

## SLIPPING INTO TRANCE

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### Abstract

It has been hypothesized that highly hypnotizable people spontaneously slip into trance when given imaginative suggestions without prior induction of hypnosis. We tested this in two studies. In Study 1, we examined state reports from ten highly suggestible students following the administration of a suggestion for altered colour perception. The suggestion was administered twice, once with and once without prior induction of hypnosis. Students reported equivalent perceptual changes with and without the induction of hypnosis, but reported being in a hypnotic state only when a hypnotic induction had been administered. In Study 2, participants received either a hypnotic induction or specific suggestions to not slip into hypnosis. Even under these circumstances, subjective responding was equivalent in both conditions and behavioural responding was only slightly higher in the 'hypnosis' condition. These data disconfirm the slipping-into-hypnosis hypothesis. Copyright © 2008 British Society of Experimental & Clinical Hypnosis. Published by John Wiley & Sons, Ltd.

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### Slipping into trance

Imaginative suggestions administered in the normal waking state (i.e. without the induction of a hypnotic trance) can elicit the same behavioural and subjective responses that are observed in hypnosis (Hull, 1933; Glass and Barber, 1961; Weitzenhoffer and Sjöberg, 1961; Barber and Glass, 1962; Hilgard and Tart, 1966; Braffman and Kirsch, 1999).<sup>1</sup> Hypnotic and waking responses to the same suggestions are highly correlated, and the difference between them is relatively small. These data have led some theorists to conclude that the effect of hypnotic trance is merely to enhance suggestibility to a relatively small degree (Hull, 1933; Hilgard and Tart, 1966; Hilgard, 1967) and have led others to doubt the very existence of the hypothesized hypnotic state (Barber, 1969; Sarbin and Coe, 1972; Spanos and Chaves, 1989).

One concern that has been raised about these studies is that subjects might inadvertently slip into hypnosis when given a suggestion without the prior induction of hypnosis (Hilgard and Tart, 1966; Nash, 2005). To avoid this, some researchers have changed the wording of the suggestion given outside of hypnosis from what it was when given in hypnosis (Kosslyn, Thompson, Costantini-Ferrando, Alpert and Spiegel, 2000; Iani, Ricci, Gherri and Rubichi, 2006). Kosslyn et al., for example, asked participants to 'experience' a grey-scale pattern as being in colour when the suggestion was given in

hypnosis, but changed this to ‘remember’ colour when the suggestion was given without prior induction of hypnosis. They explained that ‘the instructions for this condition were worded to avoid leading the subjects, who were all highly hypnotizable, to fall into a hypnotic state during performance of the task’ (p. 1281).

Many years ago, John Chaves (quoted in Barber, 1969) called attention to the problems associated with the slipping-into-hypnosis hypothesis:

If the subjects do, indeed, slip in and out of hypnosis... and if the hypnotic state is relevant to behaviour, it would seem that much research in psychology has been negated since very few if any investigators control for this variable. Carried to its logical conclusion, it would be necessary for all experimenters in psychology – irrespective of whether they are studying learning, reaction time, psychophysics, psychophysiology, or whatever – to periodically insure that their subjects had not slipped into hypnosis... More specifically, constructs such as ‘normal state’ and ‘hypnosis,’ as used by hypnotic state theorists, must be unambiguously and nontautologically denoted before questions pertaining to ‘spontaneous hypnosis’ can be seriously entertained. (Chaves, 1966, quoted in Barber, 1969: 223–4)

In Study 1, we used initial data from an ongoing study to examine whether people slip into trance spontaneously when given imaginative suggestions. As in the Kosslyn et al. (2000) study, participants were asked to see colour in a grey-scale pattern and to see a coloured pattern in shades of grey. We asked them to do this both in and out of hypnosis using the exact same suggestion each time, and we assessed their experience of being in a hypnotic trance by eliciting hypnotic state reports (Hilgard and Tart, 1966).<sup>2</sup> This allowed us to avoid the circularity problem that Chaves had identified.

