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Response Expectancy and Experimenter Bias as Factors Affecting Hypnotic Responsiveness

K. Shannon Wilson
University of Tennessee - Knoxville

To the Graduate Council:

I am submitting herewith a dissertation written by K. Shannon Wilson entitled "Response Expectancy and Experimenter Bias as Factors Affecting Hypnotic Responsiveness." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

Michael Nash, Major Professor

We have read this dissertation and recommend its acceptance:

Priscilla Blanton, John Lounsbury, Samuel Wallace

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

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RESPONSE EXPECTANCY AND EXPERIMENTER BIAS AS FACTORS AFFECTING HYPNOTIC RESPONSIVENESS

A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

K. Shannon Wilson
August 2001

DEDICATION

This dissertation is dedicated to my family-

without your constant love and unfailing support,

none of this would have been possible.

I owe you everything.

And to my wonderful husband, who

made the most important of my dreams come true-

you are my partner in every way,

and I will love you forever.

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ABSTRACT

This study examined the effect of subjects' expectations regarding their hypnotizability, and the effect of experimenter bias, on subsequent levels of hypnotic responsiveness. Ninety undergraduate psychology students, none of whom had previously been hypnotized, participated in the study. Subjects were divided into four groups (two groups of 30 and two groups of 15), in a two by two design. The two Experimental groups received a manipulation (subtle alterations of lighting conditions in the experimental room in order to confirm suggestions given under hypnosis) designed to increase their level of expectations regarding their hypnotic performance. Their actual hypnotic responsiveness was then measured using the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C). Subjects in the Control groups received only the SHSS:C. For the two Aware groups, the experimenter was aware of the group membership of the subject, and therefore knew if the manipulation had been administered. In the two Unaware groups, the experimenter was blind to this variable. These last two conditions made it possible to detect any experimenter bias that may have affected hypnotizability scores. Results indicated that the expectation manipulation did in fact increase the subjects' level of expectation regarding their hypnotizability. However, since the expectation level of subjects in the Experimental groups after the manipulation had been administered was not statistically different than that of subjects in the Control groups, the effect of those expectations on hypnotizability scores is extremely difficult to determine. Experimenter awareness of group membership was shown to have no significant effect on hypnotizability scores.

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1. Introduction

Over the past several years, within the field of hypnosis research, there has arisen a significant debate regarding the nature of a person's ability to be hypnotized. Coming down on opposing sides of that debate are those who support a social learning or contextualist explanation of hypnotizability, and those who believe that hypnotizability is a stable cognitive ability that people possess, much like IQ. Both sides acknowledge that a person's hypnotizability scores are relatively stable over time (Piccione, Hilgard, & Zimbardo, 1989), although they offer different explanations as to why this is the case.

Those who support the social learning and contextualist theories believe that a person's ability to be hypnotized is largely determined by their expectations of and beliefs about how hypnotizable they will be, rather than by any stable cognitive ability that they possess. This theory, called response expectancy theory, is essentially an extension of social learning theory. Initially, Rotter (1954) suggested this theory as a means of explaining why people do or do not engage in volitional or voluntary behaviors. Social learning theory is based on the premise that a person's display of a certain behavior is predicted by their expectation that the behavior will lead to a particular outcome that is seen by the person as being good or valuable to them. "...The occurrence of a response is hypothesized to be a function of the expectancy that the behavior will be reinforced and of the value of the expected reinforcement" (Kirsch, 1985, p. 1189). Thus, the behavior is produced with the expectation of the positive or favorable outcome.

Kirsch (1985) further extends this theory in order to encompass the effect that nonvolitional response expectancies have on volitional behaviors. "Because

nonvolitional responses have positive and negative reinforcement value, expectancies of their occurrence affect the probability that a person will engage in particular volitional behaviors. For example, agoraphobics avoid a wide variety of situations because of their expectance that entering into those situations will result in the occurrence of panic attacks" (Kirsch, 1985, p. 1190). Thus, it is suggested that a person's expectations about how they may involuntarily respond to a situation will affect their decision to either avoid to participate in that situation.

Kirsch (1985) posits that hypnotic behaviors occur in this same way. According to the response expectancy theory, a person expects that they will respond to suggestions while under hypnosis in a certain way. Then, in a manner similar to that of the placebo effect and self-fulfilling prophesy, they do respond in that way. Spanos et al (1974) suggest that the probability of the occurrence of a particular hypnotic response will depend largely on the degree to which the person under hypnosis perceives the situation as hypnotic, the response as characteristic of good hypnotic subjects, and themselves as good hypnotic subjects. If those three conditions are met, the subject would then have an expectation about how they are likely to respond to hypnotic suggestion. That expectation in turn will affect the likelihood that the response will or will not occur.

Additionally, these hypnotic behaviors are perceived by the person as being nonvolitional. Thus, their expectations of their behavior in a given situation will determine not only the occurrence of their behavior, but also their experience of that behavior. According to this theory, "it is possible that, with sufficiently strong response expectancies, all individuals would show high levels of hypnotic responsiveness" (Kirsch, 1985, p. 1196). In other words, as long as the three conditions listed above are

present, a person would be highly responsive to hypnotic suggestions, regardless of any individual variables or differences.

Supporting the opposing side of this debate are those who believe that a person's response to hypnotic suggestion is determined simply by their ability to be hypnotized, and that different people possess varying levels of that ability. According to this point of view, individuals vary in their ability, separate from any desires or expectations that they may have, to experience hypnosis, much as people vary in their scores on a measure of IQ. And, as with IQ, people seem to vary relatively normally in their ability to be hypnotized. Individual differences in the degree to which people respond to hypnotic suggestion, then, are seen by proponents of this theory as the result of simple differences in ability, and wholly unrelated to any expectations about that ability that the person may have.

Recently, this debate has received a significant amount of attention in the field of hypnosis research, and several studies have been conducted in search of empirical support for both sides of the argument. Specifically, there have been several inquiries into the area of subjects' expectations about their ability to be hypnotized, and to what extent (if at all) those expectations influence their subsequent performance on an objective measure of hypnotizability. In 1986, Council, Kirsch and Hafner conducted a study investigating the role of expectancy in hypnotic responding. In this study, which involved 128 undergraduate students, a measure of the subjects' expectation regarding their future response to hypnosis was taken after the hypnotic induction had been performed. That expectation was then compared with their scores on the Stanford Hypnotic Susceptibility Scale: Form C. Results of this study indicate that those

expectations were in fact predictive of the subjects' actual responsiveness to hypnotic test suggestions.

Thomas Teggart, in 1991, completed a study with 64 subjects that again examined the effect of expectation on hypnotizability scores. In this study, subjects were given either positively biased, negatively biased, or neutral information about the effectiveness of a subsequent hypnotic procedure, and were then administered that procedure. The results of this study show that subjects who were given positively biased information scored higher on the items of the hypnotic procedure than did subjects who received negatively or non-biased information. These results, like those of the Council, Kirsch and Hafner study, are in keeping with the response expectancy theory.

