

# Mind Your Expectations: Exploring the Roles of Suggestion and Intention in Mindfulness Training

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Mindfulness training (MT) has received increasing recognition for its therapeutic benefits in a variety of clinical contexts. Despite acknowledgement that MT effects are predicated upon the development of both mindful attention and intention, research on MT mechanisms has focused chiefly upon attentional effects. By contrast, hypnosis research has focused explicitly on suggestion techniques for cultivating beneficial therapeutic expectations. Comparing similarities between mindfulness and hypnosis techniques, this paper explores mechanisms of suggestion tacitly employed in mindfulness interventions. Distinctions between mindfulness meditation and hypnotic induction are then used to identify a form of intentionality that is unique to MT, including candidate markers of mindful intention that may help to explain mindfulness' salutary effects. Finally, the idea of changing intentions during MT is discussed, generating suggestions for how best to monitor the interaction between expectation and attentional practice when studying mindfulness interventions. Studies of intention and expectation in MT could help to determine: i) the degree to which MT benefits are driven by expectation effects rather than changes to attention, ii) how to best motivate the development of mindful attention in therapeutic interventions, and iii) what factors predict the generalization of mindfulness techniques to improve emotion regulation. By acknowledging that suggestion may be important for cultivating mindful intentions, it may be possible to deepen our understanding of how to optimally deliver mindfulness training and improve participant well-being.

## INTRODUCTION

Mindfulness training is increasingly recognized for its ability to reduce psychological distress across a variety of clinical disorders (Baer, 2003; Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Grossman, Niemann, Schmidt, & Walach, 2004). The meditation technique's success has been accompanied by a proliferation of research into MT mechanisms, exploring the cognitive and neural bases by which mindfulness improves well-being (Holzel et al., 2011; Shapiro, Carlson, Astin, & Freedman, 2006). Several attentional mechanisms have been proposed for mindfulness' salutary effects, such as positive reappraisal (Garland, Gaylord, & Fredrickson, 2011), decentering of experience (Fresco, Segal, Buis, & Kennedy, 2007), or otherwise "reperceiving" the world (Carmody, Baer, E, & Olendzki, 2009). And yet, while *attentional* accounts of MT have grown in prominence, there are few *intentional* accounts of mindfulness mechanisms, i.e., we have little evidence demonstrating how participant intentions for self-improvement support mindfulness' beneficial effects.

Intention is a fundamental principle of both classic Buddhist meditation and contemporary MT practices (Kabat-Zinn, 1990; Shapiro

& Schwartz, 2000). Holding *right intention*, the commitment to ethical and mental self-improvement, is a central tenet of the Buddhist canon (Wallace & Shapiro, 2006). Despite an avoidance of attachment to expectation during mindfulness practice, holding intentions for self-improvement through MT presumably denotes a long-term expectation that these practices will be efficacious. Indeed, in the first published description of Mindfulness Based Stress Reduction (MBSR; Kabat-Zinn, 1982), the second key element of the program is stated as:

"Expectation of relief. Meditation was presented with the suggestion that the techniques are powerful and that regular practice can bring relief from pain in many cases. In this way the placebo effect was maximized."

By suggesting that participants form intentions for self-improvement, MBSR purposefully cultivates healing expectations. More recent MBSR studies have recognized positive expectancy as a potential mechanism of MBSR's salutary effects (Shapiro, Schwartz, & Bonner, 1998), one that may even be a requisite component of the program's success (Astin, 1997). Despite this recognition, few empirical studies of MT have controlled for the effects of intention and expectation, and only one has modeled individual

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INTENTION

An explicit plan for one’s actions

EXPECTATION

An estimation of the likelihood of an anticipated event

EXPECTATION

An estimation of the likelihood of an anticipated event

PLACEBO

A sham medication or procedure that is described as being medically efficacious to create an expectation of benefit, often used to control for the power of expectation to improve subjective well-being in medical intervention studies

MINDFUL INTENTION

An explicit plan for one’s actions, without attachment or self-critical judgment in response to the success or failure of the plan

SUGGESTION

The invocation of an intention, expectation or perception.

differences in intention as part of its experimental design (Carmody et al., 2009). Controlling for expectancy effects is not a trivial matter: a recent study comparing MT to an active control group found that group participation in general accounted for many of the benefits typically ascribed to MT (MacCoon et al., 2012).

Mindfulness’ potential reliance upon expectation effects does not undermine findings that MT also generates important and health-relevant changes to attention, as the research literature has begun to demonstrate (Jha, Krompinger, & Baime, 2007; Schmertz, Anderson, & Robins, 2009). There is mounting evidence that MT does more than create positive expectations: clinical interventions such as Mindfulness-Based Cognitive Therapy (MBCT) have outperformed placebo conditions, matching or surpassing the efficacy of traditional therapeutic interventions (Segal et al., 2010; Teasdale et al., 2000). MT has also outperformed relaxation training control groups in several cases, particularly in its ability to reduce ruminative thoughts and behaviors (Alexander, Langer, Newman, Chandler, & Davies, 1989; Jain et al., 2007). However, an important consideration in the study of any alternative mental health intervention is whether some part of its effects can be attributed more simply to expectancy than that intervention’s purported mechanism of action. Indeed, some researchers argue that current mindfulness questionnaires are incomplete in omitting measurements of mindful intentions (Grossman, 2011; Van Dam, Earleywine, & Borders, 2010). By including participants’ broader intentions and expectations in future research it may be possible to better characterize the critical factors underlying efficacious MT interventions, such as how intention serves to promote and sustain attentional changes, practice compliance and feelings of well-being.

**WHY EXPECTANCY THEORY IS NEEDED IN MT**

A practical concern with the study of expectations in mindfulness research is whether it will constructively inform current research and therapeutic practice. If expectation effects are just another facet of attention training, we gain little by incorporating them in theoretical models. For example, MT could bias attention to focus upon positive outcomes, and these benign perceptions might then promote healthier physiological and social responses, such as the lowering of blood pressure, dampening of emotional reactivity, etc. If mindfulness effects can be fully explained by the attentional habits that these practices engender, then worrying about distinguishing between

contributions of expectation and attention may amount to quibbling over semantics rather than measuring two distinct influences.

Research is required to determine whether MT-related modulation of attention and expectation are empirically separable. However, there is a theoretical precedent for supporting the distinction between these two constructs (LaBerge, 1995). LaBerge referred to modulation of the attention system as “attentional preparation”, characterizing it as “an elevation of activity in the corresponding perceptual or action brain area that speeds processing of stimuli or actions when the appropriate triggering event occurs” (p.51). This description is consistent with MT instructions, which appear to facilitate activation of attentional systems for present-moment sensation (Farb et al., 2007). On the other hand, expectations rely upon more abstract, often verbal representations of “an event in terms of its attributes and its spatial and temporal characteristics” (LaBerge, p.51), and thus expectancy does not necessitate attentional preparation. It should be noted however that attention and expectation are not wholly distinct: strong expectations for success or benefits from meditation are likely to be accompanied by intentions to practice, thereby promoting attention preparation. Positive expectations can thus serve as a cue for practicing mindful attention, analogous to MT homework instructions to engage in daily mindful activities (Kabat-Zinn, 1990).

From this perspective, changes to expectation are related to but not synonymous with changes to attention; rather, by providing spatial and temporal cues for attentional deployment, expectations promote practice intentions, an important factor in determining whether attentional skills learned in a therapeutic context will generalize to daily life. Expectation and attention can thus work together to promote therapeutic effects. For example, expectations of successfully implementing mindfulness strategies in response to stress may help participants to recognize and alter their habitual stress reactions. Conversely, expectations that mindful attention may be inadequate to deal with emotional challenges make it less likely that a person will follow through on initial intentions to practice in chaotic and threatening contexts.

In the absence of explicit expectations for increased awareness of stress reactivity, it seems unlikely that short courses of MT would have the ability to implicitly replace longstanding attentional habits in reaction to daily stressors. For example, many patients suffering from depression fall into a ruminative style of processing, biasing attention towards critical self-attributions that reinforce depressive affect (Lo, Ho, & Hollon, 2008;

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Robinson & Alloy, 2003). If participants can form an expectation for success through mindfulness practice, they may be willing to form explicit intentions to implement their training. When holding an intention to react mindfully in the face of future stress, mindful responses may be explicitly recruited to compete with, and potentially overcome ruminative patterns of reactivity (Teasdale, Segal, & Williams, 1995). Without explicit intentions, the instinctual pattern of reactivity to stress is still more likely to be rumination than mindfulness.

Novel measures of the implicit and explicit application of mindful regulatory strategies will be important for assessing whether mindful strategies require conscious intentions to be engaged. It is still possible that attention training alone is sufficient for mindful responses to be implicitly cued in the face of stress, although such change seems much more likely in the presence of conscious intention to alter response patterns. It would seem that there are compelling reasons to believe that expectation and intention have a role to play in promoting MT's salutary effects. Yet even if one accepts that expectancy should be studied, a new challenge emerges: how does one best operationalize intention and expectation and include them in intervention models?

### HYPNOSIS AS A RESOURCE FOR UNDERSTANDING EXPECTATION IN MINDFULNESS

To begin to understand how intentions and expectations shape mindfulness effects, it may be helpful to compare the structure of MT to well-researched interventions in which health-promoting expectations are purposefully cultivated. While the creation of expectation is not synonymous with the creation of intention, positive expectations may serve as a helpful precursor to practice intentions, and thus are instrumental to an intervention's success. The creation of expectations is a major focus of both hypnosis (Erickson & Rossi, 1976) and placebo research (Stewart-Williams & Podd, 2004), which convincingly illustrate that when a person acts with the expectation of a therapeutic effect, these expectations can powerfully modulate attention, behavior, and well-being.