In Study 2, we replaced a hypnotic induction with instructions to ‘not slip into hypnosis’. If participants who receive this information generally respond comparably to individuals who receive a hypnotic induction, it would imply that the comparability of responding across hypnotic and waking conditions cannot be attributed to ‘slipping into hypnosis’.

## Study 1

### *Method*

Participants were nine undergraduate students at the University of Hull and one undergraduate student at the University of Sussex. They had been selected from a larger group of approximately 400 students who had been screened for hypnotic suggestibility on the Waterloo-Stanford Group C (WSGC) scale of hypnotic susceptibility (Bowers, 1993) or the Carleton University Responsiveness to Suggestion Scale (CURSS) (Spanos, Radtke, Hodgins, Bertrand, Stam and Dubreuil, 1983). To be eligible for participation, participants needed to have scored at least 5 on the CURSS or 9 on the WSGC.

For the main part of the study, participants were assessed individually. After being greeted by the experimenter, they were told:

Previous research has shown that some people with very high levels of imaginative ability are able to see a colour stimulus as grey and a grey stimulus as coloured. Research has also shown that people can respond to suggestions for perceptual alterations whether or not they have been hypnotized. The purpose of this study is to assess your ability – both in and out of hypnosis – to experience coloured stimuli as if they were grey and grey stimuli as if they were coloured.

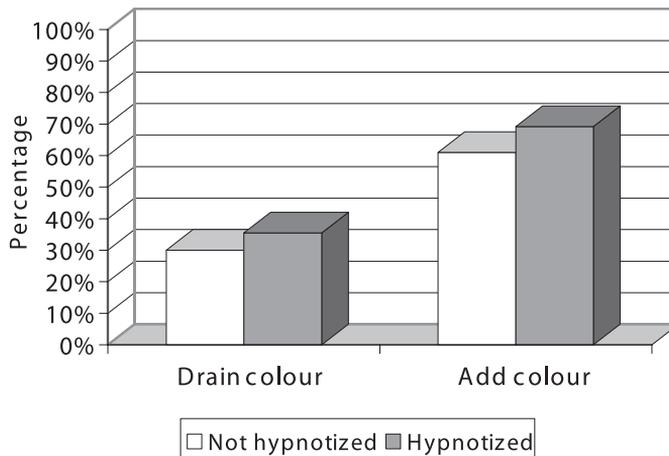
They were then shown the two stimuli used in the Kosslyn et al. (2000) study, so that they would understand the nature of the colour changing task.

On each of four trials, two of which were preceded by a hypnotic induction taken from Kirsch, Lynn and Rhue (1993), participants were asked to first see the stimulus as it actually was (in colour or in shades of grey). Then, following a pause of ten seconds, they were asked to alter their perception of it, using the suggestions that Kosslyn et al. (2000) had used in the hypnosis condition of their study. When shown the grey-scale pattern, the suggestion was to alter their perception by adding colour, so that they actually saw it in full colour. When shown the coloured pattern, the suggestion was to drain colour so that they only saw shades of grey.

On each trial, participants were asked to indicate how much colour they saw in the stimulus (from 0 to 100%) during the suggestion to alter their perception of it. At the conclusion of the session, they were asked to indicate their state of consciousness during the two hypnosis trials and during the two no-hypnosis trials. This was done on the four-point state scale used by Hilgard and Tart (1966) for this purpose. The four choices on this scale are normal state (1), relaxed (2), hypnotized (3), and deeply hypnotized (4).

### Results

No participant reported slipping into trance during the no-hypnosis part of the study ( $M = 1.40$ ,  $SD = 0.52$ ), and all but one reported being hypnotized during the hypnosis part ( $M = 3.10$ ,  $SD = 0.57$ ). A t-test for related samples indicated that this difference was significant,  $t(9) = 7.97$ ,  $p = 0.00002$ ,  $d = 3.14$ . Degree of colour seen while adding colour to a grey stimulus and draining colour from a coloured stimulus, while in and out of hypnosis, is displayed in Figure 1. A repeated measures analysis of variance indicated that participants saw significantly more colour while perceptually adding colour to the grey-scale pattern than they did while perceptually draining colour from the coloured stimulus,  $F(1,9) = 6.50$ ,  $p = 0.03$ ,  $d = 1.21$ . Thus, the effect of the suggestion was significantly greater than the effect of the stimulus itself on self-reported colour perception.



