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Current Definitions of “Transdiagnostic” in Treatment Development:

A Search for Consensus

Shannon Sauer-Zavala<sup>1</sup>

Cassidy A. Gutner<sup>2</sup>

Todd J. Farchione<sup>1</sup>

Hannah T. Boettcher<sup>1</sup>

Jacqueline R. Bullis<sup>1</sup>

David H. Barlow<sup>1</sup>

In press at Behavior Therapy

Correspondence concerning this article should be addressed to Shannon Sauer-Zavala, CARD  
648 Beacon St., 6<sup>th</sup> floor, Boston University, Boston, MA 02215. Phone: 617-353-9610. Email:  
shannonesauer@gmail.com Fax: 617-353-9609

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<sup>1</sup> Center for Anxiety and Related Disorders, Department of Psychology, Boston University

<sup>2</sup> National Center for PTSD, Women’s Health Sciences Division at the VA Boston Healthcare System and Boston University School of Medicine, Department of Psychiatry

### **Abstract**

Research in psychopathology has identified psychological processes that are relevant across a range of *Diagnostic and Statistical Manual (DSM)* mental disorders, and these efforts have begun to produce treatment principles and protocols that can be applied transdiagnostically. However, review of recent work suggests that there has been great variability in conceptions of the term “transdiagnostic” in the treatment development literature. We believe that there is value in arriving at a common understanding of the term “transdiagnostic.” The purpose of the current manuscript is to outline three principal ways in which the term “transdiagnostic” is currently used, to delineate treatment approaches that fall into these three categories, and to consider potential advantages and disadvantages of each approach.

## **Current Definitions of “Transdiagnostic” in Treatment Development:**

### **A Search for Consensus**

In recent decades, classification of mental disorders has largely focused on differentiating psychopathology into thinly sliced categories, an approach exemplified by the *Diagnostic and Statistical Manual (DSM)*; American Psychiatric Association, 1980, 2000, 2013). Emerging research, however, suggests that this “splitting” approach to diagnosis, while enhancing reliability, may come at the expense of validity (see: Barlow, Sauer-Zavala, Carl, Bullis, & Ellard, 2014). There is increasing evidence that some *DSM* disorders do not represent unique constructs and instead reflect relatively trivial variations in a common underlying syndrome (Brown & Barlow, 2009). Based on these findings, there has been a renewed interest in constructs that may be broadly applicable across classes of disorders, such as temperament, body image distortion, or anxiety sensitivity (Barlow et al., 2014; Fairburn, Cooper, & Shafran, 2003; Boswell et al., 2013). Grouping disorders based on shared characteristics is consistent with a more dimensional and functional bases for classification, with the National Institute of Mental Health’s Research Domain Criteria (RDoC; Insel et al., 2010) representing one option. This trend is also captured by an upsurge in authors using the keyword “transdiagnostic” to characterize their articles. Of the 294 studies indexed by PsycINFO with this keyword as of this writing (June, 2016), more than three quarters were published in the last five years, with very few appearing prior to 2008. As the identification of constructs or processes that occur across diagnostic boundaries has blossomed, so too has interest in treatments that may be applicable to multiple disorders. Although the term “transdiagnostic” has been increasingly utilized to describe a variety of treatment approaches in recent years (e.g., Barlow et al., 2011; Leichsenring & Salzer, 2014), there may be conceptual differences in the use of this term and in the manner in

which transdiagnostic treatments lead to improvement across a range of disorders. The purpose of the current paper is to delineate various meanings of this term to facilitate understanding and future research.

In order to effectively categorize interventions that have recently been described as “transdiagnostic,” it is necessary to establish a working definition of this term. Although no guidelines have been published with regard to what qualifies as a transdiagnostic intervention, several articles have proposed criteria for determining whether a *psychological process* can be considered “transdiagnostic.” These criteria may represent a good starting point for drawing distinctions among “transdiagnostic” treatments. First, Mansell and colleagues (2009) set what they described as “arbitrary but challenging criteria” (p. 9) to determine whether a process could be considered transdiagnostic. Specifically, their criteria require that transdiagnostic processes be assessed in both clinical and nonclinical samples and be present in a minimum of four disorders. More recently, Harvey & colleagues (2011) have highlighted differences between constructs that are “descriptively transdiagnostic” (i.e., processes that are present in a range of diagnoses), which is consistent with Mansell et al.’s (2009) criteria, and those that are “mechanistically transdiagnostic” (i.e., processes that reflect a causal, functional mechanism for co-occurrence).

