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# Susceptibility to Persuasion Under Conditions of Sensory Deprivation

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# SUSCEPTIBILITY TO PERSUASION UNDER CONDITIONS OF SENSORY DEPRIVATION

by

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## LIFE

John W. McCloskey was born in Fremont, Nebraska on May 10, 1936.

He was graduated from San Gabriel Mission High School in San Gabriel, California in June, 1954. In September he entered Mt. San Antonio Junior College in Walnut Creek, California, subsequently transferring to Don Bosco College in Newton, New Jersey. Following service in the United States Army, he recommenced studies at the Municipal University of Omaha, Omaha Nebraska. He received his Bachelor of Arts degree from Loyola University, Chicago, Illinois in February, 1963. The same month he commenced graduate studies in the department of psychology at Loyola University.

In September of 1963 the author was awarded a graduate assistantship in the clinical section of the department of psychology and appointed an Arthur J. Schmidt Scholar. Presently he is pursuing graduate courses while engaged in Internship experience in the Veterans Administration Clinical Psychology Trainee Program.

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# CHAPTER I

## INTRODUCTION

Current research in sensory deprivation, social isolation and suggestibility is popularly identified with the most avant garde scientific endeavors of our era. Its implications extend to space exploration, under the sea probing, modern psychological warfare, psychotherapeutic experimental techniques, and politics. Yet the phenomena observed under conditions of sensory deprivation are not as new as the novelty of the scientific efforts with which the technique is associated might suggest.

In fact, hypersensitivity to pattern and meaning from sensation consequent to their restriction over a prolonged period has been known to produce bizarre perceptions long before the scientific disciplines commenced any systematic study of them. Sailors on tedious watches were typically subject to illusory land sightings. Arctic explorers have recounted similar misperceptions of reality after lengthy and monotonous routines. All of these experiences depend basically on the same psychophysiological processes acting upon an organism striving to maintain contact and veridical feedback from its surroundings.

A certain narcissistic and egocentric feeling readily prompts

an individual to place disproportionate importance upon his own capacity for rational self direction and independent of extraneous forces. The same feeling elicits, in the less sophisticated, a disdain for such conceptions as unconscious determinants or the efficiency of subtle suggestion. In light of contemporary research in sensory deprivation, it is truly amazing to discover the extent to which the individual depends upon sensory input of a particular nature to maintain adequate intellectual functioning.

A particularly interesting effect of limiting sensory input has been observed in the frequently heightened suggestibility of subjects. Reflections of reality from constant contact with the environment and continuous sampling of cause-effect sequences provides an objective background against which the individual builds up his conception of the world as well as a rather stable criterion by which to assess the adequacy of his own functioning. When these reality ties are weakened by any extraneous inhibition of sensory feedback, or when they are diminished by a subjective focusing of attention on a single source of relatively unchanging stimulation, then the individual appears to seek franticaly but blindly for some other source of reality testing and self-direction. This behavior has been characterized as stimulus hunger in which perception and judgment, for example, may become increasingly a function of personal needs while the individual appears incapable of recognizing their distortion; or the individual may

exploit and uncritically absorb any fortuitous stimulation and assign pattern and meaning in bizarre fashions.

It seems to be precisely these conditions which underlie the augmented susceptibility to suggestion of individuals subject to sensory deprivation, and it is the purpose of this research to establish these conditions and assess the effectiveness of this suggestible state in facilitating at least temporary attitude changes.

It is hypothesized that those subjects who are deprived of meaningful stimulation for a two hour period will become increasingly more receptive to persuasion. Their heightened suggestibility will be operationally defined by demonstrable changes of attitude assessed by pre- and post-tests.

## CHAPTER II

## REVIEW OF THE LITERATURE

General background and experimental implications: The theoretical formulations of D. O. Hebb gave first powerful impetus to this fertile area of investigation. He noted the "phase sequence" functioning of the central nervous system and the disrupting effects upon it of monotonous sensory stimulation, emphasizing the marked decrement in brain function when the organism was deprived of varied stimulation (Hebb, 1949.) In 1955 Hebb stated more explicitly his thesis in differentiating two quite different effects of a sensory event, one a "cue function guiding behavior" and the other the "arousal function." He pointed out that this latter function is "synonymous with a general drive state." Associates of Hebb at McGill University immediately began to design tests of these hypotheses and so launched sensory deprivation studies into the mainstream of psychological investigation.

