Nuances and Uncertainties regarding Hypnotic Inductions: Towards a Theoretically Informed Praxis

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Abstract

Although most definitions of hypnosis consider inductions as the initial stage in a hypnosis protocol, our knowledge of inductions remains poor and uninformed by recent developments in theory and research. It is frequently argued that inductions play a critical role in hypnotic responding or, by contrast, are largely interchangeable and unimportant. Drawing on the literature on suggestibility, spontaneous phenomenology, neurophysiology, and cognition, we argue that the value of inductions, as well as the *potential* value of inductions, is more nuanced and uncertain. Certain components of standard inductions appear to be efficacious in enhancing suggestibility, whereas others do not have any clear benefits. The impact of inductions on suggestibility seems to vary across suggestions and modes of assessment with the sources of this variability being unknown. Considering these effects, and the broader impact of inductions on spontaneous conscious states and cognition, through the lens of heterogeneity in high hypnotic suggestibility and componential models of hypnotic suggestibility may offer novel research avenues in this area. We conclude by arguing for the practical and theory-driven optimization of inductions.

Keywords: hypnosis; hypnotizability; induction; measurement; neurophenomenology

Most definitions of hypnosis consider inductions as the initial stage in a hypnosis protocol (Elkins, Barabasz, Council, & Spiegel, 2015; Nash, 2005). Hypnotic inductions may follow introductory remarks about hypnosis and typically consist of instructions and suggestions intended to make the participant receptive to subsequent suggestions for changes in experience and behavior. Although inductions vary considerably, most are implemented with the *goal* of promoting an attentional state in which one is absorbed in the words and actions of the therapist or experimenter, but inattentive to environmental stimuli and extraneous concerns (Barber, 1984). However, despite their widespread use, and some early systematic research (Barber, 1969; Hilgard, 1965), our knowledge of inductions remains relatively poor and uninformed by recent developments in theory and research. As is unfortunately the case with other features of hypnosis, some clinicians and researchers overstate the case, declaring either that some specific inductions are especially effective (Bandler & Grinder, 1975) or, contrariwise, that inductions are unimportant and/or that all inductions have relatively similar effects (Spanos, 1986). In contrast, we believe that the value of inductions, as well as the *potential* value of inductions, is more nuanced and uncertain, and warrants greater empirical attention. In what follows we summarize research on the impact of inductions, drawing on the literature on suggestibility, spontaneous phenomenology, neurophysiology, and cognition. We further consider a number of these effects through the lens of heterogeneity in high hypnotic suggestibility. Rather than arguing for or against the impact of inductions on suggestibility, we maintain that uncertainties abound. We aim to call attention to the relatively impoverished state of knowledge regarding inductions and their component features and argue for renewed attention to the *optimization* of inductions.

Inductions and their Components

Most hypnosis protocols, and all measures of hypnotic suggestibility, involve some type of induction. In the *indirect* or *informal* approach championed in the Milton Erickson clinical perspective, there may not be any obvious induction; in contrast, formal inductions involve suggestions to relax and/or imagine something, fixate on a target or look upwards, manipulate the person's body, confuse or even shock the person with a sudden movement or word, and so on (Hammond, 1988; Weitzenhoffer, 2000). Inductions vary depending on the scale used or the aims, theoretical orientation, and practical considerations of the clinician or experimenter administering the induction. For example, Barber (1969) devised the *Barber Suggestibility Scale* with alternatives for prefacing specific suggestions with a typical hypnotic induction, task motivational instructions, or no instruction at all. The structure of inductions varies considerably in clinical contexts whereas most empirical studies use variations of the inductions included in standardized scales of hypnotic suggestibility (Woody & Barnier, 2008). However, the most widely used hypnotic suggestibility scales are decades old and consequently do not take into consideration recent theoretical advances. Moreover, the inductions included in these scales are often grafts of various historical ideas about hypnosis that have been shown to be false (e.g., implied associations between hypnosis and sleep) (Hilgard, 1982) and, are at times cumbersome, poorly phrased, and too long (e.g., Shor & Orne, 1962).