Whereas the designation “mechanistically transdiagnostic” implies that the construct in question is causally related to a range of psychopathology, the term “descriptively transdiagnostic” suggests only that a construct is present in multiple disorders, without regard to how or why. To illustrate the differences between Harvey et al.’s (2011) conceptions of “descriptively transdiagnostic” and “mechanistically transdiagnostic,” constructs that fit these categories will be highlighted. First, consider low self-esteem, which can be found in a variety of disorders from schizophrenia to panic disorder (e.g., Glasshower, Vroling, de Jong, Wolfe, & de

Keijser, 2013; Holding, Terrier, Gregg, & Barrowclough, 2013). Although low self-esteem may be descriptively transdiagnostic, there is no unifying theory to account for *how* low self-esteem contributes to the development and maintenance of these disorders. As such, it does not appear to be mechanistically transdiagnostic; therefore, specifically targeting low self-esteem in treatment may not lead directly to alleviation of specific psychopathological processes maintaining symptoms. Similarly, for many years, panic attacks were thought to be specific to panic disorder (APA, 1987; Barlow et al., 1986). However, *DSM* panic attacks are now described as ubiquitous and potentially occurring in the context of any disorder (APA, 2013). Nevertheless, few would believe that panic attacks are functionally related to the onset or maintenance of a disorder such as schizophrenia or that targeting them in treatment would lead to substantial clinical improvement.

In contrast, mechanistically transdiagnostic constructs provide information regarding the development and maintenance of a class of disorders; in other words, they represent common or core vulnerabilities that put an individual at risk for more than one mental health diagnosis as similar underlying processes are driving symptoms across conditions. For example, overvaluation of shape and weight has been implicated as a core functional mechanism in the development and maintenance of symptoms across anorexia, bulimia, and eating disorders not otherwise specified (now called other-specified eating disorders or unspecified eating disorders in *DSM-5*) (e.g., Fairburn, Peveler, Jones, Hope, & Doll, 1993; Wilson, Fairburn, Agras, Walsh, & Kraemer, 2002). Additionally, clear theoretical accounts have been proposed regarding how rumination, another example of a mechanistically transdiagnostic process, contributes to the development and maintenance of a range of emotional disorders (e.g., depression, anxiety, borderline personality disorder; Baer & Sauer, 2011; McLaughlin & Nolen-Hoeksema, 2011;

Sauer-Zavala & Barlow, 2014). Specifically, Selby and colleagues (2008, 2009, 2013) proposed and tested the emotional cascade model, in which rumination is used as a strategy for coping with negative emotions, leading to increased levels of negative affect, followed by more rumination, and so on until a physically potent behavior (e.g., non-suicidal self-injury, substance use) occurs and serves to distract from negative thoughts and emotions. Whether rumination is a core mechanism or simply part of a larger system of vulnerabilities is unclear, but it is a transdiagnostic mechanism per Harvey et al.'s (2011) definition.

We believe there are advantages to exploring processes that are mechanistically transdiagnostic over those that are descriptively transdiagnostic. Reserving the term transdiagnostic to refer to underlying mechanisms that are relevant across a class of disorders may function to better inform treatment development, as strategies can be included that focus on these core deficits rather than targeting what may be more trivial disorder correlates. Continued identification of mechanistically transdiagnostic processes may lead to more efficient treatments because targeting underlying mechanisms has been shown to lead to clinical improvement across comorbid conditions that are maintained by the same core vulnerabilities (e.g., Farchione et al., 2012).