Prolific and fruitful work has proceeded in every conceivable direction from these nuclear concepts fertilized at McGill. Perhaps a major line of investigation has proceeded in the direction of physiological correlates and organic consequences of sensory deprivation and allied processes. In 1929 Hill and

Robinson reported a case of mental retardation whose genesis they associated with inadequacy of environmental stimulation. Though their conclusions stemmed from observations innocent of adequate experimental design, the theoretical possibilities of such a cause-effect process have been largely affirmed. Similar conclusions were reached by Goldfarb (1945) who noted an incapacity to profit from learning opportunities consequent to an earlier restriction. Goldfarb made use of an acceptable research design employing several control groups against which to assess differences in his experimental group. Thompson (1960) introduced an astute though non-experimental discussion of these unfortunate effects, suggesting that "not only does she (mother) keep the infant alert and aroused, but she also provides him later with a focus for experience, a frame of reference that gives organization to a chaotic world." Teuber's (1961) research suggests that the activity of the CNS is affected similarly by deprivation, recombination, and effects, emphasizing that perceptual adaptability is related to the phylogenetic advancement. Extrapolating beyond the immediate perceptual data of his experiment, Teuber seems to generate conclusions of a Darwinian nature suggesting that some natural selection has operated phylogenetically to differentiate and perfect functions and so associate highest levels of development with the greatest perceptual adaptability. In this respect his observations appear to be post hoc

reflections and lose some of the cogency of his more empirically funded remarks. Riesen (1961) confirmed experimentally the assumption that ontogenetic development of coordinated responses may be a function of patterned prior stimulation. He cautions, however, that developmental arrest seen in sensory deprivation may be a function of patterned regressive or actual atrophic change. Rosen and Hart (1963) noted the abnormal behavior, branching into comparative psychology, of mice after early deprivation. Less related to structural or functional organic changes, the work of Petrie et al. (1962) implied similar theoretical formulations for the genesis of juvenile delinquency, suggesting that perceptual deprivation may play an important part in such behavioral pathology.

Sensory Deprivation and Psychopathology: Paul McReynolds (1956) noted the psychotomimetic states of subjects under these conditions and directed his work to throw light upon the etiology of schizophrenia. Others have traced useful similarities between the artificial phenomenon of sensory deprivation and the maladaptive process of schizophrenia (Harris, 1959; Rosenzweig, 1959.) Reitman (1964) experimented with schizophrenic subjects deprived of patterned sensory input for a four hour period, finding in these subjects an increased somasthetic sensitivity but no experimental change in their body dimension estimates. Vernon (1957) discovered significant differences between his groups of subjects under similar conditions in their capacity for

rote learning. These researchers though failing to agree on the basic issue of the more specific significance of sensory deprivation effects for psychopathology, have nevertheless contributed in developing the argument in favor of the psychogenesis of emotional disorder. It still remains to be seen whether the phenomenon of sensory deprivation by limiting communication overload permits a cognitive reintegration or in quite another fashion gives occasion to a communication dysfunction of such a magnitude that the individual is impelled to cope with his enviornment and strive to reorder it in a meaningful fashion.

Sensory Deprivation and Military Implications: All branches of the Armed Services became quickly involved in supporting comparable investigations. Great impetus was given the program by the sophisticated methods of indoctrination employed by the Chinese Communists in Korea. But the Services began at an early date to profit from work in sensory deprivation, finding new lights directed upon their own particularly urgent projects from this approach. The Navy was concerned with the effects upon submariners of the diminished social and sensory stimulation (Eron and Auld, 1954.) The Air Force found such work specially pertinent to the space program (Ruff and Levy, 1958; Balke et al., 1957; Bennett, 1958; Ormiston and Finkelstein, 1961.) Such work emphasized largely the deleterious social interaction effects of sensory deprivation procedures but was also usefully concerned with the derived decrements in both gross motor behavior and

precision tasks.

