can be modified in treatment. Recognizing the potential validity of both perspectives can lead to useful sharing of information and progress without first demanding that others adopt one's own assumptions or purposes to cooperate. This then has the potential for more integrated and comprehensive care, where treatments are tailored to the patient's individual needs, drawing on the strengths of different worldviews in that effort.

Diverse Theories

In intervention, a theory serves as a foundational set of ideas and principles, offering a structured understanding of human thoughts, emotions, and behaviors. A theoretical framework serves as an essential guide for therapists , helping them identify the root causes and mechanisms of psychological issues and shaping their treatment strategies. To make these theoretical differences explicit, it is helpful to consider three key questions, as outlined in Table 1. What is the nature of suffering? What causes suffering? And how is it fixed?

Understanding and clarifying different theoretical orientations in therapy is crucial to prevent conflict and enhance collaboration. For instance, in a case involving a client with anxiety, a psychodynamic therapist might focus on unresolved internal conflicts from early childhood, advocating for exploring the client's past. In contrast, a cognitive behavior therapist (CBT) therapist may view anxiety as stemming from negative thought patterns, emphasizing the need to modify these thoughts and behaviors for symptom relief.

Differences in these orientations can lead to disagreements over treatment approaches, such as a psychodynamic therapist perceiving CBT as superficial or a CBT therapist considering the psychodynamic focus on the past as irrelevant. However, by recognizing diversity, we can see that each theoretical framework in therapy offers a unique lens through which human thoughts, emotions, and behaviors are understood and addressed. When these frameworks are made explicit, it becomes easier to appreciate the differences and potential compatibilities among various therapeutic approaches. Table 2 provides examples of possible suffering origin stories in different therapeutic traditions.

As we shift from the disease-specific protocol model to a personalized approach, having a diverse array of processes and strategies readily available becomes crucial. We must be open to the possibility that certain strategies, even those outside our preferred therapy, might be most beneficial for our client at specific times and contexts.

Finding Common Ground

A Shared Theory of Change

A key challenge in finding common ground in intervention science is the diversity of terminology across various therapeutic approaches and theoretical models. This complexity mirrors the "jingle-jangle" fallacy identified in psychology research, where terms may sound similar but denote different concepts or sound different but refer to the same idea (Marsh et al., 2003). Clinical psychology encompasses a wide range of therapeutic schools, each with its unique language and conceptual framework.

For instance, in the realm of anxiety disorders, a cognitive–behavioral therapist might focus on concepts like "cognitive distortions" or "behavioral activation." In contrast, a psychodynamic therapist might use terms like "defense mechanisms" or "transference," focusing on unconscious processes and the client's relationship patterns rooted in early life experiences. Similarly, in treating depression, a therapist practicing dialectical behavior therapy (DBT) might emphasize "emotion regulation" and "distress tolerance" skills,

Table 1
Making Theoretical Orientation Explicit (Beyond Therapy Names)

Key topics	Detailed questions
Define the problem	How do you define suffering and "lack of thriving" within the context of your therapeutic approach or theoretical framework?
Origin story	According to your theory, what are the primary causes or origin of suffering or lack of thriving?
How do you fix the problem?	How does your understanding of suffering/thriving inform your therapeutic interventions, techniques, or strategies?

while a practitioner of ACT might focus on "psychological flexibility" and "values-driven behavior." These terms, while distinct, may overlap in their underlying principles but differ in application and emphasis. The diversity in terminology and approach can lead to confusion and miscommunication among professionals and in the therapist–client relationship.

The extended evolutionary metamodel (EEMM), proposed by Hayes, Hofmann, & Ciarrochi (2020) and Hayes, Hofmann, & Wilson (2020), serves as a promising unifying framework. This model integrates evolutionary principles, a cornerstone in life sciences, with clinical psychology. Evolutionary thinking is likely to be accepted by all evidence-based therapeutic approaches, as evidenced by their incorporation into models like CBT, ACT, compassion-focused therapy, and psychodynamic therapy (Gilbert et al., 2024; Hayes et al., 2022; Hollon et al., 2021; Nesse & Lloyd, 1992).

Table 2
Hypothetical Elements of Suffering Targeted by Different Approaches

Therapy	One possible suffering origin story
Traditional CBT	Negative thinking patterns are associated with suffering. Gaining a more adaptive perspective on the world, the future or oneself can improve well-being (Beck et al., 1979).
Acceptance and commitment therapy	Suffering stems from low psychological inflexibility. To reduce suffering, one can promote flexibility through open, nondefensive thinking and feeling, awareness of the present, sensitivity to context, and persisting in or changing behavior based on personal values and meaning (Hayes et al., 1999).
Brief dynamic psychotherapy	Suffering comes from unresolved internal conflicts and unprocessed emotions often arising from past dysfunctional relationships (Levenson, 2017).
Narrative therapy	Suffering comes from disempowering and problem-saturated life stories (White & Epston, 1990).
Compassion-focused therapy	Suffering arises, in part, from harsh self-criticism and inability to relate to difficulties in a compassionate way (Gilbert, 2010).
Humanistic therapy	Suffering arises from unfulfilled potential and disconnection from self (Rogers, 1995).
Family therapy	Suffering often stems from dysfunctional family dynamics and intergenerational trauma (Whitaker & Bumberry, 2004).
Dialectical behavior therapy	Suffering stems from a combination of emotional vulnerability and experiences in an invalidating environment, resulting in dysregulation of emotions (Linehan et al., 1993).

Note. Therapists within each therapy may differ in origin story. The examples are not intended to be a complete list of elements within a therapy. CBT = cognitive behavioral therapy.

The EEMM is based on modern evolution theory, which extends evolutionary thinking beyond genetics, to the evolution of gene expression (epigenetics), behavioral patterns, culture, and symbolic thought (Jablonka & Lamb, 2006). This approach also recognizes evolution's applicability to individuals and groups across disciplines and cultures, making it suitable for underpinning intervention science's quest to support behavioral and community development (Hayes et al., 2021). Modern evolutionary principles, when applied multidimensionally and at multiple levels of analysis (e.g., biological, psychological, social), can promote positive outcomes like equality, reconciliation, peace, prosocial behavior, and meaningful living, avoiding any association with eugenics or social Darwinism (Wilson et al., 2014). The fundamental principles driving evolutionary change are variation, selection, and retention within a specific context (Hayes, Hofmann, & Wilson, 2020; Wilson et al., 2014). These concepts can be used to examine change within psychotherapy (Gloster & Haller, 2022).

Variation is essential for effective change in clinical psychology. This concept is evident in various interventions that aim to introduce healthy behavioral variability. For example, in CBT, therapists work with clients to challenge and modify rigid, negative thought patterns, facilitating a shift toward more adaptive thinking and behaviors (Beck et al., 1979). This can increase the client's ability to explore new coping strategies and improve social interactions. Another clinical example is DBT, which incorporates mindfulness practices to enhance emotional and cognitive awareness, thereby increasing behavioral flexibility (Linehan et al., 1993). This approach is particularly effective in treating disorders like borderline personality disorder, where emotional and behavioral rigidity can be pronounced. Moreover, psychopathology is often marked by a lack of flexibility and variation: obsessive-compulsive disorder involves repetitive behaviors and fixated thought patterns, social anxiety involves repeated, ineffective attempts to avoid negative evaluation, and depression involves a reduction in the range of affect and activities.

In a clinical context, selection refers to the goals and desired outcomes of a therapy intervention, tailored to the client's specific needs and circumstances. This could include objectives like managing symptoms, improving relationships, or enhancing coping skills. Clinicians assess each intervention's effectiveness based on how well it meets the client's immediate and long-term needs and aligns with their values. For instance, in ACT, clients may be encouraged to focus on behaviors that build long-term meaning and value (Hayes et al., 1999). A more dynamically influenced therapy may focus on helping a client experience courage and love in social relationships (Kohlenberg & Tsai, 2012). Still other therapies may focus more on the reduction of symptoms like depression and anxiety (Bhattacharya et al., 2023).

Retention in clinical psychology involves sustaining adaptive behaviors and treatment gains. Clinicians often incorporate strategies like regular follow-ups, homework assignments, and continuous skill practice to reinforce positive changes (Kazantzis et al., 2016). For example, in DBT for borderline personality disorder, skills learned in therapy are reinforced through homework assignments and group therapy sessions, ensuring that clients retain and apply these skills in their daily lives to manage their symptoms effectively (Linehan et al., 1993). In family therapy, people may be asked to engage in positive communication activities outside of therapy, such as those designed to increase active listening, empathy, and the recognition of each other's strengths (Whitaker & Bumberry, 2004).

Our approach leverages evolutionary principles to analyze both current and historical effects on human health and behavior. We align with other evolutionary-informed approaches focusing on historical contexts and environmental mismatches. For instance, compassion-focused therapy highlights how today's societal pressures can compromise vital relationships, triggering excessive fight/flight responses and inhibiting care and soothing systems (Gilbert, 2019). This disruption can cause mental health issues like shame, self-criticism, and feelings of inferiority. Similarly, Millon's research views personality traits as adaptations to past environments, with disorders emerging as maladaptations in radically changed modern settings (Pincus & Krueger, 2015). Traits that were once beneficial in dangerous environments, such as heightened vigilance and aggression, may now contribute to disorders like paranoia or antisocial behavior in safer settings.

Our evolutionary framework can integrate various mismatch theories (N. P. Li et al., 2018), providing a meta-approach that facilitates scientific dialogue between advocates of different evolutionary models. This framework addresses

problems stemming from mismatches by using evolutionary principles to create solutions aligned with our biological heritage. However, specific evolutionary models can be complex and subject to change as new data emerges. New data can later overturn evolutionary explanations for mental health problems (Andrews et al., 2020). Historically, the concept of evolving purposefully within a lifetime has been underrepresented in many evolutionary accounts. Thus, the evolutionary approach underlying the EEMM supports a broad scientific conversation without prescribing specific mismatch models.

A Shared Terminology

Now that we have discussed the fundamental drivers of change that are likely to be acceptable to all evidence-based psychotherapies, we are ready to shift our focus toward a common language for talking about change processes. A process of change can be defined as a theory-based, dynamic, progressive, contextually bound, modifiable, and multilevel change sequence that occurs in predictable, empirically established patterns oriented toward desirable outcomes (Hayes et al., 2019; Hayes, Hofmann, & Ciarrochi, 2020). Let's consider each element of this definition in turn. Processes are based on clear, testable theories (see Table 2). Processes are dynamic, can change at different rates, can influence and be influenced by other processes, and can be bidirectional. They are progressive, may emerge only atop collections of other processes, and may need to be ordered in particular ways to produce optimal effects. They are influenced by and cannot be fully understood without considering context. They are modifiable targets of change and are nested at multiple levels. For example, stress can manifest at the biological level (stress hormones), psychological level (perceived controllability of stress), and social level (lack of support for stressful events).