Also in 1991, Vickery & Kirsch examined the effects of verbal manipulations on response expectancies. A total of 89 students were involved in the study, and were divided into four groups. Three of these groups were told that their level of hypnotizability would either increase, decrease or stay the same with repeated testing. One group was given no information at all, and one group was given a cognitive skill training package. The results of this study revealed that subjects who received positive information showed increases in their expectations from the first to the second testing, which were paralleled by changes in subsequent hypnotizability scores. Those in the negative information condition showed decreases in expectation and scores, and those in the no information group showed no significant changes on either measure. The effects of the skill training package were not significant. These results would seem to indicate that expectations do indeed influence performance on objective measures of hypnotizability.

In 1997, Page, Handley & Green found that, in a sample of 266 undergraduates, subjects' pre-induction beliefs about hypnosis and their expectations of experiencing hypnosis were positively correlated with their level of performance on the Harvard Group Scale of Hypnotic Susceptibility. Additionally, this study revealed that a subjects' expectations about his or her hypnotic experience were consistent with how they rated the subjective experience of the procedure after its completion.

Kirsch, Wickless & Moffitt, in 1999, again found that a person's expectations about their ability to be hypnotized were in fact influential of their actual performance on a subsequent measure of hypnotic susceptibility. In this study, 90 subjects were exposed to experiential manipulations designed to increase their expectation about their hypnotic performance. The results showed that the manipulation increased the subjects' expectation about their performance, and that that increase was paralleled by an increase in the observable hypnotic response.

Other studies, however, have yielded significantly less definitive results regarding the role of expectation in hypnotic performance. In 1983, Saavedra & Miller conducted a study in which subjects were told that the results of a previously administered battery of questionnaires indicated that they were either highly, moderately or minimally hypnotizable. Results revealed that there was a significant main effect on hypnotic performance due to the assigned expectations; however, only subjects in the low expectation group had scores significantly different from the other groups on the Harvard Group Scale of Hypnotic Susceptibility. Additionally, it was shown that the degree to which the subjects' expectations about their performance influenced their actual performances was a function of the confidence that the subjects had in those expectations.

This suggests that an individual's performance on a measure of hypnotic susceptibility is determined by more than simply their expectation of that performance.

A study completed in 1993 by Gearan & Kirsch involved twenty-seven undergraduates who had been selected for their low hypnotizability scores. Of these subjects, thirteen of them received the Carleton Skill Training Program (in order to increase their hypnotizability), and fourteen received no training. The results show that subjects who received the training scored higher on measures of response expectancy and on self-report measures of hypnotizability; however, there was no difference between the two groups on a measure of observed behavioral response. These results indicate that there most likely are other factors in addition to expectation that influence behavioral response to hypnotic suggestion, and that those factors have their effect somewhere between the subjects' subjective experience of their performance and their actual performance itself.

Several studies on this subject have yielded results that are not in support of the response expectancy theory, and that are in fact quite in contradiction to it. Ashford & Hammer, in 1978, examined the relationship between a person's expectation of experiencing amnesia following hypnosis and the actual occurrence of amnesia. Although the usual, small correlations between expectation and performance were present, the results yielded no conclusive or significant evidence that the presence of posthypnotic amnesia is positively related to the subjects' expectations that it will occur.

A 1985 experiment conducted by Simon & Salzburg also investigated the effects of manipulated expectancy on the occurrence of posthypnotic amnesia. In this study, 120 undergraduates were given either positive, negative or neutral expectation manipulation,

and were either given or not given a suggestion for the occurrence of posthypnotic amnesia. The results reveal that the manipulation of the subjects' expectation about the posthypnotic amnesia had no effect on its actual occurrence.

In 1989, Johnson et al examined the effects of manipulated expectancies on objective hypnotizability scores. In this study, thirty-two undergraduates were given personality and physiological feedback designed to convince them that they would be either highly responsive or unresponsive to subsequent hypnotic suggestions. The results of the investigation show that the expectancy manipulation had no significant effects on the subjects' responses to the hypnotic suggestions. These results, then, are in direct contradiction to the response expectancy theory.

2. Wickless & Kirsch Investigation

In 1989, Wickless & Kirsch carried out the most vigorous investigation to date into the effect that expectations have on subsequent hypnotic performance. This study was designed to test the extent to which manipulating a person's expectations about their hypnotizability would affect their subsequent hypnotizability scores. Sixty subjects were randomly assigned to one of four groups, one of which served as a control, and three of which included some form of manipulation, carried out after the hypnotic induction, designed to make the subjects believe that they were highly hypnotizable. The three forms of expectancy manipulation were 1)verbal: bogus feedback from "psychological tests" (actually filler tests that were administered before the hypnotic session) which indicated high levels of hypnotizability, 2)experiential: surreptitious confirmation of visual experience suggestions which were presented after the hypnotic induction (i.e. faintly illuminating the room with a red light bulb after suggesting that the subject will begin to see a "rosy glow" in the room), and 3) a combination of both the verbal and the experiential manipulations.

Following the manipulation, all subjects were tested for hypnotizability using the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C). The subjects that had received the expectancy manipulation were then debriefed and informed about the manipulation, and were asked to return two weeks later for a second administration of the SHSS:C. This second testing was designed to demonstrate that the increase in subjects' expectations about their hypnotizability would remain intact and stable over time.

The results of this study revealed no significant increase in hypnotizability as a result of the verbal expectancy manipulation when compared with the control group.

However, a significant increase in hypnotizability did occur for the subjects in the experiential manipulation group and the combined manipulation groups. These results would suggest, then, that a person's expectations about their hypnotizability do in fact affect how hypnotizable they are, and therefore offer support for the socio-cognitive explanation of individual differences in hypnotizability. Interestingly, the scores of the subjects in the experiential manipulation group actually increased between the first and the second administration of the SHSS:C, after the subjects had been debriefed about the manipulation. Essentially, they became more hypnotizable after they had been told that they had been "fooled" about their level of hypnotizability during the first hypnotic session.

3. Benham et al: Experiment 1

An attempt to replicate the 1989 Wickless & Kirsch results was made by Benham, Bowers & Nash in 1995. Since, in the Wickless & Kirsch study, the verbal form of expectancy manipulation by itself failed to produce a significant increase in hypnotizability scores, we chose to focus only on the experiential form of manipulation. Additionally, it seemed curious to these experimenters that the hypnotizability scores for subjects in the experiential manipulation group increased so significantly after the debriefing. We therefore decided to also investigate what, if any, effect the debriefing had on the second set of hypnotizability scores.