Sensory Deprivation and Personality Variables: Other researchers have studies their subjects intensely by psychometric and psychodiagnostic techniques to identify, if possible, personality characteristics uniquely reactive to sensory deprivation (Holt and Goldberger, 1959; Holt and Goldberger, 1961; Grunebaum and Freedman, 1960.) Using the Rorschach as a measure, Goldberger (1961) noted that the absence of reality contact in sensory deprivation facilitates the emergence of primary process thinking. His research, though communicated within an easily identified theoretical framework, lacks the specific ad hoc quality of the more committed psychoanalysts. Eron and Auld (1953) analyzed the TAT and Incomplete Sentence Blanks productions of matched controls and subjects released from a thirty day confinement aboard a submarine. They found the confined subjects' test protocols demonstrated less emotional involvement, less concern for interpersonal relations, less social responsibility, and more hypochondriasis. Cohen and Silverman (1962) by a Rod and Frame Test and a DAP test discriminated body from field-oriented subjects. They described the latter group's behavior under sensory deprivation as characterized by more intense psychological discomfort, more cognitive disorganization, and a higher incidence of visual and auditory imagery. However, dissenting voices were raised by Hull and Zubek (1962) who found no reliable differences between control and deprived subjects as assessed by the MMPI,

EPPS, and Thurstone Temperament Schedule. Ormiston (1961) in a similar procedure found no correlations among personality test scores, changes in visual illusions, and performance tasks nor any significant differences in these measures between control and deprived subjects. It is precisely this type of less glamorous ground work which seems to hold the greatest promise. These researchers have shattered the obscure black box and attempted to identify the unique factors inherent in the organism of which the various S-R sequences (such as sensory deprivation -- hypochondriasis) are a function. In other directions, the psychoanalysts showed interest in a process which seemed to facilitate investigation of dynamic principles of anaclitic therapy (Azima and Wittkower, 1957.) Vernon and McGill (1962) submitted several groups of subjects to varying degrees and varities of sensory deprivation to pin down the significant variables associated with the frequently reported hallucinatory experiences under these conditions. Much of this work, however, has proven to be less fruitful than its potential promised. The experimentation was tied down closely to psychoanalytic theory and allowed little room for truly unbiased research, so that psychotomimetic and especially regressive phenomena were inexorably "explained" by being included under a pervasive and stifling mantle of prior conclusions. Such ad hoc experimentation seems of rather limited usefulness.

Sensory Deprivation and Hypnosis: Many experimenters have

pointed out the similarity of sensory deprivation situations and the hypnotic state. Brenman and Gill (1944) in a definitive discussion of hypnotherapy note McDougall's "intellectualistic" theory explicating suggestibility in hypnosis: "... it may be explained as the acceptance of an idea without adequate logical grounds ... accepted because it remains isolated and dissociated ... The monotonous stimulation seems to aid in bringing the whole brain to a quiescent condition by facilitating the continued direction of attention to an object or impression of an unexciting character and preventing the free play of ideas." Kubie and Margolin (1944) also point up the many communalities between sensory deprivation and hypnosis, noting "the progressive elimination of all channels of sensori-motor communication between the subject and the outside world... making possible all the phenomena of apparent passive suggestibility." Later, in 1961 Kubie and Towson showed even more precisely the congruence of these two states, noting that "sensory deprivation may be considered a type of hypnotic process where the hypnotist is absent but imaged."