There are numerous accounts of placebo effects improving subjective well-being (Price, Finniss, & Benedetti, 2008) that could serve as a model for expectation effects in MT. However, unlike MT, the placebo effect generally requires a level of deception that has raised ethical concerns (Miller, Wendler, & Swartzman, 2005; Raz, Harris,

de Jong, & Braude, 2009), and potentially limits patient autonomy (Kolber, 2009). Encouragingly within the field of placebo research, evidence is emerging to suggest that explicit deception is not always required to generate expectation-based effects (Kaptchuk et al., 2010; Martin & Katz, 2010), indicating that a therapeutic context may yield positive outcomes even when its efficacy is explicitly denied. However, as non-deceptive placebo research is very new, it is of limited use in informing the present discussion.

In contrast to placebos, hypnosis has a richly documented history of producing clinically significant benefits without requiring deception (Lynn, Kirsch, Barabasz, Cardena, & Patterson, 2000). Hypnotic suggestion is in some ways a more general form of non-deceptive placebo, affirming the principle that powerful expectations can be generated simply by communicating them to another. Hypnosis has been particularly effective in the area of pain management (Landolt & Milling, 2011; Vlieger, Menko-Frankenhuis, Wolfkamp, Tromp, & Benninga, 2007), an area where mindfulness-based interventions have also shown particular promise (Chiesa & Serretti, 2011; Kabat-Zinn, Lipworth, & Burney, 1985). Indeed, one of the few comparison studies between hypnosis and meditation found that the techniques were equally effective in reducing clinical anxiety (Benson et al., 1978).

Like placebos, hypnosis-based therapeutic interventions rely explicitly on the cultivation of positive suggestion to effect psychological change (Erickson & Rossi, 1976; Heap, 1996), modulating expectations at deeply-engrained levels of perceptual awareness (Ploghaus, Becerra, Borras, & Borsook, 2003). Hypnosis research is therefore well-suited to inform our understanding of the conditions that foster expectancy. By reviewing the mechanisms of hypnotic induction, it may be possible to identify suggestive practices in MT that generate participant expectations. The identification of these suggestions may help to operationalize factors of intention and expectation in mindfulness research.

### SUGGESTION TECHNIQUES COMMON TO MT AND HYPNOSIS

For most people, mindful and hypnotic states both represent departures from one's habitual mode of experiencing reality. During the induction of these states, participants take on the expectation of altered perception or mental capacity. Whether or not such expectations manifest in a qualitatively distinct form of awareness depends upon the person: hypnotizability varies

widely by individual, environmental context and experience with hypnotic induction (Deckert & West, 1963; Diamond, 1974; Spiegel & Greenleaf, 1992). Similarly, trait measures of mindfulness at least subjectively characterize the extent to which an individual is able to enter and sustain mindful attention, an ability that also appears to increase with practice (Baer et al., 2008; Lau et al., 2006; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006). Understanding how expectations for the hypnotic state are created may therefore also aid in understanding whether such techniques are at play in mindfulness.

Several structural similarities are apparent between hypnotic induction and guided mindfulness meditation. Both the hypnotic and mindful states are associated with the ability to attend without distraction (Brown, Forte, Rich, & Epstein, 1983; Kumar & Pekala, 1988). The induction of these altered states can occur rapidly, over the course of minutes, and is generally accomplished through the guidance of an experienced instructor. In hypnosis, the participant focuses attention to the scope and focus proposed by the hypnotist (Jamieson & Sheehan, 2006), accompanied by explicit suggestions towards attentional absorption (Rainville & Price, 2003). The resulting focused attentional state renders the participant more amenable to suggestion, reducing competing input from extraneous stimuli or spontaneous thoughts (Oakley & Halligan, 2009, 2010).

Several standard practices are employed to accomplish hypnotic induction, which may serve as candidate factors for cultivating participant expectancy (Barber & De Moor, 1972): the situation is defined as hypnosis, priming participant expectations for altered perception or control. The hypnotist attempts to address participant fears and preconceptions, and then secure participant co-operation in the enterprise, establishing a willingness to follow suggestion. Participants are asked to close their eyes, removing visual stimulation as a competing source of sensory stimulation and tacitly indicating participants' trust in the procedure. The induction then often begins by suggesting naturally-occurring events, such as noticing one's breathing or the sound of the hypnotist's voice. Since these phenomena are easily attended to, it allows for the participant to habituate to the act of following the hypnotic suggestion. The hypnotist also provides guidance for what to do when the direction of attention fails, attempting to ensure that it is always possible for the participant to comply with initial suggestions, and strengthening the pattern of participant acceptance. After establishing a response set with the participant (Kirsch, 2000), the hypnotist may begin to make therapeutic suggestions. The

conclusion of a hypnotic session may also include post-hypnotic suggestions that will come into effect during the participant's daily life.

As articulated in recent theoretical research (Lynn, Surya Das, Hallquist, & Williams, 2006; Yapko, 2011), some of the procedures employed in introductory guided mindfulness meditations bear considerable structural similarity to suggestion during hypnotic induction\*. Mindfulness meditation teachers will also attempt to secure trust of participants by discussing the virtues of the meditative practice. The meditation state is often formally demarcated by suggestions to adjust posture, close one's eyes, and sometimes to listen to the sound of a bell or chime. Like hypnotists, mindfulness teachers often orient participants to naturally-occurring events, especially those that occur within the body such as the breath or physical sensations. Sometimes dissociative suggestions to let go of conceptual thoughts will also be present, or suggestions to focus entirely upon physical sensation. Similar to building a response set in hypnosis, mindfulness teachers discuss the management of distraction, i.e., the failure of directed attention, and suggest a nonjudgmental reallocation of attention back to present moment sensations. It could be argued that in urging participants to be kind or nonjudgmental when attention wanders, therapeutic suggestions are being made. Similarly, *post-meditation suggestions* may also occur, as teachers often suggest that participants allow feelings of mindful attention to extend into their daily lives.

Substantial overlap exists between hypnotic and guided mindfulness meditation induction techniques. The contribution of each of these techniques to salutary effects in mindfulness is unknown, and ripe for experimental manipulation and investigation. However, in the process of attempting to experimentally manipulate suggestion in MT, researchers must be careful not to violate the core values of mindfulness interventions or to remove suggestions that are foundations of attention training. Table 1 summarizes the hypnotic induction techniques found in a typical guided mindfulness meditation, and presents hypotheses as to whether these techniques may be manipulated without compromising attention training. Some techniques, such as suggesting nonjudgmental and present moment awareness seem to be integral to mindful attention; other techniques, such as talking in a soft and slow voice, may be an affectation that is not required for successful training. However, many elements of suggestion in MT fall into a third category, where it is difficult to determine whether the suggestion is required. For instance, mindfulness instructors often suggest examples of specific

\*It should be noted that while instructor-guided meditation is an important element of introductory mindfulness training courses such as MBCT and MBSR, such guidance during meditation is not universal to all contemplative practices. Japanese Zen meditation for instance is accompanied by a minimum of instructor suggestion or guided direction of attention (Austin, 1998). On the other hand, such Zen practices still place large importance on holding a strong long-term intention to practice, and so some suggestion may arise in cultivating these intentions. Given the variation in contemplative traditions and practices, it is important to consider the specific training practices idiosyncratic to a given tradition, and bear in mind that the present discussion focuses only on these standardized introductory mindfulness courses.

Suggestion Technique	Description	Necessary for Attentional Aspects of MT?
<b>Defining the situation:</b>	- suggesting an intention to be mindful	Yes
	- providing a historical context for the practices	No
<b>Securing cooperation:</b>	- asking participants to assume a meditation posture	No
	- asking participants to close their eyes	No
<b>Suggesting an altered state:</b>	- present moment focus	Yes
	- nonjudgmental awareness	Yes
	- suggesting that participants relax, or 'let go' of their experience	No
<b>Maximizing suggestion phrasing:</b>	- speaking in an atypically slow and distinct voice, using long periods of silence between repeated suggestions	No
<b>Coupling suggestions with naturally occurring events:</b>	- initial suggestion to focus on body awareness	Yes
	- supplying examples of bodily sensation	No
<b>Preventing or re-interpreting failure of suggestions:</b>	- initially discussing mind-wandering and painful sensation and how to respond	Yes
	- suggesting that mind wandering may have occurred and inviting redirection of attention	Unknown
	- anticipating postural pain during meditation and providing options for how to respond	Unknown
<b>Stimulating long term / goal-directed imagination</b>	- formal meditation practice	Yes
	- homework to apply mindfulness into daily living	Yes
	- suggesting how reactivity might change using mindfulness	No
	- promise of long term benefits	No

TABLE I. A summary of suggestion techniques used in MT and their hypothesized necessity for attentional training. Note: these techniques are adapted from Barber & Moore's (1972) theory of hypnotic induction. Whether these techniques are necessary components for MT attentional training is a matter of conjecture, and as such are subject to debate and revision.

body sensations or potential distractions; these suggestions may be helpful or even necessary for scaffolding participant ability to eventually notice such aspects of experience autonomously. On the other hand, suggesting potential experiences to participants can create an expectation for those experiences, and spur evaluations as to one's ability to notice these experiences rather than maintaining mindful curiosity. Thus, while suggested experiences may be helpful instruction aids for mindfully noticing and responding to distraction, they may not be strictly necessary for the cultivation of mindful attention. Investigating the necessity of suggestion techniques in this third category may help researchers to more finely discriminate between conventional and necessary components of MT.

