

VISUAL IMAGERY AND POSTHYPNOTIC CONFLICT IN
RELATION TO PSYCHOPATHOLOGY

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ABSTRACT

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By

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Two paradigms for producing psychopathology were compared, using both hypnotic and simulating subjects. One paradigm involved a highly structured procedure (cued conflict), and the other an unstructured procedure (non-cued conflict). Both paradigms included an Oedipal paramnesia. The frequency of symptoms expressed by each subject was the dependent variable. It was hypothesized that hypnosis would affect the defensive alerting properties of cued conflict, resulting in a greater number of symptoms than for cued conflict during simulation. It was also hypothesized that no differences would be found between real subjects and simulators in the non-cued conflict paradigm. A third hypothesis was that non-cued conflict would arouse fewer defenses than cued conflict, resulting in more symptoms for the non-cued conflict groups. Subjects were 48 male undergraduates, who were equally divided among four groups: Non-cued conflict, hypnosis; non-cued conflict, simulation; cued conflict, hypnosis; and cued conflict, simulation. The mean difference between groups was not significant. The non-cued conflict, hypnosis condition, however, produced significantly more symptoms than the cued conflict, hypnosis condition. An unexpected finding was a

Samuel LeBaron

significant curvilinear relationship between the frequency of symptoms and number of words spoken by each subject. This was interpreted to indicate anxiety over self-disclosure.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	iv
LIST OF FIGURES	iv
INTRODUCTION	1
METHOD	5
Subjects	5
Experimenters	5
Procedure	5
Scoring	11
RESULTS	13
Inter-scorer reliability	13
Documentation of phenomena	13
Frequency of symptoms	15
Frequency of symptom types	16
Number of words per group	17
Ratio of symptoms to words	18
Self-reported hypnotic depths	20
Ability of experimenters to distinguish between hypnosis and simulation	20
DISCUSSION	22
BIBLIOGRAPHY	28
APPENDIX A	31
APPENDIX B	39
APPENDIX C	42

LIST OF TABLES

Table	Page
1 Summary of means, standard deviations, and t-tests for frequency of symptoms	16
2 Summary of means, standard deviations, and t-tests for frequency of symptom types	16
3 Means and standard deviations for number of words	17
4 Two-way analysis of variance for number of words	17
5 Means and standard deviations for symptom frequency: group groups based on number of words spoken	18
6 Analysis of variance for frequency of symptoms: groups based on number of words spoken	19
7 Means and standard deviations for hypnotic depth	20

LIST OF FIGURES

Figure	Page
1 Median frequency of symptoms per number of words spoken: based on increments of 100 words	19

INTRODUCTION

A series of investigations (Perkins and Reyher, 1971; Sommerschield and Reyher, 1973; Karnilow, 1971, 1973; Reyher, 1967) has shown that the sudden activation of hypnotically induced impulses results in their spontaneous inhibition (repression) and in the concomitant outcropping of psychopathology. Common to these investigations is the posthypnotic presentation of trigger words serving as cues for acting upon these impulses. A free response period follows the recognition of a word. If the subject remains silent, the experimenter says, "How are you doing?" A made-up stimulus narrative (story) is recounted to the hypnotized subject as being true to provide an affective substrate for the reality of the impulses. This falsification of memory is known as a paramnesia.

Reyher (1958, 1963, 1967) observed that the type of symptom produced in these studies appeared to be a function of the degree of repression. A sequence of symptoms was reported, beginning with autonomic nervous system disturbances, as repression weakens. Reyher also noted that as repression weakens, the frequency of symptoms increases until the repressed drive-related affects and impulses are represented, at which time symptoms disappear. On the basis of these observations Reyher created a Symptomatic Reaction Scale (SRS). These findings were replicated by Perkins and Reyher (1971).

Sommerschield and Reyher (1973) used this paradigm to test the psychoanalytic formulation that each type of psychosomatic symptom represents a constellation of drives and defenses. They compared the

effects of two different paramnesias, one of which presumably activated subjects' unresolved oedipal strivings, while the other measurably activated conflicts related to anger and aggression. Once again, there was a particular order of symptoms in response to both paramnesias, according to the degree of repression. The two types of conflict did not produce significantly different symptoms from each other. These findings were essentially replicated by Karnilow (1973). In a related series of investigations (Veenstra, 1969; Karnilow, 1971; Wolfe, 1971) a different paramnesia produced only a few symptoms. These investigators concluded that their paramnesias did not contain both the necessary and sufficient conditions for producing pathogenic conflict.

In a study involving an oedipal sex paramnesia with hypnotic and simulating subjects, Burns and Reyher (in press) introduced the use of a new technique in this line of research. Rather than activating drives by presenting certain classes of cue words related to the paramnesia, as previous researchers had done, they employed a combination of free imagery, post-hypnotic suggestions, and drive-activating cues. For example, subjects were given a post-hypnotic suggestion that whenever they were asked, "How are you doing?" feelings related to the paramnesia would be intensified during ongoing free imagery. This technique also produced a wide variety of symptoms in hypnotically conditioned subjects, and the type of symptom was found to be related to the degree of repression, as in studies previously described. Unlike the previous investigations, simulation subjects produced a surprisingly large number of symptoms, although significantly fewer than the hypnotized. This is consistent with the conclusion of Morishige and Reyher (1975) that spontaneous visual imagery affords an opportunity for the repressed

aims and objects of drives to find expression. In the course of finding expression, they produce symptoms.

A new perspective was created by Moses (1974) who produced an abundance of symptoms simply by having his subjects report spontaneous visual images in response to an oedipal sex stimulus narrative. The Burns and Reyher study seemed consistent with an assumption that hypnosis was a necessary condition for producing psychopathology in laboratory conditions; yet, Moses' paradigm appeared to be more pathogenic (producing more symptoms). It appears that the use of posthypnotic cues may arouse defensive vigilance against drive expression resulting in fewer symptoms. The post-hypnotic suggestions, and their cues, for activating affects and impulses may actually serve two competing functions, one intended, the other unintended: (a) the (intentional) activation of conflict-producing drives in response to post-hypnotic cues, and (b) the (unintentional) activation of defenses in response to the same cues. Thus, hypnosis may be a necessary condition for producing psychopathology when drive-activating cues are employed, whereas hypnosis may not be a significant factor when no cues relating to conflict are present and the visual imagery stimulated by the paramnesia is intrinsically anxiety-producing. Furthermore, the opposition (conflict) between the defense-alerting properties of the procedures and cues and the impulse-activating properties of these same cues may result in fewer symptoms for a cued-conflict paradigm than a non-cued conflict paradigm, whether for hypnotic or waking subjects. Of course, the non-cued conflict paradigm does not involve this same opposition, and results in a greater intensification of drives, and therefore, a greater frequency of symptoms.