**Figure 1.** Self-reported degree of colour seen when asked, in and out of hypnosis, to drain colour from a coloured pattern and add colour to a grey-scale pattern. 100% = full colour; 0% = no colour.

There was no significant effect of the hypnotic induction on colour perception, nor was the interaction significant. Nevertheless, in order to be certain that the suggestion had an effect in the waking state as well as in the hypothesized hypnotic state, we conducted paired-sample *t*-tests within each condition (induction versus no induction). These analyses revealed that when given a suggestion for altered colour perception in the waking state, participants reported seeing significantly more colour in the grey-scale pattern than in the coloured pattern,  $t(9) = 2.7, p = 0.02, d = 1.44$ . In the hypnosis condition, this comparison was marginally significant,  $t(9) = 1.92, p = 0.09$ . The difference between these effects is not statistically significant.

### *Discussion*

In Study 1, we found no evidence of a tendency to slip into trance without formal induction of hypnosis. Despite their self-reported success in responding to perception-altering suggestions, not one of the participants reported feeling hypnotized during the no-hypnosis part of the experiment. In contrast, the formal hypnotic induction elicited reports of feeling hypnotized, and the magnitude of this effect was exceptionally large, producing a standardized mean difference of 3.14. To interpret this effect size, note that Cohen (1992) has proposed standardized differences of 0.20, 0.50 and 0.80 to represent, respectively, small, medium, and large effects.

Given the small size of our sample, we cannot draw any conclusions about our failure to find a significant effect of inducing hypnosis on responses to the suggestions for altered colour perception. To answer that question, we will need to collect additional data. Despite our small sample, however, we found a significant difference between the amount of colour subjects reported when asked to see colour in the grey-scale pattern and the amount of colour they reported when asked to see the coloured pattern in shades of grey. Participants reported seeing more colour in the perceptually altered grey pattern than in the perceptually altered colour pattern, and the size of this effect was large by conventional standards (Cohen, 1992).

## **Study 2**

### *Method*

Participants were 136 Binghamton University undergraduates (66% Caucasian; 54% male; mean age: 19) who agreed to participate in psychology department experiments in exchange for course credit. Those who signed up for our study were randomly assigned to one of two groups: a hypnosis group, and a prevent-hypnosis group. Those in the hypnosis group ( $n = 67$ ) were tested using the Carlton University Responsiveness to Suggestion Scale (CURSS; Spanos et al., 1983). Those in the prevent-hypnosis group were also tested using the CURSS, but in place of the induction, they received instructions to not slip into hypnosis. Specifically, they were told:

Today you will receive a number of experiential suggestions. We would like to see how you experience these suggestions... Some of our subjects have said that the suggestions remind them of hypnosis. But the experiment today is not hypnosis at all. In fact, we want you to remain fully alert and wide awake at all times... If you feel yourself slipping into a state you think is in any way hypnotic, like becoming sleepy or drowsy, or whatever, be sure you come out of it as quickly as possible... And remember, don't let yourself fall into anything like a hypnotic state. Stay alert and awake.

In addition to the CURSS, all participants completed pre-test measures of response expectancies and motivation (Pre-Suggestion Questionnaire; PSQ; Braffman and Kirsch, 1999), and post-test ratings of altered states of consciousness, trance, feelings of being hypnotized, relaxation, satisfaction, concentration, positivity, negativity, and boredom, which were rated using a 5-point Likert-type scale (0 = 'not at all', 4 = 'very much').