### **Transdiagnostic Treatment**

As the identification of constructs that maintain symptoms across a range of disorders has proliferated, so too have efforts to develop new psychological interventions directly targeting these transdiagnostic constructs, as well as to apply existing treatments to a wider array of psychopathology. This is not surprising, as treatments that can address more than one diagnosis confer several advantages over single-diagnosis protocols. First, there is a high degree of diagnostic comorbidity among *DSM* disorders (e.g., Allen et al., 2010; Brown, Campbell,

Lehman, Grisham, & Mancill, 2001; Kessler et al., 1996, 1998, 2008; Kessler, Berglund, & Demler, 2003), and single-diagnosis protocols do not provide guidance on how to address co-occurring diagnoses (e.g., Allen et al., 2010). Indeed, in addition to limited improvement for comorbid conditions, some studies have shown that single-diagnosis protocols demonstrate poorer outcomes for the primary, targeted disorder for individuals presenting with more than one diagnosis (e.g., DeRubeis et al., 2005; Steketee, Chambless, & Tran, 2001), possibly due to therapists' ineffective efforts to address the comorbidity (Craske et al., 2007; Gibbons & DeRubeis, 2008). An additional advantage of treatment protocols that are equipped to address multiple diagnoses is that they may substantially reduce therapist training burden. Therapists need only receive training in one protocol in order to provide evidence-based treatment for a range of disorders, rather than completing costly and time-intensive training for multiple interventions (McHugh, Murray, & Barlow, 2009).

Given the recent upsurge in interventions currently referred to as transdiagnostic, we seek to engender some clarity in the field by proposing three broad categories into which these treatments can be placed. First, we describe interventions in which a guiding therapeutic strategy is universally applied across the range of presenting conditions, an approach we have deemed *universally applied therapeutic principles*. This category includes traditional psychotherapy emanating from a variety of theoretical perspectives (e.g., psychodynamic, cognitive-behavioral) that has only recently been described as transdiagnostic, despite a history of being universally applied to most, if not all, psychopathology (e.g., Leichsenring & Salzer, 2014). Next, we discuss a *modular* approach wherein a clinician chooses from an assembled bank of discrete strategies to create a treatment that maps onto any patient's presenting problems, regardless of diagnosis. Finally, we identify interventions that explicitly target *shared mechanisms* implicated in the



development and maintenance of certain classes of psychopathology. Of course, not all treatments that have been used to target multiple disorders fit comfortably into this scheme; accordingly, we also highlight examples of exceptions to these rules. Finally, we propose recommendations for sharpening conceptions of transdiagnostic treatment using these designations.

*Universally Applied Therapeutic Principles.* Universally applied therapeutic principles interventions often emanate from a “school” or identifiable type of psychotherapy (e.g., humanistic, psychodynamic, cognitive-behavioral) and contain strategies (e.g., unconditional positive regard, transference work, cognitive restructuring) that are, as the name suggests, universally applied to a broad range of psychopathology. Theory is used to guide accounts of how therapy should be conducted (e.g., by targeting transference) and interventions within this category represent “top-down” efforts to apply an existing therapeutic technique to multiple disorders without explicit consideration for whether all disorders treated with that technique are maintained by similar processes. The universally applied therapeutic principles approach is in contrast to “bottom-up” efforts, in which theoretical models of *psychopathology* are identified and then intervention strategies are crafted to target them, as is the case for shared mechanisms treatments (described below). Although some of the interventions in this category have been applied across diagnostic boundaries for decades, they have only recently been specifically described as “transdiagnostic,” reflecting the current vogue of the field (Leichsenring & Salzer, 2014).

Humanistic psychotherapy provides a compelling illustration of universally applied therapeutic principles. Rather than being developed to target specific mechanisms of psychopathology, this collection of approaches follows from central tenets of human capacity

and need. Specifically, humanistic psychology is based on the notion that humans are inherently good, capable of exercising free will, and motivated to self-actualize, and that psychopathology develops from obstacles in to the pursuit of self-actualization (Maslow, 1962). Client-centered therapy, perhaps the best known type of humanistic psychotherapy, is structured around the universally applied therapeutic principles of empathy, genuineness of the therapeutic relationship, and unconditional positive regard (Rogers, 1951). These strategies represent the humanistic tool-kit applied to all patients. In fact, Carl Rogers, a founding theorist in humanistic psychology, stated that the emphasis is not on alleviating symptoms, but rather providing a healing context regardless of presenting problem: “In my early professional years I was asking the question: How can I treat, or cure, or change this person? Now I would phrase the question in this way: How can I provide a relationship which this person may use for his own personal growth?” (1961, p. 24). Although humanistic approaches have been applied to a wide range of psychopathology from anxiety to schizophrenia (Cain, 2002), they do not share mechanistic treatment targets responsible for symptom etiology or maintenance.

