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Behavior Therapy 48 (2017) 731–738

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# Presidential Address: Embracing the Repulsive: The Case for Disgust as a Functionally Central Emotional State in the Theory, Practice, and Dissemination of Cognitive-Behavior Therapy

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Disgust is a primary emotion, but it is also understudied in general, and in psychopathology in particular. Disgust plays a potential role in the reluctance of many non-scientifically minded practitioners from adopting evidence-based methods of treatment. This article summarizes findings from psychopathology research and treatment, and highlights basic science that potentially accounts for the hesitancy for some therapists to adopt evidence-based methods. Several recommendations are provided for future research in disgust related to both psychopathology and dissemination research.

**Keywords:** disgust; psychopathology; dissemination; evidence-based treatment

DARWIN WAS ONE OF THE EARLIEST scientists to articulate the importance of disgust for survival, as a mechanism for preventing the ingestion of harmful substances (Darwin, 1872). Prior to this, there was an implicit recognition of the role of disgust in diverse literary sources, dating back to ancient times (Lateiner & Spatharas, 2016). However, it is only in the past approximately 30 years that systematic research has accumulated to show that disgust plays a role in a wide range of psychological phenomena (Rozin & Fallon, 1987). Moreover, research in social psychology has shown that disgust can play

This manuscript is based on the Presidential Address delivered by the author at the 48th annual meeting of the Association for Behavioral and Cognitive Therapies, Philadelphia, PA.

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a functional role in how attitudes are formed and judgments made (Pyszczynski, Greenberg, & Solomon, 1999), which, as will be discussed in this article, in turn has implications for how evidence-based treatments may be disseminated to providers that have not generally embraced empirical findings in guiding delivery of services.

That disgust has been a neglected emotion in the context of psychopathology is remarkable. That it continues to be a source of misunderstanding, and with virtually no specific methods for addressing in treatment, is a serious oversight on the part of researchers and clinicians. Further, the treatment decisions of clinicians across the spectrum of practice orientations are affected by disgust. There is a growing basic science research base that supports a role for disgust in how decisions are made, particularly when the information presented is in contrast to one's worldview and personal or professional identity. In this article, there are two broad aims. The first aim is to provide an overview of the role of disgust in psychopathology, especially problems characterized primarily by avoidance. Associated with this first aim, recommendations are made for developing interventions to address disgust-based elements of psychopathology. The second aim is to describe how specific components of disgust may seriously interfere with efforts to disseminate evidence-based procedures to non-empirically minded therapists. This derives from experimental social psychological research showing a connection between disgust reactions and information that is contrary to one's personal and professional identity. In connection with this second aim, this paper will also provide consideration of how research and training may address disgust in the context of barriers to the integration of evidence-based interventions in

settings not traditionally focused on empirically supported methods of treatment.

### A Brief Primer on Disgust

As noted above, the primary protective feature of disgust is to prevent ingestion of potential contaminants, with the most basic reaction centered in the gustatory system. Research into the basic nature of disgust shows that physical reactions to putative harmful substances extend to sight, smell, touch (Rozin & Fallon, 1987), and even sound (Sauter et al., 2010). It has also been found that disgust reactions are not limited to stimuli that might involve ingestion of contaminants, prompting Angyal (1941) to instead define it as revulsion associated with any contact or physical incorporation of an offensive item. As a result of the broad sensory implications of disgust and the wide array of possible stimuli, there are several categories of stimuli that are deemed elicitors of the emotion, with some that may be seemingly distal from potential danger from contamination.

This more general feature of disgust, which extends to stimuli beyond the role of preventing ingestion of harmful substances, has led to a classification scheme of disgust elicitors (see Table 1). These classes of stimuli can be described as follows:

#### FOOD

This might be construed as the most fundamental elicitor, since it addresses the risks associated with ingesting spoiled food. But it also extends to culturally unfamiliar foods (Cheon, Christopoulos, & Hong, 2016) and to unusual combinations of food (e.g., ice cream on sautéed steak; described in Rozin et al., 1999).

#### INSECTS/ANIMALS

Given the disease risk from animals and insects, this elicitor has strong disgust-evoking properties. More specifically, though, is the degree that the

animals or insects are associated with unclear places (e.g., rodents; Davey & Marzillier, 2009).

