

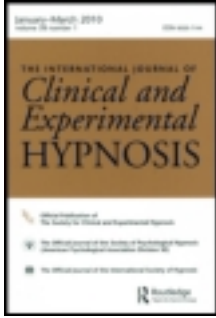
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### Measuring change in the subjective experience of hypnosis

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# MEASURING CHANGE IN THE SUBJECTIVE EXPERIENCE OF HYPNOSIS<sup>1</sup>

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**Abstract:** The authors indexed the subjective experience of hypnosis through the use of a continuous behavioral measure of the strength of the participant's experience at the time of the suggestion. Specifically, subjects turned a dial to indicate changes in their experience of the suggested effect during that experience. Thirty-three high, 47 medium, and 28 low hypnotizable subjects were asked to use the dial during the suggestion, test, and cancellation phases of three hypnotic items: arm levitation, arm rigidity, and anosmia. The pattern of ratings differed according to the nature of the suggestion. Also, across the items, subjects who passed according to behavioral criteria experienced the suggested effect to a greater degree than those who failed. Notably, whereas the ratings of highs and mediums did not differ for any item, they differed from lows on all three items. The authors discuss the implications of these findings in terms of the potential for this method to provide insight into the experience of hypnosis.

Measuring the experience of hypnosis has been a matter of conceptual and methodological concern throughout the history of the phenomenon. The major advances in understanding hypnosis in the second half of this century have been due in large part to the development of standardized measures of hypnotic susceptibility, such as the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A) (Shor & Orne, 1962) and the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C) (Weitzenhoffer & Hilgard, 1962). These measures focus on the individual's observable response to a set of specific hypnotic test items, and this response is considered to be the external indicator of the experience of hypnosis; that is, the behavior is assumed to reflect the underlying subjective experience of the individual. Typically, to "pass" an item, individuals are required to meet a specified behavioral criterion for that

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item, and their hypnotizability is determined by summing the number of items that they pass. Although a focus on behavioral response has allowed substantial advances in knowledge, it has not allowed a full understanding of the multifaceted nature of the phenomenal experience of hypnosis to emerge.

The importance of understanding the essentially private experience of the hypnotized person has been highlighted in a number of theoretical frameworks (e.g., McConkey, 1991; Sheehan & McConkey, 1982; Shor, 1970, 1979; Sutcliffe, 1961). Moreover, whereas some investigators have asked subjects to report on their "depth of hypnosis" (e.g., Laurence & Nadon, 1986; O'Connell, 1964; Perry & Laurence, 1980; Radtke & Spanos, 1981; Tart, 1970, 1979), others have asked subjects to rate their experience of individual items on various dimensions (e.g., K. Bowers, 1981; P. Bowers, 1982; P. Bowers, Laurence, & Hart, 1988; Kirsch, Council, & Wickless, 1990), and others have asked subjects to describe their experience of hypnosis in detail (e.g., McConkey, 1991; Sheehan, 1992; Sheehan & McConkey, 1982; Shor, 1979). Although these methods provide useful information, typically they are retrospective and may be influenced by various extraneous factors in such a way that the comments or ratings made after hypnosis may not reflect the actual experience of the individual.

The development and use of a method of assessing the subjective experience of hypnosis concurrently with that experience would appear to have methodological and theoretical appeal, not only as a measure of experience but also to examine the concordance of experience with behavior (see Cheek, 1959; Evans & Orne, 1965, 1971; Field, 1966; Orne & Evans, 1966; for review, see Sheehan & McConkey, 1982). In one attempt to do this, Field (1966) adapted a finger-signaling method (Cheek, 1959) and asked subjects to move their hand in one direction along a 14-in. board marked off in 20 equal units when hypnotic depth increased and in the other direction when it decreased. Field (1966) reported that there was a modest relationship between this rating and behavioral response, that the rating provided a good indicator of "fluctuations in depth" within and across items, and that there was a complex relationship between behavioral success or failure on individual items and concurrent increase or decrease of depth, with lack of change being the modal response. In a parallel attempt, Evans and Orne (1965) asked subjects to estimate their hypnotic depth by moving the hand of a clock around a large clock face that was numbered 1 to 10; subjects were told that position 1 was "normal and alert," and position 10 was "as deeply hypnotized as any person could become." Evans and Orne (1965) reported that there was a modest relationship between this rating and behavioral performance, that the rating indicated a greater depth of hypnosis for medium than for high or low hypnotizable subjects, and that the rating indicated a greater depth of hypnosis when subjects were performing, than when not performing, a task. Orne and Evans (1966) and Evans and Orne

(1971) used a similar procedure for indicating hypnotic depth when they exposed real, hypnotized and simulating, un hypnotized subjects to a hypnotist who suddenly left the room during hypnosis. They reported that the ratings on the hypnotic depth indicator typically preceded other behavioral signs of the attempts by real, hypnotized subjects to arouse themselves from hypnosis and that most moved the indicator back to the position that indicated they were normal and alert. While recognizing procedural and interpretational difficulties with these experiments, these methods and findings taken together underscore that such experiential indices provide information that standard behavioral measures do not. Thus, their further development would allow a more comprehensive construction of the experiential and behavioral atlas of hypnotic phenomena.

