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MAIN PAPER

HYPNOTIC ANAESTHESIA AND THE CIRCLE-TOUCH TEST: INVESTIGATING THE COMPONENTS OF THE INSTRUCTIONS

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ABSTRACT

High hypnotizable individuals were administered a suggestion for hypnotic anaesthesia in a circular area on the palm of the hand, and the suggestion was assessed through the circle-touch test. The test was given under three instructional conditions: (1) to say 'yes' when touched outside the hypnotically anaesthetized circle, and 'no' when touched inside the circle; (2) to say 'yes' when touched outside the circle; and (3) to say 'no' when touched inside the circle. The findings indicated particular similarities and differences across the instructional conditions in the pattern of subjects' responses to touches with aesthesiometers inside and outside the circular area. Specifically, subjects instructed to say 'yes' when touched in the non-anaesthetized area did so, and those instructed to say 'no' when touched in the anaesthetized area also tended to do so. The instruction to say 'yes' when touched outside the circle influenced responding outside, but not inside, the circle; the instruction to say 'no' when touched inside the circle influenced responding both inside and outside the circle. The findings are discussed in terms of their implications for the conduct of the circle-touch test and the understanding of hypnotic anaesthesia. In addition, the implications for understanding trance logic, or the tolerance of logical incongruity by hypnotized individuals, and for appreciating the social and cognitive processes operating in the hypnotic setting, are highlighted.

The phenomenon of hypnotized individuals reporting they do not feel any sensation and of not responding to stimulation in an hypnotically anaesthetised area has been an important focus of debate and investigation. Recently, there has been interest in a method of assessing hypnotic anaesthesia called the 'circle-touch test' (Arons, 1967; Eiblmayr, 1987; McConkey, Bryant, Bibb, Kihlstrom, & Tataryn, 1990; McConkey, Glisky, & Kihlstrom, 1989; Orne, Dinges, & Orne, 1984; Watkins, 1984; Wilton & McConkey, 1994). This test involves suggesting to hypnotized individuals that a circular area marked on their hand is anaesthetised, and then testing their response to touches inside and outside that circular area. The hypnotist indicates that subjects should say 'yes' when touched where they feel it, and 'no' when touched where they do not feel it. This instruction is said to present a paradox to hypnotized individuals, and those who say 'no' when touched in the hypnotically anaesthetised area are said to be showing a tolerance of logical ambiguity or 'trance logic' (McConkey, Bryant, Bibb, & Kihlstrom, 1991; Orne, 1959). Eiblmayr (1987) and McConkey *et al.* (1990) have reported empirical analyses of the circle-touch test.

Eiblmayr (1987) suggested to high and medium hypnotizable subjects, and to low hypnotizable subjects who were faking hypnosis, that they were experiencing anaesthesia inside a circle on their hand. She told them to say 'yes' if they felt a touch and 'no' if they did not when she touched them a number of times; she touched them inside the circle, outside the circle, or not at all. Eiblmayr (1987) reported that high and medium hypnotizable, and faking, low hypnotizable subjects did not differ in their responses when touched inside the circle. McConkey *et al.* (1990) gave high hypnotizable, and simulating, low hypnotizable subjects a similar suggestion and touched them inside and outside the hypnotically anaesthetised circle on the palm of their hand a number of times. McConkey *et al.* (1990) reported that real (high hypnotizable) and simulating (low hypnotizable) subjects responded similarly when touched inside or outside the circle; subjects typically gave no response when touched in the anaesthetised area. Notably, the procedures used by Eiblmayr (1987) and McConkey *et al.* (1990) in experimental studies, and those used by Arons (1967), Orne *et al.* (1984), and McConkey *et al.* (1989) in case studies, have differed in various ways. In fact, a well-defined procedure for the circle-touch test does not exist, and there are arguments to be made for and against the various components of the procedures that have been used to date (McConkey *et al.*, 1990).