#### BODY PRODUCTS

Secretions from one's body or someone else is a potent source of disgust reactions, particularly waste (urine, feces), but also blood and any other secretions. Given the disease liability of bodily fluids, these stimuli are reasonable as disgust elicitors (illustrated in Haberkamp et al., 2017).

#### DEATH

Images associated with death provoke strong emotional reactions in general. The role for disgust here involves the avoidance of decaying flesh, which could transmit disease, although there are additional psychological components underlying this reaction related specifically to the general tendency to avoid thoughts of mortality (Pyszczynski et al., 1999).

#### SEX

This domain elicits disgust when in the context of nonnormative behaviors, or as a specific form of body product disgust (e.g., Fahs, 2011).

#### BODY ENVELOPE VIOLATIONS

Disease risk is heightened when the areas below the skin are exposed. Likewise, the risk of contracting disease is heightened when in contact with the areas below the skin for another individual, or when one's own skin is abraded. In this way, the piercing of the flesh of a living creature sets the stage for this elicitor. This would include observing mutilated bodies or exposed viscera such as during surgery (Shenhav & Mendes, 2014).

The categories of elicitors can be arranged into three broad higher-order dimensions (Olatunji, Williams, et al., 2007). *Core disgust* is comprised of food, body products, and animals/insects. This

Table 1  
Disgust Elicitors With Illustrative Examples

Disgust Elicitor	Examples
<i>Food (CORE)</i>	Spoiled food (such as sour milk), culturally unfamiliar foods, and unexpected combinations of foods (such as ice cream with sautéed steak)
<i>Insects/Animals (CORE)</i>	Rodents and insects that dwell in dark and damp locations
<i>Body Products (CORE)</i>	Feces, urine, pus
<i>Death (ANIMAL-REMINDER)</i>	Coming in contact with a dead body, contact with objects associated with death (i.e., an urn to store the ashes of a cremated loved one)
<i>Sex (CONTAMINATION)</i>	Culturally nonnormative sexual practices or exposure to body products specifically associated with sex
<i>Body Envelope Violations (ANIMAL-REMINDER)</i>	Exposure to internal viscera

*Note.* Broader conceptual factors are listed in ( ). Not listed here is sympathetic magic, which is associated with contamination disgust and can be in reference to any of the other disgust elicitors listed here.

category can be viewed as the most basic dimension of disgust, owing to its connection to the foundational nature of the emotion in protecting from contact with potentially harmful stimuli. *Animal reminder disgust* is comprised of body envelope violations and death. This dimension is in reference to the general tendency to viscerally and spontaneously reject human connections to the animal kingdom, and also reminders of mortality (Pyszczynski et al., 1999). Finally, *contamination disgust* is comprised of sex, and the overarching component of sympathetic magic (described further below).

In addition to the categories of elicitors into which disgust-based stimuli can be arranged, there are also dispositional traits that determine the propensity and sensitivity to the emotion for individuals. There are two such traits that are most useful for the purposes of this paper: disgust sensitivity and disgust propensity.

#### DISGUST SENSITIVITY

This refers to the degree that one experiences physiological sensations that would be interpreted as disgust, and with potentially harmful consequences, such as gastrointestinal reactions or muscle tightening in the nostrils and upper lip as signals of possible illness or exposure to contaminants (Rozin, Haidt, & McCauley, 1993). This can be evaluated in reference to specific elicitors, such that an individual might be more sensitive to body envelope violations while less so for body products, for example.

#### DISGUST PROPENSITY

Unlike sensitivity, individuals may differ in the frequency of experiencing disgust reactions. This does not necessarily suggest that there is a heightened sensitivity to disgust, only that environmental events more frequently provoke disgust in individuals. Therefore, while the sight of a minor scratch on an

arm may minimally disgust one person, an individual with high disgust propensity might find observing minor physical scratches to provoke more severe disgust. It has been suggested that disgust propensity is particularly germane to psychopathology (Olatunji, Cisler, et al., 2007).

#### Disgust in Psychopathology

The available research on the role of disgust in psychopathology, while growing (Ojserkis, Taboas, & McKay, 2017), lags far behind other emotions, even other understudied ones. For example, Figure 1 shows the publication trends for disgust compared to two other historically understudied emotional states, anger and happiness, dating back to 1987, the year Rozin and Fallon published their theoretical account of disgust. The graphical display shows that disgust is far less investigated, and remains an underexamined motivator of avoidance.