Accordingly, we drew on this work to help us develop and use a "dial" method of measuring the subjective experience of hypnosis. Our method is consistent with previous methods in some respects and new in other respects. In particular, it involves asking subjects to turn a dial to indicate changes in the strength of their experience of the hypnotically suggested item. Thus, as with previous methods, subjects behaviorally, rather than verbally, indicate their experience across the entire hypnotic item. Also, the dial method allows a comparison of subjective experience and behavioral response on the specific item and with hypnotizability as measured independently. In this initial experiment, we thought it appropriate to use high, medium, and low hypnotizable subjects and to examine the use of the dial method across items that reflected the basic ideomotor, challenge, and cognitive dimensions that define hypnotic items on standardized scales of hypnotizability (see Hammer, Evans, & Bartlett, 1963; McConkey, Sheehan, & Law, 1980; but see Balthazard & Woody, 1985). Our method is new in that the dial is connected to a computer that records the position of the pointer (i.e., rating of experience) every second across the three phases (suggestion or onset, test, and cancellation or offset) of the item in a manner that generates detailed profiles of subjects' subjective responses. In this sense, the dial is truly continuous and allows comparison within and between subjects and items. Also, our use of this method differs from previous subjective measures in one important respect; that is, rather than asking subjects to use the dial throughout the session as an index of depth of hypnosis, subjects use the dial only from the suggestion to the cancellation of selected hypnotic items and indicate how much they are experiencing what the hypnotist is asking them to experience during that period (e.g., their arm becoming lighter or their arm becoming rigid). In other words, the dial indexes subjective experience during "active" rather than "passive" hypnosis, and this fact should be kept in mind when considering the results.

In addition to developing and using this dial method, we were interested in exploring the experience of subjects during the onset and offset

of hypnotic items. Most theoretical and empirical work in hypnosis has emphasized the individual's reaction during the test phase of the item. Specifically, behavioral measures have focused on whether the individual carried out the suggested response according to some predetermined criteria, and experiential measures have focused on how the individual felt as they were carrying out that response. In this sense, there has been a relative neglect of the complete experience, with only a few investigators considering what subjects are experiencing during the time that the suggestion is being administered or during the time that it is being canceled. For instance, Sheehan, McConkey, and Cross (1978) used the Experiential Analysis Technique (see also Sheehan & McConkey, 1982) to examine the different cognitive styles (*viz.*, concentrative, independent, and constructive) that high hypnotizable subjects used to help them experience different hypnotic items. Sheehan and McConkey (1982) reported case analyses of the experiences of individuals who maintained their experience of hypnosis after specific suggestions inadvertently had not been canceled. Perry (1977) examined the behavior and experience of subjects when a suggestion for hypnotic analgesia was not canceled. He reported that the majority of high hypnotizable subjects either canceled the suggestion themselves or else the experience faded with time; notably, however, Perry (1977) reported that the experience persisted for a small number of high hypnotizable subjects. Similarly, Nace and Orne (1970) gave subjects a posthypnotic suggestion to experience a compelling urge to pick up and play with a blue pencil when the hypnotist took off his glasses. Notably, Nace and Orne (1970) found that a number of subjects who failed to respond to the cue when the hypnotist was present completed the suggestion after the hypnotist had left the room, and that these individuals had higher hypnotizability scores than those who neither responded at the time of the cue nor picked up the blue pencil after the hypnotist had left. Taken together, these findings suggest that there is value in exploring the nature of experiential involvement in the suggestion and cancellation phases of hypnotic items.

In summary, in this experiment we asked high, medium, and low hypnotizable subjects to use the dial across three different hypnotic items: an ideomotor (arm levitation), a challenge (arm rigidity), and a cognitive (anosmia) item. Although we expected that there would be general consistency between subjects' dial ratings and their behavioral responses, we expected that the dial pattern of high, medium, and low subjects' ratings would differ within and across the items. Moreover, we expected that the nature of subjects' experience would differ across the suggestion, test, and cancellation phases of the items. In particular, we considered that the continuous nature of recording the strength of subjects' experience would reveal patterns across the types of subjects, types

of items, and phases of each items that would be important to understanding the subjective experience of hypnosis.

