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THE EFFECTS OF ABSORPTION AND REDUCED CRITICAL THOUGHT ON SUGGESTIBILITY IN AN HYPNOTIC CONTEXT

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Abstract

The suggestibility-enhancing effects of hypnosis are widely accepted, although poorly understood. In the present study, an attempt was made to address the effect of absorption and reduced critical thought on suggestibility change occurring in the hypnotic context. Study participants were presented with a waking suggestibility assessment followed by an induction consisting of instructions for progressive relaxation and a manipulation designed to establish an hypnotic context and an expectation for increased suggestibility. They were then presented with either further relaxation instructions, instructions to become absorbed or instructions to reduce critical thought, followed by a second suggestibility assessment. Groups were compared on objective and subjective suggestibility score change, controlling for suggestibility on the first test. Results indicate that the addition of instructions for absorption or reduced critical thought to relaxation procedures created a significantly larger suggestibility increase than instructions for relaxation alone. Moreover, instructions for relaxation alone were insufficient to produce an increase in suggestibility, despite the presence of an hypnotic context and positive expectations. These findings cast doubt on the notion that only non-state factors are responsible for suggestibility increases observed in the hypnotic context, and raise the possibility that absorption and reduced critical thought are important components of hypnosis.

Key words: absorption, critical thought, hypnosis, relaxation, suggestibility

Introduction

For many, what makes hypnosis interesting are the unusual phenomena often exhibited in response to suggestions in the hypnotic context, including alterations in sensations, perceptions, thoughts and the experienced intentionality of behaviours. Although such phenomena are typically observed in the hypnotic context, it is nevertheless clear that the use of hypnotic procedures *per se* is not necessary to produce unusual responses to suggestion. Indeed, most apparently 'hypnotic' phenomena can be produced by appropriate suggestions without the use of a formal

hypnotic induction or even explicit reference to hypnosis (Hull, 1935; Barber and Calverly, 1963; Barber, 1965). Moreover, the correlation between suggestibility measured inside and outside the hypnotic context (that is, between so-called 'hypnotic' and 'waking' suggestibility) is consistently very high (see, for example, Weitzenhoffer and Sjöberg, 1961; Braffman and Kirsch, 1999). That notwithstanding, it is clear that the inclusion of hypnotic instructions can have a facilitative effect on suggestive responding, with suggestibility typically being higher in the hypnotic context than outside it (Barber, 1965; Braffman and Kirsch, 1999).

On the face of it, the most obvious and parsimonious interpretation of these findings is that the basic mechanisms of suggestion are the same both inside and outside the hypnotic context (Bernheim, 1888; Kirsch, 1997; Brown, 1999a). Although many within the field seem to agree on this point, the source of the increase in suggestibility observed during hypnosis remains controversial. According to Kirsch (Kirsch and Lynn, 1997; Kirsch, 2000), for example, it is the widespread cultural belief that hypnosis is associated with increased suggestibility that enhances responding in this context. The fact that simply labelling the context as hypnosis is associated with increased suggestibility (Barber, 1965) provides compelling support for such a view. Similarly, in a recent experimental study, Braffman and Kirsch (1999) have shown that positive expectations about hypnosis are related to changes in suggestibility observed following the induction of hypnosis. In contrast, other investigators have argued that alterations in the cognitive and physiological state of hypnotic subjects are responsible for suggestibility changes in the hypnotic context (Cardeña and Spiegel, 1991; Woody and Bowers, 1994). Research investigating the psychophysiological concomitants of hypnosis may be viewed as lending some credence to this position (Gruzelier, 1998), although few, if any, physiological studies have assessed this issue directly.

More recently, Brown (1999a, 1999b, 2000) has argued that there is no necessary contradiction between these allegedly opposing views if one assumes that the basic mechanism of suggestion is the same across testing contexts. According to Brown, the increase in suggestibility associated with hypnosis almost certainly has multiple determinants, with both 'state' and 'non-state' factors being of importance. Although previous research has clearly demonstrated the significance of non-state factors in this respect (Barber, 1965), little or no published research has directly investigated the effect of state factors on suggestibility in the hypnotic context.* Here, a preliminary study that attempts to address this issue is reported.

