

Chapter 8

Hypnosis and mindfulness: experiential and neurophysiological relationships

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Abstract

The neural and phenomenological overlap between hypnosis and mindfulness is reviewed in this chapter. The historical emergence of hypnosis and mindfulness in their respective applications to modern medicine and psychology are discussed. Hypnosis is defined as a form of effortless, absorbed awareness with a present moment focus in which imaginative or visual percepts are often prominent. Mindfulness is specified as a broad construct that encompasses an array of meditative practices, the states of awareness supported by those practices, and an enduring trait derived from long-term practice. The overlap between hypnosis and mindfulness is discussed in terms of their respective positions along four dimensions: effort, attention, continuity of awareness, and agency. Experiential and neurophysiological points of comparison are considered in relation to those four dimensions. In conclusion, hypnosis and mindfulness are proposed to be unique states of consciousness with overlapping, yet distinct, experiential and neurophysiological features.

Introduction

Hypnosis and mindfulness have often been compared and contrasted. It has frequently been argued that they are synonymous: that, for example, mindfulness might be construed as a form of self-hypnosis. Points of comparison between these two techniques are indeed striking, despite their evident contrasts in historical origin. Both involve notable changes in subjective awareness that overlap with the experience of relaxation. Both have increasingly been used as components of clinical interventions, especially in the treatment of chronic pain and psychiatric disorders such as anxiety and depression. Both have been shown to involve changes in neural network connectivity and to overlap with the neurophysiological mechanisms of dissociative processes. At the same time, hypnosis and mindfulness differ in regard to their historical origins, cultural context, and phenomenology.

The extent of the neurological and physiological overlap between these two states is an unresolved question. The endeavor to specify the overlap and differences is motivated by two objectives: first, elucidating the characteristics of the overlap may serve to illuminate features of core

neuropsychological, emotional, and nociceptive processes which they modify in subtly contrasting ways, the clarification of which may prove beneficial to psychology, neuroscience, and medicine. Second, specificity about the overlap may prove useful in determining mechanisms and the relative strengths and weaknesses of both techniques in clinical intervention.

The following critical review pursues the foregoing objectives through an analysis of the relationships between hypnosis and mindfulness in historical, conceptual, and theoretical terms, and with regard to salient points of comparison and contrast on both experiential and neurophysiological levels.

Historical origins

Hypnosis and mindfulness emerge from distinct historical and conceptual foundations. An instructive comparison can be made in terms of each technique's respective theoretical and practical position in regard to the phenomenon of human suffering. The word "hypnosis" is derived from the ancient Greek *hypnos*, meaning sleep (Halsband, Mueller, Hinterberger, & Strickner, 2009). Hypnosis originated in the European psychotherapeutic tradition and is the oldest Western psychological treatment (Ellenberger, 1970). Freud used hypnosis in treatment and incorporated several hypnotic techniques (e.g., suggestion) in early psychoanalysis (Breuer & Freud, 1936). Freud considered the hypnotist/patient relationship as analogous to the parent/child relationship, and hypnosis as a form of regression (Bonshtein, 2012). His early ideas regarding transference derived from intense emotional reactions of patients in hypnosis, and he conceived of hypnosis as acting via transference mobilization (Freud, 1925). Indeed, he set hypnosis aside, moved his chair behind the couch, and began asking patients to free associate with eyes open instead, after one patient emerged from a hypnotic trance and threw her arms around his neck.

Early theoretical paradigms conceptualized hypnosis either with an emphasis on the interpersonal power of the hypnotist or in terms of hypnotic susceptibility as a sign of weakness or mental illness (Charcot, 1889). Later models placed less emphasis on the hypnotist and more on the hypnotic subject (Bernheim, 1957). This approach eventually led to the development of empirical hypnotizability scales (Hilgard & Hilgard, 1979; Spiegel & Spiegel, 2004). Other models described hypnosis as a form of behavior shaped or even constructed by social expectancies (Vandenberg, 1998). Subsequent to the Second World War, hypnosis increasingly moved into the mainstream, partly as a result of the clinical experience of doctors who discovered its utility in the treatment of trauma (Kardiner & Spiegel, 1947; Spiegel, 1981, 2007). Behavioristic and social constructivist models of hypnosis subsequently shifted to the margins as discoveries in psychoneuroimmunology and then neuroscience identified physiological markers of hypnosis and hypnotizability (Hoeft et al., 2012), and hypnosis increasingly came to be identified as clinically effective for conditions that were otherwise difficult to treat, such as pain and somatization (Butler, Symons, Henderson, Shortliffe, & Spiegel, 2005; Butler et al., 2009; Lang et al., 2000; Weisberg, 2008).