## METHOD

### *Subjects*

Thirty-three high (8 male, 25 female; age  $M = 19.45$ ,  $SD = 3.23$ ), 47 medium (10 male, 37 female; age  $M = 21.02$ ,  $SD = 4.84$ ), and 28 low (8 male, 20 female; age  $M = 23.61$ ,  $SD = 8.28$ ) hypnotizable first-year psychology students at the University of New South Wales participated in return for research credit. They were selected on the basis of their performance on the 12-item HGSHS:A (Shor & Orne, 1962) and on a 10-item tailored version of the SHSS:C (Weitzenhoffer & Hilgard, 1962), which included the items of interest in the present experiment; thus, only the data of those subjects who meet the criteria for inclusion in the high, medium, or low hypnotizability groups are reported. Highs scored from 9 to 12 on the HGSHS:A ( $M = 10.55$ ,  $SD = 0.90$ ) and 8 to 10 on the SHSS:C ( $M = 8.48$ ,  $SD = 0.76$ ); mediums scored from 4 to 8 on the HGSHS:A ( $M = 7.22$ ,  $SD = 1.85$ ) and 4 to 7 on the SHSS:C ( $M = 5.49$ ,  $SD = 1.08$ ); and lows scored from 0 to 4 on the HGSHS:A ( $M = 3.04$ ,  $SD = 1.22$ ) and 0 to 3 on the SHSS:C ( $M = 1.54$ ,  $SD = 1.04$ ).

### *Apparatus*

The dial was positioned on the right arm of the subject's chair. It consisted of a semirotatable disc of 70-mm diameter fixed to a stationary base. There was a pointer on the dial and a mark on the base at halfway that allowed subjects to feel how far they had turned the dial. The dial rotated through  $100^\circ$ ; the rotation end positions indicated that the subject was not at all experiencing the suggestion (0) or was completely experiencing the suggestion (100); position 0 was  $50^\circ$  left of center, position 100 was  $50^\circ$  right of center. The dial was connected to a PC computer (via the joystick port), and a DOS-based computer program recorded the position of the pointer each second; that is, subjects' ratings of their experience from 0 to 100 as indicated by the position of the dial were recorded every second for the duration of the item. Recording of the dial's position could be controlled via the computer's keyboard. The resolution of the program's recording of the dial's position was  $\pm 0.5^\circ$ .

### *Procedure*

The hypnotist welcomed subjects, gave them an overview of the experiment, and asked them to read and sign an informed consent form. Following this, she gave instructions for using the dial. The hypnotist told subjects that they would use the dial to indicate how much they were experiencing what she was asking them to experience; she told them that when the dial was all the way to the left it meant they were not

at all experiencing the suggestion and when the dial was all the way to the right it meant they were completely experiencing the suggestion. The hypnotist asked subjects to practice using the dial with their eyes closed and to use the pointer and marker to help judge the position of the dial.

The hypnotist then administered the tailored version of the SHSS:C, which included the three items of interest: arm levitation, arm rigidity, and anosmia. Before presenting the suggestion for each of these items, the hypnotist gave the following instructions:

Now I'd like you to place your right hand on the dial and prepare to indicate how much you are experiencing what I am asking you to experience. Remember, if the dial is all the way to the left, it means you are not at all experiencing what I am asking. If the dial is all the way to the right, it means you are completely experiencing what I am asking. Move the dial to indicate changes in your experience. Please begin to use the dial now.

The three items were composed of an 80-s suggestion phase, a 20-s test phase, and an 80-s cancellation phase. For the suggestion phase, the hypnotist pressed a key on the computer to begin recording the dial's position for that item and administered the suggestion. For the test phase, the hypnotist tested the suggestion: for arm levitation, testing involved the hypnotist remaining quiet while the subject experienced the suggested effect; for arm rigidity, testing involved the subject attempting to bend their arm; and for anosmia, testing involved placing oil of wintergreen under the subject's nose and asking him/her to indicate what he/she could smell. For the cancellation phase, the hypnotist canceled the suggestion, asked subjects to stop using the dial, and pressed a key on the computer to finish recording the dial's position for that item. At the completion of the SHSS:C items, the hypnotist administered a standard deinduction procedure. Following a brief postexperimental inquiry, she answered any questions, thanked subjects for their participation, and ended the session.

#### *Scoring and Analysis of Data*

In terms of subjects' behavioral responses, the hypnotist categorized responses during the test phase of each item as either "pass" or "fail." For arm levitation, subjects passed if their hand lifted at least 15 cm above the arm of the chair; for arm rigidity, subjects passed if they bent their arm less than 5 cm; and for anosmia, subjects passed if they denied and showed no overt signs of smelling the odor. In terms of subjects' dial ratings, as noted above, each item lasted for 180 s and the computer recorded one rating per second. Thus, for each item, there were 180 ratings. Within each item, there were three phases: an 80-s suggestion phase, a 20-s test phase, and an 80-s cancellation phase. Thus, 80 ratings were recorded during the suggestion phase, 20 ratings during the test phase, and 80 ratings during the cancellation phase. To assist in



analyzing the pattern of ratings across the items and phases, the 180 ratings in each item were divided into nine intervals of 20 ratings (or 20 s) each. Thus, the suggestion phase consisted of Intervals 1 to 4 ( $4 \times 20$  ratings = 80 s); the test phase consisted of Interval 5 ( $1 \times 20$  ratings = 20 s); and the cancellation phase consisted of Intervals 6 to 9 ( $4 \times 20$  ratings = 80 s).

