AD-774 761

LIBERATING BEHAVIOR FROM TIME-BOUND CONTROL: EXPANDING THE PRESENT THROUGH HYPNOSIS

Philip G. Zimbardo, et al

Stanford University

Prepared for:

Office of Naval Research

October 1971

DISTRIBUTED BY:

NTIS

National Technical Information Service
U. S. DEPARTMENT OF COMMERCE
5285 Port Royal Road, Springfield Va. 22151

NR 170-741

6 JAN 1972 452 RM
IN
BK
WG

STANFORD UNIVERSITY
Department of Psychology

(1)

Code 452 File Copy

AD774761

LIBERATING BEHAVIOR FROM TIME-BOUND CONTROL
EXPANDING THE PRESENT THROUGH HYPNOSIS[1]

Philip G. Zimbardo, Gary Marshall
Stanford University

Christina Maslach
University of California at Berkeley

DDC
RECEIVED
MAR 4 1974
F

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

A REPORT FROM THE Social Psychology Laboratory

UNCLASSIFIED

Security Classification

DOCUMENT CONTROL DATA - R & D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1 ORIGINATING ACTIVITY (Corporate author)	2a. REPORT SECURITY CLASSIFICATION
Office of Naval Research Professor P. G. Zimbardo Stanford University	Unclassified
	2b. GROUP N/A

3 REPORT TITLE

Liberating Behavior from Time-bound Control: Expanding the Present Through Hypnosis

4 DESCRIPTIVE NOTES (Type of report and inclusive dates)

Technical Report Z-07

5 AUTHOR(S) (First name, middle initial, last name)

Philip G. Zimbardo
Gary D. Marshall
Christina Maslach

6 REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
October 15 1971	~~34~~ 38	-9-

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
N 00014-67-A. 0112-0041 b. PROJECT NO. NR-171-814 c. d.	Technical Report Z-07 9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)

10 DISTRIBUTION STATEMENT

Distribution of this document is unlimited

11 SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY
None	Office of Naval Research

13 ABSTRACT

Temporal perspective was experimentally manipulated by verbal instructions to expand the present while minimizing the significance of past and future. The reactions of trained hypnotic subjects to this induction were compared with hypnotic simulators and non-simulating controls. In a fourth group, time sense was made salient but no suggestion given to alter it. Across a variety of tasks, self-report measures and behavioral observations, this modification of the boundaries between past, present, and future resulted in profound consequences among the hypnotic subjects.

Changes in affect, language, thought processes, sensory awareness, and susceptibility to social-emotional contagion, accompanied an expanded present orientation. Non-reactive measures distinguished simulators from hypnotic subjects who apparently were better able than the other subjects to incorporate the induced time distortion and perceive it as a viable alternative to their traditional time perspective. Some implications of time as a pervasive, non-obvious, independent variable in the social control of cognition and behavior are outlined.

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

DDC
RECEIVED
MAR 4 1974
F

DD FORM 1 NOV 65 1473 (PAGE 1)

S/N 0101-807-6801

UNCLASSIFIED

Security Classification

14. KEY WORDS	LINK A		LINK B		LINK C	
	ROLE	WT	ROLE	WT	ROLE	WT
TIME DISTORTION						
TEMPORAL PERSPECTIVE						
EXPANDED PRESENT						
TIME-BOUND CONTROLS						
HYPNOSIS						
SOCIAL-EMOTIONAL CONTAGION						
AROUSAL						
LOSS OF CONTROL						
SELF-IDENTITY						
EXPRESSIVE BEHAVIOR						

LIBERATING BEHAVIOR FROM TIME-BOUND CONTROL
EXPANDING THE PRESENT THROUGH HYPNOSIS[1]

Philip G. Zimbardo, Gary Marshall
Stanford University

Christina Maslach
University of California at Berkeley

October 1971

ib

LIBERATING BEHAVIOR FROM TIME-BOUND CONTROL: EXPANDING THE PRESENT THROUGH HYPNOSIS[1]

Philip G. Zimbardo, Gary Marshall
and
Christina Maslach

ABSTRACT

Temporal perspective was experimentally manipulated by verbal instructions to expand the present while minimizing the significance of past and future. The reactions of trained hypnotic subjects to this induction were compared with hypnotic simulators and non-simulating controls. In a fourth group, time sense was made salient but no suggestion given to alter it. Across a variety of tasks, self-report measures and behavioral observations, this modification of the boundaries between past, present, and future resulted in profound consequences among the hypnotic subjects.

Changes in affect, language, thought processes, sensory awareness, and susceptibility to social-emotional contagion, accompanied an expanded present orientation. Non-reactive measures distinguished simulators from hypnotic subjects who apparently were better able than the other subjects to incorporate the induced time distortion and perceive it as a viable alternative to their traditional time perspective. Some implications of time as a pervasive, non-obvious, independent variable in the social control of cognition and behavior are outlined.

LIBERATING BEHAVIOR FROM TIME-BOUND CONTROL: EXPANDING THE PRESENT THROUGH HYPNOSIS[1]

Philip G. Zimbardo, Gary Marshall
Stanford University

Christina Maslach
University of California at Berkeley

> Time is the most undefinable yet paradoxical of things; the past is gone, the future has not come, and the present becomes the past even while we attempt to define it, and like a flash of lightning, at once exists and expires.
>
> (Kugelmass, in Cohen, 1967, p.v)

Imagine with us, if you will, that you possess a special kind of psychological calendar watch. What makes it special is that it allows you to set it ahead so that it tells only future time, or back so that past time is all that it measures, or even to capture and hold the present in the imperceptible movement of its mechanism. With such a device, you could be the time keeper of yesterdays or tomorrows, or you might prefer to prevent the present from slipping into past and the future from ever becoming now. How would you use it? How would your behavior be affected by the way you chose to operate it?