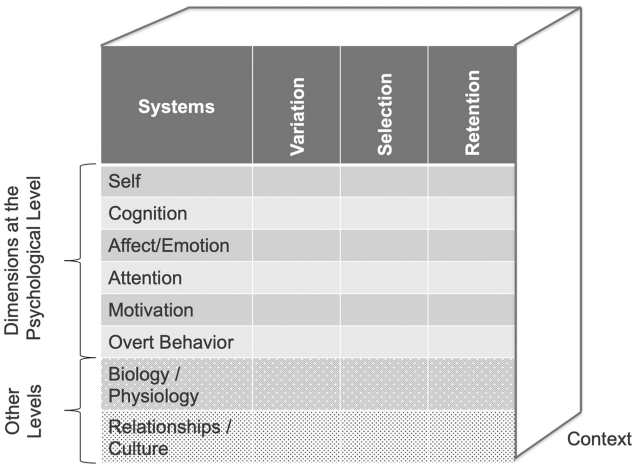
The term "therapeutic process" often refers to the patient–therapist relationship, encompassing common factors like the therapeutic alliance (Suh et al., 1989). However, in our usage, it includes these aspects only if they align with a clearly defined, testable theory and meet empirical standards. Thus, our definition is not synonymous with its more traditional usage. Our use of therapeutic process is akin to "mechanisms of change" with the exception that our concept involves nonlinear, complex dynamical processes not captured by the more traditional "mechanisms" concept.

The EEMM posits that adaptation in therapy depends on the variation, selection, and retention of idiographic dimensions of human experience, which are applicable in specific contexts. These dimensions are nested within three levels. At the psychological level of analysis (whole organisms interacting in and with a historical and situational context), dimensions include self, cognition, affect/emotion, attention, motivation, and overt behavior (Figure 1). This is a fuzzy set and other dimensions can be added (e.g., memory, imagery, etc.). Since these dimensions are meant as a loose guide and different theories may propose various distinctions, a metamodel functions better with fewer dimensions than more until more is shown to be useful.

The other levels include the suborganismic level of part of the organism (e.g., biology/physiology) and the interorganismic level (e.g., relationships/culture). At the biological/physiological level, clinicians may seek to alter such things as heart rate variability, sympathetic system activity, responses to pain, chronic illness, alcohol consumption, diet, and physical activity. There have been some attempts to create dimensions for this level. Kinley and Reyno present a neuroscientifically informed, hierarchical treatment model that corresponds with various affective and emotional dimensions (Kinley & Reyno, 2016). Phase 1 targets uncontrollable emotions linked to heightened hypothalamus and amygdala activity. Phase 2 deals with ambiguous emotional experiences that manifest as somatization. Phase 3 concentrates on the challenges of integrating emotional responses, involving the body, thoughts, and behaviors. This approach underscores the complex interplay between the neurobiological underpinnings and psychological expressions of emotional disturbances. A scoping review (Carey et al., 2020) aimed to identify studies that examined both a change mechanism—a specific process altering thoughts, feelings, or behaviors—and related biological functions or processes, defined as widely accepted brain activities like synaptic transmission or signal propagation. However, they found no relevant studies for inclusion, indicating that significant research is still needed in this area.

At the relationships/culture level, the focus shifts to altering attachment styles, intimate relationships, responses to social norms, intimacy

Figure 1
The Extended Evolutionary Meta-Model of Process-Based Therapy



expression, social skills, assertiveness, and social support. The structural analysis of social behavior model, for instance, assesses and guides modifications in interpersonal behavior by mapping interactions in terms of focus (self, other, internalized self/other), affiliation–hostility (love–hate), and interdependence–dependence (enmeshment–differentiation (Benjamin et al., 2006). Psychopathology is defined as a deviation from "normal" behavior characterized by friendliness, moderate differentiation, moderate enmeshment, and a balanced focus. For example, psychopathological states might involve extreme imbalance in focus (excessive focus on other), extreme hostility, or extreme enmeshment or differentiation (Benjamin et al., 2006). At some level, all forms of psychopathology are social in nature, though the nuances of how this impacts the functioning of individuals' relationships varies (Block et al., 2022; Gloster et al., 2021).

Although frameworks exist for both biological and social aspects of the EEMM, comprehensive dimensions for therapeutic change processes in these areas still need to be identified and developed.

It is important to note that dimensions and levels are functionally interconnected in a complex network, varying in abstraction and complexity. Psychopathology is viewed as a maladaptation in one or more of these processes and dimensions within a specific context. In the EEMM, terms are not fixed categories, but part of a flexible framework designed to facilitate discussion across diverse therapeutic practices. The primary goal of these terms is to provide a common language that highlights the distinctions and parallels between various processes and interventions. This approach enables professionals from distinct therapeutic backgrounds to communicate effectively about their methods. As a metamodel, the framework is adaptable and accommodates new terminologies and perspectives, organized into specific models, to refine its functional capacity.

The EEMM serves a dual purpose: It labels therapeutic processes (evident in clinical process measures, therapy transcripts, or observer ratings) and identifies targets for change in intervention kernels. According to Embry and Biglan (2008), a kernel is an essential element of behavioral influence, fundamental to effective prevention and treatment. We propose that any evidence-based therapy can be described in terms of a set of kernels and the processes targeted by these kernels can, in turn, be classified using the EEMM system.

Empirical Validation of EEMM Classification Scheme

This leads us to a critical question. Can people use EEMM terms to reliably classify therapeutic processes? To answer this empirically, we first created a manual for scoring statements by dimension, context, and levels based on the EEMM (see online supplemental material 1 for the complete manual). Next, we extracted statements from a set of measures used in clinical mediational studies, as detailed in Hayes et al. (2022). We selected

measures that had been demonstrated to explain the connection between various therapeutic interventions and outcomes with at least one replication, representing our best estimation of evidence-based processes of change.

Method

We utilized five raters (four human and one artificial intelligence [AI] rater) to assess dimensions and context (seven possible categories). For level assessment in three categories (biology, psychology, relational), two different rater groups were involved: One rater evaluated all items and three raters each assessed one-third of the items, resulting in two complete sets of ratings. The AI system used to rate dimensions was ChatGPT 4 (OpenAI, 2023). It was given the exact instructions provided in the online supplementary material 1 as a basis for rating the items. The human raters had a minimum of a bachelor's degree in psychology. Raters assessed the presence or absence of a dimension or level for 1,186 questionnaire items taken from 54 distinct mediational questionnaires (Hayes et al., 2022). We utilized R (R Core Team, 2022) to analyze all data.

Results and Discussion

Focusing first on levels, the correlation between the two rater groups was strong for the biology/physiology level ($r = .91$) and the social level ($r = .87$) and more moderate for the psychological level ($r = .69$). Turning now to dimensions and context, we utilized the Kuder–Richardson (KR-20) formula for dichotomous outcomes to assess reliability involving multiple raters. The alpha reliabilities suggested good reliability for cognition (KR-20 = .81), affect (KR-20 = .87), self (KR-20 = .82), motivation (KR-20 = .83), attention (KR-20 = .89), and overt behavior (KR-20 = .90). Using .70 as a cutoff, context reached adequate reliability (KR-20 = .73). The item total correlations for the five raters are presented in Table 3. There was consistent agreement between the raters and between raters and ChatGPT.

Table 4 presents an illustrative subset of questionnaires that highlight the different dimensions and context. It is worth noting that all measures reflect multiple dimensions. The full set of questionnaires and ratings can be found in online supplemental material 2. References to these questionnaires can be found in Hayes et al. (2022).

As examples, measures of perceived controllability of stressful events (Frazier et al., 2011) and hopelessness (Beck et al., 1974) focus on cognition, with items like "When I think about a stressful event from the past 2 weeks, I believe I didn't have any control over the event occurring," and "I just don't get the breaks, and there's no reason to believe I will in the future." The Positive and Negative Affect Schedule (Watson, 1994) and Difficulty with Emotion Regulation Scale (Gratz & Roemer, 2004) heavily focuses on affect, with items like "I am confused about how I feel." The self-esteem (Rosenberg, 1965) and Automatic Thought Questionnaires (Hollon & Kendall, 1980) contain content related to the self, with items such as "I'm no good" and "I wish I was a better person." The Valued Living Questionnaire (Wilson et al., 2010) and Engaged Living Scale (Trompetter et al., 2013) focus on motivation, including items like "How important is parenting to you" and "I know what motivates me in life." The Mindful Attention Awareness Scale (Brown & Ryan, 2003) focuses on attention (e.g., "It seems like I am running on automatic, without much awareness of what I am doing"), whereas the Penn State Worry Questionnaire (Meyer et al., 1990) is a mixture of cognition and attention (e.g., "I am always worrying about something"). The Self Efficacy for Exercise Scale (Resnick & Jenkins, 2000) has a strong behavioral component, with items like "How confident are you right now that you could exercise three times per week for 20 min if you did not enjoy it?" Similarly, the Protective Behavioral Strategies Survey (Martens et al., 2005) focuses on behavior such as "When using alcohol or partying, I stop drinking at a predetermined time." Finally, the Family Adaptability and Cohesion Scale (Olson, 2011) and Medical Outcomes Social Support Survey (Sherbourne & Stewart, 1991) focus on social context and includes items such as "Our family has a rule for almost every possible situation" and "How often do you have someone whose advice you really want?"

AI Accuracy in Process Classification

Given that it is feasible to rate EEMM processes and levels in a reliable way, we aimed to develop an AI tool to evaluate whether questionnaires and phrases arising from different therapeutic traditions could be classified based on the EEMM dimensions and levels. We conducted this analysis not to establish an absolute truth, but to demonstrate a replicable

Table 3
Item-Total Correlations for Ratings of Psychological Dimensions and Context

Rater	Cognition	Affect	Self	Motivation	Attention	O_Behave	Context
GPT	0.71	0.79	0.74	0.74	0.79	0.82	0.80
Rater 1	0.80	0.88	0.81	0.77	0.84	0.88	0.58
Rater 2	0.76	0.84	0.80	0.81	0.88	0.86	0.68
Rater 3	0.79	0.81	0.83	0.84	0.84	0.86	0.75
Rater 4	0.70	0.76	0.66	0.72	0.83	0.82	0.66

Note. GPT = generative pretrained transformer.

examination of EEMM classifications, facilitating discussion on their utility.