## RESULTS

In terms of behavioral responses, 42 (38.9%) subjects passed arm levitation, 81 (75.0%) passed arm rigidity, and 23 (21.3%) passed anosmia; chi-square analysis indicated a significant difference in this pattern of response,  $\chi^2(2, N = 108) = 65.40, p < .001$ . There was a strong concordance between subjects' behavioral responses and their subjective responses (as indexed by the dial method). For instance, a 3 (Item)  $\times$  9 (Interval) multivariate analysis of variance yielded significant main effects for item,  $F(2, 321) = 13.74, p < .001$ , and interval,  $F(8, 2568) = 78.89, p < .001$ , and a significant interaction between item and interval,  $F(16, 2568) = 10.27, p < .001$ . Essentially, subjects' ratings increased and then decreased across the course of the item, as indicated by significant linear and quadratic trends,<sup>3</sup> presumably in response to the suggestion, test, and cancellation phases of each item. More important, however, subjects gave higher ratings for arm rigidity than for arm levitation and anosmia. Thus, their subjective ratings mirrored the level of behavioral responding.

This concordance between behavioral and subjective response can be seen more clearly in Figure 1, which presents the mean interval ratings for subjects who passed or failed each item. For each item, a separate 2 (Response)  $\times$  9 (Interval) analysis yielded significant main effects for response and interval and a significant interaction between response and interval. Also, each analysis yielded significant linear and quadratic trends across the intervals. In other words, those who passed arm levitation, arm rigidity, and anosmia made higher ratings than those who failed each item, respectively. In particular, whereas the ratings of those who passed each item tended to increase and then decrease across the course of the item, as indicated by the linear and quadratic trends, the ratings of those who failed remained essentially low and constant across the intervals.

In addition to the concordance between behavior and experience, we were particularly interested in the ways in which hypnotizability would influence or be reflected in subjects' performance on the dial within and across the three items. Accordingly, Figures 2, 3, and 4 present the mean interval ratings for highs, mediums, and lows who passed or failed arm levitation, arm rigidity, and anosmia, respectively. For each item, we

<sup>3</sup>For brevity of reporting, individual statistics will not be reported. However, each analysis was significant at  $p < .001$ . Details of these analyses may be obtained from the authors.

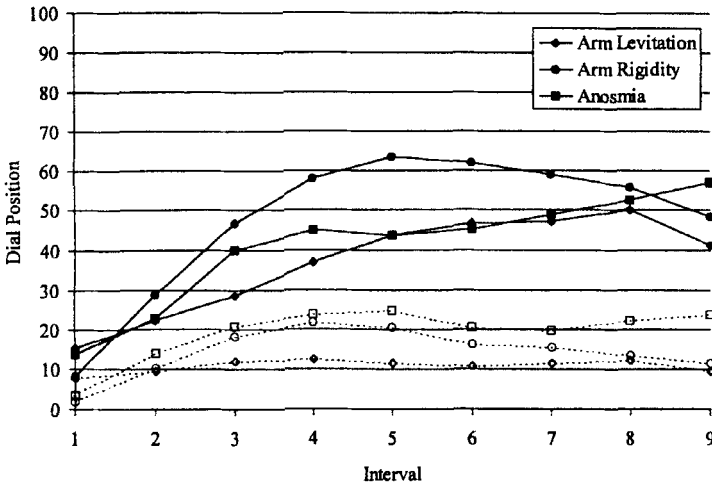


Figure 1. Mean interval ratings for subjects who passed or failed arm levitation, arm rigidity, and anosmia.

Note. The solid and broken lines represent subjects who passed or failed the items, respectively. Suggestion phase = Intervals 1 to 4; test phase = Interval 5; and cancellation phase = Intervals 6 to 9.

examined the ratings of those who passed or failed through the conduct of separate 2 or 3 (Hypnotizability)  $\times$  9 (Interval) multivariate analyses of variance.

Turning to Figure 2, 24 highs (72.7%), 18 mediums (38.3%), and 0 lows (0.0%) passed arm levitation according to the behavioral criterion; 9 highs (17.3%), 29 mediums (61.7%), and 28 lows (100.0%) failed. As would be expected, more highs than mediums or lows passed this item,  $\chi^2(2, N = 108) = 33.72, p < .001$ . In terms of the dial ratings, analysis of the high and medium subjects who passed (no lows passed) yielded a significant main effect for interval,  $F(8, 320) = 12.55, p < .001$ . Analysis of the high, medium, and low subjects who failed yielded significant main effects for hypnotizability,  $F(2, 63) = 4.81, p < .01$ , and for interval,  $F(8, 504) = 1.96, p < .05$ . In essence, the highs and mediums who passed this item showed similar ratings and their ratings tended to increase across the intervals, as indicated by significant linear and quadratic trends. Somewhat similarly, the highs and mediums who failed made higher ratings than the lows who failed. Of importance, however, the ratings of those who failed were substantially lower than those who passed.