When researching expectancy mechanisms in MT, this admittedly non-exhaustive list demonstrates a variety of candidate elements that may be experimentally manipulated. Researchers have great latitude in potential approaches to this investigation: one may strip away any hint of suggestion to isolate attention training effects; alternatively, one may conservatively manipulate only the most obvious cases of suggestion to safeguard the intervention's validity. When working with clinical populations, where maintaining a standard of care is an important ethical consideration, a conservative approach may be more appropriate, whereas in less vulnerable samples more radical variants of MT may be employed.

Given the potential for reshaping MT interventions, it will be important to monitor whether

	Overall Efficacy Maintained	Overall Efficacy Changes
Attention Effects Maintained	Irrelevant	Relevant for Expectancy Effects in MT
Attention Effects Change	Relevant for Attention Effects Unrelated to Well-Being	Relevant for Attention Effects in MT

TABLE 2. Interpretation of effects from manipulating candidate elements of suggestion in MT

the manipulation of these suggestion elements affects: i) the overall efficacy of the MT intervention on participant well-being, and ii) changes in attention related to MT. Four potential outcomes of such manipulation seem possible as summarized in Table 2. If overall intervention efficacy is unaltered, then the suggestion is either wholly irrelevant or is influencing some aspect of attentional training that is immaterial to MT effects on well-being. However, if overall intervention efficacy is altered, then the suggestion is either a component of MT expectation effects (in the case that attention changes are unaltered), or the suggestion is foundational for attention effects driving MT intervention efficacy. Partial mediation outcomes are also possible, in which attention effects are slightly altered, but overall intervention efficacy is altered to a larger degree, effects which can be calculated with mediation models. Regardless of outcome, manipulating elements of suggestion in MT may both powerfully identify that element's relevance to MT efficacy, and, if attention changes are also measured, serve to characterize the extent to which the suggestion element is associated with cultivating mindful attention.

### SUGGESTION TECHNIQUES SPECIFIC TO MT

Guided mindfulness meditation and hypnotic induction techniques appear to share many features of suggestion that may promote their therapeutic efficacy. However, the common use of suggestion in hypnotic and mindfulness inductions does not imply identical mechanisms of action. For example, while perceptual suggestions may occur in both MT and hypnosis, a mindfulness instructor would generally not suggest specific outcomes of a meditation, such as feeling less anxious or depressed. In hypnosis however, specific immediate outcomes are commonly suggested, such as the well-known example of suggesting a participant's arm has become too heavy to lift (Shor & Orne, 1962; Weitzenhoffer & Hilgard, 1962). The heavy arm suggestion is somewhat trivial as an example of hypnotherapy, but highlights a willingness

to suggest specific outcomes rather than only structuring the perceptual experience during the intervention.

Thus while suggestion in MT may be important for directing attention to particular aspects of experience, the interpretation of these experiences is left undefined and open to participants reflection. While there is a suggestion of long term benefits in MT, there is a purposeful avoidance of creating expectations for immediate relief. Participants are encouraged to think about incorporating long-term lasting changes to their perceptual habits and patterns of reaction, with expectations for increased well-being or relief from stress being contingent upon these gradual changes. Of course, just because instructors preach a lack of short term expectation does not mean that participants will abide by this request. It is a common occurrence for a participant to laud the feeling of relaxation or bliss that may be encountered during a meditative practice. Indeed, participants often pick favorite practices over an 8 week course, and their reasons for choosing one practice over another may have a lot to do with the satisfaction of short term expectations of relief or positive affect. Whether such expectations are ultimately unsatisfying when compared to a participant who eschews such expectations is an

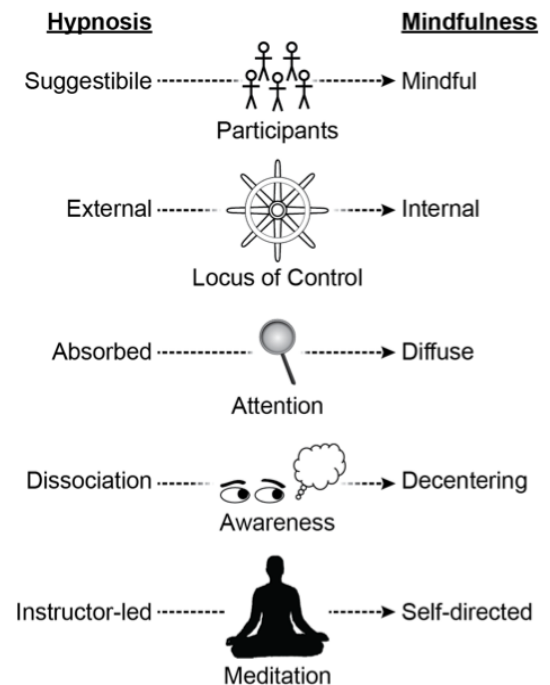


FIGURE 1. Hypothesized distinctions marking the cultivation of mindful intentions, relative to intentionality associated with instructor-led interventions. This model assumes that participants new to MT would likely approach guided meditation as though it were a hypnotic induction; over time, the internalization of intentions distinctive to mindfulness may be observed.

empirical question, one that requires longitudinal documentation of participant expectations, intentions and well-being.

So, while the structure of suggestion appears similar between mindfulness and hypnosis, MT may employ suggestion to a different end. When evaluating participant intentions during mindfulness interventions, it may be possible to evaluate whether participants endorse more mindful intentions for mindful practice compared to intentions found in hypnotherapy or other interventions promising more immediate effects. Even if participants beginning MT show a pattern of expectations more reminiscent of hypnosis than mindfulness, intentions and the quality of expectations held for mindfulness practice may shift over the course of training. Monitoring this transition may serve as a sensitive index of the internalization of mindfulness values. Proposed below are several suggestions that may be specific to MT (also summarized in Figure 1):

#### ENDORSEMENT OF MINDFULNESS TRAITS.

Hypnosis and mindfulness research literatures both acknowledge large individual differences in responsiveness to their practices. Trait suggestibility may be used to predict a person's response to suggestions regardless of whether or not they are in a hypnotized state (Braffman & Kirsch, 1999; Kirsch & Braffman, 2001), whereas trait mindfulness may in turn predict responsiveness to MT and the specific attention tasks therein (Creswell, Way, Eisenberger, & Lieberman, 2007; Shapiro, Brown, Thoresen, & Plante, 2010). However, whether or not a person meditates and their facility therein does not seem to be related to hypnotic susceptibility (Murphy, Donovan, & Taylor, 1997; Rivers & Spanos, 1981; Spanos, Gottlieb, & Rivers, 1980), suggesting that individuals participating in MT may respond differently to suggestion than highly hypnotizable participants. As research on suggestibility and meditation practice preceded the popularization of trait mindfulness measures, the relationship between this new generation of trait measures and suggestibility is still unclear. However, the traits of mindfulness and suggestibility may represent distinct dimensions of attentional expectations that attract distinct types of participants.

The association between trait mindfulness and hypnotic suggestibility could be formally investigated by assessing both of these traits in participants from each practice. It is important for our understanding of mindfulness training to account for the possibility of self-selection, that highly mindful participants are the ones who

benefit from mindfulness much as high suggestible people show the biggest response to hypnosis. Looking realistically at MT as one of many possible therapeutic interventions rather than some sort of panacea, it will be important to characterize who is likely to benefit most from MT interventions to efficiently allocate therapeutic resources. A second possibility is that mindfulness course participants do not start off as being particularly mindful, but begin to internalize course concepts and values, adopting traits that reinforce being mindful on a daily basis. Regardless of the rigidity of mindfulness traits, the measurement of these traits throughout MT participation may be a good indicator of participant readiness to incorporate mindful regulatory strategies and perceive value in the intervention.

#### CULTIVATION OF AN INTERNAL LOCUS OF CONTROL.

While it is documented that a hypnotized participant must work hard to realize the hypnotist's suggestion (Hilgard, 1977), the locus of control for the modulations in attention and/or perception is generally external in hypnosis and internal in mindfulness. Both practices begin with an external locus of control in which participants direct attention according to their instructors' directions, but mindfulness moves quickly into promoting independent practice in which attention is self-guided. Therapeutic hypnosis may also move towards allowing patients to participate in self-hypnosis practices, but this progression is not an integral component of the process. Thus different sorts of individuals may benefit from the two practices depending upon their desire for independence or desire for care from another, or from their facility with the control demands of the practices themselves. For example, a person with strong issues with authority may not be ideally suited to follow guided hypnosis, whereas a person who finds self-monitoring to be too difficult or stressful may benefit more from a guided approach.

The intention to foster an internal locus of control in MT may be one reason that facility with mindfulness does not appear to be related to suggestibility. This hypothesis could be empirically tested by borrowing from the rich social psychology literature on internal and external locus of control (Rotter, 1990). For example, one measurable proxy for the adoption of mindful intentions may be participant willingness to ascribe personal responsibility for their reactions to stressful events (Gaylord et al., 2009; Lakey, Kernis, Heppner, & Lance, 2008)

ATTENDING MINDFULLY RATHER THAN ENGAGING IN ABSORPTION.