Standardized inductions used in research are often comprised of four components: (a) *procedure identification*: identifying the procedure as hypnosis and informing someone that they will enter a state of hypnosis; (b) *receptive set*: instructions and suggestions to put the participant in an appropriate or receptive experiential set; (c) *relaxation*: instructions, exercises, and suggestions intended to promote relaxation; and (d) *absorption set*: instructions and suggestions

to promote absorption in the words and actions of the experimenter and the corresponding suggested or spontaneous inner experiences while diminishing attention to environmental stimuli and extraneous concerns. Although these components are present in the vast majority of inductions used in hypnosis research, an obvious question is whether they represent *essential* or *functional* elements of an induction.

The research carried out to investigate this question indicates that not all of these components are efficacious. There is evidence that the first is important: the word *hypnosis* embedded within an induction elicits greater suggestibility than an induction without it (Gandhi & Oakley, 2005). The probable reason is that this word produces for many people in Western culture the expectation that the procedure will bring about unusual changes, which may elicit the appropriate response from the participant according to her/his capacity (Cardeña, 2014b; Wagstaff, 2014). In contrast, in other sociocultural contexts in which *hypnosis* does not have the same cultural baggage, using the term will probably have no, or even negative, effects (Cardeña & Krippner, 2010). However, the use of the word alone is potentially insufficient and may require some type of induction to have a greater effect. For instance, Barber (1969) found that participants felt more hypnotized if the word *hypnosis* was accompanied by relaxation suggestions.

The second common component of inductions would fall to a large degree under *Response Set Theory* (Kirsch & Lynn, 1998; Lynn, Kirsch, & Hallquist, 2008), which states that providing the context for expectations of behavioral and subjective changes may elicit such responses. Although there is considerable evidence for an association between response expectancies and hypnotic suggestibility (Benham, Woody, Wilson, & Nash, 2006; Lynn et al., 2008), there are very few studies that bear on the influence of different types of verbalizations

intended to change the person's set (e.g., "remain open to whatever you experience" vs. "you can analyze your behavior") on hypnotic responding. One example is a study in which, after a relaxation induction, suggestions encouraging reduced critical thinking or absorption were more efficacious in increasing suggestibility than additional relaxation suggestions (Brown, Antonova, Langley, & Oakley, 2001). There is also some, albeit mixed, evidence that manipulating environmental stimulation to enhance expectancies for response to suggestion increases suggestibility (Benham, Bowers, Nash, & Muenchen, 1998; Lifshitz, Howells, & Raz, 2012; Wickless & Kirsch, 1989). An example of this might be surreptitiously manipulating the lighting in the room after informing participants that those very responsive to hypnosis might experience changes in the lighting (Wickless & Kirsch, 1989).

The available evidence indicates that the third component (relaxation) is incidental and unnecessary. Research has shown that inductions involving physical exercise and/or verbalizations for mental alertness are as effective as relaxation-based inductions (Bányai & Hilgard, 1976; Cardeña, Alarcon, Capafons, & Bayot, 1998; Malott, 1984; Mitchell & Lundy, 1986). Other research suggests that relaxation inductions may not reliably enhance suggestibility (Brown et al., 2001). In contrast, the fourth component, absorption, seems to enhance suggestibility, although not as much as reducing critical thinking (Brown et al., 2001), or as using facilitative sensory stimulation (Wickless & Kirsch, 1989). Thus, research suggests that certain components of standardized inductions (using the word hypnosis, fostering absorption, and reducing critical thinking) enhance suggestibility whereas others (relaxation) are incidental and unnecessary (see also Hilgard, 1982). However, the scant research on the influence of these different components on suggestibility has largely treated them in isolation and thus an

outstanding question is whether, and to what extent, they have additive or interacting effects on suggestibility.

Another important question is whether different inductions are beneficial for certain types of subsequent suggestions or for individuals with particular abilities. Thus, for instance, it may be that relaxation inductions will facilitate later imaginative suggestions to imagine oneself lying on a beach because they decrease afferent somatosensory stimulation, whereas arousing inductions may be more beneficial for suggestions to increase one's sense of bodily vigor and energy (cf. Cardeña, 2005). Similarly, inductions that implicitly or explicitly encourage specific strategies for hypnotic responding may be differentially effective depending on the individual's preferred or habitual strategy, cognitive set, and the respective suggestion (Sheehan & McConkey, 1982). Such contextual influences have not been properly explored although they are consistent with the observation that the preceding suggestion seems to influence the underlying ability or strategy one uses when responding to a suggestion (Woody, Barnier, & McConkey, 2005) and the reliable finding that highly suggestible individuals display pronounced inter-individual variability in the types of suggestions to which they respond (McConkey & Barnier, 2004; Terhune, 2015).