Turning to Figure 3, 33 highs (100.0%), 41 mediums (87.2%), and 7 lows (25.0%) passed arm rigidity according to the behavioral criterion; 0

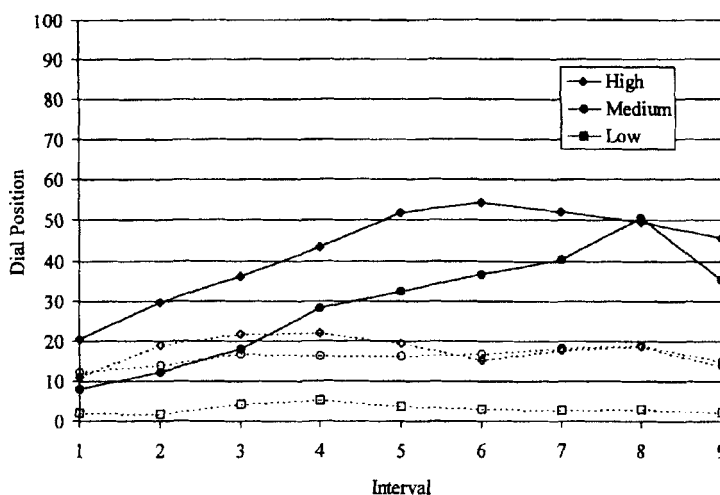
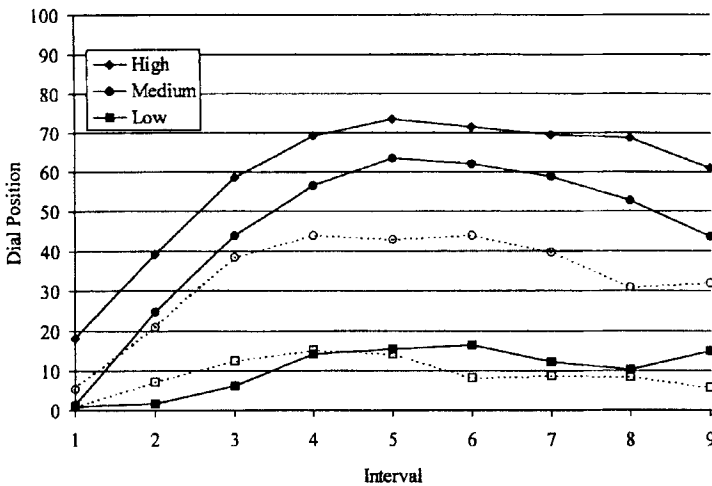


Figure 2. Mean interval ratings for high, medium, and low hypnotizable subjects who passed or failed arm levitation.

Note. The solid and broken lines represent subjects who passed or failed arm levitation, respectively; no lows passed. Suggestion phase = Intervals 1 to 4; test phase = Interval 5; and cancellation phase = Intervals 6 to 9.

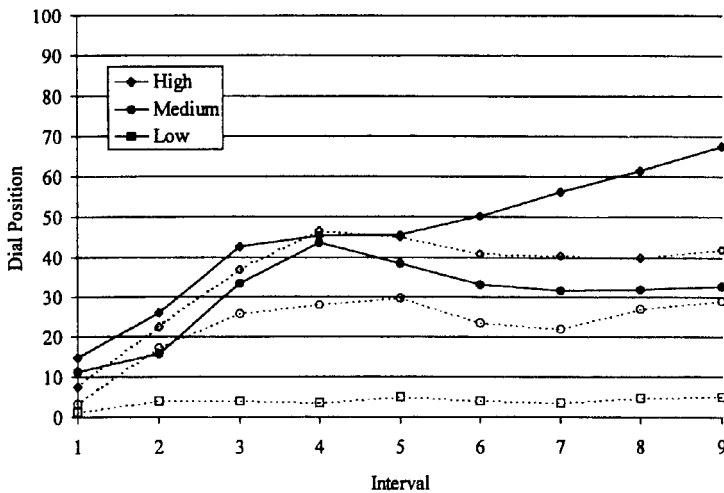
highs (0.0%), 6 mediums (12.8%), and 21 lows (75.0%) failed. Unexpectedly, an equivalent number of highs and mediums passed this item; nevertheless, very few lows passed,  $\chi^2(2, N = 108) = 52.09, p < .001$ . In terms of the dial ratings, analysis of the high, medium, and low subjects who passed yielded significant main effects for hypnotizability,  $F(2, 78) = 11.30, p < .001$ , and interval,  $F(8, 624) = 20.59, p < .001$ . Analysis of the medium and low subjects who failed (no highs failed) yielded significant main effects for hypnotizability,  $F(1, 25) = 9.86, p < .01$ , and interval,  $F(8, 200) = 6.98, p < .001$ . Thus, whereas the positive behavioral response of highs and mediums was accompanied by high ratings of subjective involvement that increased and then decreased across the phases of the item, as indicated by significant linear and quadratic trends, lows who passed this item made very low ratings of their experience; in other words, there was a mismatch between their behavioral and subjective responses. Such a mismatch can also be seen for those who failed arm rigidity. Whereas lows who failed gave low ratings across the intervals, mediums who failed made significantly higher ratings that increased and then decreased across the intervals, as indicated by a significant quadratic trend.