To describe the special quality of attention that allows for hypnotic trance states, the term *absorption* was coined, describing such intense focal attention that the distinction between the self and object becomes lost, altering one’s self-concept. Psychometric measurement of trait absorption are correlated with hypnotic susceptibility (Tellegan & Atkinson, 1974). Since mindful and hypnotic states both involve continuous attention and resistance to momentary distractions, it might be argued that both states are characterized by high levels of absorption. Additionally, it is true that some concentrative meditation practices involve intense focal attention on a particular object with the intent of dissolving self/object boundaries (Lutz, Slagter, Dunne, & Davidson, 2008), a description that is highly congruent with absorption.

However, a major point of distinction between mindfulness and hypnotic absorption is that mindful attention involves more than the non-distracted observation of experience. Several psychometric investigation exploring self-reported mindfulness have found moderate relationships between the absorption and the tendency to mindfully observe one’s experience (Baer, Smith, & Allen, 2004; Lau et al., 2006), but only a weak relationship with decentering, and no relationship with the tendencies to describe one’s experience act with awareness or nonjudgmentally accept experience (Baer et al., 2004). Using a single factor scale for mindfulness (Walach et al., 2006), absorption and mindfulness were negatively correlated, recapitulating the idea that high levels of absorption do not support mindful attention. Furthermore, in a comparison of mindfulness and concentrative meditators, both groups were found to be superior to controls in terms of sustained attention capacity, but mindfulness meditators showed an additional advantage for responding to unexpected stimuli, indicating enhanced sustained attention but less absorption with the task set (Valentine & Sweet, 1999). Thus, absorption may be a property of both hypnotic and concentrative meditation states, but less so of mindfulness states, in which diffuse rather than focal attention is deployed. It may be that in the absence of such absorption, and particularly absorption with the instructor’s suggestions, the effects of suggestion are greatly diminished.

In tracking the progression of participants through an MT intervention, it may be useful to consider how intentions towards practice change as a function of the transition between concentrative and mindful practices. For example, MBSR interventions incorporate both concentrative

practices, such as breath monitoring and targeted body scanning, before moving onto more diffuse attentional practices such as mindful attention. From an intentional angle, it would be interesting to evaluate how participants understand the intention to deploy mindful attention during formal practices and during daily life, evaluating whether these intentions become less synonymous with absorption and align more with diffuse or open awareness.

INCREASED DECENTERING AND REDUCED DISSOCIATION.

The term *dissociation* refers to a partial division of consciousness into two or more parts, and is used in broader psychiatric research to describe a range of disorders that involve a partitioning of consciousness from awareness, such as dissociative identity disorder or dissociative amnesia (Kirsch & Lynn, 1998). However, within the realm of hypnosis, constructive cases of dissociation are also regularly suggested, such as suspending consciousness of negative emotions when discussing a traumatic event. The argument has been made that both mindfulness and hypnosis are dissociated states (Yapko, 2011); after all, in therapeutic contexts such as chronic pain, both hypnosis (Dillworth & Jensen, 2010) and mindfulness (Morone, Greco, & Weiner, 2008; Rosenzweig et al., 2010) reduce subjective reports of distress, suggesting that the meditator and hypnotized person alike are dissociated from their pain. However, the purported mechanisms by which hypnosis and MT purport to improve well-being in chronic pain are very different. While hypnosis attempts to limit pain perception, either by transforming sensation or reducing attention to sensory experience, MT does not seem to reduce pain sensation but instead limits the automatic recruitment of self-referential secondary appraisals about pain, such as one’s sense of suffering or self-limitation.

By bringing pain more focally into awareness rather than attempting to alter its sensory characteristics, MT seeks to change the attribution that pain needs to be a major determinant of well-being. Mindfulness therefore tends not to promote *dissociation* so much as *decentering*, which connotes a viewing of experience as transitory rather than as self referential truth. Decentering appears to be an important factor in predicting MT’s prophylactic effects (Carmody et al., 2009; Feldman, Greeson, & Senville, 2010; Fresco, Segal et al., 2007). The absence of suggestion to alter sensory experience may be a further reason that feelings of dissociation are not commonly documented in mindfulness. By acknowledging negative experience, but shifting any given experience

DIFFUSE ATTENTION

An open and inclusive form of attention that allow for unbiased awareness of thoughts, feelings, and sensations as they occur in the present moment. Unlike focused attention, diffuse attention seeks to avoid attachment to any one particular experience, instead allowing for awareness of diverse experience arising and passing from awareness.

DISSOCIATION

A splitting off of a group of mental processes from the main body of consciousness, allowing for an altered or absent perception of events or capacities.



## DECENTERING

The ability to view one's thoughts, feelings and physical sensations as momentary and transitory experiences rather than self-diagnostic events or "Truths" about the self.

away from the "centre" of one's interpretive context, there is room for a more balanced perception of experience that is not dominated by one particular sensation or mental event. In this way, decentering may allow participants to feel an increased sense of balance or integration (Wallace & Shapiro, 2006), but without dissociation from the awareness of sensation itself.

To gauge the intentionality around viewing experience, it may be useful to assess how participants characterize perceived regulatory benefits of MT. Specifically, participant approaches to engagement with negative experience may be evaluated, distinguishing between terms such as *avoiding*, *controlling* or *suppressing* negative experience as conventional regulatory strategies, and *approaching*, *exploring* or *opening* to experience as the intention for a mindful response. Decentering may be specifically assessed using measures such as the Experiences Questionnaire (Fresco et al., 2007) or Toronto Mindfulness Scale (Lau et al., 2006), which contain measures of a person's tendency to assign self-relevance to thoughts and experiences.

## CULTIVATION OF AUTONOMOUS PRACTICE.

Expectancy and response set theories of hypnosis (Kirsch, 2001; Lynn & Sherman, 2000) emphasize the importance of culturally derived social context in enhancing the power of suggestion, rather than requiring that hypnosis be considered a special and unique state of consciousness. Within this social domain, a critical difference between the hypnotist and meditation instructor becomes apparent: participants of a mindfulness induction are not explicitly instructed to enter a hypnotic state or trance, nor is there a parallel cultural expectation of such effects as there is in hypnosis. Furthermore, the mindfulness induction suggests that participants view their experiences with curiosity and openness, but does not suggest what those experiences should feel like. By contrast, hypnotic induction contains explicit instructions on how to feel, with regard to feeling sleepy, heaviness in the body, changes in motor control or willpower, etc. The gradually increased assertion of authority by the hypnotist over the participant's internal experiences may be a critical facet of hypnotic induction, one that seems to build a much stronger response set than asking participants to maintain attention and avoid judgmental thoughts on their experiences.

It may be difficult to experiment with the sociocultural background surrounding meditation teachers, although one could imagine an experiment that manipulates the perceived venerability and authority of the instructor. A younger,

ordinarily dressed and unaccredited teacher may promote less authority than a venerable and elaborately garbed teacher who is introduced with many testimonials and accolades. Altering the mystique and prestige of the teacher may powerfully impact participant expectations for an intervention and thereby also modulate its perceived efficacy and impact on well-being. By increasing the perceived authority of the mindfulness instructor, participants may have greater expectations of course efficacy, but also show fewer intentions for autonomy as they rely upon the teacher's expertise to the detriment of their own experiences. Manipulating instructor authority may therefore have the curious effect of increasing perceived benefits of training while reducing intentions for future self-directed practice.

Aside from manipulating instructor authority, it will be important to measure the degree to which MT participants begin to engage in autonomous practice by the end of a course. Through exit interview, one can measure whether participants still rely primarily on guided meditation audio recordings and group sessions, or whether they have begun to practice without the benefit of these instructions and the suggestive support that they provide. The practices taught in MT may also influence the cultivation of autonomy—for instance, in MBCT participants are taught a "3 minute breathing space" that can be practiced without guidance throughout the day. In this way, the suggestion of developing autonomy is introduced more gradually than when asking participants to switch from a 40-minute guided meditation to a comparable self-directed meditation. Whether offering shorter autonomous meditations acts to improve participant autonomy more broadly is an outstanding empirical question.

## MEASURING INTENTIONS AND EXPECTATIONS IN MINDFULNESS INTERVENTIONS

The similarities between mindfulness and hypnotic inductions present opportunities for manipulating suggestion within MT interventions, and the distinctions between the two practices have also generated a series of testable questions. Further opportunities for modeling intention and expectation in MT are available when one considers how best to measure the effects of manipulated suggestions over the course of a mindfulness intervention. In hypnosis research, the effectiveness of hypnotic induction is often operationalized as the efficacy of suggestion on shaping behaviour (Raz, 2007); indeed, it is theorized that a central feature of hypnosis is the tendency

to respond to suggestion, an explicitly expected response (Lynn, 1997). Therapeutic hypnotism tends to focus on tackling specific issues, such as weight loss (Stanton, 1975), pain management (Chaves, 1994), mood problems (Yapko, 2001), or altering features of perception (Spiegel, Bierre, & Rootenberg, 1989). In all of these domains, resolution of these issues can be measured as direct responses to targeted hypnotic suggestions, providing a rich opportunity for empirical observation.

In mindfulness however, suggestions with specific behavioral or affective expectations are rare; the act of being mindful is primarily a sensory and attentional one, without a predictable behavioral outcome (Davidson & Goleman, 1977). Mindfulness inductions explicitly avoid targeting a particular problem. Instead mindfulness encourages participants to approach experience from a less egocentric, goal-less state (Gilpin, 2008; Rosch, 1997). By promoting *open awareness*, a diffuse allocation of attention to any and all experiences, mindfulness attempts to avoid the goal-orientation of hypnosis or of concentrative meditative practices (Lutz et al., 2008). In doing so, MT may also invalidate reliance upon discrete behavioral responses as evidence of suggestion.