Like hypnosis, mindfulness emerged from origins outside of Western medicine and science, but has lately become a topic of increasing empirical interest. In contrast with the European origins of hypnosis, mindfulness originated in the Eastern contemplative traditions of Vedic philosophy and Buddhism. Although the conceptual intricacies of these historically expansive traditions are beyond the scope of this chapter, one dimension of the pragmatic essence of both Vedic philosophy and Buddhism that can be highlighted is their emphasis on the benefit of enhancing the capacity for present-tense sensory-cognitive awareness as a means of overcoming the inevitable hardships of human existence.

Thomas William Rhys Davids (as cited in Bodhi, 2000) coined the English word “mindfulness” in 1881 as a translation of the Pali noun *sati*. Mindfulness as a term in contemporary usage typically denotes either the practice of mindfulness meditation or other practices intended to induce a state of enhanced attention to the present moment (e.g., mindful walking). A number of increasingly popular psychological interventions, such as acceptance and commitment therapy (Hayes, Strosahl, & Wilson, 1999) feature mindfulness exercises as a treatment component. Mindfulness has thus acquired a meaning in modern secular usage that is, for the most part, divested of the metaphysical and ethical frameworks in which meditative practices were construed in their Eastern contemplative origins. The term has come to denote a type of intensified attentional capacity and state (Nash & Newberg, 2013) which appears to be effective both in reducing forms of psychological distress such as anxiety and depression, and in ameliorating stress experienced by people coping with chronic medical conditions (Goyal et al., 2014). Mindfulness has been taught to a wide range of clinical and non-clinical populations, across diverse demographic groups, with evidence of beneficial impacts even after relatively short periods of training.

In summary, like hypnosis, mindfulness is a state of consciousness involving shifts in attentional focus that appears to be relatively easy to acquire as a baseline skill (albeit very difficult to master) and which can be applied to therapeutic aims. In consideration of the historical trajectory linking their respective origins and current clinical application overall, hypnosis and mindfulness emerged from culturally distinct foundations but have come to be applied to similar clinical objectives with comparable therapeutic outcomes.

Conceptual and theoretical relationships

The extent to which attention and related neurocognitive factors represent the most salient explanatory level in theoretical accounts bridging hypnosis and meditation has been a subject of separate theoretical debates within these two fields that in some ways echo each other. The parallels between those debates are illuminating in terms of the similarities between hypnosis and mindfulness. In the hypnosis literature, neurocognitive models have come to dominate sociocognitive models. Hypnosis in neurocognitive terms has been proposed to be a state of consciousness that can be induced independent of any special interpersonal or social environment (Lynn & Green, 2011). The neurocognitive-dominant model in this regard departs from historically older models that emphasized the interpersonal power of the hypnotist. Contemporary theoretical accounts of hypnosis that include interpersonal, social, or attachment factors are relatively sparsely represented in the literature. Empirical evidence has tended to support the dissociated control theory in preference to the social cognitive theory (Sadler & Woody, 2006), though one recent multifactorial conceptualization of hypnosis proposed an integration of social expectancy, neurocognitive, and trait factors (Hammond, 2005).

An important development in the establishment of hypnosis as an acceptable integrative medicine intervention was the emergence of evidence indicating cognitive and neurophysiological markers that differentiate highly hypnotizable individuals from those with a low susceptibility to hypnosis (Hasegawa & Jamieson, 2002; Hoefft et al., 2012). The differential activation of the anterior cingulate cortex (ACC) in hypnosis, relative to rest, supported the conceptualization of hypnosis as a distinct state of consciousness (Lynn & Green, 2011). High hypnotizables have been shown to demonstrate a reduced level of Stroop interference in comparison with lows following post-hypnotic suggestion (Raz, Shapiro, Fan, & Posner, 2002). Highs differ from lows in terms of EEG (electroencephalography) phase synchronization in frontal regions (Baghdadi & Nasrabadi, 2012), and demonstrate a higher proportion of occipital alpha than lows (Halsband et al., 2009).