One state factor that might be expected to contribute to the suggestibility-enhancing effects of hypnosis is 'absorption'. Tellegen and Atkinson (1974) defined absorption as a state of extremely focused or 'total' attention, in which there is 'full commitment of available perceptual, motoric, imaginative and ideational resources to a unified representation of the attentional object' (p. 274). The idea that such a state of focused attention is an important feature of hypnosis is widespread within the field, at one time representing probably the most significant point of convergence between state and non-state models of hypnosis (Spanos and Barber, 1974). It has been argued that psychophysiological studies provide some support for this idea (see Crawford and Gruzelier, 1992; Gruzelier, 1998), as have studies demonstrating that the ability to respond to suggestions during hypnosis is linked to putative measures of

*Clearly, many studies have investigated the occurrence of state-like changes following the 'induction' of hypnosis; what seem to be lacking are studies addressing whether such changes are associated with the suggestibility-enhancing effects of hypnosis.

attentional ability (Van Nuys, 1973; Karlin, 1979) and the tendency to experience episodes of total attention in everyday life, so-called 'trait' absorption (Roche and McConkey, 1990). Moreover, there are good theoretical reasons to assume that the creation of an absorbed state would be linked to an increased responsivity to suggestions (Brown, 1999b, 2000). At present, however, little is known about the effect of state absorption on suggestibility during hypnosis, something that we aimed to rectify through the present study.

One other state alteration that may contribute to suggestibility increase during hypnosis is a reduction in critical or reflective thought, coupled with a corresponding shift towards low-level or holistic cognitive processing (Crawford and Gruzelier, 1992; Fromm, 1992; Brown, 1999b, 2000). The lack of criticality often displayed by subjects in the hypnotic context has been cited as part of the essence of hypnosis (Orne, 1959), and there are both cognitive (for example, Crawford and Allen, 1983) and physiological studies that could be viewed as supporting this position (see, for example, Gruzelier, 1998). Moreover, encouraging subjects to adopt an uncritical stance and to avoid reflective thought is a common component of standard hypnotic induction procedures. However, it remains to be determined whether instructions aimed at reducing critical thought have any impact on suggestibility in the hypnotic context.

In the present study, the effect of instructions for absorption and reduced critical thought on suggestibility change during hypnosis was investigated using an experimental design similar to that recently employed by Braffman and Kirsch (1999). All subjects were presented with an initial suggestibility assessment in the absence of any explicit reference to hypnosis. Subjects were then informed that they would then receive a second suggestibility assessment following instructions to help them become hypnotized; at this point they were told that the use of hypnotic procedures was associated with significant increases in suggestibility, thereby creating an expectation for subsequent suggestibility change. Subjects then received an hypnotic induction consisting of a set of progressive relaxation instructions followed by instructions encouraging either further relaxation, the creation of an absorbed state or the reduction of critical thought. Suggestibility was then assessed for a second time, followed by de-induction instructions. If absorption and reduced critical thought contribute to the suggestibility-enhancing effects of hypnosis, one could predict that hypnotic procedures including instructions for such state alterations as well as instructions for relaxation would be associated with a significantly greater increase in suggestibility from Test 1 to Test 2 than procedures including instructions for relaxation alone.

Method

Study design

A simple, independent groups design was employed, with induction condition as the three-level independent variable (relaxation versus absorption versus reduced critical thought). Change in objective and subjective suggestibility scores from the first suggestibility assessment (SA1) to the second suggestibility assessment (SA2) were the principle dependent variables; objective and subjective scores at SAT1 were controlled for by use of analysis of covariance (ANCOVA).

Suggestibility measurement

Existing suggestibility scales were deemed unsuitable for the present study due to length, reliance on hypnotic instructions, absence of both objective and subjective

suggestibility measures and/or the inclusion of items (such as amnesia, post-hypnotic suggestion) considered unsuitable for repeated presentation in a single testing context. Accordingly, a purpose-built suggestibility scale was constructed with a view to providing a short, practical scale that was suitable for repeated administration and provided adequate coverage of the hypnotic domain (Hilgard, 1973). The scale consisted of suggestions taken from the *Barber Suggestibility Scale* (BSS) (Barber, 1965), the *Carleton University Responsivity to Suggestions Scale* (CURSS) (Spanos, Radtke, Hodgins, Stam and Bertrand, 1983), the *Stanford Scale of Hypnotic Susceptibility, Form C* (SHSS) (Weitzenhoffer and Hilgard, 1962) and the *Creative Imagination Scale* (CIS) (Wilson and Barber, 1978). The scale included eight suggestions in total, comprising two ideo-motor (BSS arm levitation; CURSS hand repulsion), three challenge (BSS hand lock; CURSS arm immobility; CURSS arm rigidity) and three cognitive items (BSS thirst hallucination; SHSS taste hallucination; CIS music hallucination) presented in an interspersed fashion. Two versions of the scale were constructed, using the same items in different testing orders; the relative order of ideo-motor, challenge and cognitive suggestions was preserved across the two tests. The two tests were presented in counterbalanced fashion across the conditions. Each test lasted approximately 10 minutes in total.