Sensory Deprivation and Brain Washing: Another approach to suggestibility is provided by the abundant literature on brain washing. Solomon et al. (1957) remark upon the "presence of a common denominator of imposed control of external stimuli ... reduction of news from outside ... solitary confinement appears to be a factor of primary importance." Biderman (1959), analyzing

the Communist Chinese procedures, reported that "indoctrination achieved some success only in a very few cases of individuals who were held for prolonged periods in complete isolation." Schein (1956) reviewing the Communist techniques of forceful persuasion, comments that perhaps the most important tool was the ability to manipulate the environment in such a way that consensual validation was frustrated, thus augmenting the captives' susceptibility to suggestion. In a similar vein, Farber (1957) notes that the impoverishment of thinking in such confinement and the restriction of sensory input may increase susceptibility to arbitrary and unsubtle training procedures. These reports of brain washing here reviewed are obviously all once removed from the actual experimental data which were not available. What has been analyzed is the personal observations, memories, and introspections of the subjects as well as the results of subsequent testing. The results must then be interpreted in much the same way as any experimental results would be if the stimuli and the condition of the organism were unknown. Although our society does not permit true replication of brain washing experiments for the extreme physical and mental anguish involved, considerable work has nevertheless been done in this area under the auspices of the federal government. The classified reports are unfortunately not available.

**Sensory Deprivation and Suggestibility:** Several investigators have concerned themselves with a more precise analysis of

the experimental variables involved in this heightened suggestibility in sensory deprivation. Camberari (1958) differentiated two groups of normal subjects on the basis of their suggestibility. The "non-suggestible" group was more defensive of intellectual control and more aware of and reluctant to ignore external factors reinforcing reality. Cohen et al. (1959) using a deprivation period of one hour noted negatively that pre-experimental suggestions did not elicit any significantly greater number of "cognitive dysfunctions" (hallucinations, etc.) The very brief experimental exposure, however, was probably an important factor in determining their subjects responses. Myers et al. (1963), after using a forty-eight hour sensory deprivation period, also discovered no overall difference in attitude changes between control and experimental groups, although the more intelligent subjects demonstrated a trend to change less than others. In 1959, Scott, Bexton, Heron, and Doan, employing a seventy-two hour deprivation period, investigated the increased susceptibility to propaganda. Attitude change was assessed by comparison of gross changes in pre- and post-tests. They noted a positive change resulting in both control and experimental groups but a significantly greater change for the experimental (deprived) group. Their work has special importance as it is marked by a very sophisticated research design and optimally arranged experimental conditions. Suedfeld (1964) espoused a "structural theory" in which subjects were arranged in a concrete-abstract continuum. He

found that all deprived subjects demonstrated significant attitude change and that "concrete" subjects changed more than "abstract"ones. He argued that sensory deprivation "causes structural simplification, reducing the subject's ability to achieve complex differentiations and integrations of incoming information, leading to all-or-none responses to information," thus reducing capacity for reasonable evaluation and leading to augmented suggestibility. Watts (1964) cleverly separates recall of contents of the persuasive message from opinion change which becomes over time functionally autonomous. He notes the rectilinear decay of induced opinion change compared to the negatively accelerated function content recall demonstrates over a six week period. This distinction made by Watts is particularly important for attitude studies in sensory deprivation, since while learning and memory demonstrate a decrement in efficiency, opinion change may well vary independently and "efficiently." Jackson and Pollard (1962) note broadly the facilitating influences of sensory deprivation on suggestibility; however, Jackson and Kelly (1962) add the caution of the distorting results non-naive subjects introduce in such research. Conflicting results have been cited by Orne and Scheibe (1964) who remark upon a great number of other possible confounding variables, not associated with the sensory deprivation situation, yet capable of eliciting similar abnormal patterns from subjects. Their criticism is well taken, but it is improbable that the obvious and blatant pre-experimental

suggestions (as the panic button in the experimental chamber labeled "press in emergency") which they employed would occur fortuitously in more carefully planned research. Focusing upon perceptual distortion in sensory deprivation, Freedman and Greenblatt (1960) suggest that an individual's continuous and automatic search for order in a non-ordered environment sets the stage for psychotomimetic behavior. This search is represented by Ormiston (1958) as a "stimulus hunger" impelling the subjects to display a greater readiness to be deceived by illusions. Courtney et al. (1961) note that visual deprivation alone cannot explain these perceptual distortions. Comparing a group of subjects allowed only to move fingers with a group permitted gross body movements, they note the latter group fared better for "keeping their body image or analogue of the outside world intact."