To achieve this, we fine-tuned two Distilled Bidirectional Encoder Representations from Transformers (distilBERT) pretrained models with the mediator items described in Hayes et al. (2022) for a multilabel classification task. The first model was used to classify items in one or more of six dimensions (self, cognition, affect/emotion, attention, motivation, overt behavior) and context, and the second one to classify items in one or more of the three levels (social, psychological, and physical). DistilBERT (Sanh et al., 2019) is an encoder model based on the transformer architecture (Vaswani et al., 2017). It utilizes a deep learning architecture specialized in generating numerical representations of natural language that considers the context of a word, being capable of "understanding" different nuances of human language. This is useful, as it can differentiate the word "flies" in the phrase "time flies when I'm with you" refers to "passes quickly" and not to a fly (bug), or the verb "fly" (Tunstall et al., 2022). These models contain millions of parameters (around 66 million in the case of distilBERT) and are originally trained on huge amounts of text (Sanh et al., 2019). However, they can also be "fine-tuned." Fine-tuning implies taking advantage of their already "learned" parameters, retraining and modifying them with significantly

Table 4
Percentage of Category Present for Each Mediational Questionnaire

Questionnaire	Cognition	Affect	Self	Motive	Attend	Behave	Context
Perceived control stress	81	14	5	0	0	0	0
Hopelessness	67	7	10	17	0	0	0
Positive negitive affect	2	89	5	0	5	0	0
Emotion regulation difficulty	16	57	10	0	10	8	0
Self-esteem	21	0	71	7	0	0	0
Automatic thoughts	24	8	54	11	0	3	0
Valued living	3	0	0	59	0	29	9
Engaged living	19	10	10	52	0	10	0
Mindfulness	4	4	0	4	58	29	0
Penn state worry	52	4	4	0	39	0	0
Self-efficacy exercise	0	25	0	0	0	75	0
Protective behavior	5	0	0	0	0	74	21
Family cohesion	36	0	0	0	0	9	55
Social support	3	3	0	0	3	39	53

Note. Shaded items indicate the highest focus of the scale.

less training data to make them more effective in specific tasks such as classifying whether a particular item should be classified as "cognition," "affect," or both (Tunstall et al., 2022).

To fine-tune the models for both tasks, we randomly split the data in training (70%, 830 items) and test (30%, 356 items) sets. As our data set was relatively small, we augmented the training set using GPT-3.5 turbo api (OpenAI, 2023) by creating two new paraphrased versions of each item, increasing our training data set size to 2,490 items. We then split our nonaugmented test set again into validation (50%, 178 items) and test sets (50%, 178 items). Using Python (Python Software Foundation, 2023), the Hugging Face and Weight & Biases libraries, we trained the models 25 times with different sets of hyperparameters by means of a Bayesian optimization (Turner et al., 2021). We aimed to find a model configuration that maximized the micro F1 score (a metric that maximizes both precision and recall) on the validation set. Once done, we selected the model configuration with the lowest hamming loss, as this indicator represents the percentage of incorrect labels in the validation set. Once selected, we tested the best models in the unseen test data (performance indicators on the validation and test set can be seen in the online supplemental material 3). The model for dimensions made mistakes in 9% of the labels on the test set, while the model for levels which was simpler made mistakes on 5% of the labels on the test set, showing that both models generalized to an acceptable level. Further details of the model tuning and tests can be found in Section 3 in the online supplemental materials.

As a proof of concept, we then deployed both models as demos within an app (https://huggingface.co/spaces/chernandezc/EEMM_Machine_V05) for the community to try and classify their own items or phrases. A user just needs to input a questionnaire item or phrase and will see it classified in terms of levels and dimensions. To foster discussion and to help the model improve, we added buttons to flag whether an input text was incorrectly classified or lacked a category. We aim to use this information for discussion and improving the model over time. As such, researchers and practitioners can help improve the model by detecting when it is not doing its job properly, or simply by disagreeing with the classification itself. We believe that this exercise may foster a fruitful conversation about using the EEMM in clinical practice and research.

A Shared Case-Conceptualization Framework

The EEMM not only provides a metatheoretical framework for organizing and communicating knowledge about evidence-based processes across treatment models but can also be practically applied to conceptualize how these processes contribute to individual cases. This next section will provide a case example to demonstrate how the EEMM can be applied using a network approach to conceptualize cases and plan treatment.

In traditional psychotherapy's protocol-for-syndrome model, therapists diagnose a specific disorder and apply a standardized treatment. This model, based on *DSM* illnesses, suggests that symptoms, like those caused by a virus, arise from a common cause and do not interact (Ebrahimi, 2023).This approach, while systematic, often overlooks the unique complexities of individual cases. For example, consider a patient diagnosed with major depressive disorder (MDD) under this model. They receive a standard treatment protocol, which primarily addresses typical symptoms like low mood and lack of motivation. However, this patient also experiences unique stressors, such as a high-pressure job and recent bereavement. The standard treatment, not tailored to these individual factors, may fail to address the complex interplay between the patient's work stress, grief, and depression, potentially leading to less effective therapy outcomes.

Network theory offers an alternative to the *DSM* model. It posits that various processes interact and influence each other in a client-specific context (Borsboom & Cramer, 2013; Epskamp et al., 2018; Fried et al., 2016; Hofmann et al., 2016), without attributing their manifestation and maintenance to a common cause (Ebrahimi, 2023). This theory treats mental disorders as emergent qualities of a complex, dynamic interplay of biopsychosocial processes (Borsboom & Cramer, 2013; Hayes et al., 2022).

Network theory facilitates mapping client experiences and treatment elements, highlighting their interconnections. In such a framework, the same processes are not uniformly applied to everyone, nor are they sequenced identically. This variability acknowledges the individual differences in how clients experience and respond to therapy.

Network theory allows for the mapping of processes and outcomes, showing how different elements of a client's experience and treatment are

interconnected. This approach helps in identifying which processes are critical for a particular client and how they can be effectively ordered for optimal therapeutic outcomes. Network theory, therefore, provides a dynamic and flexible method for case conceptualization, moving beyond the limitations of one-size-fits-all models and enabling a more personalized and effective therapeutic process. Below, we provide a concrete case example and illustrate how a process-based approach might be used to create a case conceptualization.

The Case of Mora

"You know how you can put audiobooks on 1.5× speed to listen to them faster? I feel like I'm living my life that way," said Mora in her intake. "I start work at 5 a.m. before the kids are up, eat every meal in front of a screen, and there's no space to grieve. "Mora is a 35-year-old, heterosexual multiracial woman, married, mother of two (ages 6 months and 3) who works as an attorney at a high performing firm. She endorsed symptoms of fatigue, difficulty concentrating, difficulty falling asleep and staying asleep, low mood, chronic worry, stress, decreased appetite, and grief, which have been persistent almost daily since her father died last year. A graduate of Harvard Law School, Mora was high performing at most everything she did, including motherhood; however, in the past year, the stress of microaggressions at work, birthing a second child, the cognitive demand of balancing motherhood and career, and the death of her father, and had taken their toll on her wellbeing.

Mora's presenting problem is impacted by a complex interaction between biological, physical, psychological, sociocultural, and environmental factors. Using the PBT network approach, the therapist was able to identify not only the biopsychosocial processes impacting Mora's struggle but also target the processes that would have the biggest impact on her outcome. The PBT conceptualization also offered the therapist flexibility in tailoring their intervention to Mora's cultural strengths and context as a working mom.

In the initial sessions the therapist gathered background information, defined presenting concerns, assessed risk factors, engaged in a preliminary discussion of the antecedents and consequences of the presenting concern, established therapeutic goals, and observed Mora's behavior in session. Then the therapist followed the following six steps to case conceptualization.

1. Identify problem: The therapist asked Mora to write about her problem for 10 min without censoring herself. Then to see if she could distill her problem into one to two sentences. Mora wrote: "I am exhausted, grieving, burned out, and physically depleted."
2. Identify psychological processes. The therapist then probed for psychological processes related to Mora's problem. Psychological processes include problems with attention, cognition, affect, attention, motivation, overt behavior, and self. Mora endorsed the following:
   a. Attention: I am struggling to connect with the moments in my day-to-day life. I can't focus on something and tune out distractions. I am worrying and dwelling on things too much.
   b. Affect: I am having trouble accepting my feelings of grief.
   c. Thinking: I have lost hope for the future.
   d. Motivation: I feel unmotivated and am doing too many things I feel are unimportant.
   e. Self: I blame myself and cannot treat myself with compassion.
   f. Overt behavior: I act irritably toward my kids.
3. Identify physical processes. The therapist then probed for sleep, diet, pain, and other physical issues related to Mora's problem. Mora shared that she was getting 6–7 hr of sleep a night, ate most of her meals in front of a screen, recently weaned from breastfeeding, and was frequently sick with colds. Mora reported high levels of bodily stress and fatigue.
4. Identify social and cultural level processes. The therapist then assessed for issues with managing conflict, being assertive, expressing her needs, disclosing feelings, and social connection. Mora reported she has difficulty expressing vulnerability to friends and family and struggles with asserting her needs with husband.
5. Identify relevant environmental contextual features. Finally, the therapist assessed for factors related to Mora's environment. Mora endorsed discrimination at work, time

poverty, few opportunities for enjoyment, and lack of reward or appreciation at work and home.

6. Draw the causal network. Once the therapist identified the biopsychosocial processes that were playing a role in Mora's struggle, they selected the five processes that were having the biggest impact. Mora identified:
   Psychological: trouble accepting grief
   Psychological: blame myself
   Physical: sleep deprivation
   Social: difficulty asserting needs with husband
   Environmental: unfairness at work.

A Process-Based Case Conceptualization

The therapist then used an online networking tool to map out the relationship between processes (Figure 2). This tool diagrams the connections between the processes and the strength of the connections.