Such a speculation is more than an intriguing fiction. You already own this special device which has the power of transforming the modes of time, of so readily altering time perspective. It is the human mind.

There is no construct of human imagination which has a more pervasive, yet unappreciated, effect upon our behavior as that of time. We have come to conceive of time as having an external, physical reality independent of its origin and maintenance in the minds of man. While we press time into our service as a constant or a dependent variable measuring and recording events of interest, we ignore the more fundamental role it plays in our lives.

The experience of time makes it possible for us to establish the concepts of causality, consistency and history out of essentially discrete, isolated, transient and even random occurrences. Cultural traditions and our sense of individual identity can exist only by implicitly accepting assumptions about temporal continuity. Virtually every social institution which exists to regulate individual behavior does so by forcing a reevaluation of the present within the confines imposed by the conceptual language of the past and future.

In religion, we do penance now for sins of the past, all the while bearing earthly burdens, suffering and oppression for the promised "pie in the sky when we die." Indeed, Catholics are reminded on Ash Wednesday of their mortal origins in dust and their eventual return to this state of entropy. Justice makes us responsible for keeping not only our past commitments, but those agreed upon by our fellows, as law provides the threats and penalties for failing to do so. Art, as reflected in Keats' Grecian Urn, attempts to impose coherence and a timeless presence on the mutable flux of experience.

It is through the process of socialization that time perspective is created, in order to make communal life possible, and through the emergence of memory that individuals can cope with the challenge of change. Each human being is thereby transformed from an impulsive, ego-centered creature driven by the urgency of biological needs into a more passive, analytical, socially-centered citizen able to tolerate frustration and to delay gratification. The

actor becomes a reactor, living for the moment becomes living for a purpose, and being is parceled into has been and becoming. The past and the future which begin as only cognitive modes of experience, in contrast to the sensory, empirical foundation of present experience, become the reality to which the present is subjugated.

In a later secton of this paper we shall explore further some of the consequences for behavioral freedom of our usual notions of temporal perspective. Precisely because time is such a central part of our thinking, feeling and acting, we can only investigate its functioning and impact by disrupting its usual operation. We can theorize about time as an independent variable, but to establish its controlling influence upon behavior, it is necessary to systematically interfere with the temporal process. This methodological strategy is, of course, common to the study of all psychological phenomena which function so efficiently as to go unnoticed by the behaving organism or the observer. Delaying auditory feedback to study the effect of hearing on speech, and distorting the visual field with prisms to study visual-motor coordination, are examples of the effective use of this approach.

Our investigation of time has focused upon altering the perspective of present time by expanding it. How would a person's behavior change if he or she were to alter the perceived relationship between past, present and future by having the present expand while past and future diminished? Concern with this aspect of "time sense" is in part derived from a model of deindividuation (Zimbardo, 1969). This model attempts to delineate those systems of social and personal control which create a sense of individual identity and self-awareness. It is through these mechanisms that a person's behavior is constrained to make it normal, rational and acceptable. Behavior is liberated from these constraints and allowed to become more irrational, impulsive, chaotic and

uncontrollable as attention to social and self evaluation is minimized. Controls imposed by guilt, shame, fear, reasoned analysis, past experience, commitment, obligation, responsibility and liability are shattered once past and future become insignificant. The individual, "living for the moment," should become more sensitive to sensory stimulation and more responsive to arousal cues. Behavior once initiated should be more difficult to terminate, as long as the instigating stimulus remains.

It appears that this kind of disruption of temporal perspective occurs in some people under the influence of psychedelic drugs. It is often a goal of marathon encounter groups and a co-product of states of ecstasy induced by music, dances and activities associated with "primitive" ceremonial rites.

Following a provocative lead in the work of Aaronson (1968a,b), we decided to induce an expanded present state through hypnosis. Aaronson's intensive work with several selected subjects appeared to indicate that euphoria accompanied induction of an expanded present orientation via hypnotic suggestion, while a schizophrenic-like state followe removal of the present time sense. The validity of these changes unfortunately rests upon such questionable evidence as inferences from paintings made by the subjects and clinical judgments of only a few individuals without benefit of controlled comparisons.

Our study, then, is an exploratory attempt to use hypnosis as a technique for modifying temporal perspective (specifically, expanding the present), while observing the effects of this induction across a range of tasks in experimental and control subjects.

METHOD

Subjects

Thirty undergraduates from Stanford University served as subjects in this research. They were paid volunteers recruited through their introductory psychology course. The equal number of males and females in this sample were selected from among the population of high scorers on a group administration of Form A of the Stanford Hypnotizability Scale (see Hilgard, 1965).

Those randomly assigned to the training condition received about ten hours of experience with hypnotic induction. Those randomly assigned to the no-training condition for this study, did however, receive comparable hypnotic training subsequent to it, and became experimental subjects in some of our other research. There were no differences in either the mean hypnotizability scores or the observed "success" in hypnosis of the four groups of subjects employed in this study.

Hypnotic Training

Our training approach utilizes group inductions in small groups which vary from eight persons in the initial sessions to two in the final ones. We have found this group training to be more efficient than individual sessions and also more effective.