Attitude Assessment Technique: The general skeleton of the attitude scale here employed has been taken from Remmers (1954) experimental scale "measuring attitude toward any institution." Remmers suggests that the institution or social phenomenon can be added to each statement with satisfactory results. Sigerfoos (1936) in reporting upon his experimental application of a similar Remmers scale("attitude toward any vocation") notes several cases supporting Remmers' assertion that items need not be arranged in scale value order. In 1928, L.L. Thurstone reported definitively upon his methods of attitude scale construction. He recommends

establishing scale value by judges' ratings into eleven equal appearing intervals. More recently, Edwards (1957) incorporated much of Thurstone's procedures as well as Remmers' generalized scales into his study of attitude scale construction. Edwards notes that either the median or mean scale value provides an adequate scoring measure for individual protocols.

McNemar (1946) notes the methodological difficulties of assessing attitude change, remarking that only difference in net change between groups adequately taps true attitude variation. McNemar laments the increasing frequency of exploiting college student populations for such studies. Unfortunately this trend, out of expediency, continues and results from most attitude change studies cannot be safely generalized beyond the limited population chosen.

Both Underwood (1957) and Campbell (1957) have remarked upon the interaction effects of a "sensitizing pre-test" in attitude studies. Campbell suggests, after reviewing extensively a number of experimental models, that an initial random assignment of subjects into the various groups would obviate the need for a pre-test measure. Underwood further develops a rationale supporting such a design (using a pre-test) noting its adequacy when generalizations are confined to the population from which the samples were drawn. However, the disadvantages of such a design preclude its use in many situations. Campbell points out three chief drawbacks to eliminating a pre-test:

1. special vulnerability to selection bias;

2. decreased precision in that significance is established only by greater differences; and

3. disastrous effects of experimental mortality.

Minimizing interaction effects, many investigators have, nevertheless, found the traditional model of pre- and post-test quite serviceable (N. Webb, 1959; Scott et al., 1959.)

# CHAPTER III

# PROCEDURE

## Subjects

Subjects for this experiment were undergraduate college students enrolled in a general psychology course at Loyola University, Chicago, during the 1963-64 academic year. Although the subjects were relatively free to choose the particular experiments they would take part in, a fixed number of hours of participation was a course requirement for them. This circumstance, it was felt contributed to minimize the biased personality sampling of experiments employing entirely voluntary subjects. All subjects were male, between the ages of 19 and 21.

## Design

Subjects were divided into four groups representing one experimental group and three control groups. The experimental group's attitude (N of 20) toward the Democratic Party was assessed by a paper and pencil pre-test administered at the beginning of the session. They then underwent a two hour period of sensory deprivation during which they were exposed to two presentations of the persuasive message - once after twenty-five minutes, and once after eighty-five minutes of deprivation. Immediately after being freed from the experimental apparatus the subjects' attitude toward the Party was retested.

The first control group (N of 52) received only a pre- and

post-attitude test over a two week interval. Intervening, between administrations of the test, however, was the assassination of President Kennedy. Because of the obvious historical bias introduced by this tragedy, these data were discarded and similar data acquired subsequently from fifty-two other subjects. These data measured the significance of change in attitude, if any, in the absence of other experimental manipulations and established reliability of the attitude assessment device itself.

A second control group (N of 21) were given a pre- and post-attitude test over a two hour period during which they were occupied at a private desk with class assignments. After twenty-five and eighty-five minutes they heard the five minute persuasive message. They worked in a relatively pleasant atmosphere within easy and free access to the experimenter. An AM radio provided soft background music.

The third control group (N of 12) underwent a two hour period of sensory deprivation and were given a pre- and post-attitude test. They did not hear the persuasive message. Data from this group contributed in assessing the significance of the sensory deprivation in any attitude change.

Methodology

A. Sensory Deprivation.

The situation of sensory deprivation, encompassing that of social isolation, is specified operationally by the techniques employed to make all, or as much as possible, of incoming stimuli

objectively meaningless and non patterned. The following discussion delimits the most important aspects.