Similarly, psychodynamic psychotherapy has traditionally been applied to a broad range of mental disorders (Leichsenring & Salzer, 2014), including anxiety and depressive disorders, somatic symptom disorders, personality disorders, and psychotic disorders (Abbass, Hancock, Henderson, & Kisely, 2006). Psychodynamic approaches can take various forms, but the vast majority focus on exploring self-concept and personality features, with a particular emphasis on resolving psychic conflicts (Gabbard, 2000; Shedler, 2010). In this case, the psychotherapeutic prescription for how patients should be treated is the resolution of these conflicts, using strategies such as increased attention to affect and emotion expression, identification of recurring themes or patterns, discussion of past experiences, and exploration of avoidance related to

upsetting thoughts or feelings, interpersonal relationships, and fantasy life (Shedler, 2010; Blagys & Hilsenroth, 2002). Leichenring and Salzer note that psychodynamic interventions are “universal in nature” and “transdiagnostic in origin” (p. 226) as they do not focus on specific mental disorders.

Cognitive therapy (CT) is another example of an intervention based on universally applied therapeutic principles. In a seminal piece of writing, Beck highlights the “top-down” nature of CT utilized in treatment: “Regardless of their origin, it is relatively simple to state the formula for treatment: the therapist helps a patient to unravel his distortions in thinking and to learn alternative, more realistic ways to formulate his experiences” (Beck, 1976, p. 3). Specifically, CT encourages patients to identify distorted thoughts and modify beliefs as a means of improving one’s mood and altering interactions with other people and the world. This model of treatment was originally designed based on Beck’s observations of depressed patients (1963), but has been successfully applied to a range of disorders, although “there remained many features of [other] psychological disorders that required explanation” (Beck & Haigh, 2014, p. 2). There is strong evidence to suggest that CT is effective in reducing symptoms across multiple diagnoses (e.g., Butler, Chapman, Forman, & Beck, 2006; Dobson, 1989; Gaffan, Tsaoasis, & Kemp-Wheeler, 1995, 2005; Hollon et al., 2013).

Mindfulness-based interventions have also demonstrated efficacy in the treatment of a range of psychopathology (Baer, 2006; Hofmann, Sawyer, Witt, & Oh, 2010). These interventions have been administered in the context of single-diagnosis protocols (e.g., mindfulness-based cognitive therapy for depression; Segal, Williams, & Teasdale, 2013) and broader, diagnostically independent protocols (e.g., mindfulness-based stress reduction; Kabat-Zinn, 2013). Interventions of this nature encompass such diverse targets as binge eating (Smith,

Shelley, Leahigh & Vanleit, 2006), stress in the workplace (Aikens et al., 2014), fibromyalgia (Grossman, Tiefenthaler-Gilmer, Raysz & Kesper, 2007), professional burnout (Fortney et al., 2013), psoriasis (Kabat-Zinn et al., 1998), and low sexual interest (Brotto, Basson & Luria, 2008). The goal of mindfulness-based interventions is to cultivate non-judgmental, present-focused awareness of internal (e.g., thoughts, physical sensations, behavioral urges) and external experiences using exercises such as psychoeducation and meditation. The benefit of this awareness is “endless opportunities to...develop your deep interior resources for learning, growing, healing and potentially for transforming your understanding of yourself and how you might live more wisely and with greater well-being, meaning and happiness” (Kabat-Zinn, 2011, p. 4). Of note, research has elucidated a number of mechanisms by which mindful awareness may be helpful, including exposure to distress, cognitive flexibility, relaxation, acceptance, and fostering awareness of other self-management behaviors (Baer, 2003). Nevertheless, mindfulness-based interventions do not posit a clear theoretical rationale for the development and maintenance of a range of diagnoses, nor are they designed to treat the underlying causes of each of the myriad problems to which they have been applied. Rather, mindfulness-based strategies most likely promote taking a perspective that is conducive to adaptive coping with a broad variety of difficulties, accounting for their well-documented efficacy.

Acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) represents a specific type of mindfulness-based intervention that warrants unique consideration given its broad application to a wide range of disorders and problems. According to ACT’s chief developer, Steven Hayes, “ACT seeks a unified model of *behavior change* (emphasis added) applicable to human beings in general, not just those fitting certain diagnostic criteria” (Hayes, Pistorello & Levin, 2012, p. 978). ACT’s theory of behavior change is based on relational frame

theory, a basic science account of language and cognition that posits that humans' capacity to make verbal associations between stimuli can lead to psychological suffering; anything, including one's own thoughts, can become linked with pain through cognitive meaning-making, prompting avoidance of pain-inducing stimuli (Twohig, Whittal, Cox, & Gunter, 2010). "The general clinical goals of ACT are to undermine the grip of the literal verbal content of cognition that occasions avoidance behavior and to construct an alternative context wherein behavior in alignment with one's value is more likely to occur" (Hayes, 2004, p. 651). Toward this end, ACT includes strategies aimed at cultivating cognitive defusion (the notion that thoughts are not facts), acceptance, and present-moment awareness, as well as encouraging patients to pursue valued life directions despite negative experiences (e.g., strong emotions, physical pain). Although ACT has demonstrated symptom improvement in many disorders (e.g., Bach & Hayes, 2002; Gregg, Callaghan, Glenn, Hayes, & Glenn-Lawson, 2007), its developers do not suggest that this treatment is targeting core, psychopathological or pathophysiological deficits (e.g., deficits in insulin production in diabetes, cognitive processing deficits in schizophrenia); instead, ACT "attempts to alter the patient's relationship to symptoms to decrease their negative impact" (Baudiano, Herbert, & Hayes, 2010, p. 543). Thus, ACT is consistent with a universally applied principles approach, as emphasis is placed on a theoretical model of therapy that is then applied to a broad range of problems.

*Modular Treatments.* Universally applied therapeutic principles represent the field's traditional approach to transdiagnostic treatment; however, more recently two additional methods for targeting multiple disorders have emerged. First, modular interventions, sometimes referred to as common elements treatments, were developed in response to the "one-size fits all" approach exemplified by universally applied therapeutic principles interventions (Chorpita,

Daleiden, & Weisz, 2005). Modular treatments are thought to lead to greater efficiency by allowing clinicians to craft a unique treatment for each patient by selecting from a wide bank of evidence-based therapeutic strategies. Modular treatments can be considered an empirical, rather than theoretical, approach, in which strategies are assembled that evidence promising reductions in symptoms without necessarily addressing core psychopathological mechanisms or allegiance to one particular universally applied therapeutic principle. A list of patient problems is generated and relevant strategies are selected to address each problem, allowing clinicians to assemble a treatment relevant for any patient, regardless of diagnosis, as long as there are evidence-based strategies for the patient's difficulties.

The use of modular interventions is quite prominent in the child literature (e.g., Chorpita, Taylor, Francis, Moffitt, & Austin, 2004) and in mental health applications in low- and middle-income countries (Murray et al., 2014). For example, the modular approach to therapy for children with anxiety, depression, or conduct problems (MATCH; Chorpita & Weisz, 2005) distills procedures from evidence-based treatments for commonly occurring problems of childhood into freestanding modules. A decisional balance worksheet provides guidance on selecting specific modules for a given patient's treatment plan. Similarly, Murray and colleagues (2013) developed a common elements treatment approach (CETA) that can be used by lay counselors to treat adults with anxiety and mood difficulties in low- and middle-income countries. Preliminary findings from randomized controlled trials of CETA at two sites for adult survivors of torture and/or systematic violence were promising. Across both sites, the majority of patients demonstrated clinically significant decreases in depressive and posttraumatic stress symptoms following treatment (Murray et al., 2013).