The decoupling of frontal control and cognitive systems in hypnosis has been proposed as a key marker of the hypnotic state (Egner, Jamieson, & Gruzelier, 2005).

The history of empirical mindfulness paradigms has similar features to the foregoing (for an examination of historical connections, see Chapter 2). Pioneers of the scientific study of meditation examined whether meditation was distinct from relaxation or early stage sleep. EEG studies commencing in the 1960s provided preliminary support for mindfulness as a distinct state of awareness (Kasamatsu & Hirai, 1966). Following the emergence of fMRI (functional magnetic resonance imaging) in the early 1990s, an explosion of interest in identifying neural correlates of meditation followed. Straightforward conclusions from the several hundred studies conducted since are rendered elusive as a consequence of the significant degree of heterogeneity across studies in sample sizes, population characteristics, neural regions of interest, types of meditation, and levels of meditation experience (Lutz, Slagter, Dunne, & Davidson, 2008). In general terms, however, meditation has been shown to be associated with changes in structures and networks that support attention and emotion regulation (Eberth & Sedlmeier, 2012; Goyal et al., 2014). In the minimal degree to which head-to-head comparisons have been conducted, meditation has in turn been distinguished from hypnosis, for instance in terms of EEG signature (Halsband et al., 2009).

A comparable increasing emphasis on neurocognitive factors similarly characterizes the historical course of the mindfulness literature in its assimilation of Eastern contemplative sources by Western psychological and medical science. Mindfulness is typically described in a Western context as a state in which enhanced present-moment attention facilitates a state of awareness in which cognitive and sensory percepts are experienced from a more detached, less self-identified position. While this aspect of the modern conceptualization of mindfulness accords with classical descriptions, aspects of those descriptions that stress social factors as necessary features of development in mindfulness practice have yet to be recapitulated in modern empirical investigations. For example, the requisite degree of mindfulness training of mindfulness teachers, and the role of mindfulness-oriented communities in producing therapeutic benefits and supporting and nurturing a sustained commitment to mindfulness practice, are questions that have yet to be answered in the literature (Waelde, Thompson, Robinson, & Iwanicki, in submission).

In summary, mindfulness, like hypnosis, has come to be theorized almost entirely in neurocognitive terms, thereby perhaps solidifying the outward impression of the two techniques' apparent mutual resemblance. It may, however, be premature to infer from the absence of evidence regarding the role of social factors in mindfulness that this amounts to evidence that social factors are unimportant. Elucidating social factors involved in mindfulness, including the student–teacher relationship so strongly emphasized in both Vedic and Buddhist traditions (Feuerstein, 1998), could enrich our understanding of mindfulness, highlight important differences between mindfulness and hypnosis, and broaden the neurocognitive framework in which these practices are now construed.

Experiential and neurophysiological relationships

An important consideration in the evaluation of experiential parallels between hypnosis and mindfulness is the limited extent to which head-to-head comparisons have been conducted involving subjects with comparable levels of practice in both techniques. A significant degree of epistemological caution is consequently warranted in the endeavor to infer similarities or contrasts between subjective states to which neither party has mutual access, outside the limited extant evidence base of direct phenomenological comparison studies. That said, five dimensions

of experiential comparison appear pertinent to the present review: effort, attention, continuity of awareness, imagery, and agency.

Effort: trait versus practice

One experiential feature common to both is a state of relaxed effortless absorption (see Chapter 14). Both hypnosis and mindfulness are marked by shifts in degree of arousal distinguished by patterns of cortical electrical activity (Dunn, Hartigan, & Mikulas, 1999; Fenwick et al., 1977; Halsband et al., 2009).

One point of departure is the level of initial effort required to induce these effortless states. Reports of hypnosis typically describe the capacity of the hypnotic subject to experience a state of awareness often richly imbued with imaginative characteristics in which the subject immerses with a feeling of involuntary, effortless engagement (Bowers, 1982–1983). Effortlessness and engagement similarly characterize reports of the experience of mindfulness, although the intensity of those features appears to correspond with experience level (Brefczynski-Lewis, Lutz, Schaefer, Levinson, & Davidson, 2007).