The purpose of the present study is to assess the interactions between hypnosis and the presence of drive-activating cues, in producing psychopathology. The following hypotheses were tested:

Hypothesis 1: More symptoms are reported by hypnotic than by simulating subjects, when drive-activating suggestions and cues (cued conflict) are used in conjunction with free imagery.

Hypothesis 2: An equal number of symptoms are reported by both hypnotic and simulating subjects, when free imagery only (non-cued conflict) is employed.

Hypothesis 3: Free imagery without drive-activating suggestions and cues (non-cued conflict) results in a frequency of symptoms greater than when drive-activating suggestions and cues are used (cued conflict), both for hypnotic and simulating subjects.

METHOD

Subjects

Subjects were selected from a group of undergraduate male volunteers who were administered the Harvard Group Scale of Hypnotic Susceptibility (Shor and Orne, 1962). In conformance with Orne's "real-simulator" design (Orne, 1959, 1972), 48 subjects were chosen, 24 of whom were highly susceptible ($\bar{X} = 8.9$) to hypnosis, and the remaining 24 had low susceptibility ($\bar{X} = 2.9$).

An additional criterion was the absence of any signs of psychopathology, as judged by the principle experimenter.

Experimenters

Four male undergraduates enrolled in a Clinical Psychology course were trained to assist the principle investigator. These assistants administered the experimental procedures, were blind to hypnotic-simulator conditions, and were ignorant of the hypotheses.

Procedure

First Session. Subjects were seated in a large comfortable chair, opposite the experimenter, in a quiet room, which also contained a table, lamp, and tape recorder.

All subjects participated in a one-hour individual session for hypnotic training, which was conducted by the principle investigator. The Stanford Hypnotic susceptibility Scale, Form C was administered

(Weitzenhoffer and Hilgard, 1962), with additional instructions and practice in reporting hypnotic depth (Hilgard, 1965; Tart, 1970).¹

After termination of the Form C, subjects were given practice in either: (a) re-entering hypnosis, or (b) simulating hypnosis, upon command.

Subjects were then given one of two sets of instructions, regarding a table lamp sitting beside them: (a) hypnotic subjects were instructed that they would enter a state of hypnosis in the subsequent session, whenever the lamp was on; (b) simulators were instructed under hypnosis to comply with instructions in the subsequent session, except that they were not to enter a state of hypnosis under any circumstances. Whenever the lamp was turned on, they were to behave in such a way that the experimenter would think they were hypnotized. Orne's (1972) simulating instructions were read to all simulators (Orne, 1972).²

¹Now I wish to help you enter a very comfortable and deep state of hypnosis. In order that I may know how deeply hypnotized you are, I would like you to report your hypnotic state on a scale in which zero is wide awake, as you are now; 1 is drifting slightly, relaxed, drowsy; 2 means that you are entering hypnosis; 3 is slightly hypnotized; 4 or 5 is a level that most subjects achieve easily; 8 to 10 is a level where you can easily experience, for example, amnesia, or a vivid hallucination, and beyond that the numbers go up to a very deep state of hypnosis.

You will find that you can respond quite automatically when I ask you for your hypnotic depth report, even though you will be aware that you are responding.

So, whenever I say "Hypnotic Depth," you will say a number corresponding to your hypnotic depth at that moment. Do you have any questions?

²We very much appreciate your participation in our research sessions. Today I would like you to take part in a very interesting experiment that is quite different from any in which you have participated to date. You have previously attempted to go into hypnosis and found it quite difficult to respond. Though I understand you may have been able to experience a certain heaviness in your arm or felt quite drowsy at times, it was not possible to experience much else. In this particular study there is a special group of subjects to which you will belong, all of whom were not able to enter hypnosis despite their honest

Subjects were pre-assigned to one of four experimental conditions in a 2 x 2 factorial design:

1. Hypnotically cued conflict: a hypnotized group receiving post-hypnotic suggestions and drive-activating cues with free imagery.

efforts to do so. As you know, people vary in their ability to respond, some individuals find it very easy while some individuals find it quite difficult. This doesn't seem to be related to any other personality characteristics. In this instance your task will be to simulate being a very good hypnotic subject. You will be working with one of my colleagues who is a very experienced and competent hypnotist and will be carrying out an important piece of research. Your task will be to behave as though you were one of those subjects who is able to enter deep hypnosis with ease. There will be only two kinds of subjects in this experiment: those who are excellent subjects and can enter deep hypnosis, and several individuals like yourself who are unable to do so but will be trying to simulate hypnosis.

My research colleague does know that some subjects will be trying to simulate, but has no idea who these subjects will be. Your task is to convince him that you are in fact an excellent hypnotic subject. Now this is a difficult task and you may well do something where you think you have given yourself away. Don't worry about this possibility, because if my colleague recognizes the fact that you are simulating he will stop the experiment immediately. Therefore, as long as he continues with you, you know that you have been successful in faking hypnosis. I point this out to you because in the past we have found some subjects would suddenly stop, thinking they had goofed and given themselves away, when, in fact, their behavior had been quite appropriate and the investigator had no idea that they were simulating. Keep in mind, then, that as long as the experimenter continues with you, your are doing alright; if he catches on he will stop the study immediately.