Inductions and Suggestibility

Some researchers maintain that anything can function as an induction, from an extended relaxation-based induction to the ringing of a bell, and that the components of inductions are relatively unimportant (Spanos, 1986). According to such accounts, what is important is the contextual cue that one is about to undergo a hypnotic procedure and the elicitation of any associated response (Lynn et al., 2008). This position is largely based on data showing that a

hypnotic induction elicits only a modest increase in suggestibility (Braffman & Kirsch, 1999; Hilgard & Tart, 1966). In our opinion, discussions about the impact of inductions on suggestibility have stopped prematurely in the wake of such data, failing to properly consider other equally rich data that complicate interpretation.

There are a number of concerns with generalizing solely on the basis of behavioral hypnotic suggestibility scales. First, it is unclear to what extent hypnotic suggestibility scales accurately index the *classic suggestion effect*, namely the perceived involuntariness of responses to suggestions (Weitzenhoffer, 1980) (for alternative interpretation, see Bowers, 1981; Hilgard, 1981). For example, research measuring involuntariness during response to suggestions in a standardized scale showed that as many as 20% of responses are executed in a *completely* voluntary manner (Bowers, Laurence, & Hart, 1988). Thus, hypnotic suggestibility scales probably index a mixture of involuntary and compliant responses that cannot be reliably distinguished solely on the basis of behavioral indices (see also Balthazard & Woody, 1992; Barnes, Lynn, & Pekala, 2009; Kirsch, Silva, Comey, & Reed, 1995). Second, only minimal attention has been devoted to experiential responses to hypnotic suggestions in the wake of an induction. Although behavioral and experiential scales are moderately to strongly associated (Kirsch, Council, & Wickless, 1990; Kirsch, Milling, & Burgess, 1998), they are not redundant (Bowers et al., 1988; Ruch, Morgan, & Hilgard, 1974) and experiential scales may offer valuable information absent from studies that rely solely on behavioral measures (Bates & Brigham, 1990; Cardeña & Terhune, 2014; Cardeña, Terhune, Loof, & Buratti, 2009; Council, Kirsch, & Hafner, 1986; Spanos, Arango, & Degroot, 1993). Third, statements regarding the impact of inductions have typically neglected behavioral and experiential data drawn from experimental research

involving different inductions and/or more complex suggestions and methods for assessing responsiveness to suggestion.

Different inductions have been compared only very rarely, despite the importance of such knowledge. Spanos and colleagues (1986) found no differences in different behavioral and experiential measures of suggestibility between the *Carleton University Responsiveness to Suggestion Scale* (CURSS) induction (Spanos et al., 1983) - which in contrast with most other standardized inductions emphasizes that responsiveness depends entirely on the willingness to cooperate, and that the participant retains full control - and that of the *Stanford Hypnotic Susceptibility Scale: Form C* (Weitzenhoffer & Hilgard, 1962) induction, which includes a standard relaxation-based induction. However, in a later study the CURSS induction produced a greater number of participants of low hypnotic suggestibility than two other inductions, the HGSGS:A and the GSHA (an abbreviated version of the HGSHS:A, matching the length of the CURSS), and reports of feeling less deeply hypnotized, more rational, and so on (Barnes et al., 2009).