Subjects usually find it more reassuring not to be "one on one" with the hypnotist, especially early in training, and the hypnotist is able to bring to bear additional social pressures upon the occasional subjects who are recalcitrant, "slow," or not confident in their ability to experience hypnosis. The training is permissive in orientation, stressing the subject's choice to

follow each suggestion and directed toward getting the subject to achieve self-hypnosis. It also attempts to establish a personal relationship of trust and mutual respect between hypnotist and subject. A variety of induction techniques were used over the course of training (during which time each subject was exposed to each of the three present authors in their capacity as hypnotists). However, common to both the verbal and non-verbal techniques we used was the development of a state of very deep relaxation. Specific training was given in motoric control, perceptual control, fantasy experience, amnesia, post-hypnotic suggestions, and analgesia. Underlying these phenomena was the ability, encouraged through training to concentrate, to dissociate, and to produce vivid images. All subjects reported that it was only after at least several hours of training that they began to believe something special was happening, that they were indeed "hypnotized." Every one of the subjects was able to alter ischemic pain tolerance significantly more in hypnosis than in a waking, motivated state. On an additional criterion test, all of the subjects successfully carried out a post hypnotic suggestion and appeared to have amnesia for it. During the final training sessions, general suggestions involving time distortion were given. The subjects were asked to allow the present to expand and then to describe how they felt (without comment by the hypnotist).

Procedure

The research design compared the responses of twelve trained hypnotic subjects given the suggestion to "allow the present to expand and the past and future to become distanced and insignificant" with those of eighteen other subjects distributed across three control conditions. In two of them, the same expanded present, time distortion instruction was given (via standardized tape recording). Half of these subjects were hypnotic simulators told to imagine how hypnotized subjects would respond and then to act as if they were

hypnotized throughout the study. The non-simulator controls merely received the time distortion instruction without any mention of hypnosis. The fourth group was a normal-time control informed merely to think of their own conception of time and to describe it in an appropriate metaphor (as the other subjects did before being given the present expanded treatment).

Subjects were tested in pairs from the same condition, although on most tasks they were isolated in separate cubicles. The hypnotic subjects were given a five-minute relaxation induction at the start of the experimental session, while the simulators were given the same period of time to prepare themselves to be "good" hypnotic simulators.

The first task involved writing projective stories in response to two TAT pictures, one before and the other after the time distortion manipulation. Five minutes' time was allowed for each of the two stories; the order of the two TAT pictures was counterbalanced across subjects in each group. It was predicted that subjects experiencing an expanded present would reveal before-after changes in the language and thematic content of their stories, such as, using more present tense verbs, greater reference to present events, less emphasis on future goals or antecedent conditions, etc.

A reminder to maintain a sense of the expanded present was repeated before the second and third experimental tasks (except, of course, for the normal-time controls). The second task was designed to thrust the subjects into an unexpected situation which could be humorous or repulsive. Told simply to listen to a tape recording, all subjects heard a five-minute pirated tape of an abortive radio commercial for an old movie ("The Caddie") by a former comedy team. After committing several bloopers, the comedians begin to criticize, taunt and curse each other. They become increasingly obscene and vulgar, to the obvious amusement of the recording engineers who could be

heard laughing in the background. The overt reactions of the subjects while listening to this tape were recorded by two judges behind a one-way mirror, and their self-reported reactions elicited on a questionnaire. It was predicted that subjects experiencing an expanded present would react more strongly during the recording since they would be able to overcome the normative prohibitions against openly enjoying such material in the sterile confines of a research laboratory.

The final task was designed to get the subjects more directly involved in a sensory experience through physical action. They were told they had five minutes to make something out of a large two-pound mound of clay which was on the floor in front of the room. The subjects left their cubicles and proceeded to work either independently or together, as they chose. A stack of paper towels was available near the moist, sticky clay so that subjects could clean their hands, although this was not explicitly suggested. At the end of five minutes, the experimenter entered the room and told the subjects to finish up and return to their cubicles to complete a questionnaire about their reactions to this non-cognitive task. Judges observed what the subjects made with the clay as well as how they handled it, and their reactions to being soiled with it. It was predicted that subjects experiencing an expanded present would be less likely to make an object with a finite form since that would involve planning and a future orientation. In addition, we expected these same subjects to be less concerned, or indeed to enjoy the experience of having their hands coated with the clay. When the first group of hypnotized, expanded present subjects continued to play with the clay, ignoring the request to return to their cubicles, this unanticipated source of behavioral variability was systematically recorded for all subjects (within another five-minute maximum interval).

After instructing the subjects in the appropriate groups to allow their conception of time to return to normal, and the hypnotized subjects to

come out of hypnosis, the experimenter described in detail the purpose and design of the study, answered all queries of the subjects and solicited any further personal reactions they had.

RESULTS

Overview

Verbal instructions to expand the present appeared to have had a profound effect upon the behavior of hypnotized subjects, who may have been better able than control subjects to incorporate this suggestion into their temporal perspective. Their language changed toward more frequent use of present tense verbs and more references to present events. They were more likely to laugh aloud at funny events and to continue to be physically preoccupied in a sensory experience. They were less concerned with their appearance, and had more difficulty answering questions pertaining to memories of their reacting on prior experimental tasks. Some even got involved in the sensation of writing a questionnaire response, and were indifferent to answering the test questions in a socially appropriate manner.

A few of these findings, however, also occurred among subjects simulating hypnosis. Nevertheless, the use of non-reactive response measures relatively insusceptible to experimental demand features or to subject expectation, allowed us to distinguish valid from spurious manifestations of an altered temporal perspective. No sex differences were found on any measures and, thus, only combined analyses are presented.

Temporal Language

The TAT pictures selected for this research rather clearly reflected time themes, since one showed an old woman and a young woman, and the other a farm with a farmer planting crops while a pregnant woman gazed upon the scene. The stories written by the subjects were each scored independently by two "blind" raters, with the average of their ratings being used for analysis. The primary categories analyzed were changes in the use of present tense verbs relative to total use of verbs, and changes in references to events which could be distinguished as taking place in the past, present or future.