There were three groups of subjects in this study: two experimental groups and one group that served as a control. One of the experimental groups received exactly the same procedures as did the Wickless & Kirsch groups (this group was called the Bogus Debriefed Group). The second experimental group, although its subjects received the same expectancy manipulation, was not debriefed until after the second administration of the SHSS:C (this group was called the Bogus Non-debriefed Group). This procedure enabled us to test the replicability of the Wickless & Kirsch results, and to investigate the possible effects of the debriefing simultaneously.

Our hypothesis, then was twofold; first, that subjects in the two experimental groups would obtain higher hypnotizability scores than subjects in the control group due to their increased expectations regarding their hypnotizability, and second, that there would be an increase in scores between the first and the second administration of the SHSS:C for the debriefed subjects, but not for the non-debriefed subjects.

Subjects:

Subjects were 47 students (10 male and 37 female) from the University of Tennessee at Knoxville, enrolled in either an Introductory Psychology or an Abnormal Psychology class. Only subjects having no previous experience with hypnosis were accepted, and those who completed the study received extra course credit in exchange for their participation. Subjects were randomly assigned to one of the three groups.

Measures:

All subjects were assessed with three dependent measures at both times of testing – two measures of hypnotic responsiveness and a measure of subjective hypnotic depth. The SHSS:C was used, as it was by Wickless & Kirsch (1989) as a behavioral index of hypnotic responsiveness.

A subjective measure of hypnotic susceptibility was also used. This measure was a five-point likert scale developed by Wickless & Kirsch (1989) that asks subjects to rate the vividness of their hypnotic experience, with a "1" representing not experiencing the suggestion at all, and a "5" representing experiencing the suggestion as though it were actually happening. Because subjects in the control group did not receive the bogus suggestions related to the expectancy manipulation, they were instructed to ignore the five items on the vividness scale that pertained to those suggestions.

Additionally, a subjective measure of hypnotic depth was administered. This measure was used to assess how deeply hypnotized the subjects felt themselves to be at various points during the hypnotic session. Subjects were asked to give a rating from one to ten, with "1" representing feeling wide awake and alert, and "10" representing feeling very deeply hypnotized. Subjects were asked to give this rating three times during the

administration of the bogus items, and then again five times during the administration of the SHSS:C. This measure was used at both times of testing.

Procedure:

Subjects were brought into the experimental room and asked to sit in a comfortable chair that faced the corner of the room. The experimenter was seated behind the subject and slightly to the left. The room was illuminated by two 15-watt light bulbs, and was arranged so that no shadows were visible to the subject. A panel of lights (to be described in detail later) was mounted in the wall behind and above the subject, and was hidden from sight by a corkboard. After the subject was seated, they were asked to close their eyes and find a comfortable position in which to sit for the remainder of the session. While their eyes were closed, the experimenter got up and turned on a white noise generator (the need for which was explained to the subject), and silently removed the corkboard in order to expose the lights. This removal was completed without the subjects' knowledge. The subject was then asked to open their eyes and look straight ahead, and the experimenter began the administration of the SHSS:C.

After the hypnotic induction, the first probe for hypnotic depth was given. The subjects in the Bogus Debriefed and Bogus Nondebriefed groups were then given the five bogus item suggestions. As per Wickless & Kirsch (1989), the five items designed to increase the subjects' expectations about their hypnotizability were suggestions to see the room becoming red, see the room becoming green, see a light flickering, see the room becoming dark, and see the room becoming blue. These suggestions will be called the

manipulations. Immediately after each suggestion was given, it was surreptitiously confirmed by an actual alteration of the lighting in the experimental room.

This confirmation was accomplished by the use of 25-watt red, green and blue light bulbs, and a 15-watt white bulb that were installed in the wall of the experimental room. These lights were controlled with a rheostat by a second experimenter in an adjacent room. The second experimenter was able to listen to the ongoing hypnotic session by means of a small microphone placed in the ceiling of the experimental room just above and behind the subject. When the suggestion for a particular phenomenon was given, the lights would be manipulated by the second experimenter to create that phenomenon. The extent to which the actual lighting of the experimental room was altered for each suggestion had been previously determined by extensive piloting, as set forth by Wickless & Kirsch (1989).

After a suggestion involving the colored lights was given, the intensity of the corresponding colored bulb would be slowly increased to a level previously reported by pilot subjects to be "perceptible but not distinguishable from imagined effects" (Benham et al, 1995). In order to create the flickering effect, the intensity of the white light bulb was increased and decreased rapidly, and to create the darkening effect, the intensity of the white bulb was gradually decreased. Both of these effects had been previously piloted to determine the intensity levels to which the lights should be raised or lowered. During the administration of the bogus item suggestions, the subjects were probed three separate times for hypnotic depth. These probes were given immediately before the first suggestion, and immediately following the third and fifth suggestions.

Following the administration of the bogus item suggestions, each subject was administered the twelve items of the SHSS:C. During the administration of the SHSS:C, five probes for hypnotic depth were given (after the first, third, fifth, seventh, and ninth items). After the SHSS:C had been completed, subjects were asked to fill out the vividness index. Then, subjects in the debriefed group were informed about the manipulation as follows:

> We tried to help you become hypnotized by making sure that you would have the first few experiences that I suggested to you. Remember when I told you to see colors on the wall? Whenever I said to imagine a color, we turned on a colored light bulb that made the room look a tiny bit that color. When I told you to imagine a flickering light and the room getting dark, we used the lights to make those things happen, too. But we did that only for the colored lights, the flickering and the dark. Everything else you did entirely on you own, and you did very well.

Arrangements were made for those subjects to return two weeks later for the second testing session.

For subjects in the Bogus Nondebriefed group, the procedures leading up to the debriefing were identical to those in the Debriefed group. However, after the completion of the vividness index, no debriefing took place. An appointment was made for the subjects to return for the second testing session two weeks later.

Subjects in the control group were administered only the SHSS:C, without any expectancy manipulation. The same probes for hypnotic depth as were used for the two experimental groups were given to subjects in the control group. The vividness index

was given after the hypnotic session, and subjects were instructed to ignore the first five items that pertained to the bogus items. Appointments were then made for the subjects to return for the second testing session.

During the second testing session, subjects were administered only the SHSS:C, with no bogus items. Probes for hypnotic depth were given at the same points as in the first session. Following the hypnotic session, all subjects completed the vividness index, and those who had not been previously debriefed were debriefed at that time.

Results:

The two dependent variables in this study were the subjects' behavioral responsiveness to hypnosis (as measured by the SHSS:C on a scale of 0-12) and the score on the vividness index (the average of the score given for each of the twelve SHSS:C items, with a range on 1-5). These two variables were significantly correlated ($r = .53$, $p < .001$). The results for the Bogus Debriefed and Bogus Nondebriefed were collapsed for the first testing session, as the procedures for both groups were identical. The means and standard deviations for the behavioral and vividness index scores are presented in Table 1.