Without concrete behaviors to measure in mindfulness training, how can a science of suggestion proceed? What's more, how can a therapeutic intervention hope to succeed without intended beneficial results, i.e. expected outcomes? If the idea of mindfulness as an aimless therapeutic process seems unfair, then perhaps we might consider whether mindfulness training is truly goal-less in its application, despite its core values of nonjudgment and acceptance. Several opportunities for understanding the role of suggestion and goals are apparent when considering the nature of suggestion and the composition of mindfulness interventions. Within each of these intervention elements, the application of the unique mindfulness techniques outlined above may be evaluated (summarized in Figure 2):

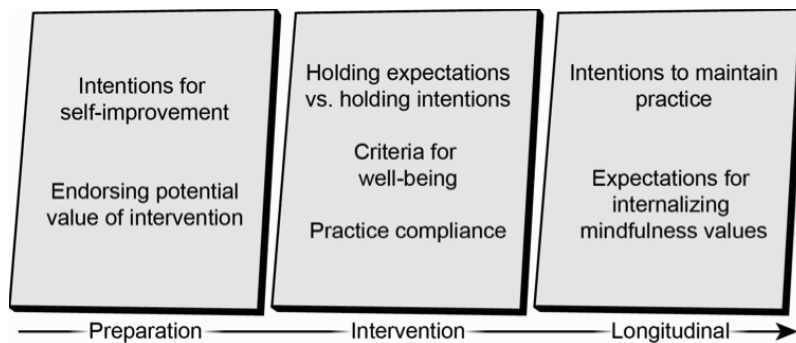


FIGURE 2. Candidate measurements of intention within the framework of an MT intervention.

ENDORSEMENT OF THE INTERVENTION.

One of the best studied effects of expectation on therapeutic intervention centers on participant expectations of therapeutic benefit (Benedetti, 2008; Price et al., 2008). Participant expectations may vary during the course of an intervention (Stone, Kerr, Jacobson, Conboy, & Kaptchuk, 2005), suggesting that it is important to follow up on intervention endorsement at multiple time points to accurately model the effect of such expectations on MT outcomes. Such expectations can be simple to assess; acupuncture researchers asked participants how effective they believed the intervention to be, and followed up on this assessment with a mid-intervention confidence rating (Linde et al., 2007), demonstrating a strong effect of intervention endorsement on the odds of responding to treatment.

HOLDING INTENTIONS VS. EXPECTATIONS.

In determining whether a participant is attempting to internalize the intentionality prescribed in MT, it is important to distinguish between participant intentions for present moment awareness and expectations for awareness. Mindfulness training may still contain explicit suggestions in terms of the intended contents of awareness, without dwelling on the outcomes of these intentions as successful or failed goal states. Participants are counseled that when they mind-wander, despite their best intentions to focus on present moment sensation, to simply make that awareness of mind wandering their present moment experience. Suggestions to bring equanimity to momentary experience may indeed be seen as an example of setting expectations for experience in mindfulness, but it is the paradoxical expectation of perception free from expectation that is being entertained (Epstein, 1999).

In this context, it may be useful to formally distinguish between attachment to intentions and expectations. An expectation has a success or failure attached to it depending upon whether that expectation is realized. If I have a goal of losing 5 pounds in the next week, my bathroom scale can verify whether or not this goal has been successfully attained, validating or invalidating my expectation. An intention, on the other hand, is either held or not, but is not contingent upon external outcomes. My weight change over the week does not impact whether or not I held the intention to lose weight. If I am attached only to my intention to hold weight, but freely discard my expectations when they are proven false, then my intention becomes stronger, unmoved

by external outcomes. This shift in one's intentions from living in a world where satisfaction is dictated by outcomes to one where satisfaction is driven by intentions is a critical milestone in the MT process.

By focusing on the distinction between whether a participant is focused upon holding *right intentions* instead of expected outcomes, it may be possible to more finely classify whether participants are maintaining mindful intentions or more conventional, expectation-laden strategies. To this end, it may be helpful to measure participant descriptions of their own intentions, particularly in their approach to meditation practice, and more broadly in their intentions for the intervention. The impact of a teacher's suggestions in fostering intentions of equanimity and present-moment focus in participants may be an important first step in operationalizing the effects of suggestion in MT.

#### CRITERIA FOR WELL-BEING.

We have already discussed the idea that MT does not condemn broad expectations, as one's expectation for benefit is supportive of intentions to practice and integrative mindfulness techniques. Rather, it is an attachment to short-term expectations that is discouraged. While the expectation for experiences such as the relief of suffering may be appropriate in contexts of hypnosis or conventional medical intervention, allowing such expectations to dictate one's sense of well-being is antithetical to the practice of mindful attention.

However, the elimination of short-term expectations may be particularly problematic when thinking about MT in a therapeutic context. Spiritual devotees of meditation may seek complete liberation from worldly attachment (Burton, 2004), and increases in spirituality following training correlate with mindfulness' salutary effects (Carmody, Reed, Kristeller, & Merriam, 2008). Unlike those pursuing a spiritual path, the average secular MT participant at a medical clinic most likely takes on meditation practice with the expectation of relief from clinically high levels of suffering rather than some sort of metaphysical liberation. In this situation, it is likely that the meditator has immediate goals of symptom improvement; presumably clinical mindfulness instructors are also motivated to teach mindfulness with the goal of reducing suffering in mind (Schmidt, 2004).

Perhaps no self-improvement project is truly free of future aspirations. However, one can consider MT as the modeling of a new process by which to seek such self-improvement. Rather than worrying about when one will be *cured* as an

endpoint to a therapeutic intervention, mindfulness focuses on engaging participants in the active process of identifying what is already working in their lives. To the extent that participants begin to internalize this process through practice, a fixation on long term outcomes becomes less important than an ability to appreciate positive aspects of the present moment. Critically, such a shift in goal focus can occur even in the cases of chronic conditions whose presenting symptoms may not be cured by mindfulness interventions. By changing the fixation on a curative goal, participants can remodel the criteria for their own happiness to become independent of that chronic condition.

Examining participant's criteria for well-being provides another index of the effects of suggestion in mindfulness: how participants intend to view their own well-being. Do participants still expect to feel better one day in the future, or are they focused on noticing positive aspects of their lives in the present? This second point is in some ways a generalization of the first, moving from intentions within the context of meditation practice, to examine a person's intentions for evaluating his or her state of well-being.

#### PRACTICE COMPLIANCE.

The performance of daily formal meditation is an integral aspect of mindfulness interventions. While expectations for the specific experiences encountered during formal meditation are discouraged, the performance of meditation itself is strongly advocated; difficulties in homework compliance are a frequent topic of discussion in MT group sessions (Kabat-Zinn, 1982), aimed at improving rates of practice compliance.

Despite the theoretical importance of practice for promoting changes in mindful attention, a recent review found mixed evidence relating practice compliance to positive intervention outcomes (Vettese, Toneatto, Stea, Nguyen, & Wang, 2009). While the importance of practice for MT effects is itself an empirical question, practice intentions and subsequent compliance present an additional opportunity to examine the effects of intention in MT.

Intention to practice at different time points of a course may reflect participant endorsement of the mindfulness intervention as potentially promoting health benefits. Additionally, practice intentions may not be equivalent to participant expectations for practice (Warshaw & Davis, 1985), with expectations providing a better indicator of actual practice compliance, given a potential disparity between participant attitudes and their perceived self-efficacy. Changes

in the disparity between practice intention and expectation throughout the intervention period are another rich source of information for how the intervention shapes participant beliefs about their own ability to engage in health promotion. Critically, mindfulness itself may help to bridge the gap between intention and practice compliance: in a recent study researchers observed that trait mindfulness was a powerful mediator of the relationship between intentions and behavior (Chatzisarantis & Hagger, 2007).

Suggestion of practice compliance in MT may therefore operate at multiple levels: it may first create intentions to practice, but also reinforce existing intentions as greater levels of subjective mindfulness are engendered. Increased self-efficacy could in turn promote positive self-evaluations at the end of the intervention, and predict longitudinal benefits through an *upward spiral* of practice compliance leading to positive reappraisal of self-efficacy (Garland et al., 2010). On the other hand, continued suggestions to practice when efforts to practice have been largely unsuccessful may feed into negative self-evaluations and feelings of failure, undermining other suggestions to remain expectation-free in one's practice.

To formally test for the relationship between intention and expectation on practice compliance, monitoring of both intentions to practice and compliance could be performed on a weekly basis. Additionally, to powerfully examine the role of suggestion in promoting practice intentions, as well as in promoting positive and negative cycles of compliance and enjoyment, the requirement to practice could be experimentally manipulated, including a partial or even no practice condition in an otherwise standard mindfulness course (Vettese et al., 2009). A more nuanced approach would manipulate practice suggestions as a function of compliance and participants' reasons for non-compliance, modulating when practice suggestions are used to determine their optimal implementation.

#### LONGITUDINAL CHANGE IN INTENTIONALITY.

Finally, it will be important to examine whether mindfulness fosters lasting changes in intention that linger beyond the culmination of the therapeutic intervention. It is important to acknowledge that the long term design of mindfulness training is to encourage participants to incorporate mindful attention into daily life (Kabat-Zinn, 1982), to integrate mindfulness into their baseline modes of attention. Even if intentions to continue formal mindfulness practices abate following the conclusion of an MT intervention, a participant's

expectations for residual benefits from the course may still be a powerful predictor of longitudinal well-being. Obtaining specific estimates from the participant about how long they expect to benefit from the training would provide a useful index of such expectation effects, particularly if such data were compared between participants who maintain a formal meditation practice and those who do not.