These data, presented in Table 1, indicate that the hypnotic group changed their time perspective in accordance with an expanded present orientation. They used more present tense verbs, more references to present events,

- -

Table 1 here

- -

fewer to future and no more than previously to the past. However, simulating controls "read" what was the appropriate way for hypnotized subjects to react and outdid the hypnosis group! They used an even greater precentage of present tense verbs, references to the present, and evidenced a marked reduction in concern for past events. These changes can not be attributed simply to the present expanded instructions since they were absent, or indeed opposite in the controls given the same induction. These controls and the normal-time controls showed a sharp reduction in their use of present tense and events. These two groups differ significantly from the hypnotized and simulator groups in their use of present tense verbs ($p<.02$, $t=2.54$, $df=28$), and nearly differ

significantly in their use of present events ($p < .10$). The differences between hypnotized and simulating subjects are not statistically significant.

Perhaps even more revealing of the degree to which the simulators perceived what was expected of them is their consensus across the various measures. Every one of them increased their percentage of present tense verbs while 58% of the hypnotic group, 33% of the neutrals, and only 16% of the normal-time group did so. The simulators thus differed significantly from each of the other three groups beyond the .01 level (by separate ratio analyses). In like manner, five of six simulators decreased their total references to past events and increased their references to present events. Only a third of the hypnosis subjects decreased their references to past events and a half of them increased their concern for present events. On the first measure, the hypnosis group differs from the simulators at the .01 level ($z = 3.52$) while on the second, the difference is at the .05 level ($z = 2.24$). The simulators also differ significantly from the other two groups on these measures, but the latter do not differ from the hypnosis group. None of the differences in references to the future were significant.

If this were our only dependent measure, we would be forced to conclude that the obtained effects of changes in language and thinking in response to the present expanded induction are confounded with consciously controlled expectations about how an hypnotic subject should react to such a suggestion.

Affective Reactions

When subjects were exposed to the humorous, obscene taped material, it was assumed that normative influences operating in the laboratory situation would prevent them from reacting strongly to it. However, if they had internalized an

expanded present orientation, they then should have been less concerned about how they might be evaluated for their reaction and more able to experience and openly respond to the immediately present situation. This reasoning receives support when we compare the extent to which subjects in the different treatments responded to the comedy material by either smiling or laughing outright. It is evident from the data in Table 2 that the pattern of laughing or simply smiling distinguished the hypnosis group from each of the others.

- -

Table 2 here

- -

These subjects were equally likely to react by openly laughing as by smiling. The simulators smiled as often as the hypnotic group, but they were not observed to react at the more intense level by laughing. Each of the other two groups behaved in a more socially appropriate manner, smiling more frequently, but laughing infrequently. In fact, they smiled significantly more than the hypnosis or simulation groups ($p<.025$, $F = 4.61$, $df = 3, 26$). The greater frequency of laughter of the hypnosis group, however, only approaches statistical significance. An analysis of subjects in each group who gave an especially hearty (or "belly") laugh indicated that the only three who did were in the hypnosis group.

This quantitative data is less convincing than some of our qualitative data of the basic changes in time sense and responsiveness to "stimulus immediacy" achieved in many of the hypnotic subjects. Only hypnotized, present expanded subjects expressed the emotional mood of the taped material by themselves

using obscenities and jokes in their questionnaire answers. For example,

a) ..."Jerry L. is so f----d up that I got sick and tired of listening to that bastard laugh. At least M. has some class but L. has no class because he's always out to lunch. I think they should lose Jerry L. in a f-----g water hazard. Because he is a hazard to humor!!!!"

b) "At first I was rather disgusted, listening to those stupid f-----s, but when they started screwing up, it blew my nose."

c) "How in the hell did you get hold of it! I never believed "stars" could swear as much as I do."

d) "Yuk, Yuk and I rate this film (X)"

A more typical view of the nature of the unusual reactions generated by this alteration of time can be witnessed in the report of one of the hypnotic subjects, written a minute after having heard the tape recording:

"I don't remember much about it now -- all I remember was that it was funny and that I'd seen the movie the men were talking about. But actually I don't really care too much about the tape at all right now. I hate writing this. So I'm stopping. Right now. I feel like laughing. But I'd better stop writing this first. Right now."

In a sprawling, childish handwriting, very different from her usual penmanship, one subject in this condition wrote:

"Sometimes it was funny - slips of tongue funny obscene - O.K. But sometimes, just two jokes - the situations described weren't funny - not nice. O.K. tape, not great. Not a funny start - sad."

Sensory Involvment

The purpose for having the subjects play with the clay was to provide an occasion for differences in the experience of time perspective to emerge which might not have been apparent on the other, more cognitive tasks. It was expected that those with a sense of expanded present would be less likely to plan ahead and thus, not render the clay into a particular shape or specific figure. The only subjects who did not end up with a distinguishable figure or recognizable "thing" were several pairs of hypnotic, expanded present subjects. They either made many small figures as part of an uncompleted diorama , or continually changed the content of their modelling. However, this measure proved to be unsatisfactory because in the short time period provided, many subjects in all conditions did not make much progress and some hurriedly put their clay into final shape when told to finish up and return to their cubicles for the next task.

The most compelling evidence for the greater involvement of the hypnotic subjects in the "here and now," and their lack of concern with appearance, comes from two rather subtle, non-obvious measures of change in temporal perspective, and also from the subjects' own accounts of the experience.

If the subjects were truly engaged in the ongoing activity of deriving pleasure from manipulating the clay for its own sake (as we would predict for those experiencing an expanded present), then our test situation should elicit two characteristic behaviors. First, when the experimenter said to stop and return to their cubicles to complete the next questionnaire, those who were "stuck in the clay" should have ignored his command once he left and it became a past event. Second, the moist clay (which was chosen because it

stuck to the hands) ought to be less disturbing to those with an expanded present orientation since they would continue to enjoy its sensory qualities and not worry about getting cleaned up before going on to the next task or how they looked to observers. The data clearly support both of these predictions in demonstrating significant differences in these behaviors between the hypnotic subjects and all others in the three comparison groups.