The effect of repeated practice on the degree of effortlessness and engagement appears to be more a feature of mindfulness than hypnosis. Whereas hypnotic engagement seems to be almost entirely a function of trait differences in hypnotizability, mindfulness engagement appears to be a function of repeated practice over months or years. More recent research has, however, questioned this neat dichotomy between the trait-like quality of the hypnotic profile and the practice-based nature of mindfulness. One study found that the degree of mindfulness engagement was moderated by neural differences in an empathy task at baseline (Mascaro, Rilling, Negi, & Raison, 2013). Such trait differences represent a key methodological concern regarding the inferences derived from experimental observation of the distinctive neurological characteristics of expert meditators, because it is not clear if meditation or pre-existing trait differences caused those characteristics (Fox et al., 2014). Equally, some evidence exists of the capacity of hypnotic subjects to become increasingly adept in self-hypnosis (Spiegel & Spiegel, 2004).

In summary, the capacities for hypnosis and mindfulness are both contingent upon trait and practice, though trait differences are more salient in the former, and practice duration in the latter.

Attention: narrow versus broad

A key experiential feature of both hypnosis and mindfulness is an alteration of attention, specifically an intensification of present-moment focus and a feeling of absorption. An early head-to-head comparison between transcendental meditation and hypnosis found that meditation and hypnosis were similar in terms of their impact on attention, though hypnosis appeared to require less effort to manage distractions (Brown, Forte, Rich, & Epstein, 1982). The role of the dorsal anterior cingulate cortex (dACC) and dorsolateral prefrontal cortex (DLPFC), structures associated with conflict monitoring, has been noted in both hypnosis and mindfulness in this regard (Halsband et al., 2009). Connectivity enhancements between the DLPFC and the salience network have been reported as greater in highly hypnotizable subjects relative to lows (Hoeft et al., 2012). Both meditation and hypnosis involve enhanced activation of interoceptive structures, specifically the dACC, DLPFC, and the frontoinsula cortex (Hoeft et al., 2012; Melloni et al., 2013).

Changes in attention appear to be accompanied in both hypnosis and mindfulness by changes in executive control and the default mode network (DMN). A study of high hypnotizables in a resting state found greater connectivity, relative to low hypnotizables, between the DLPFC and the salience network, and greater coactivation of the executive and salience networks (Hoeft et al., 2012).

Meditation has similarly been shown to enhance executive control (Teper & Inzlicht, 2013), perhaps especially so in novice meditators, who may recruit areas of the prefrontal cortex to enhance emotion regulation in a “top-down” fashion (Chiesa, Serretti, & Jakobsen, 2013). Self-reported hypnotic depth has been shown to correlate inversely with DMN activity (Deeley et al., 2012); meditation has similarly been associated with attenuated DMN connectivity (Taylor et al., 2013).

Hypnosis appears to overlap phenomenologically, in terms of absorption, more closely with concentrative (“focused attention”) meditative techniques (Lutz et al., 2008) that involve a narrowing of attention on a meditative object such as the breath or a body part, though the degree of narrowing in focused attention forms of meditation may not be equivalent to that achieved in hypnotic states. Receptive (“open monitoring”) meditative techniques, by contrast, involve an expansion rather than narrowing of attentional focus and, in this sense, diverge from hypnosis (Harrer, 2009). Another difference is that hypnosis typically involves induction by a hypnotist, whereas mindfulness is typically self-induced (Bell, Oakley, Halligan, & Deeley, 2011). This polarity between the hetero-suggestive nature of hypnosis versus the auto-suggestive nature of mindfulness breaks down in consideration of the counter-examples of self-hypnosis (Spiegel & Spiegel, 2004) and guided meditation (see Chapter 19). It could therefore be hypothesized that self-hypnosis is very close to meditation and guided meditation close to hetero-hypnosis; further empirical investigation of this question is warranted.

The impact of meditation-induced attentional changes has been proposed as a core mechanism of mindfulness-based clinical intervention, in which distressing cognitions diminish in emotional valence through decentering or cognitive diffusion (Carmody, Baer, Lykins, & Olendzki, 2009; Hayes, Luoma, Bond, Masuda, & Lillis, 2006). The resultant quality of equanimity has been proposed as a particularly important feature of mindfulness (Desbordes et al., 2014). The treatment mechanism of hypnosis for clinical disorders such as depression has been proposed in an analogous form characterized by an experience in which the subject is directed to expand awareness beyond symptoms (Alladin, 2010), though it is not clear whether this benefit derives from distraction or a decentered perceptual stance.