One-way analyses of variance (ANOVAs) on these data revealed that the bogus item expectancy manipulation produced no significant effects on either the behavioral SHSS:C scores or the subjective vividness scores, $F(1,45) = 0.097$, $p = .757$, and $F(1,45) = 0.086$, $p = .771$, respectively.

TABLE 1

Means and Standard Deviations for SHSS:C

and Vividness Scores

	Group	
	Debriefed/ Non-Debriefed $n = 32$	Control $n = 15$
Hypnotic Responsiveness	M (SD)	M (SD)
SHSS:C Scores	7.34 (2.31)	7.07 (3.77)
Vividness Ratings	3.22 (0.81)	3.15 (0.78)

Additionally, the subjective vividness scores were analyzed, using the mean of the five probes for depth (a score between 1 and 10). A one-way analysis of variance showed that the mean depth scores of the two bogus item groups ($M = 6.13$, $SD = 1.91$) were not significantly different from those of the control group ($M = 5.85$, $SD = 1.76$), $F(1,45) = .227$, $p = .636$. This indicates that the bogus item manipulations did not have a significant effect on subjective levels of hypnotic depth.

Results of Retesting:

Eleven subjects failed to return for the second testing session (four controls, four bogus debriefed, and three bogus nondebriefed). The means and standard deviations of the 36 subjects who did return are presented in Table 2.

A 3 x 2 (Group by Time) repeated measure ANOVA on SHSS:C scores failed to show any significant effects of Testing Time, Group, or a time by Group interaction, $F(1,33) = .90$, $p = .351$; $F(2,33) = 1.29$, $p = .290$; and $F(2,33) = 1.45$, $p = .249$, respectively. Further, an analysis of the vividness index scores using paired 2-tailed t tests revealed a significant difference between the first and the second testing sessions for

TABLE 2

Means and Standard Deviations for SHSS:C and Vividness Scores at Time 1 and Time 2

		Group		
		Debriefed $n = 12$	Non-Debriefed $n = 13$	Control $n = 11$
Hypnotic Responsiveness		M (SD)	M (SD)	M (SD)
SHSS:C Scores	Time 1	6.67 (2.64)	7.92 (1.94)	6.09 (3.94)
	Time 2	5.67 (2.06)	7.31 (2.43)	6.64 (2.94)
Vividness Ratings	Time 1	2.87 (0.67)	3.38 (0.76)	2.90 (0.75)
	Time 2	2.67 (0.61)	3.14 (0.79)	2.76 (0.71)

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Discussion:

Contrary to the results of the Wickless & Kirsch (1989) study, the results of this study failed to show that the bogus item manipulation had any significant effect on hypnotic responsiveness, measured either by behavioral or subjective means. Additionally, contrary to our hypothesis that the debriefing created an effect of some sort on subsequent hypnotic responsiveness, the results suggest that the timing of the debriefing had no such significant effect.

One issue that was not addressed by either the Wickless & Kirsch study or the Benham et al study is the question of whether or not the bogus item suggestions actually raised the subjects' expectations about how hypnotizable they were. Additionally, there arose a question about the cause of the increase in expectancy, if one did occur. We had assumed that the increase in expectancy was due to the confirmation of the bogus item suggestions; however, this was not empirically verified.

4. Benham et al: Experiment 2

Therefore, Benham, Bowers & Nash conducted a second study in order to address these issues. In this study, two additions were made to the procedure. First, a measure of the subjects' expectations about their hypnotizability was included, and was administered at various points throughout the hypnotic session. Second, another group of subjects was created. This fourth group received the bogus item suggestions as did the other two experimental groups; however, no surreptitious confirmation of those suggestions took place. These two additions to the procedure of the first study enabled us to determine two things: whether or not the expectations of the subjects were actually increased, and whether or not that increase, if it took place, was the result of the surreptitious confirmation of the bogus item suggestions.

Methods:

Subjects in this study attended only one hypnotic session, given the strength of the results of the first Benham et al study. There were three groups in this study - a control group that received only the SHSS:C items, a group that received the bogus item suggestions without the confirmation of those suggestions (the No Lights group), and a group that received the bogus item suggestions and the confirmation of those suggestions (the Lights group). Again, the number of subjects was targeted around the numbers used with Wickless & Kirsch (1989), with 15 subjects in each of the three groups. All subjects were enrolled in an introductory psychology course at the University of Tennessee, and received extra course credit for their participation in the study. As before, only subjects with no previous experience with hypnosis were accepted for the study.

All subjects completed the same group of hypnotic behavioral and vividness of experience measures as detailed in the first experiment. Additionally, the measure of expectations was administered immediately after the hypnotic induction, and then again immediately after the administration of the bogus item suggestions.

There were three hypotheses in this second study. First, that the subjects in the Lights condition would report having higher expectations about their hypnotizability after the administration of the bogus item suggestions than would subjects in the No Lights condition. Second, that the subjects in the Lights condition would report higher vividness ratings on the bogus items than would subjects in the No Lights condition. Lastly, assuming that a person's expectations about their hypnotizability do affect their actual hypnotizability, we hypothesized that subjects in the Lights group would score higher on the behavioral measure of hypnotizability than would subjects in the No Lights group.

Measures:

Three different dependent measures were used for all subjects. Again, the SHSS:C was used as the behavioral measure of hypnotic responsiveness. The vividness index from the first study was also used in the second study, as a subjective measure of hypnotic responsiveness. In order to measure the subjects' expectations about their hypnotizability, they were asked the following question: "If at some future time we were to give you 20 suggestions, at that time (knowing what you know now), how many of those 20 suggestions do you think you would respond to?". This measure was administered at four different times throughout the hypnotic session: prior to the

hypnotic induction, immediately following the induction, just after the administration of the bogus items, and immediately prior to the termination of the session.

Procedure:

Subjects in the Lights group received the same procedure and were administered the same measures as were subjects in the two bogus item groups in the first Benham et al experiment. Subjects in the No Lights group received the same procedure as did subjects in the Lights group, except that no confirmation of the bogus item suggestions (i.e. alteration of the lighting conditions in the experimental room) was given. Subjects in the control group were administered only the SHSS:C, without the bogus item suggestions. All subjects were given the three measures described above.

Results:

As seen in Table 3, results from this analysis showed that subjects in the Lights group reported significantly greater vividness of experience than did subjects in the No Lights group (M = 3.60 and M= 2.93, respectively; independent t for unequal means, $t(25) = -2.97$, $p = .003$). This suggests that the subjects did in fact perceive the changes made in the lighting of the experimental room, and that those changes did lead to an increase in the vividness of their experience of hypnosis.