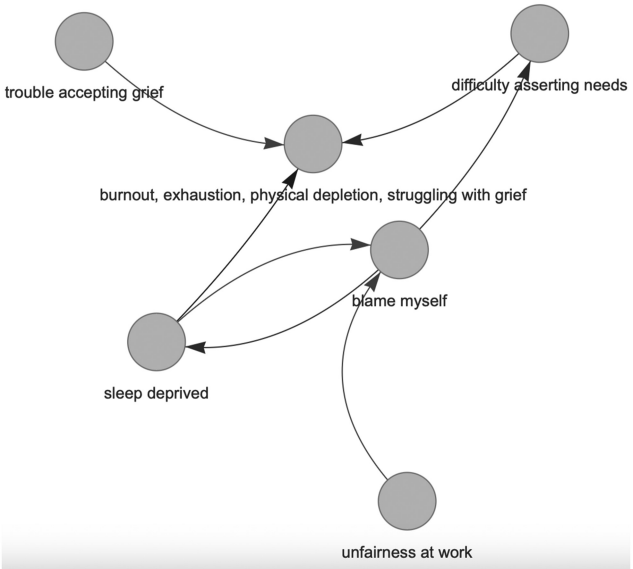
A process-based network approach is concerned about the relationships among Mora's problems. The result of a network conceptualization is the visual representation of the relationships among Mora's symptoms (see Figure 2). Although this network was not done longitudinally and was entirely based on self-report it has immediate benefits in potentially giving the therapist and Mora a clearer understanding of what is driving and maintaining her problems, and motivating a continued process focus through the course of therapy. Mora's self-reported network showed that when she blames herself (psychological process), it negatively impacts her ability to assert needs with her husband (social process), which in turn increases her exhaustion and burnout (outcome variable). In addition, there is a connection between unfairness at work, sleep deprivation and Mora blaming herself. The more she is treated unfairly at work (environmental), the more she blames herself (psychological) and the less sleep she gets (physical), which increases her burnout and exhaustion (outcome variable). What's more, and demonstrating the bidirectional nature of these variables, the more sleep deprived Mora is, the more susceptible she is to blame herself.

Figure 2 represents a subjective network, what we call a personalized life analysis network. We should note that it is also possible to derive such networks empirically, for example by collecting intensive data within-person and then using statistical modeling to generate a network of processes and outcomes (Sanford et al., 2022).

It is important to note that the network is not limited to problems that count as *DSM* symptoms.

Figure 2

A Client Network Examining Processes Linked to Burnout



For instance, difficulty asserting needs is not part of the diagnostic criteria for MDD, generalized anxiety disorder (GAD), or prolonged grief disorder. However, because Mora and the therapist identified it as a barrier, that keeps her stuck in a state of ill-being, it is an important part of her network case conceptualization. Moreover, contextual variables are commonly featured in network conceptualizations. In Mora's case, being treated unfairly at work related to her minority identity is a key to understanding what maintains her self-blame. In the network, Mora is allowed to be fully represented as a person who responds to the world around her, rather than a collection of symptoms detached from identities. In this network, self-blame and sleep problems not only have central roles, but together they are self-amplifying—one of the more important idiographic features of pathologies. Based on such features of the network, the therapist, in consultation with the client, identified that targeting self-blame through self-compassion and targeting sleep through a sleep hygiene program could be a good place to start. Providing some validation around Mora's experiences of discrimination may also provide helpful modeling for Mora to practice self-compassion.

There are now easily used apps that would allow idiographically selected sets of process and outcome items to be entered into an ecological momentary assessment (EMA) process in therapy that could confirm or disconfirm these relations in the client's actual day-to-day experience. Such a step would allow the treatment intervention program to be examined empirically, not just in terms of outcomes but also in terms of the perturbation of the self-sustained features of a pathological network.

A DSM *Case Conceptualization*

Let's consider this same case from a *DSM* perspective. Here, the goal is to identify which diagnoses Mora's symptoms meet criteria for so that we can identify evidence-based protocols that map onto those diagnoses. Mora endorsed symptoms of fatigue, difficulty concentrating, insomnia, low mood, chronic worry, stress, decreased appetite, and grief from the death of her mother. At minimum, these symptoms fulfill the criteria for MDD. A diagnosis-driven case conceptualization may also entail further assessment to see if a comorbid GAD (given chronic worry, fatigue, insomnia, and difficulty concentrating) and prolonged grief disorder (given the death of her mother approximately 1 year ago and persistent emotional pain) are also applicable.

At the same time, the therapist would need to clarify which symptoms belong to which diagnosis. For example, difficulty concentrating is a symptom of MDD and GAD. Should it count as one of the five symptoms of a major depressive episode, one of the three physiological symptoms needed for a GAD diagnosis, or both? Because diagnosing is essentially about categorizing, finding those boundaries between diagnostic labels matters within the *DSM* framework. Ultimately, the result of a *DSM* case conceptualization is a list of diagnoses that "explain" Mora's symptoms better than competing diagnoses only in the sense of categorizing them—a more formistic or mechanistic effort than one driven by practical outcomes. From the list of diagnoses, evidence-based protocols could be identified, such as behavioral activation for MDD or acceptance-based behavioral therapy for GAD, though only a minority of practitioners report using the *DSM* (Reed et al., 2011) and the treatment utility of doing so is unknown (Kupfer et al., 2002).

Rethinking "Normal" and the Psychological Homogeneity Assumption

PBT prompts a key question: Which processes specifically foster well-being for someone in each context, and how do these processes interact? In the case-conceptualization example above, we used clinical intuition and crude features of network dynamics to pinpoint crucial processes and their interplay. While these can be valuable, statistical or algorithm-based predictions may offer greater accuracy (Ægisdóttir et al., 2006; Grove et al., 2000; Lin et al., 2020).

In the past, the primary statistical method for identifying key change processes in psychology used group averages and norms, or a "nomothetic" approach. For example, if an intervention increases mindfulness in a group by 0.5 *SD*, it is assumed to affect each individual uniformly, known as the ergodic or psychological homogeneity assumption (Fisher et al., 2018; Molenaar & Campbell, 2009; Richters, 2021; Volkovysskii & Sinai, 1971). If we can make this assumption, then we can assume, for example, that if self-compassion is linked to well-being for a group of people, it will tend to be linked for each individual. It is "normal" for self-compassion to provide benefit. If so, everybody

with poor self-compassion would benefit from self-compassion training. The ergodic assumption implies that a model explaining group-level effects also applies to each individual.

This assumption is often unsupported (Richters, 2021). In clinical psychology, the focus is on within-person effects, seeking to understand change in individuals. Group effects are mathematically certain to be relevant to individual trajectories only if the phenomena are ergodic, meaning the psychological processes are stationary and uniformly applicable across individuals (Molenaar, 2013). Yet, these conditions are rarely if ever met in the life sciences and psychology (Molenaar, 2004). Consequently, group-level processes often poorly represent or predict individual well-being (Hayes et al., 2022), indicating that the same psychological processes do not uniformly drive outcomes like well-being for everyone (Gloster et al., 2024).

As a recent example demonstrating violations of the psychological homogeneity assumption, Sahdra et al. (2023) examined the links between self-compassion, other-directed compassion, and well-being in an EMA study. They found that self-compassion was positively linked with other compassion in daily life on the group level but this "central tendency" effect showed a substantial heterogeneity. For some people, self-compassion and other compassion were unrelated in their moment-to-moment experiences—a pattern of lack of harmony in the two forms of compassion. Amongst "low harmony individuals," compassion tended to be unrelated to well-being in their daily lives. That is, the well-being benefit of compassion was limited to only those individuals who exhibited self-other harmony in compassion in daily life. The psychological structure of compassion was importantly different for those who lacked the self-other harmony in compassion, which suggested a violation of the psychological homogeneity assumption regarding the processes of compassion and well-being. The "normal" or average positive effect of self-compassion poorly described the experience of many people.

Focusing only on the nomothetic effect of the link between compassion and well-being would have the unfortunate consequence of clumping the effects of the minority with that of the majority (group-level effect). In Sahdra et al.'s (2023) study, the minority who deviated from the norm were not merely statistical aberrations ("error" terms in equations). Rather, the very psychological structure of how compassion exhibited in their daily lives meaningfully differed from the "central tendency" in this subsample, suggesting a violation of the psychological homogeneity assumption regarding the processes of compassion and well-being. Even in the case of a construct like compassion, which is widely considered as a virtuous and almost universally beneficial process, a one-size-fits-all approach of boosting compassion is unlikely to benefit those who lack self-other harmony in compassion.

Our existing empirical methods may be failing us because their empirical assumptions are rarely met, but this does not mean we should abandon them. These tools can still potentially serve us well if they are used in an "idionomic" approach to data analysis that properly combines idiographic and nomothetic analyses (Hayes et al., 2022). An idionomic approach suggests that generalizations about populations, termed nomothetic conclusions, should emerge from individual system analyses rather than predetermine them. This differs from the traditional method, which frequently applies group generalizations to individuals (Ciarrochi et al., 2024)

Sahdra et al. (2024) recently reviewed some existing statistical tools suitable for an idionomic analysis for identifying within-person links between clinically relevant processes and outcomes. The relations between valued action and hedonic well-being were first idiographically modeled and only then extended to a nomothetic level. They compared this idionomic approach with multilevel modeling (MLM), which is the most popular nomothetic method for analyzing EMA data in a way that purportedly accommodates the individual level of analysis. Their idionomic methods included idiographic autoregressive integrative moving average models with an exogenous variable (i-ARIMAX), multivariate random-effects meta-analysis, deep Gaussian mixture modeling, and multilevel vector autoregression modeling (multilevel-VAR).

Sahdra et al. (2024) found that i-ARIMAX outperformed MLM in capturing within-person heterogeneity in the links between valued action and affect. MLM shrunk the estimates at the ends of the distribution toward the mean, which improved the precision of the group-level effect but sacrificed the voices of individuals who deviated from the mean. There were no cases in the MLM model-implied distribution of individual effects who deviated from the mean to the extent that the very sign of the effect flipped. For

instance, the group-level effect of valued action and joy was positive, but there were some for whom raw within-person association was negative. Disturbingly, their MLM implied slopes continued to be positive, indicating that common statistical tools disguised even the idiographic direction of the relationship while i-ARIMAX accurately preserved those unusual voices. The i-ARIMAX effects showed that group-level increases in values-based living were positively related to joy (and negatively to sadness, anger and shame), but also displayed a high degree of heterogeneity. That is, the psychological homogeneity assumption about these processes was violated. The level of heterogeneity significantly exceeded standard meta-analysis cutoffs, making the reporting of central tendency statistics inadvisable.