The impact of attentional changes in both hypnosis and mindfulness has been proposed as a key component of each technique's clinical utility in analgesia. Both hypnosis and mindfulness are effective forms of analgesia (Feldman, 2004; Zeidan, Grant, Brown, McHaffie, & Coghill, 2012). Brain structures involved in hypnosis overlap with those structures involved in pain processing (Feldman, 2004; Rainville, Duncan, Price, Carrier, & Bushnell, 1997; Rainville, Hofbauer, Bushnell, Duncan, & Price, 2002). The role of hypnosis in reducing pain unpleasantness is related to its impact on the primary somatosensory cortices (Spiegel & Spiegel, 2004). The analgesic use of hypnosis derives from its capacity to facilitate the top-down frontal regulation of limbic activity, thereby overriding the automatic processes involved in pain perception (Feldman, 2004; Rainville et al., 1997). Mindfulness has been proposed to function using similar mechanisms (Lutz, McFarlin, Perlman, Salomons, & Davidson, 2013; Zeidan et al., 2012), though these effects may depend on enhanced self-regulatory capacity developed with practice (Evans, Eisenlohr-Moul, Button, Baer, & Segerstrom, 2014). Both hypnosis and mindfulness overlap with placebo responsiveness (Benedetti, Mayberg, Wager, Stohler, & Zubieta, 2005; Chiesa & Serretti, 2010; Wager, Atlas, Leotti, & Rilling, 2011), although the extent of this overlap has yet to be clarified (see Chapter 21).

Continuity of awareness: dissociation versus integration

The respective overlap between hypnosis and meditation with dissociative processes provides an especially useful way of differentiating the two states. Dissociation was originally defined as a narrowing of the field of consciousness (Janet, 1920). The term has subsequently become understood

to comprise a range of “disruptions and fragmentations of the usually integrated functions of consciousness, memory, identity, body awareness, and perception of the self and environment” (Lanius, Brand, Vermetten, Frewen, & Spiegel, 2012, p. 701).

Dissociation can be a response to traumatic environments such as war zones or childhood abuse, although the term also encompasses non-pathological interruptions in awareness such as day-dreaming (Butler, 2006). Neurophysiologically, dissociation appears to involve a process of emotional hyperregulation, entailing excessive cortical inhibition of traumatic memories (Lanius et al., 2010).

Dissociation overlaps with hypnosis in that the latter similarly involves a state in which events appear to unfold with a sense of involuntary automaticity to which the subject is an outside observer (Zeig, 1980). Hypnosis has thus been described as “dissociation in a structured setting” (Vermetten & Bremner, 2004, p. 285). The foregoing experience of automaticity has been attributed to the disaggregation of the executive system into two parts, only one of which is available to conscious awareness, thereby creating an experience of ostensibly involuntary compliance with a hypnotic suggestion (Hilgard, 1965), or to reduced cognition as a result of attenuated frontal lobe activity (Bowers, 1992). The extent of the hypnosis/dissociation overlap is underscored by the strong correlation between hypnotizability and both dissociative identity disorder (Bliss, 1983) and post-traumatic stress disorder (PTSD) symptom severity in Vietnam combat veterans (Stutman & Bliss, 1985), and by the role of exaggerated corticolimbic inhibition in conversion disorders (Bell et al., 2011). In summary, dissociation and hypnosis both involve a fragmentation of awareness.

Mindfulness would appear to function as the direct opposite of the foregoing (see Chapter 7). That is, where hypnosis involves a dissociative discontinuity of consciousness, mindfulness involves its integration. Mindfulness and dissociation can thus be understood to exist as the twin opposing poles of an awareness spectrum (Corrigan, 2002). Intriguingly, in one neurological respect, the two states appear quite similar: mindfulness shares with dissociation an increased level of corticolimbic inhibition. Indeed, evidence that long-term meditation practice tends to enhance cortical control of limbic emotional processes (Sperduti, Martinelli, & Piolino, 2012) is often invoked as a proposed mechanism for the efficacy of mindfulness-based interventions (Chiesa & Serretti, 2010).