We realize that you have no experience in how to do this. You were chosen simply because you were not able to enter hypnosis and we know you have had no real experience in this kind of task. However, we also know from previous studies--we have run a great many studies using this procedure--that intelligent subjects are able to do this. It is difficult but it is possible. I can't tell you how to behave or what to do; you have to use whatever you know about hypnosis, whatever cues you get from my colleague, and whatever you learn from the situation to figure out how a deeply hypnotized subject would behave, and your task is then to use this information in your simulation of hypnosis. Keep in mind that you will be simulating the behavior of an excellent, highly hypnotizable individual and that your task is to maintain that you are going into hypnosis, to perform during hypnosis, and, when you are awakened, to respond as if you had been in hypnosis. In other words, this includes simulating not only while you are being hypnotized but afterwards as well. When my colleague asks you about your experiences you should answer the way a deeply hypnotized subject would answer if he

2. Simulation, cued conflict: a simulating group receiving the same treatment as hypnotically-cued conflict group.

3. Hypnosis, non-cued conflict: a hypnotized group receiving free imagery instructions only.

4. Simulation, non-cued conflict: a simulating group receiving the same treatment as hypnosis, non-cued conflict group.

Second Session. All subjects were asked three times during the session to make a mental note of their hypnotic depth, which they would record on a post-test questionnaire. Immediately before and after the paramnesia, and during the removal of the paramnesia and post-hypnotic suggestions, subjects were told, "Please note hypnotic depth."

In each of the four experimental conditions the oedipal sex paramnesia (see Appendix) was used to activate conflict-producing drives. The paramnesia describes an encounter between the subject and an attractive, older woman who invites him to her apartment. While talking and dancing together they become sexually aroused, but he feels restrained by her age and apparent experience.

had actually been in trance. If my colleague asks you how you did the last time, keep in mind that you are a good hypnotic subject and you would have gone into deep hypnosis on your previous efforts. You would have had some previous experiences with hypnosis just as you actually have, except that you would have entered deep hypnosis. All subjects will have had two such sessions with the laboratory.

At no time, once you leave this room, may you reveal to anyone that you are simulating. They will not know that you are simulating. Though it is known that some subjects will be simulating, no one knows who they are except for me. When you are completely finished with the experiment, the investigator will ask you to return to the waiting room, which you will do, and I will meet you there. I will discuss your experiences with you at that time. Until you are back with me again in the waiting room at the end of the experiment, you are to reveal to no one that you are not actually hypnotized: this means the experimenter or anyone else who asks you about your experiences other than me.

Before reading the paramnesia, the lamp was turned on. The subject was instructed to make himself comfortable and to close his eyes. After a pause of 60 seconds the subject was told to "visualize this story as I read it to you."

Cued conflict: hypnosis and simulation groups. Subjects received conflict inducing instructions (cues in italics) adapted from Sommerschild and Reyher (1973) and Burns and Reyher (in press).

Now listen carefully. Keeping your eyes closed, I would like you to revisualize the story I have just read to you, and to describe it as you revisualize it . . . (After revisualization): In a moment I will awaken you. After I awaken you, you will find that if anything connected with the woman I have told you about comes into your mind, you will feel the same feelings you experienced earlier. And after I ask you to close your eyes, these feelings will surge up from within you. They will become overwhelming; they will be irresistible. Furthermore, whenever I say to you "How are you feeling?" you will find that these feelings will surge up within you with renewed, overwhelming force. Nod your head if you understand. I am now going to awaken you by counting backwards from ten to one, and when I reach one, your eyes will be open and you will be wide awake. 10-9-8-7-6-5-4-3-2-1.

(The lamp was turned off at this time.)

Free Imagery

After S's eyes were open, E activated the implanted complex by giving standard instructions for free imagery.

"Now, for this part of the session, would you please lean back in your chair again and close your eyes. Keeping your eyes closed, I would

like you to describe whatever pictures and images that come into your mind's eye; also, report any emotions, feelings, or bodily sensations that come to your attention, as they occur. I want you to continue to describe all that you see and feel, without omitting a thing."

S was allowed to describe spontaneous imagery for five minutes.

At each 60-second interval after giving the free imagery instructions, E inquired of S:

1) "How are you feeling?" (If S was already describing his feelings, E remained silent for that 60-second interval.)

2) "What was that?" (If S spoke indistinctly).

Non-cued conflict: hypnosis and simulation groups

Subjects received instructions adapted from Moses (1974):

Now listen carefully. Keeping your eyes closed, I would like you to revisualize the story I have just read to you and to describe it to me as you revisualize it . . . (After revisualization): In a moment I will awaken you. After I awaken you, you will describe whatever images come to your mind's eye, making note of any feelings or bodily sensations that you may have. Make sure that as you describe the images in your mind, you also continue to report immediately any feelings or bodily sensations as they occur. Nod your head if you understand. I am now going to awaken you by counting backwards from ten to one, and when I reach one, your eyes will be open and you will be wide awake. 10-9-8-7-6-5-4-3-2-1. (The lamp was turned off at this time.)

The same standardized free imagery instructions were given.

Removal of Paramnesia and Suggestions

At the end of the ten-minute free imagery period S was asked to open his eyes; then the lamp was turned on to elicit either a real or simulated hypnotic state. S was then asked to make himself comfortable and close his eyes. After a pause of 60 seconds, the paramnesia and suggestions were removed as follows:

Cued conflict

The events that I recounted to you earlier did not really happen at all. The experience was not true; the feelings you reported were merely the result of a made-up story which I read to you, and for that reason have no significance for you. If you wish, you need no longer pay any attention to the story. Furthermore, all other suggestions that I have given you are now cancelled, and will no longer have any significance to you beyond what they ordinarily would. I am now going to awaken you by counting backwards from ten to one, and when I reach one, your eyes will be open and you will be wide awake. 10-9-8-7-6-5-4-3-2-1. Wide awake!

Non-cued conflict

The events that I recounted to you earlier did not really happen at all. The experience was not true; the feelings you reported were merely the result of a made-up story which I read to you, and for that reason have no significance for you. If you wish, you need no longer pay any attention to the story. Furthermore, all other suggestions that I have given you are now cancelled, and will no longer have any effect on you. I am now going to awaken you by counting backwards from ten to one, and when I reach one, your eyes will be open and you will be wide awake. 10-9-8-7-6-5-4-3-2-1. Wide awake!

All subjects were given a post-test questionnaire, and a self-report checklist for hypnotic depth during the experimental session. Subjects were urged to contact the principle investigator if they wished to further discuss their reactions.

Scoring

Symptoms elicited were scored in three ways for each subject:

- (a) total number of symptom expressions;

(b) the total number of different symptom types;

(c) the ratio of symptom expressions to total number of words.