The mean total time each subject continued to play with the clay after being told to stop is shown in Figure 1. The normal-time subjects tended to complete the task shortly before the allotted five minutes.

- -

Figure 1 about here

- -

The two expanded present control groups finished up their figures in about a minute after being told to. In sharp contrast, the hypnotic, expanded present subjects continued to play with the clay for nearly 250 seconds more. This value would have been much higher were it not for imposing on arbitrary ceiling of 300 seconds, which five of the subjects reached and were then forced to stop. Whether the unit for statistical analysis is the pair of subjects sharing the clay or the individual subject, the results are significant since the shortest time taken by any of the hypnotic subjects was at least 60 seconds longer than the longest continuation recorded for any subject in the other conditions. The significant overall effect ($p<.0001$, $F = 24.63$, $df = 3, 26$) is primarily due to the large difference between the hypnotic group and each of the others ($p<.001$).

Observers recorded the subject's concern with the mess or being dirty by noting whether they used the readily available paper towels, wiped off their hands on the desk top or on their clothing, or spent time looking at their hands. Two-thirds of the hypnotic group gave no evidence at all of any concern for the fact that their hands were coated with the residue of the clay. This is compared with the almost universal reaction of all (but two) other subjects to clean up immediately after completing the task. The proportion of subjects revealing such concern was significantly less for the hypnotic, present expanded group than the others ($p<.001$, $z = 3.52$).

In addition to these observed behavioral differences in hand wiping or attempts to clean the clay off, hypnotic, present expanded subjects also described their reaction to it much more positively than did the other subjects. Some examples of typical questionnaire reactions for these hypnotic, expanded present subjects are:

a) "Felt like I was working in the dirt, like the farmer in the picture [the TAT scene]... felt the soil under my fingernails, drying out and becoming like shaving talc."

b) "The thing I like <u>most</u> about working with the clay is - ... "getting my hands dirty ... all the clay I've got all over my hands now."

c) The thing I like least about working with the clay is -

-"The fact that it stuck to my hands and now I am a clayman."

-"my dirty hands afterwards, but that's O.K."

The control subjects across all three conditions, when asked to react to their experience of working with the clay were rather distressed by the residue on their hands. For example:

a) "My hands are caked with clay - and I got some on my shirt - It's a drag for my hands to feel like this."

b) "I've got all this goddam clay on my hands."

c) "It got my hands dirty as hell."

d) "It got clay under my fingernails and that's probably the most uncomfortable feeling I've had in 2 days."

e) "It leaves your hands filthy."

None of the expanded present, hypnotized subjects reported awareness of being observed during the clay session (through the one-way mirror), but some of the controls in each group spontaneously reported being bothered by the knowledge that they were being watched by the experimenters.

On a seven-point scale of enjoyment with the clay, there were no differences between any of the three expanded present treatment groups, each of which enjoyed it more than did the normal-time control ($p < .02$). The mean ratings were: Normal-time controls, 3.8; present expanded controls, 5.2; present expanded simulators, 6.0; present expanded hypnotized, 6.5.

The final indication of just how profound an effect was created in some subjects by incorporating a present expanded time perspective into their experiential interaction with the environment is evident in their evaluations of the clay task.

For one subject, "The clay was very soft and moist, it felt nice to dig my fingers into it. When I was working with it, the shape just kind of happened. There was very little effort involved. It just kind of worked itself out." Another subject, who really enjoyed working with the clay, was still very much in tune with her immediately present environment when she wrote:

"I didn't want to stop. But now I don't care because I'm writing this. I've got clay on my hands. Now I'll move to question #1.

"I remember feeling very, very good. But that was clay and now this is pencil and paper. It's amazing how a pencil can make marks on a paper that other people can read and understand... I can't really think about working with the clay. These questions interrupt my thought process. That makes me angry. But I don't care because it's all fantastically amazing. I can hear the blood in my ears ... Now I wonder why that is. No more room. Back in the folder - "

None of the control subjects even gave a response which was remotely comparable to these by hypnotized subjects presumably experiencing a present expanded temporal perspective.

DISCUSSION

What is most surprising about the results of this exploratory investigation into alteration of temporal perspective is that such profound effects upon thinking, feeling and acting could result from mere verbal suggestion to ~~reset~~ recreate one's perceived boundaries between the present and past and future. On the one hand, it is curious that well-established time-bound controls over behavior could be so readily suspended, and on the other, it is not at all unexpected that an individual's style of interacting with the environment and representation of it will undergo fundamental changes as "becoming", "Here - NOW" and "eventing" assume new psychological significance. As the present loses its transience by borrowing time from pastness and futurity, the conceptualized awareness of "nowness" apparently changes learned frames of reference for both "objective" stimulus reception and "appropriate" response output.

In pursuing an analysis of what Grünbaum (1967) calls the "mind-dependence of becoming", we wish to consider first the facilitory role played by hypnosis, then present some additional pilot study data relevant to issues of social-emotional contagion under expanded present states, and finally, to outline predicted effects of such states upon a range of basic psychological phenomena not yet investigated.

The Role of Hypnosis

From one point of view it could be said that the present study shows the effectiveness of simply encouraging people to make salient their personal time perspective and then to allow it to be transformed by expanding the present.

On some measures, subjects in all groups given the expanded present induction reacted differently than those in the normal-time control condition. But across all tasks (and on the basis of our observations, qualitative data and anecdotal reports) the subjects for whom temporal perspective was most markedly altered were those given hypnotic training and put into an hypnotic state during the experiment.