Testing if the bogus item procedure increases expectations:

Subjects in the Lights group displayed a significant increase in expectation scores

TABLE 3

Significant Findings for Benham et. al., # 2

Dependent Measure	Groups: Lights M (SD)	Groups: No Lights M (SD)	Groups: Control M (SD)
Expectations prior to manipulation	14.43 (5.12)	13.00 (5.57)	12.57 (5.96)
Expectations after manipulation	16.07 (4.38)	12.31 (5.63)	---------
Vividness Ratings of Manipulations	3.60 (0.46)	2.93 (0.76)	---------
SHSS:C Scores	7.20 (2.08)	6.94 (2.91)	6.87 (2.85)
Vividness	3.18 (0.64)	3.06 (0.79)	3.09 (0.40)

following the administration of the bogus item suggestions (see Table 3, prior to manipulation M = 14.43, after manipulation M = 16.07; paired t(14) = -2.32, p = .018. Subjects in the No Lights group displayed a drop, although a non-significant one, in the mean expectation scores (prior to manipulation M = 13.00, and after manipulation M = 12.31; paired two-tailed t(15) = .67, p = .515). This would suggest that the bogus item suggestions do in fact increase subjects' expectations about their hypnotizability, and that that increase is in some way related to the manipulation of the lighting in the experimental room.

Testing if higher expectations lead to greater hypnotic responsiveness:

Results from this analysis revealed that subjects in the Lights group had significantly higher expectations about their hypnotizability than did subjects in the Control group immediately prior to the administration of the SHSS:C items, t(28) = 1.81, p = .04. However, a one-way analysis of variance on the behavioral hypnotic responsiveness scores and vividness index scores revealed that no significant difference existed between the scores for subjects in the Control group and those for subjects in the Lights group, F(2,23) = .066, p - .936; and f(2,42) = .147, p = .863, respectively. This indicates that the bogus item procedure, while it did increase subjects' expectations about their hypnotizability, did not in fact increase their level of hypnotizability.

Discussion:

The results of the second Benham et al experiment demonstrate that the surreptitiously confirmed bogus item suggestions were effective in increasing the

expectations of the subjects regarding their hypnotizability. However, we again failed to produce any evidence that the increase in subjects' expectations led to an increase in actual hypnotic responsiveness, either behaviorally or subjectively.

5. Discussion of the two Benham et al experiments:

Wickless & Kirsch, in keeping with the response expectancy theory of hypnosis, posited that hypnotic responsiveness is primarily the product of the subject's attitudes and expectations. The results of their 1989 study do indeed lend support to this theory, suggesting that manipulation of a person's expectations about their hypnotizability can lead to a change in their behavioral response to hypnosis.

However, the findings of both of the Benham et al studies are at variance with those results. While we were able to obtain results indicating that the bogus item manipulation did in fact increase the subjects' expectations about their hypnotizability, and that the increase in expectancy was the result of the bogus item suggestions followed by the manipulation of the lighting conditions in the experimental room, we found no effect on actual hypnotic behavior or on subjective experience. Essentially, in both of our studies, the results fail to support the theory that expectancy has any effect on actual hypnotic responsiveness. They do, therefore, lend support to the "trait" theory of hypnotizability, suggesting that individual differences in hypnotic responsiveness reflect, at least to some degree, differences in individual ability.

6. Present Study

The present study has been designed to answer the questions and concerns that remain from the previous three studies. Several concerns were raised by reviewers of the two Benham et al studies. First, there was a question about the possibility that experimenter bias had in some way influenced the data that was collected. In all studies to date, including Wickless & Kirsch (1989) and both Benham et al studies, the experimenter was not blind to group assignment or to the purpose and hypothesis of the study. Thus, experimenter bias in scoring the objective measure of hypnotizability cannot be ruled out.

Second, the subjects in the two Benham et al studies were debriefed immediately after their second hypnotic session, rather than at the conclusion of the entire study as were subjects in the Wickless & Kirsch study. Wickless & Kirsch waited until the end of the study to debrief subjects about the manipulation in order to avoid any contamination that might take place as a result of subjects discussing the procedure of the study with one another. There is, therefore, a possibility that some contamination occurred among the subjects in the Benham et al studies. Third, the mean score on the SHSS:C for subjects in the Benham et al control group was 6.90, which raised several questions since it is slightly higher than the usual mean for the SHSS:C. However, the mean of 6.90 is only high when it is compared with means from the 1950s and 1960s. Since that time, the SHSS:C has been used in numerous studies as a measure of hypnotic responsiveness, and means ranging from 6.40 to 6.96 have been obtained (Benham et al, 1999).

The present study was designed to answer the above questions and concerns, and to hopefully be the final study in this series. It is expected that this study will

demonstrate that a person's hypnotizability is not significantly affected by their expectations about how hypnotizable they are. In order to demonstrate that point effectively, this study will need to show again that the expectancy manipulation designed to increase subjects' expectations does in fact do so. Additionally, it will need to demonstrate that the results of the study are not affected by experimenter bias or by subjects' discussion of its methods and content.

Methods:

The procedure of this study was similar to those of the previous studies, with several important changes. Like the first three studies, the first step in this study was extensive piloting of the manipulation of the lighting conditions in the experimental room. Before any hypnotic sessions took place, pilot subjects were exposed to the lighting changes as if they were actual subjects. They were then asked to answer several questions about the subtlety of the lighting changes, the extent to which they actually experienced the changes in the lighting, and whether or not the experimenter did anything to give away the fact that the lighting changes were caused by a second experimenter. Pilot subjects were also asked in a more open-ended fashion if they knew how or why they experienced seeing the lighting changes.

Subjects:

For the actual study, there were ninety subjects – two groups of thirty and two groups of fifteen subjects each. All subjects were undergraduate psychology students

who received extra course credit for their participation. Only subjects with no previous hypnotic experience were accepted for participation.

Procedure:

The Control groups received only the SHSS:C, with no bogus item suggestions or manipulations. The Experimental groups received the same procedure as did the experimental groups in the previous three studies.

There were two significant departures from the procedures of the first three studies. First, for the two groups of thirty subjects, the Unaware groups, there were two experimenters involved with each subject, in addition to the experimenter who was controlling the panel of lights. The first experimenter conducted the hypnotic induction, and administered the bogus item suggestions (to subjects in the Experimental group). The second experimenter then administered and scored the SHSS:C items. Therefore, this second experimenter was blind to the subjects' group membership. For subjects in the Unaware Control group, a measure of dissociation was administered before the hypnotic induction, in order to avoid any difference in running time that might provide clues to the second experimenter about group membership. At the completion of the study, an interview with the second experimenter was conducted in order to assess what he or she thought the purpose of the study was, and whether or not they had any knowledge of the presence or absence of the bogus item manipulations.