Scoring of the suggestibility items was adapted from the BSS (Barber, 1965), assessing both objective and subjective responses. Objective scores were assigned by the experimenter for each suggestibility item in a dichotomous fashion, according to whether an objective action consistent with the suggested effect (for example, arm rising during an arm levitation) was present or absent (one point for each response present). In line with the original BSS (Barber, 1965) hand lock suggestion, half a point was awarded if the participants' hands were not fully apart after five seconds and a full point if their hands remained partly together after 15 seconds. Total objective suggestibility scores were calculated by adding the number of objective points scored, creating a scale range from zero to eight.

Subjective suggestibility scores were also calculated for each subject. For each item that produced an objective response (including a half-response on the hand lock item), participants were asked whether they experienced their response as occurring 'by itself' (that is, involuntarily) or whether they produced it deliberately in order to go along with the test. A forced-choice testing format was rigorously enforced to prevent ambiguous responding. Participants scored one point for each objective response that they identified as having occurred involuntarily; points were summed to give a total subjective suggestibility score, with a possible range from zero to eight.

Change in objective and subjective suggestibility was calculated by subtracting SA1 scores from those obtained at SA2, with the maximum change of eight points in each case.

Study participants

The study participants were 45 undergraduate students from University College London, of whom 24 were female; their average age was 24 years (standard deviation (SD) = 7.87 years; range 18–65 years). All were randomly allocated to one of the three study conditions immediately prior to the testing session, leaving 15 participants in each study group. Participants were recruited via advertisements placed around the university. To avoid revealing the purpose of the investigation prematurely, and to prevent selection bias, no mention of hypnosis was made on the poster, which requested voluntary participants for an experiment being conducted to assess

'the influence of state and context on thought and behaviour'. Psychology students were excluded from the study due to their experience with hypnotic procedures during their course and their familiarity with the investigators. Partly informed consent was obtained from all participants, although no mention of hypnosis was made until after the first suggestibility assessment. On the study information sheet it was emphasized that participants were free to withdraw at any point, without having to give a reason; in addition, an explicit opportunity to withdraw from the study was provided after the hypnotic context was established. Ethical permission for this and all other aspects of the investigation was obtained from the relevant bodies.

Procedure

After reading the study information sheet and providing consent, all participants were presented with SA1, which was identified as a measure of imagination (see Barber, 1965). At this point participants were not aware that a second suggestibility assessment would be presented in the second half of the session. After scoring SA1, an hypnotic context was explicitly established using the following instructions:

You've just been given a test designed to measure your ability to imagine. You were given the test 'cold', that is, without any special preparation. However, many people report that they can imagine much more easily when they're hypnotized. In order for us to get a more accurate measure of your ability to imagine, you are going to be given a second test of imagination, this time following instructions to help you become hypnotized.

In this way, the study addresses the influence of different induction instructions on suggestibility, over and above that provided by an explicit hypnotic context and the expectation of suggestibility increase. All participants were then presented with a set of standard progressive relaxation instructions with hypnosis and without visual imagery. Depending on group assignment, participants were then presented with one of three sets of experimental instructions (relaxation, absorption or reduced critical thought), which were carefully worded so as to maximize their similarity (see the Appendix). SA2 was then presented, followed by de-induction instructions and the subjective scoring of the scale. Finally, participants completed the Tellegen Absorption Scale (TAS) (Tellegen and Atkinson, 1974) and a post-experimental questionnaire asking about their experiences during the session; as part of the questionnaire, participants reported their level of relaxation during SA2 on a 150 mm visual analogue scale, giving a range from zero to 150. All assessments and instructions except the questionnaires were recorded on audiotape for maximum experimental control.