However, this apparent neurophysiological overlap is starkly belied by clinical and phenomenological observation: whereas dissociation involves an amnesic exclusion of attention and a lack of integration of thought, mindfulness involves a directed quality of attention and a deidentification from fixed thoughts (Waelde, 2004). Indeed, it is precisely because the aim of many forms of meditation is to cultivate present-moment attention that meditation can be usefully employed as an intervention for trauma-related dissociation (Waelde, 2015). A possible caveat to this argument might be advanced from the small case-study literature of traumatized individuals who have inadvertently co-opted meditation as an avoidance mechanism, and for whom the experience of “mindfulness” is, in objective terms, more likely dissociative than mindful (Brown, 2009; Cashwell, Glosoff, & Hammond, 2010; Engler, 2003).

Such counterexamples aside, mindfulness, in principle, diverges from hypnosis in that while hypnosis is dissociative, mindfulness is integrative.

Imagery: prominent versus minimal

The role of visual imagery is a prominent feature of hypnosis. Indeed, hypnosis has been defined as controlled imagination (Nogrady, McConkey, & Perry, 1985), although hypnotizability and imagery ability are uncorrelated (Kogon et al., 1998). Imagery is, similarly, a feature of some forms

of meditation, in particular Tibetan Buddhist meditation (Wallace, 1993; see Chapters 3 and 4), but is not a central aspect of other meditative traditions such as Zen or Vipassana. The role of visual imagery in hypnosis encompasses both visual imagination and the image of the subject's body. Suggestibility, or the use of imagination, is a prominent feature of hypnosis, in contrast to many forms of meditation that direct the meditator to let go of reified conceptualizations of experience and attend to the reality of phenomenological experience as it actually presents itself (Harrer, 2009).

Suggestibility, a hallmark of hypnotic trance, is central to the technique's clinical use. Hypnotic trance has been observed to function both as a natural response to trauma and as a trauma treatment. Hypnosis has been used in trauma treatment to access disturbing memories in a technique with close ostensible parallels to exposure treatment (Poon, 2009). Hypnotic states can mimic the phenomenology of conversion disorders and their prefrontal neurocognitive mechanisms (Bell et al., 2011); indeed, the utility of hypnosis as a means of inducing transient laboratory analogs of psychopathological states has led to the development of some novel studies in which hypnosis is used to create and study clinical syndromes, such as mirrored self-misidentification (Connors, Barnier, Coltheart, Cox, & Langdon, 2012) and other disorders (Nash & Wong, 2011). By contrast, suggestibility is typically absent from accounts of the treatment mechanisms of mindfulness-based interventions. The impact of mindfulness on emotion regulation has instead been theorized as the outcome of shifts in top-down and/or bottom-up regulation of limbic-based emotional dysregulation (Chiesa et al., 2013). However, the use of suggestibility in hypnosis does come close to overlapping conceptually with meditative forms that involve visualization of oneself as being transformed by meditation on a deity (Landaw & Weber, 1993; see also Chapter 3).

Visual components are common in hypnotherapy; for example, a focus on positive imagery or an imaginative exercise in which the therapist invites a depressed patient to picture a "door of forgiveness" (Alladin, 2010) or to enhance self-efficacy by exerting the imagination to conceive a non-depressed version of the hypnotic subject (Yapko, 2010). Some meditation techniques include directions to focus on an imagined visual object such as the image of white light; Tibetan Buddhist meditation can involve very complex visualizations that take years to fully realize through repeated practice (Kozhevnikov, Louchakova, Josipovic, & Motes, 2009; Landaw & Weber, 1993). Several other meditation forms, however, are based primarily on somatosensory rather than visual awareness (e.g., concentration on the breath); while open monitoring forms (e.g., Vipassana and Zen) involve the endeavor to develop a non-discriminative attitude to any sensory or cognitive percept that spontaneously arises, irrespective of modality.

In terms of neural markers, one PET (positron emission tomography) study showed that the hypnotic illusion of color activated neural regions involved in actual visual color perception (Kosslyn, Thompson, Costantini-Ferrando, Alpert, & Spiegel, 2000). In summary, imagery is a prominent feature of hypnosis but a minimal feature of mindfulness.