A second issue in measuring long-term expectancy effects of MT rests on how automatic the mindful state is expected to become with time. Anecdotally, participants in mindfulness courses often emerge from introductory meditations in a somewhat trancelike state, and after longer meditation sessions are cautioned to carefully integrate themselves back into the world. However, with greater levels of practice, the distinction between the meditation state and daily life becomes less apparent. This observation is supported by an intriguing neuroimaging study of the meditative state against a range of practice experience (Brefczynski-Lewis, Lutz, Schaefer, Levinson, & Davidson, 2007). Relatively novice meditators demonstrated pervasive neural activation relative to controls when entering a meditative state, engaging in an effortful and resource intensive process that likely was accompanied by an altered state of awareness. However, advanced meditators showed little neural change during meditation, suggesting that little distinction between the meditative and baseline state after so many years of practice. Measurement of how habitual present-moment awareness has become after longer periods of meditation practice may be a tricky empirical issue, but measuring the perception and expectations around specific practice targets such as body awareness may be a more tractable initial research question. Of particular interest would be a person's practice intentions and expectations for the development of body awareness at the completion of a course, and whether such expectations predict subjective and objective improvements in body awareness during longitudinal follow up.

#### CONCLUDING REMARKS

Intention and expectation are under-investigated but potentially important contributors to the efficacy of mindfulness based interventions. To begin to investigate intentionality in MT, researchers must begin to operationalize measures of instructor suggestion, participants' expectations for benefit and compliance, and their intentions to apply mindfulness techniques. Two potential study strategies include prospective and retrospective interviewing of intervention participants,

examining their intentions and expectations to employ mindful attention, and exploring whether such strategies were actually employed after a stressful event. Longitudinal measures of how participant's intentions at the end of an intervention predict well-being may also be useful measures of suggestion-based efficacy.

Complementing the observational measures described above, some of the basic components of induction common to both mindfulness and hypnosis may be manipulated. It seems unrealistic to manipulate each of these elements of suggestion in the context of separate 8-week MBSR interventions; however, performing comparisons between a standard MBSR course, which contains many if not all of these suggestions, against one that is stripped of expectation-generating induction techniques may create powerful differences in efficacy. Perhaps more tractably, it may be possible to examine the effects of single-visit mindfulness inductions while manipulating one or more of these techniques.

A caveat in this enterprise is recognizing that not all changes in participant intentions may come from suggestions; MT is designed to foster insight into one's experiences, leading participants to generate their own new interpretations and perspectives on emotional reactivity and personal responsibility. Thus while the experimental manipulation of suggestion may be an effective means for measuring the manipulation of expectation effects, observational research designs may have difficulty in distinguishing between the sources of change in participant expectancy. Hopefully

however, if suggestion-based expectancy effects are formally modeled, this knowledge may help gauge participant insight, i.e., changes in intention and expectation that cannot be explained by suggestion effects alone. For example, in an experiment where suggestion is manipulated between two groups of participants, researchers could measure the degree to which changes in well-being are not accounted for by the manipulation of suggestion. These residual improvements in well-being may also be correlated with participant's subjective accounts of insight, and serve as an expectancy-controlled measure of intentional changes driven by contemplative practice rather than suggestion.

In many mindfulness intervention contexts, the notion of suggesting contents of awareness to participants has been a taboo. However, perhaps it is time to seriously examine the inconsistencies between descriptions of MT and its application, particularly given the many similarities in suggestion techniques found between the mindfulness and hypnosis induction. By acknowledging the multifaceted nature of mindfulness interventions, the use of suggestion may motivate participant practice completion and compliment attentional training, helping to reduce participant suffering without violating the basic mindfulness tenets of present moment awareness and nonjudgment. Perhaps it is time to let go of preconceptions of some idealized, expectation-free mindfulness intervention, and start approaching the ancient tradition of mindfulness training with a newfound sense of curiosity.

## REFERENCES

- Alexander, C. N., Langer, E. J., Newman, R. I., Chandler, H. M., & Davies, J. L. (1989). Transcendental meditation, mindfulness, and longevity: An experimental study with the elderly. *Journal of Personality and Social Psychology*, 57(6), 950–964.
- Astin, J. A. (1997). Stress reduction through mindfulness meditation. Effects on psychological symptomatology, sense of control, and spiritual experiences. *Psychotherapy and Psychosomatics*, 66(2), 97–106.
- Austin, J. H. (1998). *Zen and the brain: toward an understanding of meditation and consciousness*. Cambridge, MA: MIT Press.
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology Science and Practice*, 10(2), 125–143.
- Baer, R. A., Smith, G. T., & Allen, K. B. (2004). Assessment of mindfulness by self-report: the Kentucky inventory of mindfulness skills. *Assessment*, 11(3), 191–206. doi: 10.1177/1073191104268029
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., . . . Williams, J. M. (2008). Construct validity of the five facet mindfulness questionnaire in meditating and nonmeditating samples. *Assessment*, 15(3), 329–342. doi: 10.1177/1073191107313003
- Barber, T. X., & De Moor, W. (1972). A theory of hypnotic induction procedures. *American Journal of Clinical Hypnosis*, 15(2), 112–135.
- Benedetti, F. (2008). Mechanisms of placebo and placebo-related effects across diseases and treatments. *Annual Review of Pharmacology and Toxicology*, 48, 33–60. doi: 10.1146/annurev.pharmtox.48.113006.094711
- Benson, H., Frankel, F. H., Apfel, R., Daniels, M. D., Schniewind, H. E., Nemiah, J. C., . . . Rosner, B. (1978). Treatment of anxiety: a comparison of the usefulness of self-hypnosis and a meditational relaxation technique. An overview. *Psychotherapy and Psychosomatics*, 30(3–4), 229–242.
- Bohlmeijer, E., Prenger, R., Taal, E., & Cuijpers, P. (2010). The effects of mindfulness-based stress reduction therapy on mental health of adults with a chronic medical disease: A meta-analysis. *Journal of Psychosomatic Research*, 68(6), 539–544. doi: 10.1016/j.jpsychores.2009.10.005
- Braffman, W., & Kirsch, I. (1999). Imaginative suggestibility and hypnotizability: an empirical analysis. *Journal of Personality and Social Psychology*, 77(3), 578–587.