An idionomic approach may foster meaningful nomothetic findings. For example, Sahdra et al. (2024) then identified a subgroup, the "stoics," for whom valued action in daily life did not produce hedonic well-being (by lowering sadness and/or increasing joy). These individuals who deviated from the norm were not mere statistical anomalies that can be shoved inside error terms in statistical modeling equations. The very meaning of valued action in daily life for these individuals deviated from the norm, as clarified by multilevel-VAR based networks of within-person and between-person associations between valued action, affect variables, especially in the context of stressful or positive events. For Stoics, stressful situations were linked to valued action, but not hedonic well-being. For nonstoics, valued action was less likely in stressful situations, but when valued action did occur it was associated with more joy and less sadness. These insights would simply have been impossible in a typical nomothetic approach in which the group-level effect (valued action is positively linked to hedonic well-being) is usually the final word.

Psychotherapists deal with individual human beings, not "error" terms in statistical models. To the extent that our methods shrink meaningful deviations from the norm toward the group-level effect, as was demonstrated in Sahdra et al. (2024), we underestimate violations of the psychological homogeneity assumption. The loss of meaningful information in our models is not just producing myopic scientific insights, but also hampering progress in empirically driven process-based personalized interventions. The diverse voices in the data, especially those that deviate from the norm, need to be heard in our methods, if we expect our methods to serve interventionists and their clients. Initial evidence from Sahdra et al.'s (2024) study suggests that an idionomic approach seems to be superior to a purely nomothetic one in characterizing diverse pathways linking therapeutically relevant processes and outcomes. Methodological progress in this area would be useful for progressing PBT.

Methodological progress would also allow data on how intervention kernels change processes to modify systems and the outcomes they yield. This in turn would allow incremental process-based knowledge to accumulate, instead of "horse race" studies that are dissatisfying to all and rarely seem to modify practice.

How the PBT Agora Can Address Theoretical Differences

This article introduces a unifying framework for intervention science at the metatheoreitical and methodological levels. Perhaps it is not the first of its kind (see, e.g., Marquis, et al., 2021), but it is unique in its approach. Unlike many past models, it does not aim to overshadow or replace other therapeutic methods but to create a more responsive intellectual and empirical agora where ideas and methods can compete with human suffering instead of each other. Others have made just such a call for a common meeting ground where we can, at least temporarily, set aside our favorite clinical paradigm and have genuine discussion (Anchin, 2008; Marquis, 2018; Marquis et al., 2021; Melchert, 2016). For example, Marquis et al. (2021) argues for the value of metatheory that focuses on foundational suppositions and philosophical assumptions and identifies core concepts and categories across psychotherapies.

PBT offers a comprehensive metaframework for change and a common way of speaking (the EEMM), a universally applicable analytic approach that prioritizes personalization and understanding the individual, and a network framework that allows for a dynamic understanding of how processes and outcomes influence each other. These elements should align with, and be useful to, all evidence-based therapies. PBT is designed to be dynamic and adaptable, with the expectation that its terms and perspectives will continuously evolve, enhancing its functional capacity.

Crucially, PBT does not intend to supplant the theories and philosophical underpinnings of the various therapeutic approaches. Instead, it aims to create a common language to articulate differences and recognize similarities. For instance, Figure 3 illustrates a simplified comparison of classical ACT and dynamic therapy within the EEMM framework. While these approaches employ distinct strategies and theories of suffering, they can be understood using a shared language. Some of the core EEMM categories overlap between ACT and dynamic therapy (e.g., affect, self), yet their strategies differ (e.g., defusion vs. insight). A dynamic therapist might use emotional responses in sessions, such as recurring feelings of anger, to gain insights into the client's daily experiences and its developmental origins, enhancing client awareness through attentional and social processes. An ACT practitioner might focus on interoceptive exposure and helping their client to open up to and learn from difficult feelings rather than avoiding them. This could lead to awareness of earlier development issues, but emotional flexibility would be more of the goal than insight. If direct comparisons were made, they would not be solely at the level of outcomes but rather as the kernel → process → outcomes interface. Importantly, any result would be of direct interest to either perspective.

Within the EEMM framework, a dynamic therapist can still employ specific terms like "transference" and "insight" without needing to adapt their terminology to ACT-specific language, and vice versa. Similarly, idionomic analysis is equally relevant to both. This is an example of what we mean by PBT as an agora—a place where therapists and change agents can meet, cooperate, discuss, evaluate, and change. And unlike some previous waves of clinical thought, practitioners are data and idea generators, not merely consumers. Academics should not be viewed as akin to Moses descending from the mountain, presenting evidence-based protocols to practitioners, whose role is simply to implement these protocols. This is a shared journey and the idionomic vision of PBT transforms the academic–practitioner relationship into a genuine two-way partnership.

There are a host of important questions that will take such a partnership to answer: How do we identify key processes? Which process should be addressed first? How can we align treatment components with both the client's needs and the clinician's approach? In the PBT model, academics and practitioners collaborate closely, tackling these questions together. Analytic tools are simplified and shared, and clinicians are central in data collection and interpretation, as well as the development and testing of process-based kernels that fit individual needs.

Summary and Conclusion

The field of psychosocial intervention science has stagnated over the last few decades. Since Kuhn's (1962) work, historians of science concur that stagnation often stems from "in the box" thinking. This mindset, governed by pervasive yet unrecognized assumptions, overshadows potentially more effective alternatives, either preventing their exploration or obstructing their proper evaluation. Additionally, the stagnation may stem from a gap between science and practice. Both researchers and practitioners have their own strengths and biases; however, by collaborating and establishing a two-way bridge, they might overcome these biases and break the deadlock (Goldfried, 2019).

We began this article by examining our field's assumptive base because clinical researchers and practitioners often overlook their own assumptions. This oversight not only limits their own perspective but also leads them to suppress alternative viewpoints, stifling creativity in the process. We contend that embracing diverse views enhances the quest for consilience, provided that an effective agora is established. This begins with recognizing and valuing different assumptions and goals.

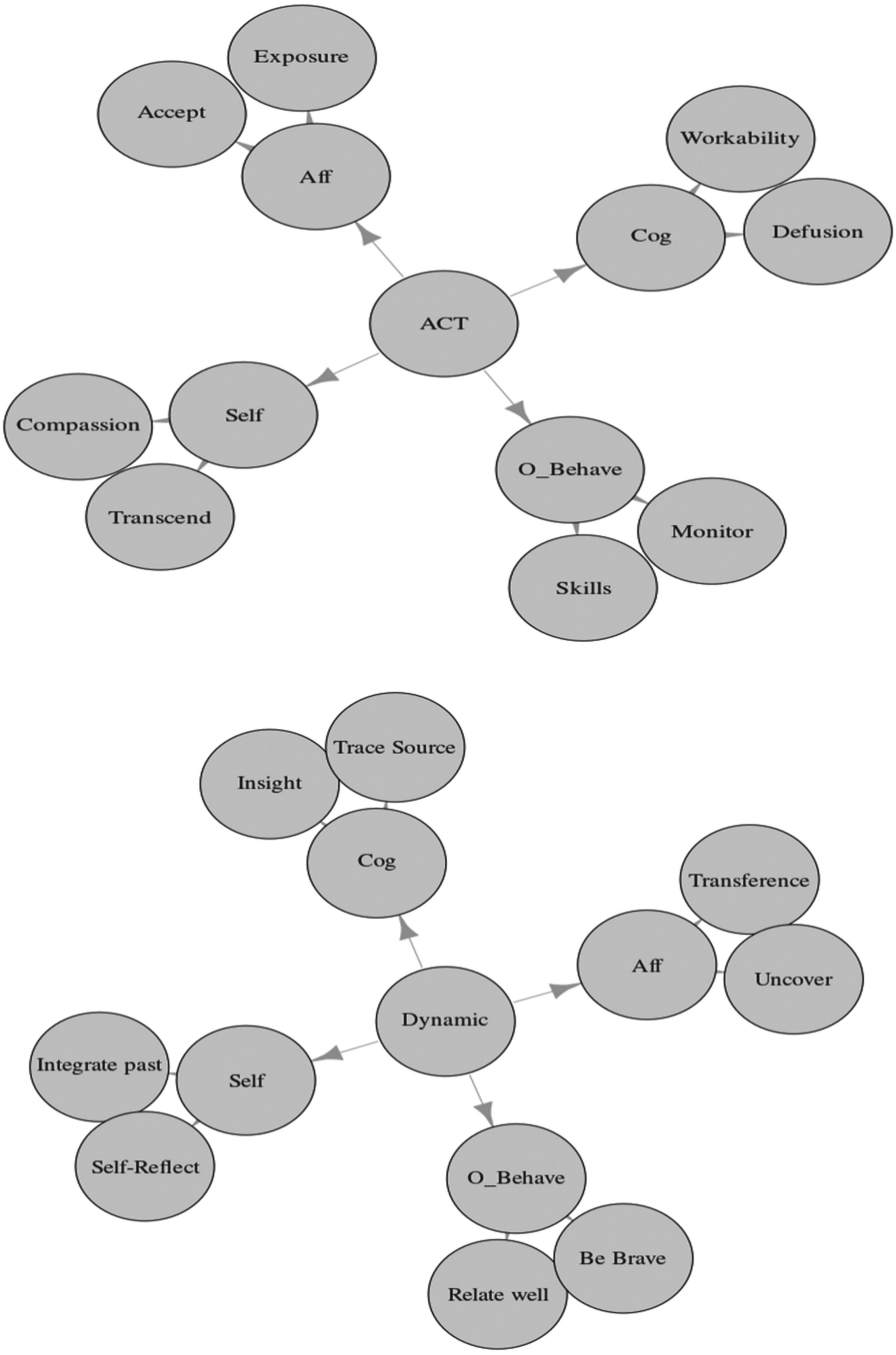
The agora we are constructing has been pointed to many times in the history of our field, but not with a set of ideas that provide a clear target, approach, and analytic strategy.

A PBT approach involves five key ideas that address this need, each of which is profoundly different from the current mainstream. The first four of these ideas begin with a core practical assumption that most clinicians appear to believe, but that is often then ignored or violated by the scientific approaches that we bring to our field. The last of the five is the biggest leap but in some ways, it is the most important:

> *Target: Therapy is a process, and while outcomes are important, they will be achieved in a step by step and holistic journey.* Therefore, the focus of intervention and intervention science should be on processes of change across a range of levels of analysis—psychological,

Figure 3

Common Processes and Diverse Techniques in ACT and Psychodynamic Therapy



Note. ACT = acceptance and commitment therapy; Aff = affect; Cog = cognition; O_Behave = overt behavior.

biological, and social—and specific dimensions within these levels. At the psychological level, these might include sense of self, cognition, affect, attention, motivation, and overt behavioral habits in addition to such other dimensions as may be required for analytic purposes.