Following the recommendations of Braffman and Kirsch (1999), the order of the hypnotic and non-hypnotic suggestibility assessments was not counterbalanced so as to preserve participants' naïvety concerning the nature of the experiment during the non-hypnotic test. As there was no reason to assume that induction type would interact with assessment order, this approach was considered the most appropriate in this context.

Results

The main study findings are presented in Table 1. Self-reported relaxation during SA2 was statistically equivalent across the three study conditions, as were TAS

Table 1. Mean (SD) relaxation, TAS and suggestibility scores in each of the three experimental conditions

	Relaxation	Condition Absorption	Reduced critical thought
Relaxation score*	106 (31)	117 (15)	111 (25)
TAS score*	18.2 (6.0)	21.4 (6.6)	16.9 (4.9)
Objective suggestion:			
SA1	4.03 (1.7)	3.87 (2.3)	3.40 (2.2)
SA2	3.17 (1.9)	4.03 (2.4)	4.10 (2.4)
Change	-0.87 (1.0)	0.17 (1.4)	0.70 (1.1)
Subjective suggestion:			
SA1	3.23 (1.7)	2.70 (1.6)	2.43 (2.3)
SA2	3.00 (1.8)	3.70 (2.5)	3.97 (2.5)
Change	-0.23 (0.5)	1.00 (1.6)	1.53 (1.5)

*Assessed following SA2
TAS = Tellegen Absorption Scale.

(Tellegen and Atkinson, 1974) scores. Any differences in suggestibility in the three conditions cannot therefore be attributed to differences in state relaxation or trait absorption.

Objective suggestibility scores

There were no significant differences in objective suggestibility scores between the three groups at SA1. Although the absorption and reduced critical thought groups showed an increase in objective suggestibility from SA1 to SA2, the relaxation group showed a decrease on this measure (see Figure 1). Paired-samples Student's *t*-tests indicated that the increase in objective suggestibility scores was significant for the reduced critical thought (t -test(14) = -3.78; $p < 0.005$) but not the absorption condition (t -test(14) = -0.458; $p > 0.1$). The decrease in objective suggestibility in the relaxation condition was also significant (t -test(14) = 3.45; $p < 0.005$). According to one-way ANCOVA controlling for baseline scores, the change in objective suggestibility in the absorption condition was significantly different to that observed in the relaxation condition ($F(1,27) = 5.23$; $p < 0.05$). The reduced critical thought condition also differed significantly from the relaxation condition in terms of objective susceptibility change ($F(1,27) = 14.70$; $p < 0.001$). The difference between the absorption and reduced critical thought conditions on objective suggestibility change was not significant.

Subjective suggestibility scores

There were no significant differences in subjective suggestibility scores between the three groups at SA1. As with objective scores, both the absorption and reduced critical thought groups showed an increase in subjective suggestibility from SA1 to SA2 (see Figure 2); in both cases, the increase was significant according to paired-sample Student's *t*-tests (absorption: t -test(14) = -2.50; $p < 0.05$; reduced critical thought: t -test(14) = -3.85; $p < 0.005$). In contrast, the relaxation group showed a

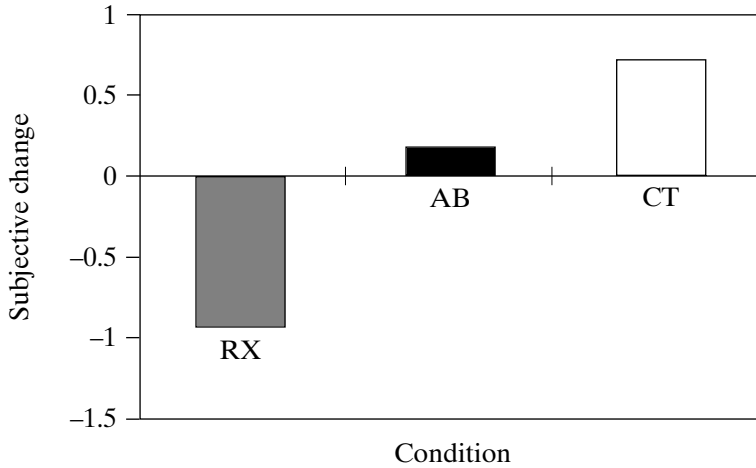


Figure 1. Change in objective suggestibility scores from SA1 to SA2 in relaxation (RX), absorption (AB) and reduced critical thought (CT) conditions.