Agency: hidden observer versus no self

An important difference between hypnosis and mindfulness concerns their respective impact on the experience of agency and selfhood. Hilgard and colleagues reported that the experience of hypnotic analgesia featured the possibility for subjects of identifying a "hidden observer" who was capable of registering the experimentally induced pain despite its subjective absence in the hypnotic state (Hilgard, Morgan, & MacDonald, 1975). Some meditative states differ from hypnosis in this regard in that they involve an experience in which the subjective sense of first-person perspective or selfhood is significantly reduced, at times even to the point where the practitioner

experiences a non-dualistic merger between the perceiving awareness and perceptual content (Austin, 1999, 2009; Josipovic, 2014). It has been suggested that the current taxonomy of meditative forms in the empirical literature, which involves a bifurcation between focused attention and open monitoring forms (Lutz et al., 2008), does not capture the non-dualistic dimension of some meditative experience, and that further research could thus profitably investigate the establishment of a non-duality scale to complement the present two-part taxonomy (Josipovic, 2010). The foregoing non-dualistic attenuation of separate selfhood is, by contrast, typically absent from reports of hypnotic states.

The impact of meditation on self networks has been proposed as a unifying framework to account for the impact of mindfulness on emotional dysregulation and its enhancement of compassion and ethical behavior (Vago & Silbersweig, 2012). Hypnosis has been used, clinically, to help depressed patients create a more positive identity (Yapko, 2010). Hypnosis has been proposed as a form of “self-referential thinking”; in contrast to meditation, which has been described as a state in which the separate self recedes from view and perceptual contents unfold in the absence of a witness (Brown et al., 1982).

One model proposed to describe the changes in agency in hypnosis differentiates two types of agency—pre-reflective and reflective—suggesting that the latter form recedes in hypnosis (Polito, Barnier, & Woody, 2013). This claim parallels evidence that meditation decouples two dissociable forms of self network—narrative and experiential (Dor-Ziderman, Berkovich-Ohana, Glicksohn, & Goldstein, 2013; Farb et al., 2007; Vago & Silbersweig, 2012; see also Chapter 20).

In summary, while both hypnosis and mindfulness involve intensified present-moment awareness, an impact on time perception and body awareness, and a feeling of effortlessness, they differ in the experience of agency. Hypnosis also involves powerful focal concentration that emphasizes intense awareness of the content of thought or perception in space, but may therefore decontextualize it temporally (e.g., hypnotic age regression) (Spiegel & Spiegel, 2004). In the absence of well-designed phenomenological comparisons, it is hard to strictly differentiate the respective changes in agency. A review of the literature indicates that hypnosis shares with some forms of mindfulness an experience of a “hidden observer” that witnesses perceptual content without involvement in that content. However, the full scope of meditative phenomenology may extend upon a non-dualistic spectrum, at the far point of which the witnessing awareness is further attenuated.

Conclusion

Hypnosis and mindfulness are neurocognitive and experiential phenomena that closely overlap in regard to their impact upon effort, attention, dissociation, imagination, and agency. Hypnosis and focused attention meditation share an experience of narrow absorbed attention marked by changes in executive control and alterations in default mode network activation. Visual imagery is a prominent feature of hypnosis but absent from mindfulness, with the exception of visualization-based meditation forms. A quality of effortlessness characterizes hypnosis and the experience of expert, but not novice, meditators. Hypnotizability and mindfulness are both traits, though the latter appears more contingent upon training than the former. The attenuation of an observing awareness appears to be common to both hypnosis and mindfulness, though the degree of attenuation may extend further on a non-dualistic spectrum in some forms of meditation.

In synthesis, it can be theorized that the hypnotic state replicates or closely parallels a form of hetero-induced focused attention mindfulness, with prominent visual elements and a moderate attenuation of agency. Mindfulness can, in turn, be theorized as a form of self-hypnosis, perhaps

for beginners more than experienced meditators, insofar as novice meditators mirror a hypnotic top-down regulation of attention. At the same time, hypnosis and mindfulness can be broadly differentiated in terms of their positions on opposite ends, respectively, of the five dimensions of effort (trait versus practice), attention (narrow versus broad), awareness (dissociative versus integrative), visualization (prominent versus minimal), and agency (hidden observer versus no self). That is, hypnosis and mindfulness are unique states of consciousness with overlapping, yet distinct, experiential and neurophysiological features.

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