Assessment and Strategic Approach: We need to listen to the people we treat, and avoid letting norms, averages, or preconceptions stifle clients' voices. Therefore, the link between processes of change and negative or positive outcomes needs to be modeled longitudinally and individually at first, and then examined in a more nomothetic way. Nomothetic generalizations should be retained if and only if they help us understand the majority of individuals that we model in a given area, while also recognizing the existence of meaningful voices that deviate from the norm. Thus, idionomic strategies need to be foundational in our field and assessment tools themselves need to be constructed in this same bottom up manner.

Core Analytic Strategy: We are not listening to our clients as empirically-based clinicians if we are not measuring and modeling them as complex and unique people. Therefore we should find ways to model this complexity, such as using idionomic network analysis to guide case conceptualization and treatment targeting.

Core Intervention Approach: People deserve intervention methods that are fitted to their unique, individual needs, and that foster outcomes that the clinician and client have agreed to pursue in an efficient and effective manner. Therefore interventions should not be "one size fits all" but rather should be based on a coherent set of evidence-based kernels that are likely to alter key processes of change as shown by idionomic assessment.

Theoretical Agora: People are evolving wholes, and if we can agree on that, we can use the queen of all theories in the life sciences to create an agora in which a diversity of ideas can be stated, heard, and tested. Modern multidimensional, multilevel evolutionary science, when combined with modern AI and statistical tools, can serve as a broad umbrella (a meta-model) under which a variety of more specific process-based models of change can be developed and tested that fit the first four ideas above. Each specific model should focus on how to establish healthy variability, that is selected, retained, and fitted to context based on the goals of the client across a range of levels of analysis and across a range of response dimensions.

This collection of analytic assumptions and strategies has never been deployed or even argued for as a set until the arrival of PBT, but all of these ideas are plausible, and have some empirical support. Bringing them together into a single vision gives the psychotherapy and intervention science more generally a new direction that has the hope of developing a knowledge base that applies with precision, scope, and depth. The stagnation of our field is empirically undeniable. If we keep doing what we have been doing, we will keep getting what we have been getting. The era of protocol-for-syndrome is over, and a process-based era is upon us. Properly managed, this new era can be notably more progressive. PBT provides a new vision for psychotherapy unification that deserves and apparently will get a serious test, but the speed and scope of this test is up to those who are looking for a new way forward. In other words, it is up to you.

References

Ægisdóttir, S., White, M. J., Spengler, P. M., Maugherman, A. S., Anderson, L. A., Cook, R. S., Nichols, C. N., Lampropoulos, G. K., Walker, B. S., Cohen, G., & Rush, J. D. (2006). The meta-analysis of clinical judgment project: Fifty-six years of accumulated research on clinical versus statistical prediction. *The Counseling Psychologist*, *34*(3), 341–382. https://doi.org/10.1177/0011000005285875

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*.

Amole, M. C., Cyranowski, J. M., Conklin, L. R., Markowitz, J. C., Martin, S. E., & Swartz, H. A. (2017). Therapist use of specific and nonspecific strategies across two affect-focused psychotherapies for depression: Role of adherence monitoring. *Journal of Psychotherapy Integration*, *27*(3), 381–394. https://doi.org/10.1037/int0000039

Anchin, J. C. (2008). Pursuing a unifying paradigm for psychotherapy: Tasks, dialectical considerations, and biopsychosocial systems metatheory. *Journal of Psychotherapy Integration*, *18*(3), 310–349. https://doi.org/10.1037/a0013557

Andrews, P. W., Maslej, M. M., Thomson, J. A., & Hollon, S. D. (2020). Disordered doctors or rational rats? Testing adaptationist and disorder hypotheses for melancholic depression and their relevance for clinical psychology. *Clinical Psychology Review*, *82*, Article 101927. https://doi.org/10.1016/j.cpr.2020.101927

Aristodemou, M. E., Kievit, R. A., Murray, A. L., Eisner, M., Ribeaud, D., & Fried, E. I. (2023). Common cause versus dynamic mutualism: An empirical comparison of two theories of psychopathology in two large longitudinal cohorts. *Clinical Psychological Science*, *12*(3), 380–402. https://doi.org/10.1177/21677026231162814

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression*. Guilford Press.

Beck, A. T., Weissman, A., Lester, D., & Trexler, L. (1974). The measurement of pessimism: The hopelessness scale. *Journal of Consulting and Clinical Psychology*, *42*(6), 861–865. https://doi.org/10.1037/h0037562

Benjamin, L. S., Rothweiler, J. C., & Critchfield, K. L. (2006). The use of structural analysis of social behavior (SASB) as an assessment tool. *Annual Review of Clinical Psychology*, *2*(1), 83–109. https://doi.org/10.1146/annurev.clinpsy.2.022305.095337

Berry, D. R., Hoerr, J. P., Cesko, S., Alayoubi, A., Carpio, K., Zirzow, H., Walters, W., Scram, G., Rodriguez, K., & Beaver, V. (2020). Does mindfulness training without explicit ethics-based instruction promote prosocial behaviors? A meta-analysis. *Personality and Social Psychology Bulletin*, *46*(8), 1247–1269. https://doi.org/10.1177/0146167219900418

Bhattacharya, S., Goicoechea, C., Heshmati, S., Carpenter, J. K., & Hofmann, S. G. (2023). Efficacy of cognitive behavioral therapy for anxiety-related disorders: A meta-analysis of recent literature. *Current Psychiatry Reports*, *25*(1), 19–30. https://doi.org/10.1007/s11920-022-01402-8

Block, V. J., Haller, E., Villanueva, J., Meyer, A., Benoy, C., Walter, M., Lang, U. E., & Gloster, A. T. (2022). Meaningful relationships in community and clinical samples: Their importance for mental health. *Frontiers in Psychology*, *13*, Article 832520. https://doi.org/10.3389/fpsyg.2022.832520

Borgogna, N. C., Owen, T., & Aita, S. L. (2023). The absurdity of the latent disease model in mental health: 10,130,814 ways to have a DSM-5-TR psychological disorder. *Journal of Mental Health*, 1–9. https://doi.org/10.1080/09638237.2023.2278107

Borsboom, D., & Cramer, A. O. J. (2013). Network analysis: An integrative approach to the structure of psychopathology. *Annual Review of Clinical Psychology*, *9*(1), 91–121. https://doi.org/10.1146/annurev-clinpsy-050212-185608

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Buch, A. M., & Liston, C. (2021). Dissecting diagnostic heterogeneity in depression by integrating neuroimaging and genetics. *Neuropsychopharmacology*, *46*(1), 156–175. https://doi.org/10.1038/s41386-020-00789-3

Carey, T. A., Griffiths, R., Dixon, J. E., & Hines, S. (2020). Identifying functional mechanisms in psychotherapy: A scoping systematic review. *Frontiers in Psychiatry*, *11*, Article 291. https://doi.org/10.3389/fpsyt.2020.00291

Ciarrochi, J., & Bailey, A. (2008). *A CBT-practitioner's guide to ACT: How to bridge the gap between cognitive behavioral therapy and acceptance and commitment therapy*. New Harbinger Publications.

Ciarrochi, J., Sahdra, B., Hayes, S. C., Hofmann, S. G., Sanford, B., Stanton, C., Yap, K., Fraser, M. I., Gates, K., & Gloster, A. T. (2024). A personalised approach to identifying important determinants of well-being. *Cognitive Therapy and Research*. Advance online publication. https://doi.org/10.1007/s10608-024-10486-w

Ciarrochi, J., Sahdra, B., Hofmann, S. G., & Hayes, S. C. (2022). Developing an item pool to assess processes of change in psychological interventions: The Process-Based Assessment Tool (PBAT). *Journal of Contextual Behavioral Science*, *23*, 200–213. https://doi.org/10.1016/j.jcbs.2022.02.001

Cristea, I. A., Stefan, S., Karyotaki, E., David, D., Hollon, S. D., & Cuijpers, P. (2017). The effects of cognitive behavioral therapy are not systematically falling: A revision of Johnsen and Friborg (2015). *Psychological Bulletin*, *143*(3), 326–340. https://doi.org/10.1037/bul0000062

Ebrahimi, O. V. (2023). Systems-based thinking in psychology and the mental health sciences. *Nature Reviews Psychology*, *2*(6), Article 332. https://doi.org/10.1038/s44159-023-00193-w

Embry, D. D., & Biglan, A. (2008). Evidence-based kernels: Fundamental units of behavioral influence. *Clinical Child and Family Psychology Review*, *11*(3), 75–113. https://doi.org/10.1007/s10567-008-0036-x

Epskamp, S., Borsboom, D., & Fried, E. I. (2018). Estimating psychological networks and their accuracy: A tutorial paper. *Behavior Research Methods*, *50*(1), 195–212. https://doi.org/10.3758/s13428-017-0862-1

Fisher, A. J., Medaglia, J. D., & Jeronimus, B. F. (2018). Lack of group-to-individual generalizability is a threat to human subjects research. *Proceedings of the National Academy of Sciences*, *115*(27), E6106–E6115. https://doi.org/10.1073/pnas.1711978115

Frazier, P., Keenan, N., Anders, S., Perera, S., Shallcross, S., & Hintz, S. (2011). Perceived past, present, and future control and adjustment to stressful life events. *Journal of Personality and Social Psychology*, *100*(4), 749–765. https://doi.org/10.1037/a0022405

Fried, E. I., Epskamp, S., Nesse, R. M., Tuerlinckx, F., & Borsboom, D. (2016). What are "good" depression symptoms? Comparing the centrality of DSM and non-DSM symptoms of depression in a network analysis. *Journal of Affective Disorders*, *189*, 314–320. https://doi.org/10.1016/j.jad.2015.09.005

Gilbert, P. (2010). *The compassionate mind: A new approach to life's challenges*. New Harbinger Publications.