Why this should be so, we think is understandable as a consequence of the nature of hypnotizability and the reality-distorting experiences characteristic of our training procedures. It is our opinion that the ease with which a person can experience hypnotic phenomena depends, in large part, upon being able to suspend reliance upon "critical reality-testing", to be willing to give up objective-subjective differentiations, and to have developed an "imaginative involvment" (J. Hilgard, 1970) with symbols and words to the extent that they can assume a controlling influence over the individual's behavior.

Given subjects selected on the basis of high hypnotizability scores, we further developed the above characteristics in training sessions, as well as instilling in these subjects an attribution of internal control over experience and behavior. Thus, it is probably that they were pre-set to accept the viability of the present expanded suggestion, to have confidence they could alter their temporal perspective as suggested, and be less apprehensive about feeling or acting in non-conventional ways in the experimental situation. The obtained differences between hypnotic subjects and simulators on the non-reactive tasks and in their self-descriptions

indicates that there is something more operating than subject selection or expectation of behaving like an hypnotic subject, or even complying with inferred experimenter demands. That something more is not peculiar to the "mystical" nature of hypnosis, but rather to the combination of learning experiences which increase hypnotizability and hypnotic training experiences which produce the psychological changes noted above. This is to say, that the effects noted are in no way limited to hypnotic subjects but rather to those experimental conditions which facilitate allowing, accepting and temporarily incorporating such basic changes in one's sense of time. Certain drugs, alcohol, sensory deprivation, intense emotional arousal, and some states of mental illness can lead to changes in temporal perspective; hypnosis merely offers a better methodological strategy for studying the effects of induced changes in time sense on behavior.

Social-Emotional Contagion

Of special interest to social psychologists are some provocative observations we made about "contagion" phenomena is the present expanded state. When hypnotic subjects in groups of three were told to experience the expanded present (not as part of the study reported here), they were quick to move from disposition to act, and to transmit their emotional reaction from one to the other. A subject would report feeling so good, she wanted to scream and laugh and shout -- and then would. Or another would describe feeling euphoric and then act euphorically, smiling, singing, laughing, joking, moving. All 18 of the reported hypnotic subjects (and many others we have trained since) described the expanded present experience as very desirable.

When one subject in a group began laughing, the others were quickly "infected" until all were doing likewise. In one group, this erupted laughing of one subject resulted in a kind of group hysteria for a full fifteen minutes until we terminated the suggestion. The generally positive nature of the experience does not account for its contagion as was demonstrated in one group where a subject got angry upon not being able to find a name in a phone book (he was instructed he would not). The other two subjects laughed and joked with each other oblivious to his plight. One of them kept shouting because when the present had expanded, the dot on a moving time line (his conception of time) expanded into a hugh balloon with him inside it. Any sounds he made were being echoed and reverberated, making him laugh at this unusual state. The angry subject kept flipping through the pages of the phone book, putting so much pressure on the page as his finger scanned the names that the pages began to tear. The other two also were given phone books and began trying to help find the elusive name, but could not remain serious long enough to do so. Then, they started ripping pages from their books, at first slowly, but soon faster and faster. All three were suddenly throwing the pages all around, wadding them up into balls, making paper airplanes of them, and firing the missiles at each other and the experimenters.

It was hard to determine whether their mood was angry or euphoric, it seemed somewhere in between, a kind of affect-laden hysteria without a clear emotional label. The experimenters, frightened by this loss of control, returned the subjects to a deep state of relaxation using a well-

conditioned, pre-arranged, non-verbal cue. When they were awoken, in a room littered with three demolished phone books, their spontaneous "socially appropriate" reaction was to begin cleaning up the mess. They seemed surprised at what they saw and remembered doing. A similar emotional contagion and acting-out also occurred in another group where furniture was overturned and a half-demolished phone book flung at the experimenter before normal time perspective and its controlling influences were invoked.

Temporal Foundation of Psychological Phenomena

Earlier in this paper, we sketched some of the ways in which assumptions about the temporal ordering of experience are essential for establishing self-identity, as well as systems of social and technological control. Here we wish to suggest more specifically how some selected psychological phenomena are or can be shown to be time-bound.

a) Suggestibility. The contagion effects observed in our small groups of hypnotic subjects under an expanded present orientation may have resulted primarily from a heightened level of suggestibility brought about by a weakened past commitment to socially sanctioned ways of behaving and a lessened concern for future consequences of acting out one's feelings. It should also follow that subjects for whom the past (with its commitments and established "face") is diminished as well as the future (with its apprehension over responsibility for being wrong or inappropriate), will be more persuasible and more likely to yield to situational conformity pressures.

b) Dissonance. This same line of argument leads to the prediction that there would be no cognitive dissonance or attempts at dissonance reduction

for those experiencing an expanded present. It becomes obvious that dissonance arises primarily from inconsistency between perception of one's present and past behaviors or from the possibility that present decisions will have negative consequences in the future. It may be possible to separate out these two temporal influences on dissonance arousal and reduction by minimizing either past or future and combining the other state with an expanded present.

c) Catharsis. The experience of feeling a reduction in emotional tension after "getting if off your chest" by telling another person may be produced by the subtle operation of temporal factors. The act of verbalizing an internal threat puts it into an externalized form which can then be cast out of the present and established as belonging to the reality of the past. "Telling it as it is" automatically tags the content communicated as an event which occurred in a time period prior to any "NOW" which the person subsequently experiences in thinking about that content. The act of catharsis renders an emotional event which generates anxiety because of its timeless, formless threat into a distanced, analytical event with substance and time coordinates, one which can then be located in memory and subject to recall at the discretion of the individual. Emotional responding in this analysis has a tenseless psychological status, involving a sense of the immediacy of of stimulus input and the need to cope with it directly and continually. Thus, emotional arousal becomes both a consequence of an extended present time sense as well as an antecedent inducing it. The dynamic force of repressed thoughts stored in the unconscious therefore, derives from the relentlessness of their timeless presence. By not being brought to conscious awareness and given a time-bound location in memory, such cognitions continue to generate the affect originally associated with them, posing a persistently recurring threat. Repression can not be a totally effective defense against

such thoughts because its contents not being time-bound, continue to exist in the extended present, always potentially available for emergence into conscious awareness, and thus, as an emotional challenge.