1. Social Isolation.

Subjects were placed in an experimental booth for a two hour period. Their movements and vocalizations were monitored by the experimenter, and excepting the case in which a subject would request release, there were no communications between the subjects and the experimenter.

2. Kinesthesis.

Subjects reclined upon a comfortable but firm cot with instructions not to move. Cardboard cylinders were placed on arms and legs to facilitate immobility, and those subjects who move about excessively, in spite of instructions, were excluded from the study.

3. Vision.

Subjects wore a mask type set of goggles encompassing their entire field of vision and reducing ambient dim lighting to a faint reddish glow of indeterminate form.

4. Audition.

Subjects wore a pair of padded earphones through which they heard a tape recording of white noise (a mixture of all audible frequencies at constant intensity producing subjectively a hissing sound.) An additional large speaker, driven by the same output as the earphones, was placed in the experimental booth. This precaution assured the exclusion of all possible

extraneous noise filtering into the booth. Dubbed into the white noise recording at the 25 to 30 and 85 to 90 minute intervals of the two hour period was the persuasive message.

B. Persuasive Message.

The persuasive message was composed by the experimenter. It claims neither literary brilliance nor even good style. Some of the statements are mere fabrications without a shred of truth; others are genuinely controversial. The "persuasive" aspect of the message is blatantly obvious, and no attempt was made to conceal the biased negativism throughout. The contents and form were particularly influenced by the particular sample of subjects whose characteristics have already been noted. The message appears as Appendix A.

C. Measure of Attitude Change.

Remmers' (1954) Scale for Measurement of Attitude toward Any Institution was employed. The forty items were completed so that insertion of the institution in question, the Democratic Party, provided content validity. Reliability of this particular form of the scale was tested by the first control group of fifty-two subjects over a two week interval. Item scale values were computed by Thurstone's (1928) technique. Each item was typed on a separate 5 by 8 inch card and twenty-five judges rated them on an eleven point "equal appearing" interval scale on the dimension of "favorableness to the Party." These distributions yielded satisfactorily low Q's and standard measures then

established the individual scale values. A copy of the Attitude Scale is included as Appendix B. Appendix C includes the relevant statistical data.

The attitude test required about five minutes to complete. Tests of individual subjects were scored by taking the mean scale value of all items which the subjects checked his agreement with.

Statistical Procedures of Analysis

For all groups but one, Fisher's t test for differences between correlated means was employed:

$$t = M_d \Big/ \sqrt{\Sigma x_d^2 / N(N-1)}$$

This rather stringent statistical technique requires greater differences for comparable levels of significance than other measures. It was, however, considered appropriate in light of the small samples (N less than 30) whose distributions became increasingly leptocurtic as the number of degrees of freedom decreased.

The Pearson Product Moment Coefficient of Correlation

$$r_{xy} = \Sigma xy \Big/ N\sigma_x\sigma_y$$

was employed in one instance where there was a fairly symmetrical distribution of pre- and post-test scores and the N adequately large.

## CHAPTER IV

## RESULTS AND DISCUSSION

Only one of the groups demonstrated any significant attitude change (cf. Table 1.) A primary control group (N of 52) testing the reliability of the attitude scale yielded a pre- and post-test product moment correlation coefficient of .77, significant at the .01 level of confidence. The major experimental group of 20 individuals who were subjected to a two hour period of sensory deprivation with two exposures to the persuasive message yielded a pre- and post-test correlation of .85, significant at the .01 level. A t test for the difference between the correlated means corroborated the nonsignificance of the differences obtained.

Considering the possibility that those individuals with an initially less positive attitude might be more amenable to change in the direction suggested by the persuasive message, the experimental group was subsequently dichotomized into sections of high and low scorers. The cutoff point was set for high scorers (with a less positive attitude) at initial scale score greater than 3.00. Nine subjects satisfied this criterion. However the means of their pre- and post-tests proved not to be significantly different. The obtained t was .66, not significant at the .05 level.