*Shared mechanisms treatment.* The last category of transdiagnostic treatments is informed by more basic work identifying processes that are implicated in the development and maintenance of a class of mental disorders. We have deemed this approach *shared mechanisms treatment* and, as the name implies, interventions that fall into this category explicitly target common underlying mechanisms that are relevant across a class of disorders. Treatments in this category represent a shift in the field's thinking regarding diagnosis and treatment of psychopathology as evidenced by the NIMH's funding priorities that challenge researchers to identify processes that occur across diagnoses and can become the focus of treatment (RDoC; Insel et al., 2010). Thus, the strategies included in a shared mechanisms approach are informed by theoretical models of *psychopathology* (rather than *treatment* as in universally applied therapeutic principles approaches) and are explicitly designed to target core features that occur across disorders. This definition of shared mechanisms treatment is an extension of Harvey and colleagues' (2011) conceptualization of mechanistically transdiagnostic constructs, as the identification of core processes informs the treatment targets and strategies included in these interventions.

The use of exposure practices in the treatment of a broad range of anxiety disorders represents one of the first examples of a shared mechanisms treatment. Although the specific guidelines for incorporating this practice may vary (e.g., graduated versus intense, brief versus prolonged; see: Meuret, Wolitzky-Taylor, Twohig, & Craske, 2012), exposure involves encouraging patients to repeatedly approach feared stimuli. The incorporation of exposure into treatments for anxiety disorders is based on the notion that these disorders are maintained by an overestimation of the danger associated with feared stimuli and that repeated engagement with these emotion-eliciting objects/situations extinguishes anxiety in such contexts (e.g., Grillon,

2008). Although there are various accounts of how exposure extinguishes fear responses, including fear habituation (Foa & McNally, 1996), belief disconfirmation (Salkovskis, et al., 2006), and inhibitory learning (Craske, Treanor, Conway, Zbozinek, & Vervliet, 2014), its incorporation within the treatment of anxiety disorders is based on basic science suggesting its utility for addressing core factors that cause and maintain anxiety disorders – in line with our conception of shared mechanisms treatments.

Cognitive behavioral therapy-enhanced (CBT-E; Fairburn, 2008) was created to address the full range of eating disorder diagnoses, and represents one of the first attempts to develop a comprehensive shared mechanisms treatment package. CBT-E is based on Fairburn's theoretical model of eating disorders that specifies the overvaluation of shape and weight as a core maintaining mechanism in anorexia nervosa, bulimia nervosa, and eating disorders not otherwise specified (Fairburn, Cooper, & Shafran, 2003). Preoccupation with shape and weight is targeted in CBT-E in several ways, including decreasing body checking, decreasing rigid rules around food, implementing regular eating, and challenging distorted thinking. Additionally, individual case formulation is used to target and enhance areas of importance in the individual's life beyond shape and weight (e.g., friends, family, school/work) to assist in reducing the disproportionate importance placed on shape or weight. CBT-E is consistent with the definition of a shared mechanisms treatment proposed here, in that the treatment strategies are designed to directly target a mechanistic process present across the full range of eating disorders (i.e., overvaluation of shape or weight). Of course, CBT-E also incorporates optional treatment strategies specifically designed to target other idiosyncratic maintaining factors (e.g., clinical perfectionism) that are not uniformly present across individuals diagnosed with eating disorders.



Whether a patient receives any of these optional treatment strategies is dependent entirely upon the clinician's case formulation, consistent with the modular approach described above.