### Results

We failed to detect any significant differences on the PSQ Expectation of Feeling or PSQ Response Expectancy subscales,  $ps > 0.10$  (see Table 1). Following the explanation of the experiment, but prior to the induction, hypnosis participants reported marginally greater motivation to respond to the suggestions on the PSQ Motivation subscale,  $t(132) = 1.79, p = 0.08, d = 0.31$ . However, immediately prior to the administration of suggestions, both groups were asked again to rate their motivation to respond as well as the number of suggestions they expected to pass. On average, hypnosis participants expected to respond to 3.03 suggestions ( $SD = 2.24$ ), whereas prevent hypnosis participants expected to respond to 3.41 suggestions ( $SD = 2.33$ ), and this difference was not significant,  $t(132) = -0.97, p = 0.34$ . Additionally, we failed to find any difference in terms of reported motivation immediately prior to suggestion administration,  $t(132) = 1.14, p = 0.26$ , indicating that motivation levels were relatively similar in the hypnosis ( $M = 3.21, SD = 1.32$ ) and prevent hypnosis ( $M = 2.97, SD = 0.97$ ) conditions.

In order to test for between-groups differences in objective, subjective and involuntariness ratings on the CURSS, we performed independent-samples t-tests with an a priori alpha level of 0.05. Group means on the CURSS subscales are displayed in Table 2. Participants in the hypnosis condition scored significantly higher on objective responding relative to the prevent-hypnosis group,  $t(133) = 2.19, p = 0.03, d = 0.38$ . However, we failed to detect any significant differences for subjective responding [ $t(133) = 0.92, p = 0.36, d = 0.16$ ] or suggestion involuntariness [ $t(133) = 1.18, p = 0.24, d = 0.20$ ]. It is noteworthy that the CURSS Objective subscale operationalizes the degree of responding

**Table 1.** Pre-suggestion and post-suggestion experiences as a function of hypnosis condition

Scale	Hypnosis ( $n = 66$ )		Prevent Hypnosis ( $n = 69$ )	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
PSQ Motivation	13.73	6.61	11.71	6.43
PSQ Expectation of Feeling	9.61	5.56	9.45	5.75
PSQ Response Expectancy	9.52	5.04	8.77	4.62
Posttest Number of Suggestions Responded (range 0–7)	2.06	1.94	2.45	2.35
Posttest Altered State of Consciousness (range 0–4)	1.21	1.23	0.59	0.91
Posttest Trance Experience 4)	1.15	1.07	0.38	0.64
Posttest Felt Hypnotized (range 0–4)	1.17	1.08	0.41	0.71
Posttest Responded Like Excellent Participant (range 0–4)	2.86	0.94	3.10	1.02
Posttest Satisfied with Ability to Respond (range 0–4)	2.15	1.24	2.32	1.12
Posttest Felt Relaxed (range 0–4)	2.92	0.92	2.87	1.08
Posttest Had a Positive Experience of Experiment (range 0–4)	2.79	0.97	2.87	1.07
Posttest Felt Bored During Experiment (range 0–4)	1.73	1.21	1.86	1.22

**Table 2.** CURSS performance as a function of hypnosis condition

CURSS Subscale	Hypnosis ( <i>n</i> = 66)		Prevent Hypnosis ( <i>n</i> = 69)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Objective	1.73	1.55	1.20	1.22
Subjective	4.88	3.71	4.30	3.56
Involuntariness	3.79	3.58	3.10	3.17

required to pass the suggestion (e.g. one's arm must rise at least six inches for the arm levitation suggestion). However, when we asked participants how many suggestions they responded without defining what constituted a response, both groups reported responding to approximately two of the suggestions (Table 1) and the mean difference between groups was nonsignificant,  $t(133) = -1.04$ ,  $p = 0.30$ .