With regard to informal Ericksonian approaches, indirect inductions have not been shown to be more effective in enhancing suggestibility than direct ones (Lynn, Neufeld, & Mare, 1993); in fact, the latter have been found to elicit greater spontaneous changes in consciousness (Robin, Kumar, & Pekala, 2005). Page and Handley (1991) also found no difference in behavioral or experiential suggestibility between a standard relaxation-based induction and a Chiasson induction, in which one stares at her/his outstretched hand; nor did Page and colleagues find that adding a visual and auditory device to enhance gaze fixation produced a greater effect than a standard eye fixation induction (Page, Handley, & Carey, 2002). Similarly, an induction that includes visual fixation, although widespread, does not seem to have a greater effect than one

without it (Weitzenhofer & Sakata, 1970). The length of the induction does not appear to be critical either as rapid inductions appear to be similarly effective and may actually be viewed more favorably than traditional inductions (Martinez-Tendero, Capafons, Weber, & Cardeña, 2001), although at least one study observed noticeably greater, albeit non-significantly so, behavioral and experiential hypnotic suggestibility for a 10 min than a 1 min induction (Klinger, 1970). Furthermore, individuals feel more deeply hypnotized after some minutes have elapsed than immediately after an induction, which would speak against a very rapid induction (Cardeña et al., 2013). There is also some evidence that formal inductions may also be less important in clinical contexts (Straus, 1980). On the whole, these studies reveal relatively few - and minor - differences in the impact of different inductions on suggestibility.

Research on complex suggestions in experimental settings using more advanced methods introduces greater nuance into the impact of an induction on suggestibility. It has been shown, for instance, that non-hypnotic suggestions are comparably effective to posthypnotic suggestions in disrupting the Stroop interference effect (Raz, Kirsch, Pollard, & Nitkin-Kaner, 2006). This aligns with some of the studies reviewed above that an induction may have only minimal impact. In contrast, research on delusions in which participants judged the magnitude of their response continuously using a dial found that hypnotic suggestions elicited more *rapid* responses than suggestions that were preceded by a puzzle task rather than an induction, even though the two methods were associated with roughly equivalent *frequencies* of response to the suggestions (McConkey, Szeps, & Barnier, 2001). Another study on induced delusions similarly found that the same suggestion for a mirror-self misidentification delusion was eight times more effective when preceded by an induction (Connors, Barnier, Coltheart, Cox, & Langdon, 2012). These data suggest that the impact of an induction on suggestibility is far less clear-cut than suggested

by some authors. In particular, these results raise the question whether an induction is more effective for particular suggestions. They also suggest the possibilities that the impact of an induction may be more salient for particular *features* of an individual's response to a suggestion and/or that certain measurement methods may be better at detecting the efficacy of an induction (e.g., McConkey et al., 2001).

Other questions regarding the impact of inductions on suggestibility remain largely unexplored. Inductions may include explicit or implicit suggestions regarding the strategies to use when responding to suggestions, which may impact suggestibility (Woody & Barnier, 2008). For example, Comey and Kirsch (1999) found that *omitting* instructions for goal-directed fantasy in an induction was associated with increased responsiveness to some suggestions. There is also evidence that responsiveness to different suggestions recruits different underlying mechanisms (Woody et al., 2005). In particular, this research implies that hypnotic suggestibility may be comprised of a core ability *and* ancillary componential abilities that differentially influence responsiveness to specific suggestions (e.g., ideomotor vs. hallucination suggestions). Thus, different inductions or different components of inductions may have a different impact on ensuing suggestions. Previous research found that non-hypnotic suggestibility was more strongly associated with easy (ideomotor) suggestions than difficult (cognitive-perceptual) suggestions (Woody, Drugovic, & Oakman, 1997). If this association holds, responsiveness to cognitive-perceptual suggestions should be influenced by an induction to a greater extent than ideomotor suggestions.

Induction Response Variability

An indisputable fact about hypnosis is that individuals display marked variability in their responsiveness to suggestions. Conceptualizing an induction as the first suggestion in a hypnosis procedure (Nash, 2005) implies that individuals may vary in their response to the induction. Although an understudied question, research indicates that inductions do not elicit uniform changes in suggestibility across participants. For example, Tart and Hilgard (1966), identified subgroups of participants who were either highly suggestible at baseline *and* following an induction or low in suggestibility at baseline *but* highly suggestible following an induction (see also Hilgard & Tart, 1966). Braffman and Kirsch (1999) similarly found that an induction increased behavioral and experiential suggestibility in ~45% of participants but decreased them in ~28% of participants. Although the relative lack of observable change in suggestibility following an induction in some highly suggestible individuals may be due to ceiling effects (Kirsch et al., 2011), these data still highlight the considerable variability in response to an induction.