No experience however unpleasant and traumatic can retain its full emotional impact once it has become labeled as a past event. It should be possible to demonstrate for example, that emotional reactions used as negative reinforcers in aversion therapy lose their effectiveness over time because with each repetition, they move further into the established, unchanging and thus, unthreatening past. For expanded present subjects the potency of such negative emotional reinforcers should remain unchanged or even increase with repeated aversive conditioning trials. Such an interaction would show that it was time factors and not sheer repetition which influenced reinforcing strength.

d) Memory and aging. Amnesia for recent events coupled with memory for more past events attributed to senility and physiological deterioration of the brain may be more profitably thought of as a psychological process initiated by perceived hopelessness. An old person facing a truncated future, who is living a meaningless present existence, "lives" largely in an expanded past temporal state. In such a condition, old stories are retold endlessly, old events given new significance and even sad ones are tinged with nostalgia. The present is an impediment to be dealt with and dispatched in order to return to the comfort of the past. We would expect that techniques (hypnotic and other) which might induce a sense of expanded present or future in old people would be an antidote to retrograde amnesia phenomena and might even increase longevity. A 68-year old institutionalized patient interviewed by one of the authors said he wished his face were like a shirt which he could wash and starch

and put away in a drawer, available whenever he wanted it, but unchanged and still fresh as when it was put there. Perhaps the aged put their memories in such a drawer which preserves their freshness and vigor against the inroads of time.

e) Memory and mental health. Discrepancies between private time and objective or clock time also occur in some types of mental illness (cf. Cohen, 1967; Lehmann, 1967; Luce, 1970). Some patients experience a temporal claustrophobia in which they are trapped by too many demands in an insufficient amount of time to meet them. Others dread the expanse of unfilled time (a counterpart to agoraphobia). Some obsessives attempt to do away with the flow of time and the threat of change by over-structuring the present. In the characteristic experience of depersonalization, time stands still as the immediate past becomes remote and the present is but a recurrence of what has previously occurred. It must also be that in the psychotic detachment from reality, temporal perspective undergoes transformations necessary to change attributions of causality and reconstitute basic assumptions about behavioral continuities.

But perhaps the most fascinating relation of time orientation to psychopathology centers about concepts of self identity and self worth. There is a class of people who are currently attractive, well built, loved and admired, and successful by consensual agreement in their culture, but have come to believe that they are, in fact, the antithesis of one or more of these traits; ugly, too fat or skinny, unloved or a failure. It appears that their present self evaluation, though inconsistent with presently available positive feedback, nevertheless, is congruent with real or imagined negative feedback experienced during their childhood. For example, a father, perhaps fatigued from work,

tells his daughter who is eager to embrace him to go away and not bother him. This event, instead of being repressed, is given a salient place of notoriety in memory and comes to be the reality framework into which all subsequent evaluations are distorted. When the present situation becomes subjugated to the sacred reality of the past, neurotic reactions are the inevitable consequence.

Often therapy for such cases attempts to show how the past situation has changed, and the past evaluations, now seen in proper perspective, are no longer relevant. An alternative therapeutic strategy which we have begun to pursue experimentally in our laboratory is called "temporal reconstruction therapy." Under hypnotically-induced age regression, the individual's past is cognitively changed to be the way he or she would have wanted it to be. Instead of "now" being woven from the fabric of the past, the past is rewoven from the fabric of the present. Because we all tend to believe in the truth, legitimacy and ultimate reality of the past, such a proposal seems to be a violation of nature. However, "if experience is the best teacher," and "you knew then what you know now," and "if only it weren't so," and "you had your life to live over," you might be happier and saner through such a therapeutic strategy.

Finally, we conclude with the spontaneous reaction of one of our female subjects (concerned about being overweight) during her experience in the expanded present state. It raises many provocative questions for future research about the interplay between changing temporal perspective, identity, and mechanisms of social control:

> I'm melted, I am so thin, I cover practically everything.
> In fact, I am sort of falling into everything because I
> am so thin, and I can hear all the little things vibrating,

and I can taste all the different things, like wood and the carpet, and the floor and the chairs. I really can't see any more, though, I mean it's all different colors, but it's so big you can hardly see it, everything is very confusing, but I've just sort of melted into everything . . . I'm unresponsible! . . . I'm everything! I can keep going. . . . I'm not a thing anymore, I'm everything so I can't do anything. There's nobody there, nobody who says to me, "Hey, Everything, you have to do this."

References

Aaronson, B. S. Hypnotic alterations of space and time. International Journal of Parapsychology, 1968a, 10, 5-36

Aaronson, B. S. Hypnosis, time rate perception, and personality. Journal of Schizophrenia, 1968b, 2, 11-41

Cohen, J. Psychological Time in Health and Disease. Springfield, Illinois: C. C. Thomas, 1967

Grünbaum, A. The status of temporal becoming. In R. Fischer (Ed.), Interdisciplinary Perspectives of Time, Annals of the New York Academy of Sciences. New York: New York Academy of Sciences, 1967, 138, 374-395

Hilgard, E. R. Hypnotic Susceptibility. New York: Harcourt, Brace & World, 1965

Hilgard, J. Personality and Hypnosis. Chicago, Illinos: University of Chicago Press, 1970

Lehmann, H. E. Time and psychopathology. In R. Fischer (Ed.), Interdisciplinary Prespectives of Time, Annals of the New York Academy of Sciences. New York: New York Academy of Sciences, 1967, 138, 798-821

Luce, G. G. Rhythms in Psychiatry and Medicine. Public Health Service Publication No. 2088, Washington D.C. 1970

Zimbardo, P. G. The Human Choice: Individuation, reason, and order versus deindividuation, impulse, and chaos. In W. J. Arnold & D. Levine (Eds.). Nebraska Symposium on Motivation. Lincoln, Nebraska: University of Nebraska Press, 1969

Footnotes

This research was financially supported by an ONR research grant: N00014-67-A-0112-0041 to Professor P. Zimbardo, and written while the senior author was a fellow at the Center for Advanced Study in the Behavioral Sciences.