The second control group (of 21 subjects) was exposed only

Table 1

Correlations and t values for pre- and post-attitude tests

| | Experimental Group | | Control Groups | | |
|---|---|---|---|---|---|
| | $I_a$ | $II_b$ | $III_c$ | $IV_d$ | $V_e$ |
| t | .86 | .66 | | 2.68* | .95 |
| $r_{xy}$ | .85 | | .77** | | |
| N | 20 | 9 | 52 | 21 | 12 |

* Significant at .01 level.
** Significant at .05 level.

Note. - a. Received sensory deprivation, persuasive lecture, and attitude tests. b. High scorers of Group I. c. Received attitude tests only. d. Received attitude tests and persuasive lecture. e. Received attitude tests and sensory deprivation.

to two presentations of the lecture over a two hour period. A comparison of the pre- and post-test means yielded a difference significant at less than the .02 level of confidence. The obtained t was 2.68. The remaining control group of 12 subjects was tested before and after two uninterrupted hours of sensory deprivation. The t score for the nonsignificant differences between the means of their pre- and post-tests was .95, obviously not significant.

Only three subjects reported any "unusual feelings" associated with their period of sensory deprivation. One subject commenced a pattern of quick and shallow respiration with profuse sweating and restless turning after twenty minutes of sensory deprivation. Twenty minutes later he requested to be released. He subsequently reported the very unpleasant experience of spinning rapidly around in circles, causing him to become panicky and nauseated. He demanded to know if the experimenter had actually contrived this experienced motion. Another subject persisted through the entire procedure, but noted afterwards that he had seen quite distinctly bright red lights flashing off and on. A third subject completed the session and later reported having perceived the white noise as an animated but unintelligible conversation which seemed to become more distinct as the sensory deprivation period wore on.

Discussion

The most crucial test of the hypothesis that the condition

of sensory deprivation facilitates and augments suggestibility was found in data from the experimental group. The two attitude assessments of individuals in the group correlated even more highly than those of the "reliability" control group and strikingly emphasizes the nonsignificance of any attitude change. Even when the cards were stacked in favor of positive findings by testing the pre- and post-test differences of that part of the experimental samply hypothetically most amenable to positive change, no meaningful differences were observed. This further corroborates the major negative findings and reinforces the suggestion that suggestibility of subjects undergoing sensory deprivation of very limited duration may not be significantly altered.

The unexpected attitude change in the control group which heard the suggestive message but otherwise passed a rather pleasant two hours suggests a plausible explanation for these negative findings.

The conditions of sensory deprivation are subjectively experienced as extremely stressful and frustrating - both physically and emotionally. The subjects were restrained and gross bodily movements effectively inhibited. They were instructed to assume a comfortable position initially but forbidden to change this posture thereafter. Thirst, possibly stimulated by the stress, could not be satiated. Enforced boredom made sleep desirable, yet they could not relax sufficiently to attain this.

(Although many subjects remarked beforehand that they intended to sleep on the cot, every subject indicated he had been unable to fall asleep.) They were isolated from a considerable portion of meaningful consensual and social validation of their subjective, sometimes bizarre, perceptions. Although they were aware that the experiment would not last longer than two and one half hours, they never knew just how much time had elapsed or how much longer they had to endure their discomfort. In this midst of this distress, these individuals heard the persuasive message, recorded by the same experimenter who had introduced them to the situation.

If these subjects saw through the "purpose" of the procedure, their previous unpleasant experience may well have induced an hostility toward the experimenter (or augmented a pre-existing negativism because of the class requirement) and a marked resistance to the thinly veiled post-test expectations, counteracting the facilitating influence of the sensory deprivation. The control subjects, however, who only heard the persuasive message were not influenced by these factors and demonstrated a change in attitude consequent to the minimal suggestion.

Less than optimally controlled experimental conditions, especially of the auditory stimuli, may have contributed to the nonsignificant results. Another difficulty is the type of persuasive message utilized. It is not unlikely that a more sophisticated and subtle attempt at persuasion would have produced

different results.