These data might be reconciled with typological models of high hypnotic suggestibility, according to which there may be two or three discrete subtypes of respondents (Barber, 1999; Carlson & Putnam, 1989). These accounts maintain that one of these subtypes is characterized by pronounced dissociative tendencies and there is growing evidence in favor of this typology (Terhune & Cardeña, 2015). Barber (1999), in particular, predicted that high dissociative highly suggestible individuals would be more responsive to an induction than highly suggestible individuals low in dissociation. This prediction has not yet been directly tested to our knowledge, but preliminary, indirect evidence comes from studies showing that individuals with pronounced dissociative symptoms (i.e., those with dissociative, posttraumatic, or functional neurological

disorders) display elevated hypnotic suggestibility (Bryant, Guthrie, & Moulds, 2001; Roelofs et al., 2002; Spiegel, Hunt, & Dondershine, 1988) (but see Litwin & Cardeña, 2001), but do not seem to differ from controls in non-hypnotic suggestibility (Brown, Schrag, Krishnamoorthy, & Trimble, 2008). This leads to the prediction that dissociative tendencies will be associated with an individual's increase in suggestibility following an induction. These potentially rich inter-individual differences are lost in the use of aggregate data to contrast baseline and hypnotic suggestibility and should be considered more thoroughly in future research on the impact of inductions.

Spontaneous Experiential and Cognitive Sequelae of Inductions

Discussions of the impact and significance of inductions have typically neglected the spontaneous sequelae experienced by participants following an induction. These phenomena, however, provide valuable information regarding changes in cognitive and perceptual functioning produced by an induction, and their neurophysiological underpinnings, and are likely to color the phenomenology of hypnotic responding more broadly as they reliably covary with individual differences in hypnotic suggestibility (Pekala & Kumar, 2007).

One line of research has sought to explore the spontaneous experiences reported in response to a standard induction using a self-report instrument, the *Phenomenology of Consciousness Inventory* (Pekala & Kumar, 2007). This research has consistently found that highly suggestible individuals reliably experience spontaneous alterations in body image, time perception, meaning, and awareness, increased affect and imagery, and decreased self-awareness, rationality, volition, and memory following an induction (see also Cardeña, 2014a). One study reported that direct and indirect inductions have similar effects on spontaneous

phenomenology (Szabó, 1993), although a subsequent study found that direct inductions elicited greater spontaneous alterations in awareness (Robin et al., 2005).

One limitation of these studies is that they used standardized inductions drawn from standard scales such as the *Harvard Group Scale of Hypnotic Susceptibility: Form A* (Shor & Orne, 1962). As described above, these inductions typically include references to sleep and repeated instructions and suggestions to promote relaxation and heaviness of the body and limbs, absorption in the words of the experimenter, and reduced awareness of the environment. Thus, any changes in different dimensions of consciousness following an induction may be driven by the inclusion of such components. In turn, the use of such inductions renders it difficult to disentangle which experiences are attributable to which components. Cardeña (2005) circumvented these limitations by using a minimal (neutral) induction with only a 1-30 count and a suggestion to go into hypnosis. Highly suggestible participants still exhibited pronounced changes in a variety of dimensions of consciousness similar to those reported by Pekala and Kumar (2007), although low suggestible individuals did not experience substantial changes (Cardeña, Jonsson, Terhune, & Marcusson-Clavertz, 2013). These results complement the observation that the word *hypnosis* enhances suggestibility (Gandhi & Oakley, 2005) and seem to suggest that many features of standardized inductions are not necessary to observe the rich spontaneous sequelae of an induction. Complicating matters, research has begun to show that spontaneous experiential response to an induction may comprise discrete patterns (Pekala & Kumar, 2007; Terhune & Cardeña, 2010). We previously found that highly suggestible participants exhibited one of two distinct response patterns: a *dissociative* response characterized by greater alterations in experience, greater negative affect, poorer attention, and reduced volitional control, and an *inward attention* response characterized by greater awareness of mental

processes and greater imagery vividness (Terhune & Cardeña, 2010). These results suggest that inductions elicit a diverse array of spontaneous experiences that may form unique patterns of responding.