- Brefczynski-Lewis, J. A., Lutz, A., Schaefer, H. S., Levinson, D. B., & Davidson, R. J. (2007). Neural correlates of attentional expertise in long-term meditation practitioners. *Proceedings of the National Academy of Science USA*, 104(27), 11483–11488. doi: 10.1073/pnas.0606552104
- Brown, D., Forte, M., Rich, P., & Epstein, G. (1983). Phenomenological differences among self hypnosis, mindfulness meditation, and imaging. *Imagination, Cognition and Personality*, 2(4), 291–309.
- Burton, D. (2004). *Buddhism, knowledge, and liberation: A philosophical analysis of suffering*. Aldershot, England; Burlington, VT: Ashgate.
- Carmody, J., Baer, R. A., E, L. B. L., & Olendzki, N. (2009). An empirical study of the mechanisms of mindfulness in a mindfulness-based stress reduction program. *Journal of Clinical Psychology*, 65(6), 613–626. doi: 10.1002/jclp.20579
- Carmody, J., Reed, G., Kristeller, J., & Merriam, P. (2008). Mindfulness, spirituality, and health-related symptoms. *Journal of Psychosomatic Research*, 64(4), 393–403. doi: 10.1016/j.jpsychores.2007.06.015
- Chatzisarantis, N. L., & Hagger, M. S. (2007). Mindfulness and the intention-behavior relationship within the theory of planned behavior. *Personality and Social Psychology Bulletin*, 33(5), 663–676. doi: 10.1177/0146167206297401
- Chaves, J. F. (1994). Recent advances in the application of hypnosis to pain management. *American Journals of Clinical Hypnosis*, 37(2), 117–129.
- Chiesa, A., & Serretti, A. (2011). Mindfulness-based interventions for chronic pain: a systematic review of the evidence. *Journal of Alternative and Complementary Medicine*, 17(1), 83–93. doi: 10.1089/acm.2009.0546
- Creswell, J. D., Way, B. M., Eisenberger, N. I., & Lieberman, M. D. (2007). Neural correlates of dispositional mindfulness during affect labeling. *Psychosomatic Medicine*, 69(6), 560–565. doi: 10.1097/PSY.0b013e3180f6171f
- Davidson, R. J., & Goleman, D. J. (1977). The role of attention in meditation and hypnosis: A psychobiological perspective on transformations of consciousness. *International Journal of Clinical and Experimental Hypnosis*, 25(4), 291–308. doi: 10.1080/00207147708415986
- Deckert, G. H., & West, L. J. (1963). The problem of hypnotizability: A review. *International Journal of Clinical and Experimental Hypnosis*, 11, 205–235. doi: 10.1080/00207146308409246
- Diamond, M. J. (1974). Modification of hypnotizability: A review. *Psychological Bulletin*, 81(3), 180–198.
- Dillworth, T., & Jensen, M. P. (2010). The role of suggestions in hypnosis for chronic pain: A review of the literature. *Open Pain Journal*, 3(1), 39–51.
- Epstein, R. M. (1999). Mindful practice. *Journal of the American Medical Association*, 282(9), 833–839. doi: jsc90157
- Erickson, M. H., & Rossi, E. L. (1976). Two level communication and the microdynamics of trance and suggestion. *American Journal of Clinical Hypnosis*, 18(3), 153–171.
- Farb, N. A., Segal, Z. V., Mayberg, H., Bean, J., McKeon, D., Fatima, Z., & Anderson, A. K. (2007). Attending to the present: Mindfulness meditation reveals distinct neural modes of self-reference. *Social, Cognitive & Affective Neuroscience*, 2(4), 313–322. doi: 10.1093/scan/nsm030
- Feldman, G., Greeson, J., & Senville, J. (2010). Differential effects of mindful breathing, progressive muscle relaxation, and loving-kindness meditation on decentering and negative reactions to repetitive thoughts. *Behaviour Research and Therapy*, 48(10), 1002–1011. doi: 10.1016/j.brat.2010.06.006
- Fresco, D. M., Moore, M. T., van Dulmen, M. H., Segal, Z. V., Ma, S. H., Teasdale, J. D., & Williams, J. M. (2007). Initial psychometric properties of the experiences questionnaire: validation of a self-report measure of decentering. *Behavior Therapy*, 38(3), 234–246. doi: 10.1016/j.beth.2006.08.003
- Fresco, D. M., Segal, Z. V., Buis, T., & Kennedy, S. (2007). Relationship of posttreatment decentering and cognitive reactivity to relapse in major depression. *Journal of Consulting and Clinical Psychology*, 75(3), 447–455. doi: 10.1037/0022-006X.75.3.447
- Garland, E. L., Fredrickson, B., Kring, A. M., Johnson, D. P., Meyer, P. S., & Penn, D. L. (2010). Upward spirals of positive emotions counter downward spirals of negativity: insights from the broaden-and-build theory and affective neuroscience on the treatment of emotion dysfunctions and deficits in psychopathology. *Clinical Psychology Review*, 30(7), 849–864. doi: 10.1016/j.cpr.2010.03.002
- Garland, E. L., Gaylord, S. A., & Fredrickson, B. L. (2011). Positive reappraisal mediates the stress-reductive effects of mindfulness: An upward spiral process. *Mindfulness*, 2(1), 59–67.
- Gaylord, S. A., Whitehead, W. E., Coble, R. S., Furot, K. R., Palsson, O. S., Garland, E. L., . . . Mann, J. D. (2009). Mindfulness for irritable bowel syndrome: protocol development for a controlled clinical trial. *BMC Complementary and Alternative Medicine*, 9, 24. doi: 10.1186/1472-6882-9-24
- Gilpin, R. (2008). The use of Theravada Buddhist practices and perspectives in mindfulness-based cognitive therapy. *Contemporary Buddhism: An Interdisciplinary Journal*, 9(2), 227–251.
- Grossman, P. (2011). Defining mindfulness by how poorly I think I pay attention during everyday awareness and other intractable problems for psychology's (re)invention of mindfulness: Comment on Brown et al. (2011). *Psychological Assessment*, 23(4), 1034–1040; discussion 1041–1036. doi: 10.1037/a0022713
- Grossman, P., Niemann, L., Schmidt, S., & Walach, H. (2004). Mindfulness-based stress reduction and health benefits. A meta-analysis. *Journal of Psychosomatic Research*, 57(1), 35–43. doi: 10.1016/S0022-3999(03)00573-7
- Heap, M. (1996). The nature of hypnosis. *European Journal of Gastroenterology & Hepatology*, 8(6), 515–519.
- Hilgard, E. R. (1977). The problem of divided consciousness: A neodissociation interpretation. *Annals of the New York Academy of Science*, 296, 48–59.
- Holzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neutral perspective. *Perspectives on Psychological Science*, 6(6), 537–559.
- Jain, S., Shapiro, S. L., Swanick, S., Roesch, S. C., Mills, P. J., Bell, I., & Schwartz, G. E. (2007). A randomized controlled trial of mindfulness meditation versus relaxation training: Effects on distress, positive states of mind, rumination, and distraction. *Annals of Behavioral Medicine*, 33(1), 11–21. doi: 10.1207/s15324796abm3301\_2
- Jamieson, G. A., & Sheehan, P. W. (2006). A critical evaluation of the relationship between sustained attentional abilities and hypnotic susceptibility. *Contemporary Hypnosis*, 19(2), 62–74.
- Jha, A. P., Krompinger, J., & Baime, M. J. (2007). Mindfulness training modifies subsystems of attention. *Cognitive, Affective, & Behavioural Neuroscience*, 7(2), 109–119.
- Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: theoretical considerations and preliminary results. *General Hospital Psychiatry*, 4(1), 33–47.
- Kabat-Zinn, J. (1990). *Full catastrophe living: using the wisdom of your body and mind to face stress, pain and illness*. New York, NY: Delacorte.

- Kabat-Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self-regulation of chronic pain. *Journal of Behavioral Medicine*, 8(2), 163–190.
- Kaptchuk, T. J., Friedlander, E., Kelley, J. M., Sanchez, M. N., Kokkotou, E., Singer, J. P., . . . Lembo, A. J. (2010). Placebos without deception: A randomized controlled trial in irritable bowel syndrome. *PLoS One*, 5(12), e15591. doi: 10.1371/journal.pone.0015591
- Kirsch, I. (2000). The response set theory of hypnosis. *American Journal of Clinical Hypnosis*, 42(3–4), 274–292.
- Kirsch, I. (2001). The response set theory of hypnosis: Expectancy and physiology. *American Journal of Clinical Hypnosis*, 44(1), 69–73.
- Kirsch, I., & Braffman, W. (2001). Imaginative suggestibility and hypnotizability. *Current Directions in Psychological Science*, 10(2), 57–61.
- Kirsch, I., & Lynn, S. J. (1998). Dissociation theories of hypnosis. *Psychological Bulletin*, 123(1), 100–115.
- Kolber, A. (2009). How placebo deception can infringe autonomy. *American Journal of Bioethics*, 9(12), 25–26. doi: 10.1080/15265160903242725
- Kumar, V. K., & Pekala, R. J. (1988). Hypnotizability, absorption, and individual differences in phenomenological experience. *International Journal of Clinical and Experimental Hypnosis*, 36(2), 80–88. doi: 10.1080/00207148808409332
- LaBerge, D. (1995). *Attentional processing: The brain's art of mindfulness*. Cambridge, MA: Harvard University Press.
- Lakey, C. E., Kernis, M. H., Heppner, W. L., & Lance, C. E. (2008). Individual differences in authenticity and mindfulness as predictors of verbal defensiveness. *Journal of Research in Personality*, 42(1), 230–238.
- Landolt, A. S., & Milling, L. S. (2011). The efficacy of hypnosis as an intervention for labor and delivery pain: A comprehensive methodological review. *Clinical Psychology Review*, 31(6), 1022–1031. doi: 10.1016/j.cpr.2011.06.002
- Lau, M. A., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., . . . Devins, G. (2006). The Toronto Mindfulness Scale: Development and validation. *Journal of Clinical Psychology*, 62(12), 1445–1467. doi: 10.1002/jclp.20326
- Linde, K., Witt, C. M., Streng, A., Weidenhammer, W., Wagenpfeil, S., Brinkhaus, B., . . . Melchart, D. (2007). The impact of patient expectations on outcomes in four randomized controlled trials of acupuncture in patients with chronic pain. *Pain*, 128(3), 264–271. doi: 10.1016/j.pain.2006.12.006
- Lo, C. S., Ho, S. M., & Hollon, S. D. (2008). The effects of rumination and negative cognitive styles on depression: A mediation analysis. *Behaviour Research and Therapy*, 46(4), 487–495. doi: 10.1016/j.brat.2008.01.013
- Lutz, A., Slagter, H. A., Dunne, J. D., & Davidson, R. J. (2008). Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, 12(4), 163–169. doi: 10.1016/j.tics.2008.01.005
- Lynn, S. J. (1997). Automaticity and hypnosis: A sociocognitive account. *International Journal of Clinical and Experimental Hypnosis*, 45(3), 239–250. doi: 10.1080/00207149708416126
- Lynn, S. J., Kirsch, I., Barabasz, A., Cardena, E., & Patterson, D. (2000). Hypnosis as an empirically supported clinical intervention: The state of the evidence and a look to the future. *International Journal of Clinical and Experimental Hypnosis*, 48(2), 239–259. doi: 10.1080/00207140008410050
- Lynn, S. J., & Sherman, S. J. (2000). The clinical importance of sociocognitive models of hypnosis: response set theory and Milton Erickson's strategic interventions. *American Journal of Clinical Hypnosis*, 42(3–4), 294–315.
- Lynn, S. J., Surya Das, L., Hallquist, M. N., & Williams, J. C. (2006). Mindfulness, acceptance, and hypnosis: Cognitive and clinical perspectives. *International Journal of Clinical and Experimental Hypnosis*, 54(2), 143–166. doi: 10.1080/00207140500528240
- MacCoon, D. G., Imel, Z. E., Rosenkranz, M. A., Sheftel, J. G., Weng, H. Y., Sullivan, J. C., . . . Lutz, A. (2012). The validation of an active control intervention for Mindfulness Based Stress Reduction (MBSR). *Behaviour Research and Therapy*, 50(1), 3–12. doi: 10.1016/j.brat.2011.10.011
- Martin, A. L., & Katz, J. (2010). Inclusion of authorized deception in the informed consent process does not affect the magnitude of the placebo effect for experimentally induced pain. *Pain*, 149(2), 208–215. doi: 10.1016/j.pain.2009.12.004
- Miller, F. G., Wendler, D., & Swartzman, L. C. (2005). Deception in research on the placebo effect. *PLoS Medicine*, 2(9), e262. doi: 10.1371/journal.pmed.0020262
- Morone, N. E., Greco, C. M., & Weiner, D. K. (2008). Mindfulness meditation for the treatment of chronic low back pain in older adults: a randomized controlled pilot study. *Pain*, 134(3), 310–319. doi: 10.1016/j.pain.2007.04.038
- Murphy, M., Donovan, S., & Taylor, E. (1997). *The physical and psychological effects of meditation: A review of contemporary research with a comprehensive bibliography, 1931–1996* (2nd ed.). Sausalito, CA: Institute of Noetic Sciences.
- Oakley, D. A., & Halligan, P. W. (2009). Hypnotic suggestion and cognitive neuroscience. *Trends in Cognitive Sciences*, 13(6), 264–270. doi: 10.1016/j.tics.2009.03.004
- Oakley, D. A., & Halligan, P. W. (2010). Psychophysiological foundations of hypnosis and suggestion. In S. J. Lynn, J. W. Rhue & I. Kirsch (Eds.), *Handbook of Clinical Hypnosis* (2nd ed.). Washington, DC: American Psychological Association.
- Ploghaus, A., Becerra, L., Borras, C., & Borsook, D. (2003). Neural circuitry underlying pain modulation: expectation, hypnosis, placebo. *Trends in Cognitive Sciences*, 7(5), 197–200. doi: 10.1016/S1364-6613(03)00061-5
- Price, D. D., Finniss, D. G., & Benedetti, F. (2008). A comprehensive review of the placebo effect: Recent advances and current thought. *Annual Review of Psychology*, 59, 565–590. doi: 10.1146/annurev.psych.59.113006.095941
- Rainville, P., & Price, D. D. (2003). Hypnosis phenomenology and the neurobiology of consciousness. *International Journal of Clinical and Experimental Hypnosis*, 51(2), 105–129. doi: 10.1076/iche.51.2.105.14613
- Raz, A. (2007). Suggestibility and hypnotizability: Mind the gap. *American Journal of Clinical Hypnosis*, 49(3), 205–210.
- Raz, A., Harris, C. S., de Jong, V., & Braude, H. (2009). Is there a place for (deceptive) placebos within clinical practice? *The American Journal of Bioethics*, 9(12), 52–52.
- Rivers, S. M., & Spanos, N. P. (1981). Personal variables predicting voluntary participation in and attrition from a meditation program. *Psychological Reports*, 49, 795–801.
- Robinson, M. S., & Alloy, L. B. (2003). Negative cognitive styles and stress-reactive rumination interact to predict depression: A prospective study. *Cognitive Therapy & Research*, 27(3), 275–292.
- Rosch, E. (1997). Mindfulness meditation and the private (?) self. In N. Ulrich & D. A. Jopling (Eds.), *The conceptual self in context: Culture, experience, self-understanding*. (pp. 185–202). New York: Cambridge University Press.
- Rosenzweig, S., Greeson, J. M., Reibel, D. K., Green, J. S., Jasser, S. A., & Beasley, D. (2010). Mindfulness-based stress reduction for chronic pain conditions: variation in treatment outcomes and role of home meditation practice. *Journal of Psychosomatic Research*, 68(1), 29–36. doi: 10.1016/j.jpsychores.2009.03.010
- Rotter, J. B. (1990). Internal versus external control of reinforcement: A case history of a variable. *American Psychologist*, 45(4), 489–493.