A modification of the Symptomatic Reaction Scale (Reyher, 1958, 1967; Perkins and Reyher, 1971; Stern, 1974; Burns and Reyher, in press) was used. (See Appendix.) This modified version is a nominal scale composed of 110 categories.

The principle investigator and another graduate student scored the protocols.

RESULTS

Inter-scorer reliability

The inter-scorer reliability for the Symptomatic Reaction Scale was computed by Spearman rank order correlation for all 48 subjects. A correlation of .96 was found between the two raters.

Documentation of phenomena

The following four protocols illustrate the variations found within each experimental condition, in terms of length, symptom frequency, and numbers of symptom types. Statements which were scored as symptoms are underlined. The experimenter's query, ("How are you feeling?"), is indicated by (HYF).

SUBJECT #06; Cued conflict, hypnosis

My arms feel really light . . . like . . . like maybe they're going up and down. I don't--I don't feel them . . . like they're not attached to my body . . . I just feel relaxed. My legs feel tense, though . . . like they're being pushed together. Other than that I just feel relaxed. (HYF). Just relaxed. I'm starting to feel a little bit worried . . . about why I'm sitting here like this . . . and not doing anything . . . I guess confused. Now I'm getting a little bit more tense . . . my arms are tense . . . so are my legs. (HYF). I'm trying to relax . . . I am . . . I am relaxing a little bit . . . starting to sink into my chair a little bit more. (HYF). Just--just relaxed now . . . My eyes are watering . . . I feel--my legs are tingling . . .

they feel like they're maybe starting to twitch . . . feeling restless
. . . feels like I'm not sitting straight . . . like I'm leaning over
to one side . . . starting to get hot . . .

SUBJECT #19; Non-cued conflict, hypnosis

Um . . . I see this um . . . this . . . this . . . this woman . . .
 she's about 30 to 35 . . . long blonde hair . . . and uh . . . really
 deep brown eyes . . . and she's kind of sexy . . . and good . . .
 (laughs) . . . it . . . she makes you feel really . . . really insecure
 and kind of s-s . . . gosh I'm scared (laughs) . . . I'm really sorry
that . . . heart's pounding about 150 miles an hour . . . and oh . . .
 really feel out of place . . . um . . . (HYF). Feeling nervous . . .
 um . . . gosh, really scared me . . . (HYF). Nervous. (HYF). Um . . .
 um . . . relaxed . . . (HYF). Relaxed . . . um . . .

SUBJECT #32; Cued conflict, simulation

Blank . . . no really vivid objects . . . I think about the story.
 The woman should be a blonde . . . in her thirties . . . (HYF). How
 am I feeling? Fine. No real sensations other than relaxation. Excited
 if I could see her . . . (HYF). Fine. (HYF). Fine. (HYF). Fine.
I feel myself becoming smaller. My mind is just blank. Thinking about
 different things . . . riding on a motorcycle . . . a nice one . . .
 (derivative of intercourse?)

SUBJECT #42; Non-cued conflict, simulation

Um . . . just some sort of anxiety . . . nothing really visual,
 just blank. Uh . . . empty pit feeling in my stomach, like I haven't
 eaten say, in half a day and I'm really nervous about something. Slight
heaviness in my chest and shoulder area . . . um . . . tingling

throughout my right shin . . . that's about all. (HYF). Um . . . I
don't really feel relaxed . . . sort of upset about something . . .
sorta worried that--I dunno, like I was a little kid and I did something,
busted a window or something I didn't want my father to find out about
it . . . tense . . . (HYF). Very tense. My palms s-s-seem to be sweat-
ing . . . my breathing seems to be labored slightly . . . (HYF). About
the same . . . getting somewhat hotter . . . sweat seems to be coming
. . . my hands . . . my stomach . . . under my arms . . . my head feels
--my face muscles are very tensed up. (HYF). Nervous.

Frequency of symptoms

A summary of descriptive statistic and appropriate t-tests are presented in Table 1.³ The prediction of the first hypothesis, that hypnotic subjects in the cued conflict paradigm would report a significantly greater number of symptoms than simulators, was not supported $t(22) = 0.136$, $p > .50$. However, the prediction of the second hypothesis, that hypnotic and simulating subjects in the non-cued conflict condition would report an equal number of symptoms, was supported, $t(22) = 0.769$, $p > .10$. Table 1 also shows that the prediction of the third hypothesis, that free imagery with non-cued conflict is more pathogenic than free imagery with cued conflict, was supported only by the hypnotic subjects. Thus, the third hypothesis was only partially supported.

³The following formula was used to adjust the alpha level for multiple pair-wise comparisons:
$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{MS_{\text{error}} \left(\frac{1}{N_1} + \frac{1}{N_2} \right)}}$$

TABLE 1

Summary of means, standard deviations, and
t-tests for frequency of symptoms

	Hypnosis n = 24	Simulation n = 24	<u>t</u>	<u>p</u>
Cued Conflict n = 24	4.67 (4.05)	4.92 (3.60)	0.136	n.s.(1-tailed)
Non-Cued Conflict n = 24	8.58 (4.10)	7.17 (5.69)	0.136	n.s.(2-tailed)
<u>t</u>	2.125	1.360		
<u>p</u>	.025 (1-tailed)	n.s. (1-tailed)		

Frequency of symptom types

An expected significant ($p < .001$) correlation of .85 was obtained between frequency of symptoms and number of symptom types by calculating a Pearson product-moment correlation. When the obtained means (Table 2) were evaluated against the hypotheses, the results were the same as for symptom frequency.

TABLE 2

Summary of means, standard deviations, and t-tests
for frequency of symptom types

	Hypnosis n = 24	Simulation n = 24	<u>t</u>	<u>p</u>
Cued Conflict n = 24	2.17 (1.64)	2.92 (1.98)	0.731	n.s.(1-tailed)
Non-Cued Conflict n = 24	5.33 (2.87)	4.25 (2.86)	1.056	n.s.(2-tailed)
<u>t</u>	3.07	1.29		
<u>p</u>	.005 (1-tailed)	n.s. (1-tailed)		

Number of words per group

An analysis of variance showed that the experimental manipulations did not influence word fluency (Table 4). The obtained means and standard deviations are shown in Table 3, and the F-max test (F-max (11,4) = 4.09, $p > .05$) showed that the variances were homogeneous.