Gilbert, P. (2019). Psychotherapy for the 21st century: An integrative, evolutionary, contextual, biopsychosocial approach. *Psychology and Psychotherapy: Theory, Research and Practice*, *92*(2), 164–189. https://doi.org/10.1111/papt.12226

Gilbert, P., Huxter, M., & Choden. (2024). Exploration of evolution-informed compassion-focused therapy and Buddhist approaches to insight

meditation: A three-way exploration. *Mindfulness*, *15*(5), 1014–1037. https://doi.org/10.1007/s12671-023-02141-4

Gloster, A. T., & Haller, E. (2022). Meaningful and lasting change—psychotherapy in the light of evolutionary processes. *Clinical Psychology in Europe*, *4*(3), Article e9859. https://doi.org/10.32872/cpe.9859

Gloster, A. T., Haller, E., & Greifeneder, R. (2021). The centrality of human interaction. *Zeitschrift Für Psychologie*, *229*(3), 143–147. https://doi.org/10.1027/2151-2604/a000445

Gloster, A. T., Nadler, M., Block, V., Haller, E., Rubel, J., Benoy, C., Villanueva, J., Bader, K., Walter, M., Lang, U., Hofmann, S. G., Ciarrochi, J., & Hayes, S. C. (2024). When average isn't good enough: Identifying meaningful subgroups in clinical data. *Cognitive Therapy and Research*. Advance online publication. https://doi.org/10.1007/s10608-023-10453-x

Goldfried, M. R. (2019). Obtaining consensus in psychotherapy: What holds us back? *American Psychologist*, *74*(4), 484–496. https://doi.org/10.1037/amp0000365

Goldfried, M. R., & Wolfe, B. E. (1996). Psychotherapy practice and research: Repairing a strained alliance. *American Psychologist*, *51*(10), 1007–1016. https://doi.org/10.1037/0003-066X.51.10.1007

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, *26*(1), 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94

Greenberg, L. S. (1986). Change process research. *Journal of Consulting and Clinical Psychology*, *54*(1), 4–9. https://doi.org/10.1037/0022-006X.54.1.4

Greenberg, L. S., & Newman, F. L. (1996). An approach to psychotherapy change process research: Introduction to the special section. *Journal of Consulting and Clinical Psychology*, *64*(3), 435–438. https://doi.org/10.1037/0022-006X.64.3.435

Grove, W. M., Zald, D. H., Lebow, B. S., Snitz, B. E., & Nelson, C. (2000). Clinical versus mechanical prediction: A meta-analysis. *Psychological Assessment*, *12*(1), 19–30. https://doi.org/10.1037/1040-3590.12.1.19

Hayes, S. C., Atkins, P., & Wilson, D. S. (2021). Prosocial: Using an evolutionary approach to modify cooperation in small groups. In R. A. Houmanfar, M. Fryling, & M. P. Alavosius (Eds.), *Applied behavior science in organizations* (pp. 197–223). Routledge.

Hayes, S. C., Ciarrochi, J., Hofmann, S. G., Chin, F., & Sahdra, B. (2022). Evolving an idionomic approach to processes of change: Towards a unified personalized science of human improvement. *Behaviour Research and Therapy*, *156*, Article 104155. https://doi.org/10.1016/j.brat.2022.104155

Hayes, S. C., Hayes, L. J., & Reese, H. W. (1988). Finding the philosophical core: A review of Stephen C. Pepper's World Hypotheses. *Journal of the Experimental Analysis of Behavior*, *50*(1), 97–111. https://doi.org/10.1901/jeab.1988.50-97

Hayes, S. C., Hayes, L. J., Reese, H. W., & Sarbin, T. R. (1993). *Varieties of scientific contextualism*. Context Press.

Hayes, S. C., & Hofmann, S. G. (2020). *Beyond the DSM: Toward a process-based alternative for diagnosis and mental health treatment*. New Harbinger Publications.

Hayes, S. C., Hofmann, S. G., & Ciarrochi, J. (2020). A process-based approach to psychological diagnosis and treatment: The conceptual and treatment utility of an extended evolutionary meta model. *Clinical Psychology Review*, *82*, Article 101908. https://doi.org/10.1016/j.cpr.2020.101908

Hayes, S. C., Hofmann, S. G., & Ciarrochi, J. (2023). The idionomic future of cognitive behavioral therapy: What stands out from criticisms of ACT development. *Behavior Therapy*, *54*(6), 1036–1063. https://doi.org/10.1016/j.beth.2023.07.011

Hayes, S. C., Hofmann, S. G., Stanton, C. E., Carpenter, J. K., Sanford, B. T., Curtiss, J. E., & Ciarrochi, J. (2019). The role of the individual in the coming era of process-based therapy. *Behaviour Research and Therapy*, *117*, 40–53. https://doi.org/10.1016/j.brat.2018.10.005

Hayes, S. C., Hofmann, S. G., & Wilson, D. S. (2020). Clinical psychology is an applied evolutionary science. *Clinical Psychology Review*, *81*, Article 101892. https://doi.org/10.1016/j.cpr.2020.101892

Hayes, S. C., Strosahl, K., & Wilson, K. G. (1999). *Acceptance and commitment therapy: An experiential approach to behavior change*. The Guilford Press.

Hofmann, S. G. (2020). Imagine there are no therapy brands, it isn't hard to do. *Psychotherapy Research*, *30*(3), 297–299. https://doi.org/10.1080/10503307.2019.1630781

Hofmann, S. G. (2022). Psychotherapeutic interventions and processes. *Cognitive and Behavioral Practice*, *29*(3), 581–584. https://doi.org/10.1016/j.cbpra.2022.02.001

Hofmann, S. G., Asnaani, A., Vonk, I. J. J., Sawyer, A. T., & Fang, A. (2012). The efficacy of cognitive behavioral therapy: A review of meta-analyses. *Cognitive Therapy and Research*, *36*(5), 427–440. https://doi.org/10.1007/s10608-012-9476-1

Hofmann, S. G., Curtiss, J., & McNally, R. J. (2016). A Complex network perspective on clinical science. *Perspectives on Psychological Science*, *11*(5), 597–605. https://doi.org/10.1177/1745691616639283

Hofmann, S. G., & Hayes, S. C. (2019). The future of intervention science: Process-based therapy. *Clinical*

Psychological Science, *7*(1), 37–50. https://doi.org/10.1177/2167702618772296

Hollon, S. D., Andrews, P. W., & Thomson, J. A. (2021). Cognitive behavior therapy for depression from an evolutionary perspective. *Frontiers in Psychiatry*, *12*, Article 667592. https://doi.org/10.3389/fpsyt.2021.667592

Hollon, S. D., & Kendall, P. C. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy and Research*, *4*(4), 383–395. https://doi.org/10.1007/BF01178214

Hoyt, M. F., Young, J., & Rycroft, P. (2020). Single session thinking 2020. *Australian and New Zealand Journal of Family Therapy*, *41*(3), 218–230. https://doi.org/10.1002/anzf.1427

Imel, Z. E., Laska, K., Jakupcak, M., & Simpson, T. L. (2013). Meta-analysis of dropout in treatments for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology*, *81*(3), 394–404. https://doi.org/10.1037/a0031474

Jablonka, E., & Lamb, M. (2006). *Evolution in four dimensions: Genetic, epigenetic, behavioral, and symbolic variation in the history of life (life and mind: Philosophical issues in biology and psychology)*. The MIT Press.

Jones, E. E., Cumming, J. D., & Horowitz, M. J. (1988). Another look at the nonspecific hypothesis of therapeutic effectiveness. *Journal of Consulting and Clinical Psychology*, *56*(1), 48–55. https://doi.org/10.1037/0022-006X.56.1.48

Kazantzis, N., Whittington, C., Zelencich, L., Kyrios, M., Norton, P. J., & Hofmann, S. G. (2016). Quantity and quality of homework compliance: A meta-analysis of relations with outcome in cognitive behavior therapy. *Behavior Therapy*, *47*(5), 755–772. https://doi.org/10.1016/j.beth.2016.05.002

Kendler, K. S., Zachar, P., & Craver, C. (2011). What kinds of things are psychiatric disorders? *Psychological Medicine*, *41*(6), 1143–1150. https://doi.org/10.1017/S0033291710001844

Kinley, J. L., & Reyno, S. M. (2016). Project for a scientific psychiatry: A neurobiologically informed, phasic, brain-based model of integrated psychotherapy. *Journal of Psychotherapy Integration*, *26*(1), 61–73. https://doi.org/10.1037/a0039636

Kohlenberg, R. J., & Tsai, M. (2012). *Functional analytic psychotherapy: Creating intense and curative therapeutic relationships*. Springer.

Koydemir, S., Sökmez, A. B., & Schütz, A. (2021). A meta-analysis of the effectiveness of randomized controlled positive psychological interventions on subjective and psychological well-being. *Applied Research in Quality of Life*, *16*(3), 1145–1185. https://doi.org/10.1007/s11482-019-09788-z

Krebs, P., Norcross, J. C., Nicholson, J. M., & Prochaska, J. O. (2018). Stages of change and psychotherapy outcomes: A review and meta-analysis. *Journal of Clinical Psychology*, *74*(11), 1964–1979. https://doi.org/10.1002/jclp.22683

Kuhn, T. S. (1962). *The structure of scientific revolutions*. University of Chicago Press.

Kupfer, D. J., First, M. B., & Regier, D. A. (2002). *A research agenda for DSM V*. American Psychiatric Publications.

Leichsenring, F., Steinert, C., Rabung, S., & Ioannidis, J. P. A. (2022). The efficacy of psychotherapies and pharmacotherapies for mental disorders in adults: An umbrella review and meta-analytic evaluation of recent meta-analyses. *World Psychiatry*, *21*(1), 133–145. https://doi.org/10.1002/wps.20941

Levenson, H. (2017). *Brief dynamic therapy*. American Psychological Association.

Li, C., Xu, D., Hu, M., Tan, Y., Zhang, P., Li, G., & Chen, L. (2017). A systematic review and meta-analysis of randomized controlled trials of cognitive behavior therapy for patients with diabetes and depression. *Journal of Psychosomatic Research*, *95*, 44–54. https://doi.org/10.1016/j.jpsychores.2017.02.006

Li, N. P., van Vugt, M., & Colarelli, S. M. (2018). The evolutionary mismatch hypothesis: Implications for psychological science. *Current Directions in Psychological Science*, *27*(1), 38–44. https://doi.org/10.1177/0963721417731378

Lin, Z. J., Jung, J., Goel, S., & Skeem, J. (2020). The limits of human predictions of recidivism. *Science Advances*, *6*(7), Article eaaz0652. https://doi.org/10.1126/sciadv.aaz0652

Linehan, M. M., Heard, H., Clarkin, J., Marziali, E., & Munroe-Blum, H. (1993). *Dialectical behavior therapy for borderline personality disorder*. Guilford.