Such research can be further expanded upon by adopting a neurophenomenological orientation that integrates neurophysiological and experiential data (Cardeña, 2016; Lutz & Thompson, 2003). Following this approach, we recently investigated the electrophysiological correlates of spontaneous experiences following a neutral induction (Cardeña et al., 2013). Notably, spontaneous experiences of positive affect and transcendence, and hypnotic suggestibility (marginally), were inversely associated with global functional connectivity, suggesting that some spontaneous anomalous experiences following an induction are associated with reduced network communication. Complementary research has further shown that following an induction highly suggestible individuals exhibit reduced frontal-parietal connectivity (Terhune, Cardeña, & Lindgren, 2011a) and frontal connectivity (Jamieson & Burgess, 2014) in frequency bands related to a range of higher-order cognitive functions.

Using EEG, De Pascalis (1993) found that during the early and middle stages of an induction (Morgan & Hilgard, 1979), highly suggestible participants exhibited greater power in the upper beta band than low suggestible participants. Offering better spatial resolution than EEG, resting state fMRI research (McGeown, Mazzoni, Venneri, & Kirsch, 2009) has shown that highly suggestible individuals exhibit a greater reduction in anterior medial prefrontal cortex following an induction than low suggestible participants (see also Deeley et al., 2012). Medial prefrontal cortex is activated during a range of psychological functions so these data should be interpreted cautiously. Nevertheless, insofar as this region is similarly activated during metacognition of agency (Miele, Wager, Mitchell, & Metcalfe, 2011), it is plausible that changes in the activity

patterns of this region reflect decreases in metacognition or self-related processing (see also Landry & Raz, 2015), that contribute to individual differences in hypnotic suggestibility. Additional research is required to clarify the neurophysiological basis of these experiences but these converging results have begun to highlight how neurophysiological changes following an induction underlie spontaneous alterations in consciousness.

An independent line of research has sought to understand the impact of an induction on spontaneous cognition and perception. This research has been motivated by the desire to discriminate between competing theories of hypnosis (Woody & Sadler, 2008), but it also has implications for the role of inductions in hypnotic responding. Although not programmatic, multiple studies have suggested that a hypnotic induction impairs selective attention among highly suggestible, but not low suggestible, individuals (Jamieson & Sheehan, 2004) (see also Farvolden & Woody, 2004). These results are arguably consistent with the phenomenological and neurophysiological sequelae of inductions described above. Inductions also seem to reliably produce contractions in the perception of duration relative to control conditions (Naish, 2014). These timing distortions are of theoretical importance given the overlapping neural circuitry between time perception and sense of agency (Yin, Terhune, Smythies, & Meck, 2016), changes in which constitute the primary phenomenological feature of hypnotic responding (Bowers, 1981; Kihlstrom, 2008; Weitzenhoffer, 1980).

As with other dimensions of hypnotic responding, individuals also vary in the extent to which their cognitive functioning is affected by an induction. In two independent studies with different samples, an induction selectively impaired sustained attention and cognitive control among high suggestible individuals who were highly dissociative, but not among those who exhibited few dissociative tendencies (Marcusson-Clavertz, Terhune, & Cardeña, 2012; Terhune,

Cardeña, & Lindgren, 2011b). The former study used a relaxation-based induction that did not mention hypnosis whereas the latter used a hand heaviness induction without mentioning relaxation (the two subtypes did not differ in relaxation across conditions), suggesting that these results are relatively robust and that some of the spontaneous responses to an induction may be restricted to, or elevated among, high dissociative highly suggestible individuals. Such effects may be related to other characteristics of this subgroup including elevated involuntariness (Terhune, Cardeña, & Lindgren, 2011c) and reduced attentional effort (King & Council, 1998) during hypnotic responding, as well as in their spontaneous experiences in daily life (Cardeña & Marcusson-Clavertz, 2016). These findings suggest that an induction elicits spontaneous changes in cognition and perception in highly suggestible individuals and that some of these effects are more pronounced in high dissociative highly suggestible individuals. How these results relate to other effects of an induction remains unclear and requires further research.

Optimizing Inductions

Although much of the discussion regarding the impact of inductions has focused on whether inductions are effective in enhancing suggestibility and which components of inductions are essential, a more substantive question is which components function to *optimize* inductions. In other words, researchers and clinicians should actively seek to better understand which components facilitate the largest increase in suggestibility and, whether these components are uniformly efficacious across individuals. In this final subsection we return to the components of inductions and consider ways to optimize inductions. We first describe a number of practical ways to improve inductions and then advocate for theory-driven optimization of inductions.