Shortly after the development of a theoretical account of disgust, it was found that disgust plays a role in avoidance associated with certain animals and insects (Matchett & Davey, 1991; Oaten, Stevenson, & Case, 2009). There has since been a wide range of research showing that disgust is critically involved in a wide range of psychopathology, including specific phobias (such as blood-injection-injury phobia), eating disorders, disorders of sexual arousal, and obsessive-compulsive disorder (Olatunji & McKay, 2009). More recently, it has been shown that disgust plays a role in posttraumatic stress disorder (Badour et al., 2014) and depression (Powell, Simpson, & Overton, 2013).

Although disgust has been implicated in a diverse range of psychopathology, the largest body of research has accumulated in anxiety disorders and contamination fear associated with obsessive-compulsive disorder (OCD). The former has its roots in the findings that phobias are based in part on

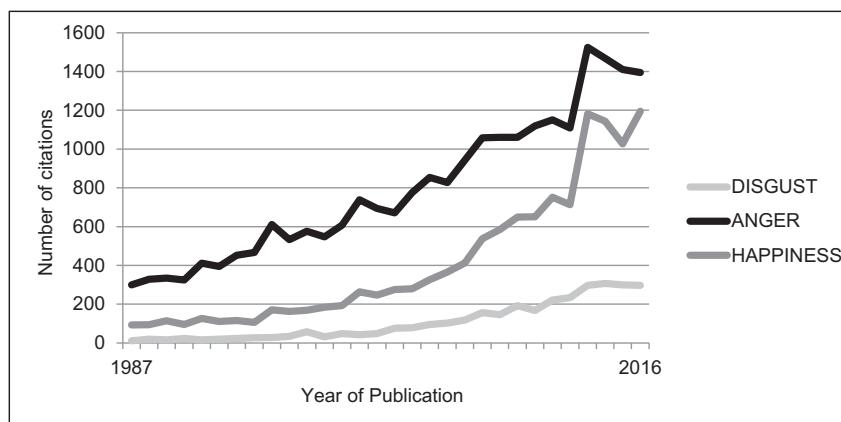


FIGURE 1 Trends in publications for disgust, anger, and happiness, 1987-2016.

disease avoidance. The latter is due to a construct associated with disgust referred to as *sympathetic magic*. This construct refers to the communicability of disgust through objects. This can be either through objects that resemble stimuli that evoke disgust (e.g., a soup bowl shaped like a toilet) or a neutral object that comes in incidental contact with something considered contaminated, is subsequently cleaned, but still retains the power to provoke disgust (e.g., a pen that has been thoroughly cleaned after coming in contact with feces). Most individuals are susceptible to sympathetic magic (Rozin, Millman, & Nemeroff, 1986), but contamination fear confers a far greater risk of this problem. For example, the ability for perceived contaminants to transfer across otherwise neutral objects was far greater among individuals with contamination-based OCD compared to individuals with other anxiety disorders, with the “contamination” persisting up to 12 steps removed from the source (Tolin, Worhunsky, & Maltby, 2004). In a recent meta-analysis, it was found that, among anxiety disorders, disgust was most relevant in those with more prominent contagion-related concerns (Olatunji, Armstrong, & Elwood, 2017).

While there is an accumulating research base supporting a role for disgust in psychopathology, a residual concern that has hampered investigations involves whether the reaction is distinct from anxiety. As the majority of research on disgust is self-report in nature, a clear case could be made that individuals misattribute their reactions to disgust when it is better ascribed to anxiety or general negative affect (Edwards & Salkovskis, 2006), or even more fundamentally that the measures simply correlate due to shared method variance (Cole, Ciesla, & Steiger, 2007). The question of whether and to what degree disgust is distinct from anxiety in anxiety disorders has been addressed in some investigations, and generally suggests that these emotional states operate independently of one another in motivating avoidance (cf. Moretz & McKay, 2008; Olatunji et al., 2010).