Marquis, A. (2018). *Integral psychotherapy: A unifying approach*. Routledge.

Marquis, A., Henriques, G., Anchin, J., Critchfield, K., Harris, J., Ingram, B., Magnavita, J., & Osborn, K. (2021). Unification: The fifth pathway to psychotherapy integration. *Journal of Contemporary Psychotherapy*, *51*(4), 285–294. https://doi.org/10.1007/s10879-021-09506-7

Marsh, H. W., Craven, R. G., Hinkley, J. W., & Debus, R. L. (2003). Evaluation of the big-two-factor theory of academic motivation orientations: An evaluation of jingle-jangle fallacies. *Multivariate Behavioral Research*, *38*(2), 189–224. https://doi.org/10.1207/S15327906MBR3802_3

Martens, M. P., Ferrier, A. G., Sheehy, M. J., Corbett, K., Anderson, D. A., & Simmons, A. (2005). Development of the protective behavioral strategies survey. *Journal of Studies on Alcohol*, *66*(5), 698–705. https://doi.org/10.15288/jsa.2005.66.698

Melchert, T. P. (2016). Leaving behind our preparadigmatic past: Professional psychology as a unified clinical science. *American Psychologist*, *71*(6), 486–496. https://doi.org/10.1037/a0040227

Meyer, T. J., Miller, M. L., Metzger, R. L., & Borkovec, T. D. (1990). Development and validation of the Penn State Worry Questionnaire. *Behaviour Research and Therapy*, *28*(6), 487–495. https://doi.org/10.1016/0005-7967(90)90135-6

Molenaar, P. C. M. (2004). A manifesto on psychology as idiographic science: Bringing the person back into scientific psychology. *Measurement: Interdisciplinary Research & Perspective*, *2*(4), 201–218. https://doi.org/10.1207/s15366359mea0204_1

Molenaar, P. C. M. (2013). On the necessity to use person-specific data analysis approaches in psychology. *European Journal of Developmental Psychology*, *10*(1), 29–39. https://doi.org/10.1080/17405629.2012.747435

Molenaar, P. C. M., & Campbell, C. G. (2009). The new person-specific paradigm in psychology. *Current Directions in Psychological Science*, *18*(2), 112–117. https://doi.org/10.1111/j.1467-8721.2009.01619.x

Nesse, R. M., & Lloyd, A. T. (1992). The evolution of psychodynamic mechanisms. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 601–624). Oxford University Press.

Nuttgens, S. (2023). Of interventive doppelgangers and other barriers to evidence-based practice in psychotherapy. *Journal of Psychotherapy Integration*, *33*(1), 20–33. https://doi.org/10.1037/int0000279

Olson, D. (2011). FACES IV and the circumplex model: Validation study. *Journal of Marital and Family Therapy*, *37*(1), 64–80. https://doi.org/10.1111/j.1752-0606.2009.00175.x

OpenAI. (2023). *GPT-3.5 Turbo* (Version 3.5) [Computer software]. https://platform.openai.com/docs/models/gpt-3-5

Pepper, S. C. (1942). *World hypotheses: A study in evidence*. University of California Press.

Pincus, A. L., & Krueger, R. F. (2015). Theodore Millon's contributions to conceptualizing personality disorders. *Journal of Personality Assessment*, *97*(6), 537–540. https://doi.org/10.1080/00223891.2015.1031376

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology*, *51*(3), 390–395. https://doi.org/10.1037/0022-006X.51.3.390

Python Software Foundation. (2023). *Python* (Version 3.8) [Computer software]. https://www.python.org/

Rajakannan, T., Safer, D. J., Burcu, M., & Zito, J. M. (2016). National trends in psychiatric not otherwise specified (NOS) diagnosis and medication use among adults in outpatient treatment. *Psychiatric Services*, *67*(3), 289–295. https://doi.org/10.1176/appi.ps.201500045

R Core Team. (2022). *R: A language and environment for statistical computing* [Computer software]. R Foundation for Statistical Computing. https://www.R-project.org/

Reed, G. M., Mendonça Correia, J., Esparza, P., Saxena, S., & Maj, M. (2011). The WPA-WHO global survey of psychiatrists' attitudes towards mental disorders classification. *World Psychiatry*, *10*(2), 118–131. https://doi.org/10.1002/j.2051-5545.2011.tb00034.x

Resnick, B., & Jenkins, L. S. (2000). Testing the reliability and validity of the Self-Efficacy for Exercise scale. *Nursing Research*, *49*(3), 154–159. https://doi.org/10.1097/00006199-200005000-00007

Richters, J. E. (2021). Incredible utility: The lost causes and causal debris of psychological science. *Basic and Applied Social Psychology*, *43*(6), 366–405. https://doi.org/10.1080/01973533.2021.1979003

Rogers, C. R. (1995). *On becoming a person: A therapist's view of psychotherapy*. https://books.google.ca/books?hl=en&lr=&id=0yHBXXhJbKQC&oi=fnd&pg=PR9&ots=7vWNx7Fuj3&sig=XfDcSkEUKDFrlYmSM5Un42pIk2s

Rosen, G. M., & Davison, G. C. (2003). Psychology should list empirically supported principles of change (ESPs) and not credential trademarked therapies or other treatment packages. *Behavior Modification*, *27*(3), 300–312. https://doi.org/10.1177/0145445503027003003

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.

Sahdra, B. K., Ciarrochi, J., Fraser, M. I., Yap, K., Haller, E., Hayes, S. C., Hofmann, S. G., & Gloster, A. T. (2023). The compassion balance: Understanding the interrelation of self- and other-compassion for optimal well-being. *Mindfulness*, *14*(8), 1997–2013. https://doi.org/10.1007/s12671-023-02187-4

Sahdra, B. K., Ciarrochi, J., Klimczak, K. S., Krafft, J., Hayes, S. C., & Levin, M. (2024). Testing the applicability of idionomic statistics in longitudinal studies: The example of 'doing what matters'. *Journal of Contextual Behavioral Science*, *32*, Article 100728. https://doi.org/10.1016/j.jcbs.2024.100728

Sanford, B. T., Ciarrochi, J., Hofmann, S. G., Chin, F., Gates, K. M., & Hayes, S. C. (2022). Toward empirical process-based case conceptualization: An idionomic network examination of the process-based assessment tool. *Journal of Contextual Behavioral Science*, *25*, 10–25. https://doi.org/10.1016/j.jcbs.2022.05.006

Sanh, V., Debut, L., Chaumond, J., & Wolf, T. (2019). *DistilBERT, a distilled version of BERT: Smaller, faster, cheaper and lighter*. arXiv. https://arxiv.org/abs/1910.01108

Sherbourne, C. D., & Stewart, A. L. (1991). The MOS social support survey. *Social Science & Medicine*, *32*(6), 705–714. https://doi.org/10.1016/0277-9536(91)90150-b

Suh, C. S., O'Malley, S. S., Strupp, H. H., & Johnson, M. E. (1989). The Vanderbilt psychotherapy process scale (VPPS). *Journal of Cognitive Psychotherapy*, *3*(2), 123–154. https://doi.org/10.1891/0889-8391.3.2.123

Tedeschi, R. G., & Moore, B. A. (2021). Posttraumatic growth as an integrative therapeutic philosophy. *Journal of Psychotherapy Integration*, *31*(2), 180–194. https://doi.org/10.1037/int0000250

Trompetter, H. R., Ten Klooster, P. M., Schreurs, K. M. G., Fledderus, M., Westerhof, G. J., & Bohlmeijer, E. T. (2013). Measuring values and committed action with the Engaged Living Scale (ELS): Psychometric evaluation in a nonclinical sample and a chronic pain sample. *Psychological Assessment*, *25*(4), 1235–1246. https://doi.org/10.1037/a0033813

Tully, P. J., Wittert, G., Selkow, T., & Baumeister, H. (2014). The real world mental health needs of heart failure patients are not reflected by the depression randomized controlled trial evidence. *PLoS ONE*, *9*(1), Article e85928. https://doi.org/10.1371/journal.pone.0085928

Tunstall, L., von Werra, L., & Wolf, T. (2022). *Natural language processing with transformers*. O'Reilly Media.

Turner, R., Eriksson, D., McCourt, M., Kiili, J., Laaksonen, E., Xu, Z., & Guyon, I. (2021). Bayesian optimization is superior to random search for machine learning hyperparameter tuning: analysis of the black-box optimization challenge 2020. In H. J. Escalante & K. Hofmann (Eds.), *Proceedings of the NeurIPS 2020 competition and demonstration track* (Vol. 133, pp. 3–26). PMLR.

van Tilburg, W. A. P. (2019). It's not unusual to be unusual (or: a different take on multivariate distributions of personality). *Personality and Individual Differences*, *139*, 175–180. https://doi.org/10.1016/j.paid.2018.11.021

Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, Ł, & Polosukhin, I. (2017). Attention is all you need. *Advances in Neural Information Processing Systems*, 5998–6008. https://doi.org/10.48550/arXiv.1706.03762

Volkovysskii, K. L., & Sinai, Y. G. (1971). Ergodic properties of an ideal gas with an infinite number of degrees of freedom. *Functional Analysis and Its Applications*, *5*(3), 185–187. https://doi.org/10.1007/BF01078123

Watson, D. (1994). *The PANAS-X—Manual for the positive and negative affect schedule-expanded form*. https://iro.uiowa.edu/esploro/outputs/other/The-PANAS-X-Manual-for-the-Positive/9983557488402771

Whitaker, C. A., & Bumberry, W. M. (2004). *Dancing with the family: A symbolic-experiential approach: A symbolic experiential approach*. Routledge.

White, M., & Epston, D. (1990). *Narrative means to therapeutic ends*. WW Norton & Company.

Wilson, D. S., Hayes, S. C., Biglan, A., & Embry, D. D. (2014). Evolving the future: Toward a science of intentional change. *Behavioral and Brain Sciences*, *37*(4), 395–416. https://doi.org/10.1017/S0140525X13001593

Wilson, K. G., Sandoz, E. K., Kitchens, J., & Roberts, M. (2010). The Valued Living Questionnaire: Defining and measuring valued action within a behavioral framework, 2008. *The Psychological Record*, *60*(2), 249–272. https://doi.org/10.1007/BF03395706

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