The most widely used measures of hypnotic suggestibility were developed more than half a century ago (Shor & Orne, 1962; Weitzenhoffer & Hilgard, 1962) and there are concerns regarding their efficacy (Bowers et al., 1988; Ruch et al., 1974; Terhune, 2015; Woody & Barnier, 2008). As research turns to the development of novel measures of hypnotic suggestibility, researchers and clinicians must also improve the inductions present in these scales. The efficacy of inductions can be easily enhanced with relatively minor adjustments. Standard inductions are excessively long, particularly in the HGSHS:A (Shor & Orne, 1962), and evidence from rapid inductions (Eitner, Wichmann, Schlegel, & Holst, 2006) suggests that this is unnecessary. For example, we have often noticed how all or most participants have already responded to the eye closure suggestion within the induction of the HGSHS:A long before the suggestion is completed, exemplifying the unnecessarily drawn-out nature of the induction. Inductions also sometimes make reference to antiquated ideas about hypnosis that are not empirically sound, such as the similarities between hypnosis and sleep, clear vestiges from previous eras (Hilgard, 1982) that should be excluded from standard inductions. We routinely omit such references in our own research and we suspect that others do as well but it is important for such omissions to become standard practice in order to ensure methodological uniformity across studies. Similarly, although they represent a core feature of the majority of inductions and are present in most of the major scales, the evidence indicates that there is mixed evidence as to how much, if at all, relaxation suggestions increase suggestibility (Bányai & Hilgard, 1976; Barber, 1969; Brown et al., 2001). Thus, we recommend that inductions in future scales and in experimental studies be more rapid and omit references to sleep and perhaps to relaxation. Standard inductions might also be strengthened by including absorption-specific instructions (Brown et al., 2001).

A further concern, the significance of which is not yet clear, is the uniformity of inductions across studies. Cognitive and neuroimaging studies often draw or adapt inductions from standard scales, which is beneficial because it ensures that readers are aware of the induction structure; however, this practice is not universal and inductions are not always clearly specified. Perhaps more worrisome is that a number of neuroimaging studies on hypnosis have used inductions that include instructions and suggestions for visual imagery (for a review, see Oakley & Halligan, 2013). The inclusion of such specific suggestions, which do not have any clear value in the enhancement of suggestibility to our knowledge, only functions to cloud the interpretation of any phenomenological and neurophysiological data (Cardeña et al., 2013). For this reason, we think that the development of a battery of different inductions, with descriptions of their intended use and strengths and limitations, will prove useful across a range of contexts and procedures. This will advance the field by providing a common set of replicable procedures that provide much-needed standards for this understudied, but potentially important, feature of hypnosis. This battery should be developed with consideration to individual differences in hypnotic suggestibility (Terhune & Cardeña, 2015) and responsiveness to inductions (Braffman & Kirsch, 1999; Tart & Hilgard, 1966) as well as the characteristics of the subsequent suggestions. For example, analgesia suggestions may be better preceded by a relaxation than an active-alert induction (see also Woody et al., 2005). Moreover, such a battery may prove useful for clinicians, who may, for instance, work with highly dissociative individuals, who may feel more comfortable with an induction that emphasizes that they retain control over their experiences.

Inductions can be further optimized by approaching their development in a more theory-driven manner that integrates information from a range of sources to further enhance