TABLE 3

Means and standard deviations for number of words

Group	Mean	s.d.
Non-cued conflict, hypnosis	148.92	67.80
Non-cued conflict, simulation	127.75	106.82
Cued conflict, hypnosis	124.58	108.08
Cued conflict, simulation	115.92	137.10

TABLE 4

Two-way analysis of variance for number of words

Source	SS	df	ms	F	p
Total	518386.00	47	--	--	--
A	2670.08	1	2670.08	0.23	n.s.
B	3924.91	1	3924.08	0.34	n.s.
AB	7062.91	1	7062.91	0.62	n.s.
Error	504728.93	44	11471.11	--	--

A = Hypnosis vs. simulation

B = Non-cued conflict vs. cued conflict

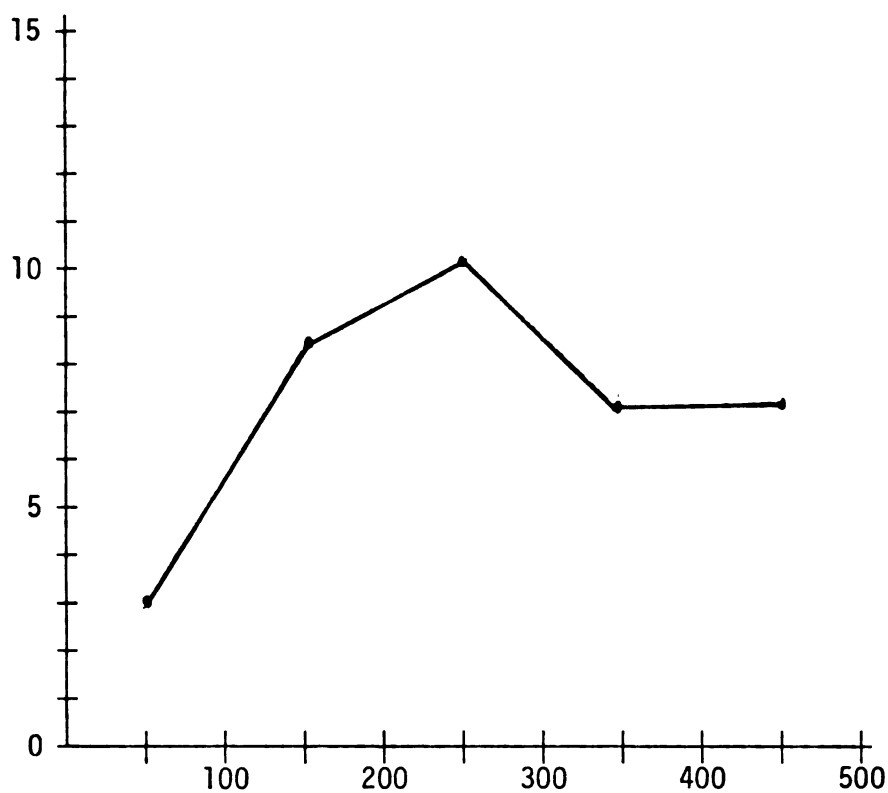
Ratio of symptoms to words

To assess whether frequency of symptoms was merely a function of a subject's loquacity, subjects were divided into four equal groups, based on the number of words spoken. The mean number of symptoms and standard deviations for each group are shown in Table 5. The median numbers of symptoms as a function of number of words spoken are plotted in Figure 1. Results of an analysis of variance for frequency of symptoms, shown in Table 6, indicated the existence of a significant relationship between the two variables $F(3,44) = 4.58$, $p < .01$; $F\text{-max}(11,4) = 4.24$, $p > .05$. A trend analysis using the method of orthogonal polynomials indicated a complex relationship between number of words spoken and frequency of symptoms, consisting of significant linear ($F_{\text{linear}} = 9.195$, $p < .005$) and quadratic ($F_{\text{quadratic}} = 4.21$, $p < .05$) components. The degree of relationship between number of words spoken and frequency of symptoms was obtained by calculating eta, which was .49.

TABLE 5

Means and standard deviations for symptom frequency:
groups based on number of words spoken

Group	Mean	s.d.
Group 1 (0-50 words)	2.67	2.81
Group 2 (51-105 words)	6.00	3.62
Group 3 (106-189 words)	8.83	5.78
Group 4 (190-500 words)	7.25	4.17



Median frequency of symptoms per number of words
spoken: based on increments of 100 words

FIGURE 1.

TABLE 6

Analysis of variance for frequency of symptoms:
groups based on number of words spoken

Source	SS	df	ms	F	p
Total	1036.3125	47	--	--	--
Between Groups	246.7291	3	82.2430	4.58	.01
Within Groups	789.5834	44	17.9445	--	--

Self-reported hypnotic depths

The use of hypnotic depth self-reports was designed as a means of checking whether some hypnotic subjects might fail to experience hypnosis or simulators might become hypnotized. If self-reported hypnotic depths are indeed representative of alleged alterations in awareness due to hypnosis, one would expect hypnotic subjects to report hypnotic depths significantly higher than simulators.

A mean hypnotic depth score was calculated for each subject on the basis of the post-test questionnaire. Group means and standard deviations are shown in Table 7. The results of a t-test for depth scores of simulators vs. hypnotized subjects indicated that the hypnotic depth scores did indeed vary as expected, with the obtained t (6.463) significant at the .0005 level.

TABLE 7
Means and standard deviations for hypnotic depth

Group	Mean	σ
Non-cued conflict, hypnosis	4.33	3.02
Non-cued conflict, simulation	1.08	0.68
Cued conflict, hypnosis	4.06	1.21
Cued conflict, simulation	1.11	0.67

Ability of experimenters to distinguish between hypnosis and simulation

In order to fulfill the requirements of Orne's real-simulator design, experimenters should not be able to distinguish between hypnotized and simulating subjects. Eight subjects who made reference to their hypnotic or simulating state during the experimental session were

eliminated from consideration in testing for the significance of the proportion of correct guesses. On the basis of this test ($z = .949$, $p > .30$), it was concluded that the proportion of correct guesses (57.5%) was not significantly different from chance. Even with the eight subjects included, the proportion was not significant (two-tailed test).