TABLE 1

Mean changes in TAT responses before to after induction of time distortion

TREATMENT	MEAN % PRESENT TENSE VERBS TO TOTAL VERBS	MEAN % TOTAL REFERENCE TO: PAST	PRESENT	FUTURE
Present Expanded				
Hypnosis (n=12)	+ 8.5	0.0	+ 3.3	-3.2
Simulation (n=6)	+12.4	-10.1	+11.3	-1.3
Control (n=6)	-14.6	- 1.2	- 8.3	+9.6
Normal Time (n=6)	-20.7	+ 5.9	- 8.8	+2.9

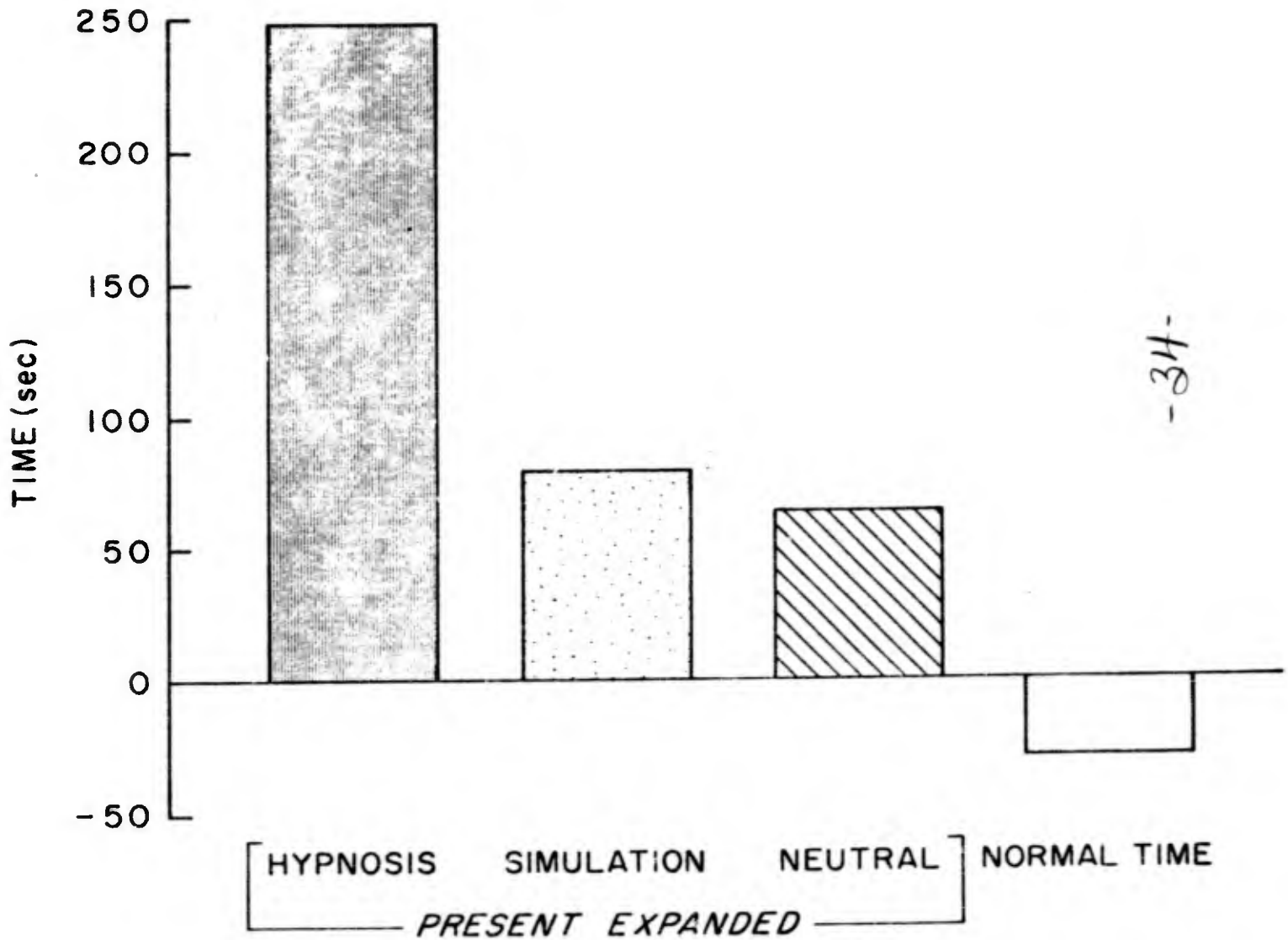
TABLE 2

Mean number of smiles or laughs observed in response to obscene, comedy material

TREATMENT	SMILES	LAUGHS
Present Expanded		
Hypnosis	3.0	3.0
Simulation	3.7	.2
Control	5.2	1.0
Normal Time	6.7	.7

Figure Caption

Mean time spent continuing to play with clay after being instructed to terminate this activity (original five-minute task period is the zero baseline).


250
200
150
100
50
0
-50
TIME (sec)
HYPNOSIS
SIMULATION
NEUTRAL
NORMAL TIME
PRESENT EXPANDED