There have been few investigations into methods for reducing disgust reactions. Indeed, there are more conceptual analyses of approaches to treat disgust than actual treatment outcome findings. Early investigations attempting to reduce disgust relied on adapting exposure methods in a similar manner to that used for fear reduction. These limited scope of trials generally showed that, while exposure was helpful in reducing disgust, it did so at a slower rate and to a lesser extent than for fear in contamination-based OCD (McKay, 2006), spider fear (Smits, Telch, & Randall, 2002), and blood-injection-injury phobia (Olatunji, Smits, et al., 2007). Findings suggesting a

slower rate of response with exposure for disgust has led to conceptualizations that include a wide range of other clinical interventions such as counterconditioning and cognitive interventions aimed at disgust sensitivity, secondary appraisals of the ability to tolerate disgust, and altering cognitions through imagery rehearsal (Mason & Richardson, 2012).

At this stage of the research, it is suggestive that disgust plays an important role in a wide range of psychopathology. It is also apparent from the available research that there is not a well-developed technology for alleviating clinically relevant disgust constructs, such as primary disgust reactions, disgust sensitivity, or disgust propensity. Some explanations for this impediment are in order. First, and perhaps most important, disgust is not viewed as a priority area for research funding. Indeed, a search using only the word “disgust” of funded projects on the National Institutes of Health (NIH) publicly accessible database showed five active projects as of this writing (August 7, 2017) for which disgust played some role in the larger research project, and with only one being exclusively related to disgust. A search of the entire database (which catalogs funded research back to 1997) revealed only 79 projects where disgust was a part of the study, and only 2 that had disgust as the central focus. To put this in the proper context, according to the NIH public disclosures, across all institutes there are approximately 50,000 competitive grants awarded annually. Research involving disgust, therefore, represents approximately 0.012% of active projects. Until a clearer case is made for the public health relevance of disgust, in psychopathology generally and as a problem worth reckoning with in treatment, the state of research on this important emotional state will continue to lag.

### A Role for Disgust in Dissemination of Evidence-Based Interventions

Over the past 25 years, with the advent of standards for declaring interventions empirically supported (Chambless & Hollon, 1998), significant advances have been made in defining evidence-based components of treatment for psychological problems. This movement to develop guidelines was, at the time, highly controversial. And while the controversy has dimmed over the years, it may have been displaced by a benign disinterest by non-scientifically minded practitioners. Research has shown that while evidence-based treatment can be disseminated to otherwise non-scientifically minded practitioners, on follow-up the record shows that the delivery of these approaches tends to last only as long as the investigation studying its implementation (McHugh & Barlow, 2010). There are myriad likely causes for

this problem, ranging from system resources for monitoring fidelity of care, ongoing didactic training, competency of case conceptualization and delivery, and methods of outcome assessment. However, there is another potential individual difference cause that may viably explain the resistance among some therapists to embrace evidence-based care: therapist identity.

#### THERAPIST IDENTITY AND SCIENTIFIC UNDERPINNINGS OF THEORY

[Bornstein \(2005\)](#) lamented that psychodynamic theory had fallen from mainstream psychological practice due to a wide range of isolating practices. Among those enumerated were overreliance on idiographic methods, a general hostility to mainstream scientific practices (such as statistical tests and establishment of valid measures of constructs), and an underappreciation of findings from other theoretical models. The observation that mainstream psychodynamic practitioners were reluctant to embrace evidence-based assessments of their interventions has been made by others (e.g., [Lees, 2005](#)), who likewise lamented this as a problem for the dissemination of the theory and approach. Within psychodynamic theory, the concept of evidence-based practice remains anathema, with theoreticians arguing against data-based research findings ([Appelbaum, 2011](#)). As a result, a significant subgroup of practitioners reject the accumulation of empirical findings on psychotherapy outcome, either as distal to their work, unrelated due to inherent flaws in methodology (as it fails to hew to the assumed theoretical framework personally endorsed), or that it simply is too superficial to address the myriad complex needs of their clients.

The limited reliance on empirically derived support for interventions is not restricted to practitioners who self-identify with psychodynamic theory. Indeed, there are numerous therapeutic approaches that are practiced, many with dubious supporting evidence. For example, in a survey of practitioners in Wyoming, [Hipol and Deacon \(2012\)](#) found that the majority of respondents reported employing cognitive-behavioral interventions for anxiety disorders. However, it was additionally found that the majority also practiced psychodynamic procedures, and close to a quarter of respondents also reported employing thought-field therapy for anxiety disorders. These latter approaches have either mixed support, or virtually no support, for this set of disorders, and yet are widely practiced, at least in the state of Wyoming. Further, there are numerous non-empirically based treatment approaches that are widely endorsed by practitioners across the globe. For instance, existential psychotherapy is taught at 128 institutions in 42 countries ([Correia et al., 2014](#)) and yet also lacks a substantial empirical base ([Hoffman et al., 2015](#)).