**Figure 3.** Mean interval ratings for high, medium, and low hypnotizable subjects who passed or failed arm rigidity.

*Note.* The solid and broken lines represent subjects who passed or failed arm rigidity, respectively; no highs failed. Suggestion phase = Intervals 1 to 4; test phase = Interval 5; and cancellation phase = Intervals 6 to 9.

Finally, turning to Figure 4, 16 highs (48.5%), 7 mediums (14.9%), and 0 lows (0.0%) passed anosmia according to the behavioral criterion; 17 highs (51.5%), 40 mediums (85.1%), and 28 lows (100.0%) failed. As would be expected, more highs than mediums or lows passed this difficult item,  $\chi^2(2, N = 108) = 23.28, p < .001$ . In terms of the dial ratings, analysis of the high and medium subjects who passed (no lows passed) yielded a significant main effect for interval,  $F(8, 168) = 7.89, p < .001$ . Analysis of the high, medium, and low subjects who failed yielded significant main effects for hypnotizability,  $F(2, 82) = 13.70, p < .001$ , and interval,  $F(8, 656) = 17.79, p < .001$ , and a significant interaction between hypnotizability and interval,  $F(16, 656) = 3.83, p < .001$ . Thus, the ratings of highs and mediums who passed this item did not differ, although their ratings generally increased and then decreased across the intervals, as indicated by significant linear and quadratic trends. For those who failed this item, there were important differences across hypnotizability levels. Highs who failed made higher ratings than did mediums, who made higher ratings than did lows. Notably, however, whereas the ratings of mediums who failed appeared consistently lower than mediums who passed across the course of the item, the ratings of highs who failed only appeared to diverge from those of highs who passed after the test



**Figure 4.** Mean interval ratings for high, medium, and low hypnotizable subjects who passed or failed anosmia.

*Note.* The solid and broken lines represent subjects who passed or failed anosmia, respectively; no lows passed. Suggestion phase = Intervals 1 to 4; test phase = Interval 5; and cancellation phase = Intervals 6 to 9.

phase of the item; in particular, highs who passed increased their ratings following the test, whereas highs who failed decreased their ratings.

## DISCUSSION

High, medium, and low hypnotizable subjects showed different patterns of experience across the hypnotic items of arm levitation, arm rigidity, and anosmia. In particular, subjects overall showed greater experiential involvement in arm rigidity than in arm levitation and anosmia; in other words, they showed greater involvement in the challenge item than in the ideomotor or cognitive items. Subjects who passed an item in terms of the behavioral criterion reported a greater strength of experience for that item than those who did not meet the behavioral criterion. In other words, there was a substantial match between behavior as assessed by the specific criterion and experience as assessed by the dial. Although high hypnotizable subjects responded behaviorally more so than medium and low hypnotizable subjects, the dial pattern of high and medium hypnotizable subjects was essentially similar for each of the items and was different from that of low hypnotizable subjects.

The different patterns of dial ratings across the items underscore that hypnotic items tap particular dimensions of hypnotic responding, and

these dimensions involve different aspects of experiential involvement as well as different behavioral responses. In particular, the findings suggest that these items do not differ simply in terms of difficulty, but, rather, they differ in a more complex amalgam of demands that are placed on and experienced by the hypnotized individual. Specifically, whereas challenge items are typically considered to be more difficult than ideomotor items (e.g., Balthazard & Woody, 1985; McConkey et al., 1980), the pattern that we observed indicated that subjects experienced the challenge item (arm rigidity) more strongly than they did the ideomotor and the cognitive items. More generally, however, the findings support the notion that behavior is a reasonable, if sometimes blunt, indicator of the experience of the hypnotized individual (see also Kirsch et al., 1990; O'Connell, 1964; Sheehan & McConkey, 1982). However, theoretical specificity requires a more fine-grained analysis of both behavior and experience, and the method developed and used in this experiment is an attempt to provide that level of analysis.