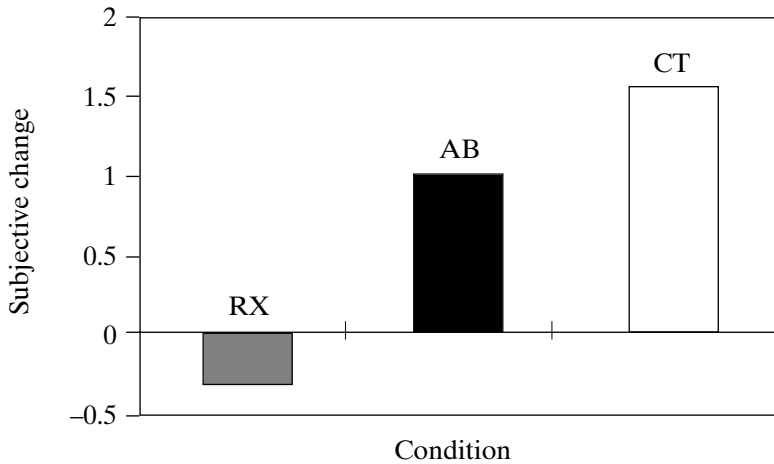


Figure 2. Change in subjective suggestibility scores from SA1 to SA2 in relaxation (RX), absorption (AB) and reduced critical thought (CT) conditions.

non-significant reduction in subjective suggestibility from SA1 to SA2. The increase in subjective suggestibility scores (controlling for baseline scores through ANCOVA) in the absorption condition was significantly different to that observed in the relaxation condition ($F(1,27) = 8.67; p < 0.01$) as was that observed in the reduced thought condition ($F(1,27) = 15.11; p < 0.001$). The absorption and reduced critical thought conditions did not differ in terms of subjective suggestibility change.

Discussion

In line with expectation, both the absorption and reduced critical thought groups showed significant increases in subjective suggestibility scores from SA1 to SA2; however, only the reduced critical thought condition yielded a significant increase in objective suggestibility. In contrast, both objective and subjective suggestibility scores went *down* in the relaxation condition, contrary to expectation. As predicted, the increase in objective and subjective suggestibility scores was significantly greater in the absorption and reduced critical thought conditions than the relaxation condition; suggestibility change was not significantly different between the relaxation and reduced critical thought conditions. The results of the present study therefore indicate that the use of instructions to become absorbed or to reduce critical thought, both of which are commonly included in standard hypnotic procedures, may be an important factor contributing to the increase in susceptibility typically observed in the hypnotic context. This contribution is over and above (or perhaps in interaction with) that provided by explicitly labelling the context as hypnosis and creating an expectation for increased suggestibility.

The findings of the present investigation appear to contradict the common socio-cognitive assertion that hypnosis-related increases in suggestibility are merely a product of participant beliefs concerning the suggestibility-enhancing effects of hypnosis (Kirsch, 2000). It appears instead that such increases may be partly attributable to the generation of an altered psychological state characterized by absorption or a reduction in critical thought during hypnosis (Cardeña and Spiegel, 1991; Fromm, 1992; Woody and Bowers, 1994; Gruzelier, 1998; Brown, 1999b, 2000). One must remain cautious about accepting such an interpretation in the absence of further information, however. At present, we are unable to say for certain that our participants' psychological state was altered in any way by the addition of instructions for absorption or reduced critical thought, or indeed whether any such changes — should they have been present — were responsible for the increased suggestibility observed in these conditions. It is therefore impossible to rule out alternative interpretations for the present findings. For example, it may be that the addition of instructions for absorption or reduced critical thought to relaxation procedures simply makes for a more convincing hypnotic induction than that produced by relaxation instructions alone. The effect of such a difference on participant expectations could account for the between-group differences in suggestibility change observed here. A replication attempt could address this issue through the inclusion of a credibility measure designed to assess whether the study conditions are equivalent in terms of their perceived hypnotic plausibility. In addition, it would be instructive to obtain participant reports of their subjective state following the experimental procedures used here, such as the degree to which they felt absorbed and/or engaged in critical thought during the second suggestibility assessment; the Experiential Analysis Technique (EAT) (Sheehan, McConkey and Cross, 1978) represents one measurement approach that may be particularly useful in this respect. Such measures could be used to predict suggestibility change in regression analysis, thereby allowing for a more informed judgement concerning the relationship between suggestibility and psychological state.