Subjects responded to probes regarding their expectations about their hypnotizability and regarding how hypnotized they felt themselves to be at eight different points during the experiment: immediately prior to the hypnotic induction, immediately

following the induction, after the administration of the bogus item suggestions (for the Experimental group only), and after the third, fifth, seventh, ninth and last SHSS:C items.

A second part of this study included two additional groups of fifteen subjects each who had been randomly assigned. One group served as the Aware Control group, and received exactly the same procedure as did the Control group in the Wickless & Kirsch study. The Aware Experimental group also received the same procedure as did the Wickless & Kirsch experimental group; however, the experimenter for these two groups was a new experimenter who was unaware of the first part of the study and unaware of the hypothesis of the study, but who was aware of the Wickless & Kirsch study and its hypothesis. As was the experimenter in the Wickless & Kirsch study, this experimenter was aware of both the hypothesis of the study and the group membership of individual subjects. A detailed comparison of the procedures for all four studies can be founding Table 4.

Essentially, this study had a 2 x 2 design. The first factor was manipulation, and subjects were divided into groups called Experimental (those who received the expectation manipulation) and Control (those who did not). The second factor was experimenter awareness, and subjects were divided into groups called Aware (in which the experimenter was aware of the subject's Experimental/Control group membership) and Unaware (in which the experimenter was unaware of group membership). The procedures for the four groups that constitute the present study are detailed in Table 5.

TABLE 4

Comparison of Relevant Studies and Procedures

Experiment	Induction	Manipulation	Confirmation	SHSS:C	Debriefing	Depth
Benham et. al. #1:						
Control	yes	no	no	yes	no	yes
Debrief	yes	yes	yes	yes	yes	yes
No Debrief	yes	yes	yes	yes	no	yes
Benham et. al. # 2:						
Control	yes	no	no	yes	no	yes
Lights	yes	yes	yes	yes	yes	yes
No Lights	yes	yes	no	yes	yes	yes
Present Study:						
Aware Control	yes	no	no	yes	no	yes
Aware Experimental	yes	yes	yes	yes	yes	yes
Unaware Control	yes	no	no	yes	yes	yes
Unaware Experimental	yes	yes	yes	yes	yes	yes

TABLE 4 CONTINUED

Experiment/ Group	Vividness	Expectation	Awareness of Hypothesis	# of Experi-menters	# of Subjects	Awareness of Group Membership
Benham et. al. #1:						
Control	yes	yes	yes	2	11	yes
Debrief	yes	yes	yes	2	12	yes
No Debrief	yes	yes	yes	2	13	yes
Benham et. al. #2:						
Control	yes	yes	yes	2	15	yes
Lights	yes	yes	yes	2	15	yes
No Lights	yes	yes	yes	2	15	yes
Present Study:						
Aware Control	yes	yes	yes	2	15	yes
Aware Experimental	yes	yes	yes	2	15	yes
Unaware Control	yes	yes	no	3	30	no
Unaware Experimental	yes	yes	no	3	30	no

TABLE 5

Procedure for Control and Experimental Groups, Collapsed Over Aware and Unaware Groups, in Present Study:

Control Groups	Experimental Groups
Depth/Expectation 1	Depth/Expectation 1
Induction	Induction
Depth/Expectation 2	Depth/Expectation 2
* Depth/Expectation 3 is omitted for these groups	Manipulation
	Depth/Expectation 3
SHSS:C Items 1-3	SHSS:C Items 1-3
Depth/ Expectation 4	Depth/Expectation 4
SHSS:C Items 4-5	SHSS:C Items 4-5
Depth/Expectation 5	Depth/Expectation 5
SHSS:C Items 6-7	SHSS:C Items 6-7
Depth/Expectation 6	Depth/Expectation 6
SHSS:C Items 8-9	SHSS:C Items 8-9
Depth/Expectation 7	Depth/Expectation 7
SHSS:C Items 10-12	SHSS:C Items 10-12
Depth/Expectation 8	Depth/Expectation 8

These Aware groups served as a comparison to the other two Unaware groups, in order to determine if experimenter blindness or awareness of hypothesis and group membership leads to either suppression of control group scores or inflation of experimental group scores. This made it possible to test whether or not Wickless & Kirsch's findings were predicated on the experimenter 1) being aware of the hypothesis of the study, and 2) being aware of the subjects' group membership. We expected the results of this part of the study to reveal a significant interaction on hypnotizability between awareness of group membership on the part of the experimenter and whether or not the expectation manipulation was received by the subject.

The following results were expected from this study: from the first part of the experiment, I expected that there would be an increase in expectations for those subjects in the Unaware Experimental group. I expected no significant differences between the two groups on measures of actual hypnotic responsiveness or subjective experience. From the second part of the experiment, I expected the same increase in expectations for the Aware Experimental group as for the Unaware Experimental group. However, I also expected that there would be a significant difference between the Aware Control and the Aware Experimental groups on the behavioral measure of hypnotic responsiveness, with the scores for the Aware Control group being lower not only than the scores for the Aware Experimental group, but lower than the scores for the two Unaware groups as well. A two-way interaction was therefore expected, such that only those subjects who received the expectation manipulation *and* who were administered the SHSS:C by an experimenter who was aware of their Experimental/Control group membership would score significantly higher on the SHSS:C.

This difference would be due to the fact that the experimenter was not blind to the hypothesis of the study or to the subjects' group membership, and therefore had their own expectations for outcome. With these results, it would be possible to attribute Wickless & Kirsch's results to subtle and unintentional procedural and scoring biases. These results would also lend further support to the trait theory of hypnotic responsiveness. Though the "Group Membership Unknown" procedure would definitively preclude any group-based biases in scoring and administration of the SHSS:C, it is nevertheless possible that in "seeking" the null findings that are hypothesized, the experimenter who is aware of group membership may unwittingly blunt the full range of possible scores on the SHSS:C (0-12), thereby indexing all subjects as scoring about the same. An extreme example of this would be that all subjects would receive a score of six. Obviously, no group differences could emerge under those conditions.

Results:

The two primary dependent variables in this study were the subjects' ratings of their level of expectation regarding their future hypnotizability (the mean of the eight expectation scores, possible range 0-20), and their behavioral responsiveness to hypnosis (the SHSS:C scores, possible range 0-12). Other variables that were examined, but to a lesser degree, included the vividness index scores (the mean of the twelve vividness index ratings, possible range 1-5), and the subjective hypnotic depth ratings (the mean of the eight hypnotic depth scores, possible range 1-20). The means for these variables for each group can be found in Table 6.