DISCUSSION

The failure to find group differences is offset by the unexpected significant difference between the non-cued conflict and cued conflict conditions in hypnosis but not in simulation. An examination of the means suggests that the production of symptoms was augmented for hypnotized subjects during the non-cued conflict condition and diminished during the cued conflict condition. It should be kept in mind that the period of observation was devoted to free imagery, a procedure which has inherent pathogenic properties (Morishige and Reyher, 1975). Also, those investigations (Larison, 1974; Karnilow, 1971; Veenstra, 1969; Wolfe, 1971) failing to produce symptoms demonstrate that cued conflict per se lacks demand characteristics for reporting symptoms in the free response observation period following a trigger word. If there were demand characteristics to report symptoms in the present research, simulators should have reported more symptoms in the cued conflict condition than in the non-cued conflict condition. The obtained means are in fact in the opposite direction. The implication of this is that the four conditions in the present investigation served to modulate the intrinsic pathogenic properties of free imagery. One post hoc explanation, based on the relationship among group means, is offered for its heuristic value: Because of their alleged altered state of awareness, the hypnotized subjects may have felt more vulnerable (less protected) than the simulating subjects in the cued conflict condition. Accordingly, their

defenses would be alerted to a greater degree, and consequently, fewer symptoms would be produced. This would explain why the real subjects reported fewer symptoms in the cued condition than did the simulating subjects, but it would not explain why the simulators in the cued condition reported fewer symptoms than simulators in the non-cued condition. This unexpected directional difference could be attributed to the simulating instructions per se. They required the simulating subjects to maintain an analytical-cognitive perspective which might have opposed the expression of drives in their imagery. Such a task orientation for simulating subjects prevents the expression of drives as do intellectualizing defenses. The hypnotized subjects in the non-cued condition apparently were able to experience a greater degree of drive expression than hypnotized subjects in the cued conflict condition (Fromm, Oberlander, and Gruenewald, 1970) because of the alleged reduction in defenses that is brought about by the presumed alteration in awareness represented by hypnosis. The simulators in the non-cued conflict condition apparently were not able to maintain an analytical-cognitive orientation because of the absence of conflict-inducing instructions and cues. Being less preoccupied by the simulating task, these subjects would experience more drive organized visual images than the simulators in the cued conflict condition, but less than that experienced by the real subjects.

Aside from the foregoing complex interaction between groups and conditions wherein state and instructions are confounded, there is another source of potential confounding. The smaller mean difference between conditions for the simulating subjects could reflect a greater rigidity or inflexibility in the defenses of insusceptible subjects which protect

them from blatant expressions of drive. Consequently, they tend to resist hypnosis and any other modification of awareness such as getting "high," "stoned," or losing one's self in a book (Äs, 1962; Hilgard, 1965).

The lack of a significant difference in verbal output between real and simulating subjects in this investigation suggests that spontaneous imagery is a more powerful influencing variable than hypnosis and simulation instructions. Wide subject variation in verbal output appears to be a function of individual differences rather than a function of the experimental manipulation. The curvilinear relationship between the number of words and symptom frequency supports this view, and is consistent with Stern's (1975) findings. Stern concluded on the basis of his data that differences in the ratio of symptoms per word were a function of the degree to which his subjects' security operations were activated. Those subjects whose self-esteem was most threatened were those who spoke the least and who expressed few symptoms. Subjects who felt the least threatened were able to express themselves freely; they also expressed few symptoms, since they were at ease in the situation. Subjects who express the most symptoms were those whose self-esteem was moderately threatened, but who possessed enough ego-strength to permit awareness and expression of symptoms. The congruence between the curvilinear relationship found in Stern's research and the present investigation is particularly striking in view of the fact that the two experimental paradigms were dissimilar.

Other questions suggested by this research concern the experimental design employed by Burns and Reyher (in press) in obtaining the results which contributed to the rationale of this experiment. In their

use of simulators, Burns and Reyher used what they described as a "modified real-simulator design" to remove the sources of confounding inherent in the real simulator design (Reyher and Smyth, 1971). However, their simulators were not pre-tested to determine their hypnotic susceptibility. Furthermore, five of the simulators were eliminated because they inadvertently became hypnotized; of the remaining five there appears to be no verification that they were not at least partially susceptible to hypnosis.

Although this disparity in experimental design may have contributed to the significant difference reported by Burns and Reyher, the most important consideration is that their reasons for dropping five S's may have been specious. These subjects were dropped on the basis of their report that they had become hypnotized. They may have believed that they were hypnotized, however, only because they were experiencing a large number of symptoms. Burns and Reyher note that: "If the occurrence of symptoms had been their criteria for becoming hypnotized, these results are spurious; including them with the simulators would have made the mean difference nonsignificant." Thus, if the five subjects had not been dropped, no differences would have been found between hypnosis and simulation, consistent with the present investigation.

The use of a hypnotic depth scale in the present investigation permitted subjects to communicate their subjective experience independent of their reactions to the paramnesia; thus they did not focus on the occurrence or absence of symptoms as a criterion for judging their hypnotic state. The fact that a significant difference was found between depth scores reported by simulators and hypnotic subjects

emphasizes the usefulness of such a measure in assessing the effect of the hypnotic vs. simulation manipulations.

In general, the protocols obtained in this research are similar to those found in previous research using an oedipal paramnesia (Burns and Reyher, in press; Moses, 1974). In the present research, for example, subjects experienced feelings of lightness in various parts of their bodies, feelings of tension, or feelings of limbs being detached from the body; tingling, twitching, and hot sensations. Frequent emotional expressions included feeling worried, nervous, or scared; reports of physical and sensory disorientation included experiencing oneself leaning over to one side, floating, and becoming smaller.

As Burns and Reyher (in press) indicated, symptoms reported under these conditions are not merely psychosomatic, but sometimes appear to be symbolic representations of the drive itself. For example, subject #42 reported feelings of anxiety and psychosomatic symptoms of emptiness in the stomach. Heaviness and tingling in the right shin might be regarded as hysterical in the context of such metaphorical terms as: ". . . like I was a little kid and I did something, busted a window (coitus with mother?) or something, and I didn't want my father to find out about it . . ."