Importantly, participants were asked about their experiences during the experiment (see Post-test questions in Table 1) and our results supported the effectiveness of the prevent hypnosis instructions. Participants in the hypnosis condition reported significantly greater altered state experiences,  $t(120) = 3.30$ ,  $p = 0.001$ ,  $d = 0.57$ ; trance experiences,  $t(106) = 5.07$ ,  $p < 0.0001$ ,  $d = 0.87$ ; and feelings of being hypnotized,  $t(112) = 4.82$ ,  $p < 0.0001$ ,  $d = 0.83$ . Moreover, whereas 15% of hypnosis participants reported that they prevented themselves from becoming hypnotized, 36% of prevent hypnosis participants actively prevented hypnotic experiences, and this difference in proportions was significant,  $\chi^2(1) = 7.54$ ,  $p = 0.006$ , Cramer's  $V = 0.24$ . As shown in Table 1, participants reported similar levels of relaxation, boredom, and positive experiences in both conditions. Hypnosis and prevent hypnosis groups also reported similar levels of satisfaction with their responsiveness to the suggestions and overall evaluations of themselves as participants.

### Discussion

Participants who were instructed not to experience a state of hypnosis and who did not receive a hypnotic induction nevertheless responded quite similarly to hypnotic suggestions relative to a standard administration of hypnotizability scale (the CURSS). Although participants reported somewhat higher objective (i.e. criterion-oriented) responding to hypnotic suggestions in the hypnosis group, we did not find corroborative evidence for greater responding following hypnotic induction when the definition of a 'response' was left up to the participants' judgment. Moreover, objective responding rates across groups differed less than half a suggestion, on average, which is of questionable practical significance. Subjective evaluations of suggestion responsiveness (i.e. to what extent did the person feel that he/she responded) did not differ across groups, nor did ratings of involuntariness. The fact that the majority of individuals in the 'prevent hypnosis' group did not report active resistance may account for their not feeling the need to prevent something they did not experience.

These findings call into question the importance of hypnotic inductions in evaluations of hypnotizability. Moreover, our results suggest that responses to hypnotic suggestions may not depend on cognitive processes unique to hypnosis or on defining the context as hypnosis, but may instead be rely upon a person's imaginative suggestibility more

broadly. As Kirsch (1997) and Weitzenhoffer (1980) have pointed out, hypnotizability scales measure trait-like imaginative suggestibility rather than suggestibility enhancement due to hypnosis, as was originally thought (Hilgard and Tart, 1966).

The present study rules out the possibility that levels of suggestibility were similar across groups because participants who did not receive a hypnotic induction spontaneously went into a hypnotic state, as has been suggested by some (e.g. Barabasz, 2005–2006). Rather, it is conceivable that despite similar levels of responsiveness, participants in the hypnosis condition made different attributions about their experiences than did participants who were instructed to guard against hypnotic experiences. Insofar as hypnosis participants reported higher levels of trance experience, altered states of consciousness, and feelings of hypnotizability, they likely attributed their responsiveness to suggestions to the effects of hypnosis. Conversely, individuals in the prevent hypnosis condition may have attributed their responsiveness to their ability to imagine the suggestion without imbuing their responses with hypnosis-related meaning.

## Discussion

A within-subject design was used in Study 1 and a between-subject design was used in study 2. Nevertheless, the findings from these studies are consistent. They indicate that people are able to respond subjectively to even the most difficult suggestions without experiencing themselves as being in a hypnotic state. Behavioural differences across hypnotic and nonhypnotic differences, while statistically significant, are very small and probably of little practical or clinical import. In contrast, reports of being hypnotised differed substantially between hypnosis and no-hypnosis conditions. Taken together, these studies indicate that people do not spontaneously slip into hypnosis when asked to respond to imaginative suggestions.

## Notes

- 1 The terms *waking* and *hypnosis* were coined because it was once believed that hypnotic inductions produced a sleep-like state. Although it is now known that hypnotized subjects remain fully awake, these terms have been retained.
- 2 Given the generally accepted conclusion that no physiological or behavioural markers of the hypothesized a hypnotic trance have been found, self-reports of being in an altered state have been proposed as a sufficient basis for inferring its presence or absence (Tart and Hilgard, 1966; Kihlstrom, in press).

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