TABLE 6

Means for Variables in Present Study

	Groups			
Dependent Measure	Control Aware	Experimental Aware	Control Unaware	Experimental Unaware
SHSS:C Scores	6.20	6.33	6.10	6.53
Expectation Scores	15.51	15.47	14.75	14.37
Vividness Scores	3.00	3.02	2.78	3.02
Depth Scores	4.48	5.48	4.62	5.25

The expectation scores showed only a weak correlation with the SHSS:C scores (r = .23, p = .03). An r^2 regression shows that subjects' expectations of their hypnotizability accounted for only five percent of the variance in their SHSS:C scores. When only the initial expectation scores, taken before the hypnotic induction took place, were compared with SHSS:C scores, no significant correlation appeared (r = -.02, p = .848). two-way ANOVAs on these data revealed that neither the expectation manipulation nor experimenter awareness had a significant effect on SHSS:C scores, F(1,86) = .243, p = .623, and F(1 ,86) = .008, p = .931, respectively.

A 3 x 2 Chi Square analysis was also carried out, with subjects in the Experimental and Control groups divided into categories of low hypnotic responsiveness (SHSS:C scores between 0-4), medium hypnotic responsiveness (SHSS:C scores between

5-8) and high hypnotic responsiveness (SHSS:C scores between 9-12). The chi-square was nonsignificant, X^2 (2) = .903, p = .637. This indicates a normal and even distribution of low, medium and high hypnotizable subjects between the four groups. None of the cell had an expected count of less than five.

Average ratings of hypnotic depth were strongly correlated with SHSS:C scores, r = .52, p < .001. Repeated measures ANOVAs revealed that the individual subjective hypnotic depth ratings were not affected either by the expectation manipulation, $\underline{F}(6,81)$ = 3.19, p = .078, or by experimenter awareness, $\underline{F}(6,81)$ = .016, p = .901.

However, a paired samples t test indicated that subjects in the Experimental groups evidenced a significant increase following the expectation manipulation in their reports of subjective hypnotic depth. Subjects in the Experimental groups showed an increase in subjective hypnotic depth from M = 4.75 following the hypnotic induction to $\underline{M}$ = 7.02 following the manipulation and the first three SHSS:C items, $t(44)$ = -8.56, p < .001. However, subjects in the Control groups showed no such change in subjective depth, moving only from $\underline{M}$ =5.13 to $\underline{M}$ = 5.44, $t(44)$ = -1.35, p = .185. The Aware and Unaware groups were collapsed for the purpose of this analysis.

Average vividness scores were also strongly correlated with SHSS:C scores, r = .70, p < .001. A repeated measures ANOVA indicated that the subjects' individual subjective vividness ratings were not significantly affected by either the expectation manipulation, $\underline{F}(11,76)$ = .069, p = .794, or by experimenter awareness, $\underline{F}(11,76)$ = .562, p = .456. However, a independent samples t test revealed that the expectation manipulation did significantly affect the subjects' average vividness ratings. Subjects in

the Experimental groups had significantly higher mean vividness ratings ($\underline{M}$ = 3.21) than did subjects in the Control groups ($\underline{M}$ = 2.85), $t(88) = -2.81$, $p = .006$.

A repeated measures ANOVA revealed that expectation was significantly increased by administration of the expectation manipulation, $\underline{F}(6,81) = 2.45$, $p = .032$. As was predicted, a paired samples t test revealed that subjects who received the expectation manipulation (the Experimental groups) reported a significant increase in their level of expectation regarding future hypnotic performance as a result of the manipulation. Their mean expectation scores rose from M = 13.33 immediately following the hypnotic induction to $\underline{M}$ = 15.47 following the manipulation and the first three SHSS:C items, $t(44) = -3.31$, $p = .002$. Subjects who did not receive the expectation manipulation (the Control groups) showed no significant increase in expectation level when measured immediately following the induction ($\underline{M}$ = 15.62) and immediately following the first three SHSS:C items ($\underline{M}$ = 15.49), $t(44) = .276$, $p = .784$. Since the purpose of this analysis was to determine the effectiveness of the expectation manipulation, the Aware and Unaware groups were temporarily collapsed.

Upon closer examination of the expectation scores, it is apparent that scores for the Experimental and Control groups change differently over time. While the mean expectation scores prior to the induction were not statistically different for the Experimental and Control groups ($\underline{M}$ = 12.80 and $\underline{M}$ = 13.67, respectively, $t(88) = .603$, $p = .548$), they become significantly different when measured immediately following the hypnotic induction. At that time, the mean expectation for the Experimental group was 13.33, while the mean for the Control group was 15.62, $t(88) = 2.16$, $p = .034$.

After the expectation measurement immediately following the hypnotic induction, the mean expectation scores for the two groups were not significantly different at any time during the procedure. Neither are these scores significantly different when they are taken as an average across the entire experimental session. The Experimental group obtained an average expectation score of 14.74, while the Control group average was 14.98, $t(88) = .251$, $p = .802$. However, the manner in which the scores in the Experimental and Control groups change over time is different. It appears that, for the Control group, there is an increase in average expectation between the points immediately prior to and immediately following the hypnotic induction. Then the average expectation ratings flatten out during the administration of the SHSS:C, and decrease after the conclusion of the hypnotic session. For the Experimental group, there is also an increase between the points prior to and following the induction. However, the average expectation ratings continue to increase throughout the administration of the SHSS:C, and then decrease at the conclusion of the session. These trends can be seen in Figure 1. Experimenter awareness had no significant effect on the progression of expectation ratings, and is therefore not discussed here.

In a more detailed investigation into the differences in expectation scores between the Control and Experimental groups, scores for those groups were compared during the time period in which subjects were under hypnosis, after the expectation manipulation had been administered. Results of this analysis reveal that the mean expectation score during that time for the Control group was 15.27, while the mean expectation score for the Experimental group was 16.06 (see Figure 2). An independent

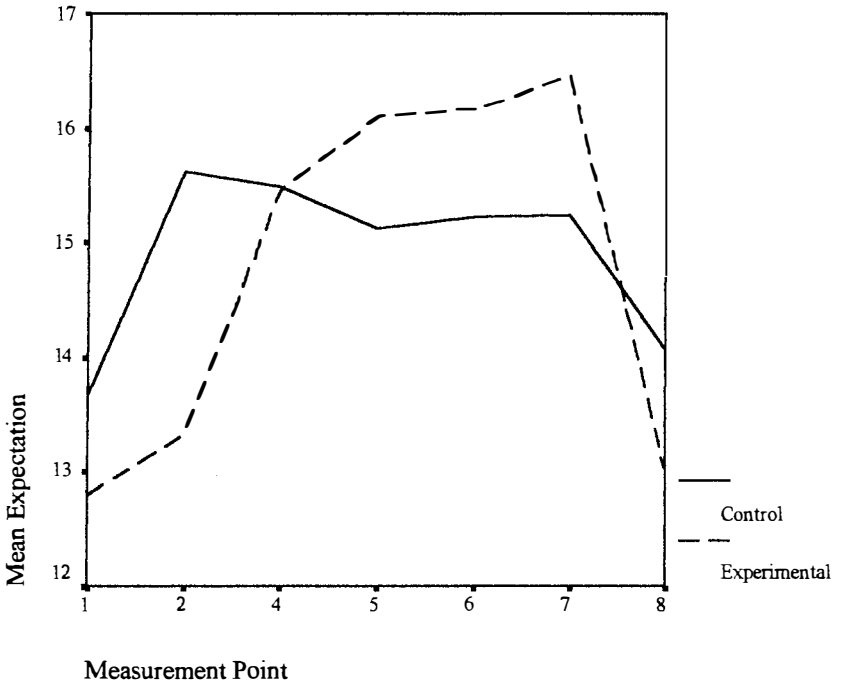

FIGURE 1

Expectation Ratings Over Time

samples t test indicates that those scores were not significantly different, $t(45) = .749$, $p = .456$.