Apparently contradictory behavior, typically involving forms of defense such as denial or rationalization, was frequently found in this research. Subject #19, for example, who described himself as scared and nervous, suddenly stated that he was relaxed. Another subject reported feeling sick, repulsed, and guilty. He described in some detail the unpleasantness of the situation, and reported to the author immediately after the experiment was over that he had thought a few times of leaving

the experiment. He added, however, that the experience had actually been very good, because it had given him an opportunity to test his moral convictions, by resisting the "temptations" described in the paramnesia. His responses to the post-test questionnaire were consistent with these statements. Although the subject characterized the research as "offensive," he indicated that the experience had been a good one, that it was interesting, likely to contribute to scientific knowledge, and that he was glad to have participated.

Previous research (Reyher, 1967; Sommerschild and Reyher, 1973; Burns and Reyher, in press; Moses, 1974) using the same paramnesia has produced similar contradictory behavior. This type of behavior may be interpreted as a coping mechanism for subjects who believe that by expressing positive feelings about the experiment they are behaving like good subjects. Also, they attempt to resolve the cognitive dissonance arising from their willing cooperation in an uncomfortable situation by convincing themselves that the experience was in fact, a good one. Such behavior is not unique to this line of research; in the area of social psychology, for example, Milgram (1963) noted that in spite of the extreme anxiety and conflict experienced by participants in his obedience studies, some subjects stated that they were glad to have participated, and that it had been a valuable experience.

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APPENDICES

APPENDIX A
SYMPTOMATIC REACTION SCALE (Revised April, 1975)

- A. RAS,I Reactions produced by the presumed inhibition (I) of the ascending reticular activating system such as:
1. Sleepy, tired
 2. Drained, run down
- A. VSF. Reactions produced by the presumed effect of visual deprivation upon eye closure under conditions that produce anxiety and a resulting distortion of vestibular system feedback. Subjectively this is experienced as motion such as:
3. Rotation
 4. Spinning
 5. Light headed
 6. Dizzy
 7. Moving up and down
 8. Moving back and forth
 9. Tilting
- and as being disoriented such as for
10. Place
 11. Direction
 12. Time
- A. ABI. Reactions produced by the presumed effect of visual deprivation upon eye closure under conditions that produce anxiety and a

resulting distortion of somesthetic feedback. Subjectively this distortion is experienced as changes in body image such as:

13. Elongation of body or one of its parts
14. Shrinking of body or one of its parts
15. Thickening or inflation of body or one of its parts
16. Heaviness of body or one of its parts
17. Lightness of body or one of its parts
18. Disappearance of body or one of its parts
19. Squeezing or feeling of pressure on body or one of its parts
20. Numbness of body or one of its parts
21. Pain in body or one of its parts

Note: The high incidence of pains and pressures in the head, eyes and behind eyes may have special significance and are scored ANS,PC.

A. ANS,S Physiological manifestations of anxiety, sympathetic branch of autonomic nervous system such as:

22. Sweaty, clammy
23. Dry mouth
24. Tachycardia, skipped heart beat
25. Gastritis
26. Warm
27. Cold
28. Goose flesh
29. Shiver
30. Malaise

A. SNS Physiological manifestations of anxiety, somatic nervous system

31. Tics and twitches

- 32. Tremors
- 33. Stiff muscles
- 34. Tired muscles
- 35. Tense muscles

A. AE,S Anxiety equivalents, somatic

- 36. Uncomfortable
- 37. Uptight
- 38. Fidgety
- 39. Restless
- 40. Nervous
- 41. Funny
- 42. Shaky
- 43. Antsy
- 44. Uneasy
- a. Embarrassed

A. Anx. Anxiety due to a reduction or threatened reduction of self-esteem, such as:

- 45. Scared
- 46. Anxious
- 47. Frightened

A. CD. Reactions revealing a disruption of cognitive processes due to the anxiety-producing properties of the experimental task such as:

- 48. Confusion
- 49. Inability to think
- 50. Bafflement

A. RSE. Reduction in self-esteem. Reactions in which there is a perceived disparity between one's expectations and one's actual performance, such as:

- 51. Feeling of failure
- 52. Feeling inadequate, dumb
- 53. Goofing up
- 54. Feeling powerless, impotent

B. ANS,PC. Reactions of presumed parasympathetic innervation (vasodilation), cranial division, autonomic nervous system due to insufficiency of repression of affect and impulses of intrapsychic origin, such as:

- 55. Headache
- 56. Band of pressure around head
- 57. Tightness
- 58. Throbbing in head
- 59. Pain behind eyes
- 60. Burning eyes
- 61. Blushing
- 62. Blood rushing to head

B. EAA. Ego alien affect, not cognitive dissonance, tinged with the Superego's rejection of impulses of intrapsychic origin, such as:

- 63. Weird
- 64. Strange
- 65. Queasy
- 66. Unreal
- 67. Unnatural
- 68. Crazy
- 69. Spooky
- 70. Foreign

- B. CC,S. Conscious correlates of mislabeled or muted affect due to fear of rejection by experimenter. This etiology as well as type of affect must be determined by context of behavior, particularly the subject's imagery.

71. For reduction in self-esteem: feel alone, feel bad, abandoned, etc.

72. For guilt: down on self, hasseling myself

73. For anger: frustrated, bothered, impatient, annoyed, etc.

74. For sex: excited, aroused, hyper, etc.

- B. Hys. Hysterical reactions of symbolic significance

75. Loss of cognitive function

76. Loss of perceptual function

77. Loss of bodily function

- B. DC. Disturbance of consciousness due to insufficiency of repression, such as:

78. Feeling stoned

79. Feeling out of it

80. Spaced out

81. Like a daydream

82. Like talking in sleep

- C. DR. Dissociative reactions due to an insufficiency of repression in which there is an awareness of unknown forces influencing one's thoughts and behavior, such as:

83. Blocking something

84. Content of thought cannot be specified, but there is mentation

85. Wanting to do something, but not knowing what

- C. AAE. Affective anxiety equivalents because of defenses against the experience of anxiety of intrapsychic origin, such as:
 - 86. Excitement, when not sexual as determined by context
 - 87. Aroused, when not sexual as determined by context
 - 88. Hyper, when not sexual as determined by context
 - 89. Anticipation
 - 90. Surprise, shock
- C. CAE. Cognitive anxiety equivalents because of defenses against the experience of anxiety of intrapsychic origin, such as:
 - 91. Pensive
 - 92. Ruminative
 - 93. Concerned
 - 94. Troubled, worried
- D. CC,R Conscious correlated of repression due to unconscious fear that a small expression of repressed affect will result in the Ego being overwhelmed by Id, i.e., a small expression of anger will lead to murder. This etiology as well as type of affect must be determined by context of behavior, particularly the subject's imagery:
 - 95. For reduction in self-esteem: feel bad, feel alone, abandoned, etc.
 - 96. For guilt: down on self, hasseling myself
 - 97. For anger: frustrated, bothered, impatient, annoyed, etc.
 - 98. For sex: excited, aroused, hyper, etc.
- E. SER. Superego reactions resulting from a greater insufficiency of repression of affect and impulses of intrapsychic origin, such as:
 - 99. Contriteness
 - 100. Shame

101. Guilt

102. Disgust

F. DP. Reactions in which there is profound disturbance of perception

103. Perception breaks down entirely, and "everything seems like it's moving and changing."

104. Hallucinations, positive: seeing a word when it was not presented or seeing something other than a word; Also auditory or olfactory.