An alternative explanation could be that the present findings simply reflect idiosyncrasies in our study groups, particularly our relaxation group. The finding that suggestibility scores actually went down for this group is at odds with previous research showing that the use of the hypnotic label alone is sufficient to produce

increased suggestibility scores (see Barber, 1965). It is possible that our relaxation group had, by chance, a disproportionately high number of individuals with negative attitudes towards hypnosis, who are particularly likely to show suggestibility decreases when testing is conducted in the hypnotic context (Braffman and Kirsch, 1999). Such a possibility underscores the need for replication of the current findings using a larger sample, and indicates that the measurement of participant attitudes towards hypnosis would be an appropriate methodological refinement in future studies.

It is also important to consider the similarities and differences between the absorption and reduced critical thought conditions employed here, both of which produced significant and comparable suggestibility increases from SA1 to SA2. It is possible that both conditions produced suggestibility increases for the same reason, that is, via the production of a highly absorbed state of which a reduction in criticality is one feature (Tellegen and Atkinson, 1974; Brown, 1999b). Alternatively, it may be that instructions to reduce critical thought simply provide participants with an effective strategy for responding to suggestions and have very little effect on their psychological state. The findings of the present study do not allow us to evaluate the relative validity of these contrasting positions; again, the inclusion of measures designed to assess levels of absorption and critical thought during SA2 could shed further light on this issue. In addition, it may be informative to investigate the effect on suggestibility of instructions for absorption and reduced critical thought alone, compared to instructions emphasizing both.

In summary, we have reported a study demonstrating that the addition of instructions to become absorbed or reduce critical thought to standard relaxation procedures are associated with significantly greater increases in suggestibility than relaxation procedures alone. The results of this study could be viewed as casting doubt on the notion that beliefs and expectations are the sole factor determining the suggestibility-enhancing effects of hypnosis, and raise the possibility that state factors may also contribute to this phenomenon. At present, however, the findings reported here are insufficient to allow any firm conclusions to be drawn concerning these issues, although we have identified a number of avenues by which future investigation in this area might proceed. In addition to the methodological improvements that we have suggested here, future research may like to consider other factors, such as the use of visual imagery, that might contribute to suggestibility increases during hypnosis. Such research will not only provide us with insight into the origins of suggestibility increases during hypnosis but also with valuable information about how we might maximize the efficacy of our hypnotic procedures.

Appendix

Script for relaxation manipulation

'You're feeling deeply relaxed now. The test of imagination is going to begin in a moment. Some people find that they respond better to these tests when they are relaxed. Allow yourself to feel completely relaxed ... more and more relaxed ... relax completely ... you're feeling completely relaxed now ... completely relaxed ... your breathing is slow and regular ... slow and regular ... you're totally relaxed ... completely relaxed as you listen to the tape ... just continue to relax now. The test of imagination is going to begin ... you will remain completely relaxed throughout ... completely relaxed.'

Script for absorption manipulation

'You're feeling deeply relaxed now. The test of imagination is going to begin in a moment. Some people find that they respond better to these tests when they are very focused. Allow yourself to feel completely focused ... let your attention narrow down ... focus only on the things I say ... and the things I ask you to experience and do ... focus completely ... become totally absorbed in what you're doing ... just let all other things slip from your mind ... focus completely ... become utterly engrossed in the experience of listening and responding to this tape ... concentrate on nothing else. The test of imagination is going to begin ... you will remain completely absorbed throughout ... completely absorbed.'

Script for reduced critical thought manipulation

'You're feeling deeply relaxed now. The test of imagination is going to begin in a moment. Some people find that they respond better to these tests when they avoid thinking critically. Allow yourself to let go completely ... don't question what you're being asked to do and experience ... just go with the flow ... avoid thinking about the tape ... don't question whether or not it will work ... let yourself go ... don't analyse your responses until after the tape ... you're totally relaxed ... completely relaxed as you listen to the tape ... go with the flow ... don't question ... just go with the flow. The test of imagination is going to begin ... you will think uncritically throughout ... think uncritically.'

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