In the present experiment, we investigated the effects of the components of the circle-touch test instruction on the responses of subjects who were experiencing hypnotic anaesthesia. The essential instruction is that subjects should say 'yes' when touched outside the hypnotically anaesthetized circle, and 'no' when touched inside the circle. We investigated the effects of that instruction in this usual way (yes outside — no inside), and in terms of its component parts of saying 'yes' when touched outside the circle (yes outside), and of saying 'no' when touched inside the circle (no inside). We (1) selected carefully the high hypnotizable subjects who were given hypnotic anaesthesia and the circle-touch test; (2) employed a previously used suggestion for hypnotic anaesthesia (McConkey *et al.*, 1990), and established a precise procedure for distinguishing the circular area; (3) used aesthesiometers of known pressure levels in the circle-touch test; and (4) employed varying intervals between touches to ensure that subjects did not develop expectations about touches. Moreover, the experimenter obtained ratings from subjects on the dimensions of effort, success, and belief, and also obtained ratings on how much they thought about the particular instruction. We sought to determine whether the different instructions (yes outside — no inside; yes outside; no inside) were associated with different responses on the circle-touch test.

METHOD

Subjects

Sixteen (10 female and 6 male; age M = 21.69, SD = 7.74) introductory psychology students at Macquarie University, Sydney, received a nominal payment in return for their involvement. They were invited to participate on the basis of their previous high performances on the 12-item Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor & Orne, 1962), and a 10-item, tailored version of the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962). Subjects had scored 10–12 on the 12-item HGSHS:A (M = 10.44, SD = 0.51) and 8–10 on the 10-item, tailored SHSS:C (M = 9.25, SD = 0.58).

Materials

Three Semmes-Weinstein Pressure Aesthesiometers of 4.08 g, 4.74 g, and 5.46 g pressure were used.

Procedure

Upon arrival, subjects were seated in a comfortable chair and given informed consent procedures. The hypnotist then administered a standardized hypnotic induction procedure, and gave the suggestion for hypnotic anaesthesia (McConkey *et al.*, 1990) that focused on telling subjects: 'Outside the circle your feeling is normal, just as it always has been. But inside the circle, all the feeling is going away. It is going to become more and more numb, until you won't be able to feel anything at all within the circle. You won't have any feeling at all in that part of your palm. You will have normal feeling everywhere else, but the area within the circle will be insensitive. . . . Outside the circle, feeling is normal; inside the circle, all feeling is gone. All feeling is gone.' The hypnotist then gave subjects either the standard circle-touch test instructions to 'say "yes" when touched outside the circle' and 'say "no" when touched inside the circle', or the modified circle-touch test instructions to either 'say "yes" when touched outside the circle', or to 'say "no" when touched inside the circle'.

The instructions for the three instructional conditions were as follows: *Yes Outside — No Inside* (YO-NI): 'All right, now I am going to touch your palm several times in different places. When I touch outside the circle where you can feel it, you should say "yes". When I touch inside the circle where you cannot feel it, you should say "no". Here goes.' *Yes Outside* (YO): 'All right, now I am going to touch your palm several times in different places. When I touch outside the circle where you can feel it, you should say "yes". Here goes.' *No Inside* (NI): 'All right, now I am going to touch your palm several times in different places. When I touch inside the circle where you cannot feel it, you should say "no". Here goes.' The hypnotist then touched subjects with each of the three aesthesiometers in a predetermined random pattern. There were 24 touches: 12 inside and 12 outside the circle, with pressure levels 4.08 g, 4.74 g, and 5.46 g, and at intervals of 2 s, 4 s, and 6 s. The three pressure levels and the three intervals of touching were based on pilot work to ensure that subjects did not come to expect a certain level of pressure or a certain interval between touches.

Following the 24 touches, the hypnotist cancelled the suggestion for hypnotic anaesthesia. She then requested subjects to rate their experience of hypnotic anaesthesia on the dimensions of effort (1 = it just happened, 7 = put in a lot of effort), success (1 = not at all successful, 7 = extremely successful), and belief (1 = did not at all believe, 7 = totally believed); she also requested subjects to rate how much they thought about the instruction associated with the circle-touch test (1 = didn't think at all about the instruction, 7 = thought a lot about the instruction). Following this, the hypnotist administered other suggestions, and a standardized hypnotic deinduction procedure. Finally, she conducted a brief post-experimental inquiry, answered any questions, and ended the session.