The finding that high and medium hypnotizable subjects differed in terms of their behavioral, but not experiential, response suggests that although fewer mediums than highs are able to respond to hypnotic suggestions, particularly as they increase in difficulty (e.g., anosmia), those mediums who respond do so successfully. In other words, in response to a given suggestion, medium hypnotizable subjects are not necessarily less able than high hypnotizable subjects to have a successful and compelling hypnotic experience, neither is the strength of their experience any less intense. Rather, they appear limited in the range of suggestions to which they can respond. These findings suggest that it would be useful to examine the nature of successful responding for medium hypnotizable subjects from both a behavioral and an experiential perspective.

In terms of the pattern of ratings across the phases of the hypnotic items, the linear and quadratic trends in the data indicated that the experience of subjects changed across the phases and that these changes were different for different types of subjects and for different types of items. For instance, whereas during cancellation of arm rigidity, both high and medium hypnotizable subjects showed a decreasing strength of experience, during cancellation of anosmia, highs showed an increasing strength and mediums showed a decreasing strength of experience. It seems that for high hypnotizable subjects, their positive experience during the test of anosmia enhanced and encouraged the intensity of their experiential involvement, and this intensity was not diminished by an explicit instruction from the hypnotist that was intended to cancel their experience. In this respect, it is striking that the pattern of dial ratings indicated that, across the items, the offset of the experience progressed relatively slowly and in a way that was very different from the pattern that characterized the onset of the experience.

The relatively slow, and in some cases nonexistent, offset of the experience is consistent with the findings of Evans and Orne (1965, 1971), Orne and Evans (1966), Nace and Orne (1970), and Perry (1977) that high hypnotizable subjects may take some time to disengage themselves from a suggested experience. This finding points to the inappropriateness of any assumption, which is implicit in a substantial amount of the literature on hypnosis, that the cancellation of a hypnotic experience is easy and instantaneous. Rather, it supports the notion that the effects of a hypnotic suggestion may linger after the hypnotist has communicated that the suggestion is terminated. Indeed, the phenomenological focus in some frameworks of hypnosis on dimensions such as trance, nonconscious involvement, and archaic involvement (see Shor 1970, 1979) underscores that hypnotized individuals need time and must expend effort to disengage from the experience, whether that is an experience of a specific hypnotic item or hypnosis overall (see also Evans & Orne, 1971; Orne & Evans, 1966). The dial method reported here would be a useful tool to investigate these issues more broadly, both during and after a hypnotic interaction.

The development and application of this continuous, concurrent measure of the strength of hypnotic experience provided an indication of changes within and across individuals as well as within and across items and allowed fine-grained shifts in experience to become transparent. Subjects' dial ratings for arm rigidity showed that the strength of experience of high and medium hypnotizable subjects was similar, with the essential difference being that highs become engaged in the experience more quickly. Similarly, subjects' dial ratings for anosmia showed that high and medium hypnotizable subjects were experientially involved to a similar degree during the test but that they diverged markedly during cancellation; also, the ratings of highs who passed anosmia and highs who failed indicated that they were involved to a similar degree during the test, but that their experience diverged after the test and during the cancellation. These patterns point to the substantial amount of information that is hidden when subjects are asked, for instance, to retrospectively give single ratings that require experiential averaging and that are likely influenced by a wide range of extraneous variables (see also P. Bowers et al., 1988; Field, 1966; Laurence & Nadon, 1986; Orne & Evans, 1966; Radtke & Spanos, 1981).

Although this method appears to be of potential value, there are a number of procedural and inferential issues that need examination. For instance, one issue involves the way in which subjects understand the task of using the dial method. At a general level, further work is needed to ensure that subjects understand the precise nature of the task and the precise dimension on which they are being asked to make a continuous, concurrent rating of experience. In our experiment, subjects were asked

to indicate the extent to which they were experiencing what the hypnotist asked them to experience, and the relatively slow decrease in experiential involvement during the cancellation phase may reflect some confusion in subjects' understanding of the task during that phase. In other words, they may have been rating the degree to which they were experiencing the cancellation (e.g., for arm levitation, their arms no longer feeling light) rather than the decline in their experience of the suggested effect. Moreover, in any assessment of subjective experience, care needs to be taken to ensure that subjects are actually responding in terms of the dimension that the experimenter has asked them to use; that is, the subjects' interpretation of a dimension may not always accord with that of the experimenter, and this point needs to be acknowledged (see also Evans & Orne, 1965). In this sense, it is important to differentiate between measuring the experience of a suggestion (along a dimension such as strength or belief) and measuring the hypnotic experience in general (along a dimension such as depth). Our use of the dial method focuses on subjects' experience between the onset and offset of the hypnotic item, and, thus, our data may not be entirely compatible with previous data that has focused on the more general dimension of depth of hypnosis either during a suggestion ("active") or during hypnosis ("passive"). In future research, investigators who use these types of experiential methods should be explicit about what they are attempting to measure. Although our subjects appeared able to use the dial reasonably effectively, it is not clear whether the attentional load and/or physical demands of the task are experientially intrusive and influence response to both the suggestion and the rating task (see also Field, 1966). Finally, the use of the dial method contributes to the overall nexus of demands that are impinging on the behavior and experience of the hypnotized individual, and clarification is needed of the degree to which the pattern of findings in the use of the dial may reflect a relatively greater influence of external demands rather than internal experiences (see also P. Bowers et al., 1988; Field, 1966; Laurence & Nadon, 1986; Radtke & Spanos, 1981). These are matters of implementation and interpretation that future research could and should examine in more detail. Nevertheless, the present experiment underscores that the dial method is a valuable method of measuring the subjective experience of hypnosis.