105. Hallucinations, negative: cannot see words presented

G. Anx,A. Acute reactions indicating a nearly complete breakdown or insufficiency of the subject's repression of affect and impulses of intrapsychic origin and his behavior becomes disorganized.

106. Violent reactions of both branches of the ANS

107. Incontinence

108. Aimless ineffective behavior

109. Panic, terror, extreme

110. Suicide

Do not score the items below if the Drive Activation Scale also is used.

AED. Affective expressions of drives

111. Sexual feelings

112. Anger

113. Depression

Sen. Sentiments or nonsymptomatic, affective dispositions

114. Love, tenderness

115. Nostalgia, yearning

116. Reverence, adulation

- 117. Belongingness, clanishness, esprit de corps, affiliation
- 118. Pride
- 119. Dedication to higher goals

APPENDIX B
QUESTIONNAIRE

Exp. Code: 1 2 3 4

Exp. Condition: FI CI

Thank you for your participation. If you wish detailed feedback about the rationale and results of this research, write your name and mailing address at the end of this questionnaire.

Please respond to this questionnaire carefully and completely, because your answers are an important part of our assessment of the study.

Sometimes participants in psychological research feel their experience was not what the experimenter expected or wanted. Participants often feel that if they report their experience accurately and completely, the experimenter might be angry or disappointed by their responses.

On the contrary, we hope that you will feel free to respond completely and sincerely, to help us better understand our procedure, observations, and results.

1. During this session, you were told by the experimenter to mentally record your degree of hypnotic involvement at three different times. Please write the three numbers corresponding to those requests to "recall hypnotic depth." (If you have trouble recalling, just remember as well as you can.)

- a. _____
- b. _____
- c. _____

2. Were there times during the session when your hypnotic involvement (depth) varied significantly from those just mentioned? (Please be specific.)

3. Answer (a), (b), and/or (c) (whichever is appropriate)

- (a) When the cue lamp was on, what did you do, or think of, to help yourself enter the hypnotic state?

(b) When the cue lamp was on, what did you do, or think of, to help yourself behave as if you were in the hypnotic state?

(c) When the cue lamp was on, what did you do, or think of, to help yourself resist entering hypnosis?

4. Have you heard anything about this experiment previously, or any other like it? (If yes, be specific.)

5. What do you think was the purpose of this study?

6. What do you think the researchers hoped to discover as a result of this research?

7. Based on your experience with this study, you would say that the study is:

(Circle True or False for each)

T F a. Probably worthless.

T F b. Interesting.

T F c. Trivial.

T F d. Likely to contribute to psychological knowledge.

T F e. Not relevant to the real world.

T F f. A good experience for yourself, personally.

T F g. Offensive.

T F h. Easy.

8. Please circle True or False for each of the following:

T F I'm glad I participated in this study.

T F This study was generally boring.

T F I felt anxious about hypnosis in the first session.

T F I felt anxious about whether I would be a good subject.

T F The first experimenter's instructions were difficult to follow.

T F The second experimenter's instructions were difficult to follow.

9. What were the most positive, enjoyable, and/or interesting aspects of this study for you? (write "none" if appropriate.)

10. What were the most negative, unenjoyable, and/or boring aspects of this study, for you? (write "none" if appropriate.)

11. The following statements refer to the period after the experimenter asked you to report any physical sensations, as well as any images that came to your mind:

T F I felt less comfortable than before.

T F I felt sleepy.

T F I had some images and/or physical sensations which I preferred not to report. (Note: if this was the case, your privacy is respected; if you wish to add comments about this item, please do so below, as this will be helpful to us.)

T F I felt somewhat embarrassed.

T F I felt confused about the instructions.

T F I was interested in what was happening.

12. Any further comments?

13. Name and permanent mailing address. (Only if you wish to receive feedback about this research.)

APPENDIX C
OEDIPAL SEX PARAMNESIA

These events occurred one evening while you were out walking. As you were leisurely walking, your attention was drawn to an attractive, older woman who seemed quite upset. You offered to be of assistance as the woman was about to pass you. Frantically, the woman revealed that she had lost her purse and did not have enough money for her bus fare. Wishing to help the woman, you reached into your pockets and your wallet. You only had a ten dollar bill. You then offered to accompany her to the bus and pay for her fare. She, however, felt very indebted to you and insisted that you accompany her to her apartment in order that she might repay you. Somewhat reluctantly you agree.

Once within her apartment she suggested that you might like to look at her record collection while she left to find some money for the bus fare. When she returned, she seemed very friendly and reluctant to have you leave. After talking about the collection, she offered you a drink and a snack. She then turned on the record player and you danced awhile with the woman. Gradually you become aware of some stimulating, but disquieting thoughts and feelings. She was very good looking and it seemed like such a pity to have all her beautiful softness and curves go to waste. She seemed to be silently inviting you; her closeness, glances, words, and breathing, suggested to you that she was becoming extremely sexually aroused. You were just starting to make love to her when suddenly more thoughts ran through your mind. She was

older, respectable, perhaps married, and undoubtedly very experienced. You wondered if you would be able to satisfy her. How traumatic it would be if she laughed at your advances. In spite of these thoughts, you found yourself becoming increasingly excited and aroused. You wanted to make love to her right there, but the telephone rang. While you waited, you become so aroused and excited that you could hardly speak. You made a hurried excuse for leaving, promised to call her back and left the apartment.

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