RESULTS

Subjects in the three instructional conditions did not differentially experience hypnotic anaesthesia and did not differentially think about the instructions, as indexed by their ratings of effort, success, belief, and instruction. Product–moment correlations between these dimensions yielded significant coefficients between belief and success ($r = 0.80$, $P < 0.01$), effort and instruction ($r = 0.54$, $P < 0.05$), and success and instruc-

tion ($r = -0.53$, $P < 0.05$). Thus, there was a positive relationship between successful hypnotic anaesthesia and believing that nothing was felt when touched in the hypnotically anaesthetized area, and between putting effort into experiencing hypnotic anaesthesia and thinking about the instructions, and a strong negative relationship between successful hypnotic anaesthesia and thinking about the instructions. Product–moment correlations between hypnotizability, as indexed by the SHSS:C, and each of the dimensions yielded significant coefficients between hypnotizability and effort ($r = -0.71$, $P < 0.01$), success ($r = 0.50$, $P < 0.05$), belief ($r = 0.55$, $P < 0.05$), and instruction ($r = -0.52$, $P < 0.05$). Thus, there was a positive relationship between hypnotizability and successful hypnotic anaesthesia, and hypnotizability and believing that nothing was felt when touched in the hypnotically anaesthetized area; also, there was a negative relationship between hypnotizability and putting effort into experiencing hypnotic anaesthesia, and hypnotizability and thinking about the instructions.

Table 1 presents the mean number of responses on the circle-touch test. Although the number of subjects was relatively small, planned comparisons were conducted to assess the impact of the instructions. First, a comparison of being instructed to say 'yes' when touched outside the circle was conducted. Subjects instructed to say 'yes' when touched outside the circle (YO-NI, M = 9.50; YO, M = 9.67) did so more than those who were not (NI, M = 2.75, $F(2, 15) = 4.07$, $P < 0.05$). However, subjects instructed to say 'yes' when touched outside the circle (YO-NI, M = 4.33; YO, M = 3.83) did not say 'yes' when touched inside the circle more often than those who were not given the yes option outside the circle (NI, M = 0.50). Thus, the instruction to say 'yes' outside the circle influenced responding outside the circle, but not inside the circle. Second, a comparison of being instructed to say 'no' when touched inside the circle was conducted. Subjects instructed to say 'no' when touched inside the circle (YO-NI, M = 5.00; NI, M = 3.50) tended to do so more than those who were not (YO, M = 0.00, $t(13) = 1.92$, $P < 0.07$). Notably, however, subjects instructed to say 'no' when touched inside the circle also said 'no' when touched outside the circle more often (YO-NI, M = 1.33; NI, M = 0.50) than those who were not given the no option inside the circle (YO, M = 0.00, $F(2, 15) = 4.23$, $P < 0.05$). Thus, the instruction to say 'no' inside the circle influenced responding both inside and outside the circle. Third, a comparison of saying 'no' with giving no verbal response when touched inside the circle was conducted. Subjects in the YO-NI condition were as likely to say 'no' (M = 5.00) as to give no verbal response (M = 2.67) when touched inside the circle. However, they tended to be more likely to say 'yes' or 'no' (i.e., give some verbal response, M = 9.33) than to give no verbal response (M = 2.67, $t(5) = 2.37$, $P < 0.06$). In comparison, although subjects in the NI condition were also as likely to say 'no' (M = 3.50) as to give no verbal response (M = 8.00) when touched inside the circle, they were as likely to say 'yes' or 'no' (i.e., give some response, M = 4.00) as they were to give no verbal response (M = 8.00). Thus, the extra option of saying 'yes' given to subjects in the YO-NI condition, led them to make more responses when touched inside the circle than subjects in the NI condition.[1]

[1]The characteristics of the six subjects who said 'no' at least once when touched inside the circle, were compared with those of the four subjects who never said 'no' when touched inside the circle, even though they had been instructed to do so. The differential responding to the circle-touch test by these individuals was not related to: hypnotizability; effort to experience hypnotic anaesthesia; success in experiencing hypnotic anaesthesia; belief that nothing is felt when touched in the hypnotically anaesthetized area; or thinking about the instructions.