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### Messen von Veränderung in subjektiver Erfahrung von Hypnose

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**Zusammenfassung:** Wir teilten die subjektive Erfahrung der Hypnose durch Anwendung eines kontinuierlichen, verhaltensmäßigen Maßes in Maßeinheiten ein, die die Stärke der Erfahrung des Probanden zur Zeit der Suggestion anzeigten. Speziell drehten die Probanden einen Schalter, um Veränderungen in ihrer Erfahrung des suggerierten Effektes während jener Erfahrung anzuzeigen. Wir gaben Anweisung an 33 hoch-suggestible, 47 mittel-suggestible und 28 niedrig-suggestible Probanden, den Schalter während der Suggestions-, Test- und Auslöschungsphase [cancellation phase] von drei hypnotischen Elementen zu bedienen: Armlevitation, Armstarre und Anosmie. Das Muster der Bewertungen war unterschiedlich je nach Art der Suggestion. Außerdem erfuhren Probanden, die alle Aufgaben gemäß den verhaltensmäßigen Kriterien erfolgreich ausführten, den suggerierten Effekt stärker als diejenigen, die scheiterten. Zu bemerken ist, daß die Bewertungen der hoch- und mittel-suggestiblen Probanden bei keinem Element Unterschiede zeigten, während sie sich von denen der niedrig-suggestiblen Probanden bei allen drei Elementen unterschieden. Wir diskutieren die Implikationen dieser Ergebnisse in Hinblick auf Möglichkeiten, durch diese Methode Einblick in die Erfahrung der Hypnose zu gewinnen.

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### La mesure du changement dans l'expérience subjective de l'hypnose

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**Résumé:** Nous avons indexé l'expérience subjective de l'hypnose au travers de l'utilisation d'une mesure du comportement continu de la force de l'expérience du participant au moment de la suggestion. Spécifiquement, les sujets devaient tourner un cadran afin d'indiquer les changements de leur expérience en cours de suggestion. Nous avons demandé à 33 hauts, 47 moyens, 28 sujet hypnotisables d'utiliser le cadran pendant la suggestion, pendant le test et l'annulation des phases de 3 signes d'hypnose: lévitation du bras, rigidité du bras, et anosmie. Les résultats diffèrent selon la nature de la suggestion. Egalement, parmi les 3 signes, les sujets qui ont réussi les critères de comportement ont expérimenté l'effet de suggestion à un degré plus élevé que ceux

qui échouèrent. Notamment quand les taux élevés ou moyens ne différaient pas sur aucun des 3 points, ils différaient pour les taux les plus bas sur les 3 signes. Les auteurs discutent les implications qu'entraînent ces découvertes en terme de potentialité pour cette méthode à fournir l'insight au cours de l'expérience de l'hypnose.

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### Una nueva forma de medir cambios en la experiencia subjetiva de hipnosis

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Resumen: Clasificamos la experiencia subjetiva de hipnosis mediante el uso de una medida conductual continua de la intensidad de la experiencia durante la sugestión hipnótica. Específicamente, los participantes manipularon un dial para indicar cambios en cómo experimentaban el efecto sugerido durante la hipnosis. Pedimos a 33 participantes muy hipnotizables, 47 con hipnotizabilidad media, y 28 con hipnotizabilidad baja, que usaran el dial durante las fases de sugestión, prueba, y cancelación de tres items hipnóticos: levitación del brazo, rigidez del brazo y anosmia. El patrón de las respuestas varió según la naturaleza de las sugestionen. En todos los items, quienes pasaron el criterio conductual experimentaron el efecto sugerido en un mayor grado que quienes fracasaron. Es de notarse que las puntuaciones experienciales de los participantes con hipnotizabilidad alta y media no difirieron en ninguno de los tres items. En contraste, las puntuaciones en los tres items de los participantes con hipnotizabilidad alta o media fueron distintas de las puntuaciones de los participantes poco hipnotizables. Discutimos las implicaciones de estos resultados desde el punto de vista de la potencialidad de este método para aumentar nuestro conocimiento de la experiencia de hipnosis.

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