Additionally, several treatment protocols have emerged to address the full range of anxiety disorders (e.g., Norton, 2012; Schmidt et al., 2012). One example of this approach is the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (UP; Barlow et al., 2011). Rather than focusing solely on one *DSM* grouping of disorders (e.g., anxiety disorders, eating disorders, etc.), the UP was developed in direct response to high rates of co-occurrence among the broader class of emotional disorders (anxiety, depressive, and related disorders; Barlow, 1991) to address common underlying mechanisms that account for this comorbidity. Specifically, neuroticism, the tendency to experience intense negative emotions, has been implicated as a temperamental vulnerability important in the development of emotional disorders. Aversive reactions to these negative emotions when they occur leads to problematic avoidant coping that backfires in the long term, resulting in rebound effects that essentially maintain neuroticism (see: Barlow, Sauer-Zavala, Carl, Bullis, & Ellard, 2014). Therefore, the goal of the UP is to extinguish distress in response to strong emotions in order to decrease reliance on the avoidant coping that paradoxically maintains negative emotional experiences. Although the strategies included in this treatment are consistent with a cognitive-behavioral approach (e.g., cognitive restructuring, exposure), they are focused on addressing core psychopathological deficits in how patients experience and respond to negative emotions. For example, cognitive restructuring enhances cognitive flexibility, and although patients are still taught to reappraise their automatic thoughts, the emphasis is on the fact that their initial negative thought associated with the emotion is one of many possibilities and does not need to be labeled as bad or avoided.

### **Summary & Evaluation of Approaches**

We have delineated three broad categories of treatments that have been described as “transdiagnostic.” These three categories are distinct with regard to the theoretical rationale for how and why they can be used to treat a range of psychological conditions. First, the universally applied therapeutic principles approach relies on theoretical accounts of how therapy should be conducted, generally emanating from traditional schools of psychotherapy. Within this approach, a guiding principle is adopted and then universally applied to an often indiscriminate range of conditions. In contrast, in a shared mechanisms approach, the theory applies to the psychopathology itself, through the identification of core vulnerabilities that contribute to the development and maintenance of a range of diagnoses. As noted above, universally applied therapeutic principles can be thought of as a top-down approach in that they apply an existing treatment strategy to a wide range of conditions, whereas shared mechanisms can be thought of as a bottom-up approach in that it identifies underlying processes that maintain multiple disorders and then crafts an intervention to target them. Finally, modular approaches represent an atheoretical approach to transdiagnostic treatment. Modular treatments can be thought of as empirical (rather than theoretical) as they involve the identification of research-supported strategies (e.g., interpersonal skills training) to address specified problems (e.g., deficits in assertiveness) with little regard for diagnosis. Modular interventions are transdiagnostic in that any patient’s constellation of presenting problems can be treated by assembling relevant treatment components or modules. Specific interventions within each of the three transdiagnostic treatment categories have led to reductions in symptoms across diagnostic boundaries (e.g., Chorpita et al., 2004; Farchione et al., 2012; Hofmann, Asmundson & Beck, 2013; Murray et al., 2013; Swain, Hancock, Hainsworth, & Bowman, 2013).

Despite sharing the key advantage of addressing multiple disorders effectively, each of these approaches has unique disadvantages. First, universally applied therapeutic principles is a one-size-fits-all approach that is extended to new disorders based on the notion that therapy should be conducted consistently with every patient; however, the strategies contained within each of the interventions in this category may not be equally appropriate for all of the presentations for which they are employed. In contrast, shared mechanisms treatments are explicitly designed to target empirically identified maintaining factors implicated for a range of disorders, ensuring their applicability across diagnostic boundaries. Unfortunately, core mechanisms remain unknown for many classes of disorders, limiting the ability to employ the shared mechanisms approach widely at present. Finally, whereas treatment components in universally applied therapeutic principles and shared mechanisms interventions simultaneously address symptoms of multiple disorders, strategies in modular approaches are typically presented sequentially, perhaps lengthening the course of treatment for multi-symptomatic patients.

In considering the advantages and disadvantages to each approach to transdiagnostic treatment, we suggest that shared mechanisms interventions may confer additional benefit beyond the other two categories. In contrast to universally applied therapeutic principles and modular approaches, shared mechanisms interventions are based on a clear theoretical foundation regarding the processes maintaining symptoms across a class of disorders. It is possible that targeting these underlying mechanisms (rather than definitional symptoms) may result in more robust and lasting clinical improvement, a notion in line with NIMH's strategic aims for increasing treatment efficacy and efficiency (e.g., RDoC). Additionally, treatment components included within a shared mechanisms approach can be explicitly tested to assess whether they actually engage the target mechanisms thought to be maintaining symptoms,