Table 1. Mean number of responses on the circle-touch test

	Inside Circle			Outside Circle		
	'Yes'	'No'	NVR	'Yes'	'No'	NVR
Yes outside — No inside	4.33	5.00	2.67	9.50	1.33	1.17
	(3.72)	(5.22)	(3.44)	(1.87)	(1.21)	(1.84)
Yes outside	3.83	0.00	8.17	9.67	0.00	2.33
	(4.54)	(0.00)	(4.54)	(4.80)	(0.00)	(4.80)
No inside	0.50	3.50	8.00	2.75	0.50	8.75
	(1.00)	(5.75)	(5.42)	(5.50)	(0.58)	(5.85)

Note. Standard deviations appear in parentheses. NVR = No Verbal Response.

DISCUSSION

Those who were instructed to say 'yes' when touched in a non-anaesthetized area did so, and those instructed to say 'no' when touched in an anaesthetized area also tended to do so. The instruction to say 'yes' when touched outside the circle influenced responding outside, but not inside, the circle; the instruction to say 'no' when touched inside the circle influenced responding both inside and outside the circle. Subjects in each of the instructional conditions indicated that they gave a similar amount of thought to the instruction they received, and indicated also that they experienced the hypnotic anaesthesia similarly on the dimensions of effort, success and belief. The findings overall are consistent with those of McConkey *et al.* (1990) who argued that claims about the circle-touch test and the inferences that can be drawn from its application in experimental, clinical, and forensic settings (Arons, 1967; Orne *et al.*, 1984; Watkins, 1984) cannot be sustained by the available empirical evidence. Future research on the circle-touch test could usefully extend our exploration of the impact on hypnotized individuals' responses of different aspects of the instructions and the procedures. In particular, future research should determine in more detail the meaning of those instructions from the point of view of the individual participant (see also Kihlstrom, 1995).

In terms of hypnotic anaesthesia, the findings indicate that hypnotized individuals can experience suggested anaesthesia in a compelling way and can sustain that experience when tested by aesthesiometers. Moreover, the subjective success of the suggestion and a belief in the genuineness of the experience are related and associated with hypnotizability; notably, they are related inversely to the degree of effort that subjects expend in seeking to experience the suggested effects. This pattern of findings among hypnotizability, effort, success, and belief is similar to that observed and discussed elsewhere (Lynn, Rhue, & Weekes, 1990; McConkey, 1991). In addition, it underscores that the experiences of hypnotized individuals and the attributions that they make about those experiences are most appropriately understood in a theoretical framework that recognizes the interactive influence of the social and cognitive processes operating within the hypnotic setting and within the hypnotized individual.

In terms of the tolerance of logical incongruity, the findings indicate that the subjects in the relevant instructional conditions were as likely to follow the instructions and say 'no' as they were to give no verbal response when touched in the hypnotically anaesthetized area. In other words, they were as likely to display trance logic

response as they were not to do so; indeed, 60% of subjects who received the relevant instructions displayed that response and 40% did not. Moreover, the findings indicate that these two types of individuals do not differ appreciably in terms of their hypnotizability or their responses on the subjective dimensions associated with the experience of hypnotic anaesthesia that we indexed. This pattern follows that observed by McConkey *et al.* (1989) in two case studies, and is consistent with the findings of Wilton and McConkey (1994) who gave high hypnotizable individuals a suggestion that their dominant hand was anaesthetized, placed different objects into the anaesthetized and non-anaesthetized hands of the subjects, and then asked them to name the objects. Wilton and McConkey (1994) reported that subjects identified fewer objects placed into their anaesthetized than non-anaesthetized hands, but the majority of individuals identified at least one of the objects in their anaesthetized hand. Further, some who experienced complete anaesthesia acknowledged the contradiction associated with the task and did not identify any objects, while others did not acknowledge the contradiction but identified some of the objects with a hand they described as completely anaesthetized. The findings underscore both the heterogeneity of the experience and behaviour of hypnotized individuals. They highlight also that what may appear to be illogical to the observer, may not be experienced as such by the hypnotized individual. In this respect, hypnotic anaesthesia and the circle-touch test could provide a useful vehicle for further exploration of trance logic, as well as being intriguing phenomena in their own rights.

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