suggestibility. We find it unfortunate that relatively few of the previous comparisons of different inductions were grounded in contemporary theory. Theory-driven optimization has the potential to yield not only empirically-based induction modifications but also novel ways of testing such theories. A dominant strand present in a diverse array of theories of hypnosis is that hypnotic responding is characterized by a disruption of executive monitoring or meta-awareness (Dienes & Perner, 2007; Hilgard, 1977; Kunzendorf, 1985-86). For example, Kirsch and Lynn (1998) proposed that individuals might intentionally respond to suggestions but the volitional nature of their responses does not breach awareness. Dienes and Perner (2007) similarly proposed that the intention associated with the enactment of a response may not be accessible to consciousness because of a failure of metacognition, producing the perception that one was not the author of the response (i.e., the classic suggestion effect; Bowers, 1981; Weitzenhoffer, 1980). A corollary of these and similar accounts is that the experimental disruption of metacognition will augment suggestibility (Semmens-Wheeler, Dienes, & Duka, 2013). To our knowledge, only one study has explored this idea within the context of an induction. As described above, Brown and colleagues (2001) incorporated instructions and suggestions for reduced critical thinking, increased absorption, or further relaxation following a relaxation-based induction and found that the critical thinking (and, to a lesser extent, absorption) instructions enhanced behavioral and experiential suggestibility more than additional relaxation instructions. This suggests that promoting a reduction of mindfulness and disengagement from the critical evaluation of one's responses may augment hypnotic responding.

Other variables that should be targeted in inductions include response expectancies and rapport (Lynn et al., 2008). Although we believe that the magnitude of the role of response expectancies in hypnotic responding has sometimes been overstated, there is consistent evidence

for an association between response expectancies and hypnotic suggestibility (Benham et al., 2006; Lynn et al., 2008) and increasing expectancies through different manipulations may prove to be a valuable way of enhancing suggestibility. For example, Klinger (1970) found that observing peers modeling high responsiveness increased the observers' own responsiveness. Although studies examining the extent to which manipulating variables that should augment response expectancies influences hypnotic suggestibility have produced mixed results (Benham et al., 1998; Lifshitz et al., 2012; Wickless & Kirsch, 1989), future research may benefit from considering ways to enhance response expectancies during the induction phase. By contrast, to our knowledge no research has sought to systematically investigate ways by which rapport could be enhanced during the induction, but given its importance in both clinical and experimental contexts this represents an important question that warrants attention.

Research on the optimization of inductions will also need to grapple with a number of methodological challenges. Between-groups designs involving the random allocation of participants to an induction condition or a control condition require larger sample sizes than within-groups designs in which participants undergo both conditions sequentially and thus are at increased risk of Type II errors, as demonstrated in failures to observe induction-specific differences in between-groups designs (Hilgard & Tart, 1966). Accordingly, any studies adopting between-groups designs will need to be prudent in the interpretation of null results and should consider using Bayesian statistical analyses (Dienes, 2014) and/or meta-analysis in order to more clearly weigh the respective evidence for or against the impact of an induction or specific components of an induction. In contrast, although within-groups designs have increased statistical power, they are susceptible to carryover effects. Although such effects do not necessarily pose a concern in psychological research, they do represent a clear challenge in

hypnosis studies. For instance, previous research has shown that the impact of an induction on suggestibility is *greater* when the induction condition precedes the baseline condition than when the baseline condition precedes the induction condition; this effect has been interpreted as participants "holding back" in the former (Braffman & Kirsch, 1999). Further research has cited this as justification for administering the baseline condition prior to the induction condition with no counterbalancing (Milling, Coursen, Shores, & Waszkiewicz, 2010), but this may lead to an underestimation of the impact of an induction. Moreover, induction-specific differences observed in within-groups designs might also be related to fatigue, boredom, familiarity, or practice associated with repeated administration of the suggestion protocol. Future research on the impact of inductions should prioritize identifying the psychological variables that mediate any order effects in order to more robustly estimate the impact of an induction on suggestibility.

Summary and Conclusions

Although clinicians and researchers have made strong pronouncements regarding the importance, or lack thereof, of hypnotic inductions, a careful reading of the impact of inductions on suggestibility, spontaneous conscious states, cognition, and neurophysiology suggests a more nuanced perspective. Certain components of standard inductions appear to be efficacious in enhancing suggestibility whereas others do not. The impact of an induction on suggestibility varies depending on a number of factors including the type of suggestion and the mode of assessment, although the source of this variability is unknown. Moreover, inductions do not seem to uniformly impact suggestibility and cognition, and preliminary evidence suggests that typological and componential models may provide a valuable framework for understanding individual differences in the impact of an induction on suggestibility, spontaneous experience,

and cognition. Despite the uncertainties surrounding the characteristics and mechanisms of inductions, theory-informed approaches offer new avenues for the optimization of inductions, a critical step in the development of novel measures of hypnotic suggestibility.

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