Given that some theoretical approaches lack a paradigmatic emphasis on empirical support for the interventions, allegiance to a particular theory would foster a professional identity that likewise views scientific findings with skepticism. Survey findings suggest that non-evidence-based approaches are often placed on equal footing with evidence-based practices (e.g., [Brookman-Frazee et al., 2009](#)), thus devaluing the often rigorous science that resulted in available efficacious techniques.

#### CHALLENGES TO PROFESSIONAL IDENTITY RESULT IN ADVERSE REACTIONS

As noted above, it is widely appreciated that there are numerous psychotherapeutic practices but only a small number that have evidence to support their application. Members of the psychotherapeutic community do not represent a monolithic whole, but also self-identify with a wide range of theories, therapeutic procedures, and subspecialties that emphasize unique procedures. However, members of the psychotherapeutic community in principle share the same guiding mandate, to identify and alleviate human suffering.

Identity threats, such as a mandate that clinicians who were previously employing nonscientific methods switch to evidence-based procedures, would be expected to produce strong negative reactions. Since psychotherapy involves addressing a broad range of life problems, the identity around different therapeutic approaches represents a type of worldview for the therapist. These worldviews, when willfully violated by advocates of evidence-based treatments, can evoke disgust in those with a nonscientific worldview ([Moll et al., 2007](#)).

Accordingly, it would be predicted that therapists who endorse the practice of non-evidence-based interventions would find the presentation of empirically supported therapies to be a threat to their identity. This proximal identity threat would lead to aversive reactions toward the source (e.g., trainer, administrator demanding the approach, supervisor), including a disgust response. Research has suggested that this effect is most pronounced in those who have high confidence in their personal identity and likewise experience high self-esteem ([Landau et al., 2009](#)). The relationship between worldview, antiscience perspective on therapy, and assumptions that underlie how scientific therapy is implemented is depicted in Figure 2.

#### ANTISCIENCE BIASES AND CIRCUMVENTING IDENTITY THREAT

As noted here, many therapists subscribe to a worldview that suggests science has a limited role in validating therapies. This includes perspectives endorsed by mainstream theories widely practiced.

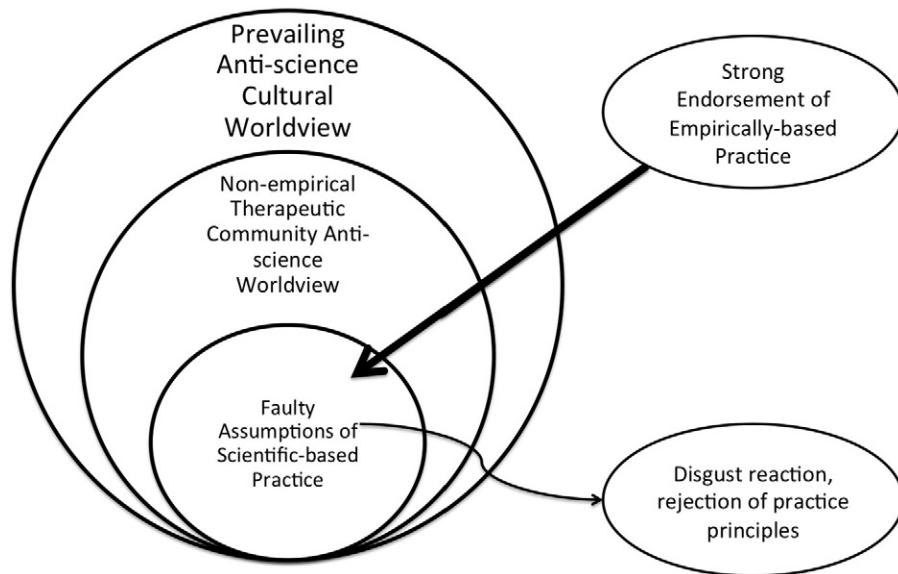


FIGURE 2 Conceptual illustration of disgust evocation when evidence-based treatment methods presented to non-empirically oriented therapists.