Discussion:

The small positive correlation between average expectation and SHSS:C scores is indicative of some sort of relationship between those two variables. However, the fact that expectation accounted for only five percent of the variance in SHSS:C scores suggests that some other factor that has not been measured by this study may be involved in influencing hypnotic responsiveness. Additionally, expectation ratings taken during the hypnotic procedure itself may have already been affected by the content of the procedure, or by the subjects' responses to the items encountered. That fact may

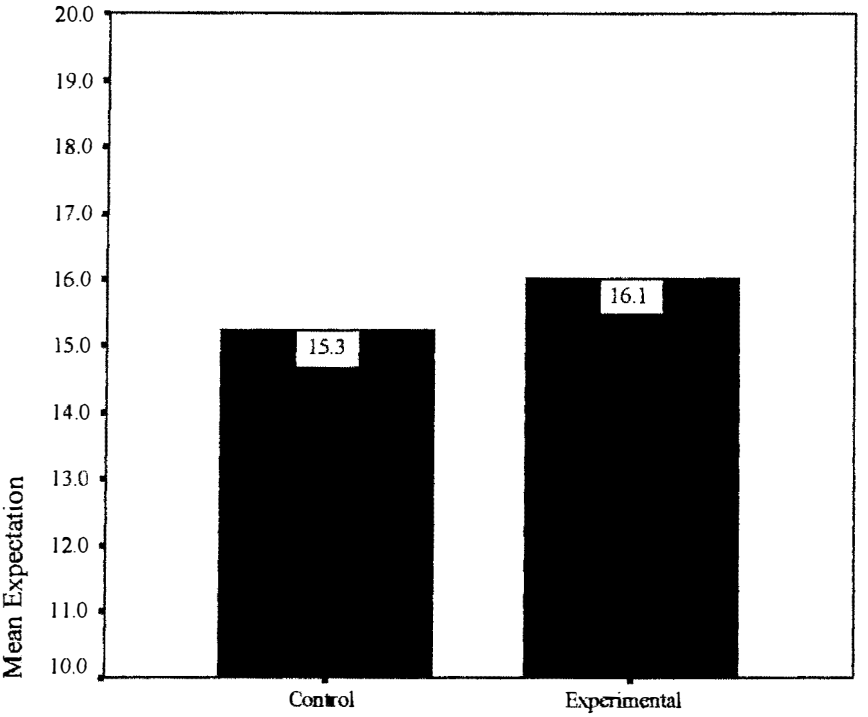

FIGURE 2

Mean Expectation Scores During Hypnosis and After Manipulation

complicate the relationship between the two variables, and make any correlations that exist between them somewhat clouded.

The initial expectation rating, taken before the hypnotic procedure began, would seem to be a more realistic and untainted measure of the subjects' actual expectation level. That rating, when examined, showed no significant correlation at all with SHSS:C scores. These results may indicate the need for further investigation into this particular area.

The Chi Square analysis revealed that the lack of significant differences between the four groups in this study was not due to an uneven distribution of low, medium and high hypnotizable subjects in those groups. The other inquiries made into this area

showed that neither the expectation manipulation or experimenter awareness had a significant effect on SHSS:C scores.

It does appear that subjects' ratings of hypnotic depth and subjective vividness are strongly correlated with SHSS:C scores. These correlations are logical, since a subject's feelings of being very deeply hypnotized and of vividly experiencing the suggestions being given would increase as they responded positively to the SHSS:C items, and decrease as they failed to respond to the more difficult items.

The fact that the subjects' ratings of hypnotic depth and subjective vividness of experience were higher for the Experimental groups than for the Control groups is also to be expected. Given that the expectation manipulation was designed to make the subject feel that they were deeply hypnotized and experiencing the suggestions that were given to them, the differences in these ratings between the Experimental and Control groups is easily understandable.

The inquiries made into the area of expectation ratings yielded results that were somewhat complicated. As was the case with the first two studies in this series, the present study failed to replicate the results obtained by Wickless & Kirsch (1989), which suggested that subjects' expectations play a role in determining their SHSS:C scores. It is apparent, though, from the results of this study, that the expectation manipulation does indeed increase the level of a subject's expectation regarding their hypnotizability. However, since in this particular study the expectation manipulation increased the expectations of the Experimental group to a level that was essentially equal to that of the Control group, it is very difficult to draw conclusions regarding the effect that expectation had on hypnotic responsiveness. The reason for the difference in the average

expectation scores when measured immediately following the induction is unknown. Since that measure did follow the hypnotic induction, it is possible that some factor involved in the induction influenced the two groups in a different manner. It seems more likely, however, that this difference is simply a statistical "fluke", and is due to random and unexplained differences between the two groups.

The manner in which the expectation ratings for the Control and Experimental groups change over time is also a puzzle. While these differences are nonsignificant, they do warrant some attention. It again seems possible that there may be another factor involved in influencing the expectation ratings that has not been accounted for my the variables measured in this study. The possibility should be considered that, when the expectation manipulation increased the level of the subjects' expectations, it did so in a manner that continued to affect the ratings for the remainder of the hypnotic session.

The fact that expectation and SHSS:C scores were only marginally correlated, though, would seem to indicate that, whatever the nature of the relationship is between expectation and hypnotic responsiveness, that relationship is attenuated at best. This finding is also consistent with the results of the previous two Benham et al studies.

Contrary to the hypothesis of this study, the results indicate that experimenter awareness did not play a role in determining the subjects' scores on the SHSS:C. Since awareness had no effect on SHSS:C scores, it can be said that, at least in the present study, experimenter bias when scoring the SHSS:C was not responsible for differences, or the lack thereof, between the four groups on those scores.

Unfortunately, the results of the present study do not provide an answer to the question of whether or not expectations play a role in determining hypnotic

responsiveness. Neither do they answer the question raised by the previous studies on this subject regarding why there have been consistently conflicting results in this area of research. It is clear that further investigation is necessary, and that the possibility of developing new and more refined techniques for carrying out those investigations should be explored.

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Vita

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