- Schmertz, S. K., Anderson, P. L., & Robins, D. L. (2009). The relation between self-report mindfulness and performance on tasks of sustained attention. *Behavioral Science, 31*(1), 60–66.
- Schmidt, S. (2004). Mindfulness and healing intention: Concepts, practice, and research evaluation. *Journal of Alternative and Complementary Medicine, 10* Suppl 1, S7–14.
- Segal, Z. V., Bieling, P., Young, T., MacQueen, G., Cooke, R., Martin, L., . . . Levitan, R. D. (2010). Antidepressant monotherapy vs sequential pharmacotherapy and mindfulness-based cognitive therapy, or placebo, for relapse prophylaxis in recurrent depression. *Archives of General Psychiatry, 67*(12), 1256–1264. doi: 10.1001/archgenpsychiatry.2010.168
- Shapiro, S. L., Brown, K. W., Thoresen, C., & Plante, T. G. (2011). The moderation of Mindfulness-based stress reduction effects by trait mindfulness: Results from a randomized controlled trial. *Journal of Clinical Psychology, 67*(3), 267–277. doi: 10.1002/jclp.20761
- Shapiro, S. L., Carlson, L. E., Astin, J. A., & Freedman, B. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology, 62*(3), 373–386. doi: 10.1002/jclp.20237
- Shapiro, S. L., & Schwartz, G. E. (2000). Intentional systemic mindfulness: An integrative model for self-regulation and health. *Advances in Mind-Body Medicine, 16*(2), 128–134.
- Shapiro, S. L., Schwartz, G. E., & Bonner, G. (1998). Effects of mindfulness-based stress reduction on medical and pre-medical students. *Journal of Behavioral Medicine, 21*(6), 581–599.
- Shor, R. E., & Orne, E. C. (1962). *Harvard Group Scale of Hypnotic Susceptibility*. Palo Alto, CA: Consulting Psychologists Press.
- Spanos, N. P., Gottlieb, J., & Rivers, S. M. (1980). The effects of short-term meditation practice on hypnotic susceptibility. *Psychological Reports, 30*, 87–97.
- Spiegel, D., Bierre, P., & Rootenberg, J. (1989). Hypnotic alteration of somatosensory perception. *American Journal of Psychiatry, 146*(6), 749–754.
- Spiegel, H., & Greenleaf, M. (1992). Personality style and hypnotizability: The fix-flex continuum. *Psychiatric Medicine, 10*(1), 13–24.
- Stanton, H. E. (1975). Weight loss through hypnosis. *American Journal of Clinical Hypnosis, 18*(2), 94–97.
- Stewart-Williams, S., & Podd, J. (2004). The placebo effect: Dissolving the expectancy versus conditioning debate. *Psychological Bulletin, 130*(2), 324–340. doi: 10.1037/0033-2909.130.2.324
- Stone, D. A., Kerr, C. E., Jacobson, E., Conboy, L. A., & Kaptchuk, T. J. (2005). Patient expectations in placebo-controlled randomized clinical trials. *Journal of Evaluation in Clinical Practice, 11*(1), 77–84. doi: 10.1111/j.1365-2753.2004.00512.x
- Teasdale, J. D., Segal, Z., & Williams, J. M. (1995). How does cognitive therapy prevent depressive relapse and why should attentional control (mindfulness) training help? *Behaviour Research and Therapy, 33*(1), 25–39. doi: 10.1016/0005-7967(94)E0011-7
- Teasdale, J. D., Segal, Z. V., Williams, J. M., Ridgeway, V. A., Soulsby, J. M., & Lau, M. A. (2000). Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology, 68*(4), 615–623.
- Tellegan, A., & Atkinson, G. (1974). Openness to absorbing and self-altering experiences (“Absorption”), a trait related to hypnotic susceptibility. *Journal of Abnormal Psychology, 83*, 268–277.
- Valentine, E. R., & Sweet, P. L. G. (1999). Meditation and attention: A comparison of the effects of concentrative and mindfulness meditation on sustained attention. *Mental Health, Religion & Culture, 2*(1), 59–70.
- Van Dam, N. T., Earleywine, M., & Borders, A. (2010). Measuring mindfulness? An Item Response Theory analysis of the Mindful Attention Awareness Scale. *Personality & Individual Differences, 49*(7), 805–810.
- Vettese, L. C., Toneatto, T., Stea, J. N., Nguyen, L., & Wang, J. J. (2009). Do mindfulness meditation participants do their homework? And does it make a difference? A review of the empirical evidence. *Journal of Cognitive Psychotherapy, 23*(3), 198–225.
- Vlieger, A. M., Menko-Frankenhuis, C., Wolkamp, S. C., Tromp, E., & Benninga, M. A. (2007). Hypnotherapy for children with functional abdominal pain or irritable bowel syndrome: a randomized controlled trial. *Gastroenterology, 133*(5), 1430–1436. doi: 10.1053/j.gastro.2007.08.072
- Walach, H., Buchheld, N., Buttenmuller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—the Freiburg Mindfulness Inventory (FMI). *Personality and Individual Differences, 40*, 1543–1555. doi: 10.1016/j.paid.2005.11.025
- Wallace, B. A., & Shapiro, S. L. (2006). Mental balance and well-being: Building bridges between Buddhism and Western psychology. *American Psychologist, 61*(7), 690–701. doi: 10.1037/0003-066X.61.7.690
- Warshaw, P. R., & Davis, F. D. (1985). Disentangling behavioral intention and behavioral expectation. *Journal of Experimental Social Psychology, 21*(3), 213–228.
- Weitzenhoffer, A. M., & Hilgard, E. R. (1962). *Stanford Hypnotic Susceptibility Scale Form C*. Palo Alto, CA: Consulting Psychologists Press.
- Yapko, M. (2001). Hypnosis in treating symptoms and risk factors of major depression. *American Journal of Clinical Hypnosis, 44*(2), 97–108.
- Yapko, M. D. (2011). *Mindfulness and hypnosis: The power of suggestion to transform experience* (1st ed.). New York, NY: Norton.