The following quote in the abstract from Appelbaum (2011) illustrates this point: "I wish to formulate in broad outline an approach to the conceptualization of psychoanalysis that is divested from theory. This view sees the core of psychoanalysis as a humanistic practice, first and foremost guided by the individuality of the dyadic encounter, rather than as a science" (p. 1). This means that the usual sources of persuasion that might be relied upon in scientific conferences (e.g., tables with statistical tests, graphical displays of improvement) should be eschewed when addressing an audience that embraces a worldview deemphasizing or outright rejecting science. Instead, language that bridges the gap between the evidence-based audience and the non-science-minded practitioners might have greater endorsement and blunt any possible adverse disgust reactions the audience may experience.

There is indirect evidence that clinicians adopt evidence-based approaches with greater enthusiasm when presented without the underlying scientific support. Stewart and Chambless (2009) found that practitioners expressed more openness to practicing evidence-based interventions when these were presented in the context of case illustrations, and that statistical support for the procedures had no incremental gain in the endorsement of these approaches. On the other side, when presented with the opportunity to receive training in empirically supported therapies, practitioners who identified as psychodynamically oriented and more experienced clinicians were most strongly opposed to learning evidence-based approaches (Stewart & Chambless, 2012). These findings follow from the basic science

findings on how information that violates one's identity will be resisted more strongly (Pyszczynski et al., 1999; Landau et al., 2009).

Trainers would do well to co-opt the language of the non-empirically oriented therapists in presenting evidence-based methods. Take, for example, exposure therapies. This intervention has an extensive base of research supporting its application for a wide range of problems (Richard & Lauterbach, 2006). It is also a procedure that violates the basic tenets of several major theories, given that it is widely perceived to provoke strong anxiety in session, and may run counter to the identity of therapists regarding how emotions are experienced in session. Indeed, there is a widespread hesitancy to incorporate exposure therapy due to anticipated harms to clients that are endorsed by therapists (Richard & Gloster, 2006). Instead, the language of curative value of evidence-based treatments would likely garner more positive response among trainees. Further, presenting the models of treatment as more fully in line with the self-identified nature of the clinicians would be predicted to block any possible disgust response emerging from the identity threat posed by embracing an evidence-based approach to treatment. This means that trainers in evidence-based treatments might emphasize the *compassionate* nature of this set of interventions, the benefits of providing *relief* to those *suffering*, and the importance of acting as a *curative force* for clients. This language shift could be adopted while retaining a focus on disseminating evidence-based methods, since these are entirely consistent with the movement for evidence-based treatments (for a more detailed discussion, see McKay & Ojserkis, 2015).

### Conclusions and Future Directions

Miller (1993) stated, “contact with the disgusting makes one disgusting. To study disgust is to risk contamination; jokes about his or her unwholesome interest soon greet the disgust researcher” (p. 711). It would appear, given the low base rate of research into disgust, that many investigators have embraced this idea. However, this neglects the real and growing recognition that disgust plays a central role in a wide range of psychopathology. Further, the lack of attention to disgust has limited the ability to properly conceptualize treatment where this emotion would be the focus of intervention. At present, the only intervention tested for alleviating disgust is exposure, which serves as a natural extension of methods for reducing avoidance due to other emotions but is also based on the brute force of ignorance. Treatment using this method is slower and accomplishes a lower level of change. It is also unmoored from an understanding of disgust, simply because we lack a basic conceptualization of how the emotion operates. Funding priorities will not shift until it is made clear that disgust represents an important component of a program of research that will address more fully ways of alleviating human suffering.

On the other side of the desk, clinicians who embrace non-scientifically based interventions are likely to experience disgust reactions (and other aversive emotions) when faced with the prospect of adopting evidence-based interventions. This is derived from basic science findings regarding the reactions people have when their identity and worldviews are threatened. Given how tightly we form self-identity with our professional pursuits, this would represent a serious threat. As a result, it is recommended that trainers in evidence-based treatments deemphasize the underlying scientific findings in favor of the relief to human suffering when addressing non-scientifically minded audiences. This recommendation has not been empirically tested but it is warranted.

### Conflict of Interest Statement

I declare that I have no conflicts of interests associated with the material presented in this manuscript. No funding support was provided in the development of this article.

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RECEIVED: August 8, 2017

ACCEPTED: August 10, 2017

AVAILABLE ONLINE: 19 August 2017