ensuring that every strategy is an “active ingredient.” Despite our endorsement of the shared mechanisms approach, it should be noted that these categories are not always mutually exclusive. For example, a recently expanded version of Beck’s theory, the generic cognitive model, describes common cognitive processes observed across diagnostic boundaries to provide a framework to explain “the phenomenology of disorders not explained in previous iterations of the original [CT] model” (Beck & Haigh, 2014, p. 1). Specifically, the authors implicate “faulty information processing” (p. 4) that leads to problems in affective, motivational, and behavioral systems. They refer to information processing biases as core underlying processes that lead to different schema modes (e.g., self-expansive mode, self-protective mode) related to diverse presentations (e.g., depression, anxiety). The fact that CT was applied to a broad range of disorders prior to the development of this testable model relevant beyond depression suggests that this intervention has its roots in the universally applied therapeutic principles tradition, but is now moving toward a shared mechanisms approach.

The empirical evolution of CT from a universally applied therapeutic principle approach to one of shared mechanisms illustrates the shifting boundaries of our proposed transdiagnostic categories. Given the purported value of shared mechanisms treatments, we propose that continued treatment development research be focused on identification of mechanistically transdiagnostic constructs and therapeutic strategies to target them. Therefore, we consider two criteria that place an intervention within the shared mechanisms category, regardless of whether it was initially developed to target shared mechanisms or whether its theoretical model for addressing core mechanisms came after its application to multiple disorders (as with CT). First, there should be a convergence of evidence to support the role of a given mechanism in the development and maintenance of a range of psychopathology or class of disorders. A natural

consequence of this criterion is that there will be a clear theoretical rationale for how targeting a given mechanism will lead to improvement across diagnoses. Second, there should be evidence to suggest that strategies included within the intervention do, in fact, explicitly target the core mechanisms identified in the theoretical account. These two criteria lay a foundation for future directions within the field of transdiagnostic treatment development, as outlined below.

### **Conclusions and Future Directions**

Recently, the term “transdiagnostic” has been applied to a broad range of psychological processes and treatment approaches. This label has been used to refer descriptively to psychological constructs that are observed across a range of disorders, but also describes functionally causal mechanisms that inform the development of classes of disorders and can be targeted in treatment (Harvey et al., 2011). In our view, the term also refers to three distinct categories of treatment approaches: universally applied therapeutic principles, empirically based modular strategies, and targeting shared mechanisms across classes of disorders. Each of these approaches is equipped to address psychopathology across diagnostic boundaries, allowing them to parsimoniously target comorbid conditions and reduce therapist training burden. Across all three categories, we rely on evidence that active treatment components, unique to each approach described, are the main drivers of clinical improvement across disorders, while recognizing that so-called non-specific factors (e.g., therapist alliance, expectancy, etc.) may also contribute to this improvement, as first proposed by Frank (1961; Frank & Frank, 1993; see also: Hofmann & Barlow, 2014).

Across both basic psychopathology research and applied treatment development, we believe that a focus on transdiagnostic processes that are relevant to the development and maintenance of a range of diagnoses will lead to more robust treatment approaches that

efficiently address symptoms of multiple disorders. This approach is exemplified by Harvey et al.'s (2011) conception of mechanistically transdiagnostic processes and our proposed shared mechanisms category within transdiagnostic interventions. Given that shared mechanisms approaches are the newest form of transdiagnostic interventions, there is limited empirical evidence to support their advantage over the other two types of transdiagnostic treatments. Accordingly, future research should explore whether explicitly targeting mechanistic processes indeed leads to more robust and longer lasting symptom improvement. Of course, we do not yet know with any certainty the core mechanisms associated with some classes of disorders, although research is advancing on several fronts (for a review, see Barlow, Ellard, Sauer-Zavala, Bullis, & Carl, 2014). Continued basic psychopathological research identifying core processes relevant across diagnostic boundaries is an important line of future work. Finally, the isolation of treatment strategies that directly map onto core mechanistic processes via experimental therapeutic studies is necessary to ensure that the most efficient path to symptom improvement is being taken. Overall, there is a strong theoretical rationale for the advantages of a shared mechanisms approach to transdiagnostic psychological treatment.

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