But even in light of these findings, the initial hypothesis still cannot be rejected. The results suggest that a more stringent test would necessitate equating subjectively experienced discomfort for all groups. The lack of this needed control may well explain the diverse reports found in the literature.

The kinesthetic, auditory, and visual perceptual distortions experienced by three subjects seem to represent individual efforts to seek out patterned stimulation and meaning in an otherwise sterile environment. In two cases, these distortions may have alleviated somewhat the tedium, but one subject found his experience extremely unpleasant. The small number of subjects admitting to these bizarre experiences introduces yet another confounding variable. It would be very interesting to subject these and similar responding individuals to thorough psychological evaluations to determine whether any peculiar pattern of traits predisposes toward such behaviors and relate such findings to other empirical tests of attitude change.

# CHAPTER V

## SUMMARY

Perhaps interest was first generated in the problems of arousal stimulation and its necessity as a prerequisite for efficient cognitive functioning by D. O. Hebb (1959, 1955) who distinguished the general drive state aspect of stimuli consequences from their cue properties.

Prolific investigations in the area of sensory deprivation proceeded from these conceptions of Hebb, for it was precisely under conditions of sensory deprivation, where all ambient stimulation could be severely limited, that the arousal function of sensory stimuli could be most accurately studied.

Earlier investigators have associated such phenomena as mental retardation and impaired learning capacity (Hill and Robinson, 1929; Goldfarb, 1945) with such prior restriction. Following the work at McGill University, however, a vast number of phenomena began to be experimentally identified as sensory deprivation effects. Especially in six general areas of psychological research such experimentation has flourished:

(1) Psychopathology: Researchers have studied the etiology of schizophrenia (McReynolds, 1956) and the ongoing schizoprenic process (Harris, 1959; Rosenzweig, 1959.)

(2) Military Implications: Social behavior and work efficiency have been the major foci of attention in military

investigations as exemplified by the work of Eron and Auld (1954,) Ruff and Levy (1958), and many others.

(3) Personality Variables: A number of investigators have directed their attention to the more basic problems of identifying, if possible, the salient personality characteristics associated with particular response tendencies of subjects under sensory deprivation. Hold and Goldberger (1959), Grunebaum and Freedman (1960) and others represent this experimental orientation.

(4) Hypnosis: Attempting to relate the phenomena of sensory deprivation to better known processes, many researchers (as Kubie and Towson, 1961, and others) following the suggestions of Brenman and Gill in 1944 have noted the many similarities between sensory deprivation and hypnosis.

(5) Brain Washing: Of immediate practical importance since the Korean War experience has been the significance of the crudely effective process known as brain washing in which sensory deprivation procedures have been applied for the purpose of manipulating the political alignments of prisoners of war (Solomon et al., 1957; Biderman, 1959; and others.)

(6) Suggestibility: The phenomenon of augmented susceptibility to suggestion has been related to all the areas of psychology in which sensory deprivation experimentation has proceeded. Camberari (1958) differentiated subjects on the basis of their varying levels of suggestibility. Scott, Bexton, Heron, and

Doan (1959) assessed attitude changes in their subjects consequent to a lengthy exposure to sensory deprivation. Others have reported negative results from similar research (Cohen et al., 1959; Myers et al., 1963.) Still other researchers have made use of sensory deprivation conditions to refine their own theories of attitude change (Suedfeld, 1964; Watts, 1964.)

The present research was generated as a test of the hypothesis that sensory deprivation does in fact augment subjects' susceptibility to suggestion. Subjects were college sophomores enrolled in an elementary psychology course. They were divided into four groups. The first group were pre-tested on the attitude scale, exposed to a two hour period of sensory deprivation during which they heard two presentations of the persuasive message and then retested. The second group of subjects received only a pre-and post-attitude test over a two week period. The third group received the pre-and post-attitude tests over a two hour period during which they heard the persuasive message twice. A third group was pre-tested on the attitude scale, exposed to to uninterrupted hours of sensory deprivation and post-tested immediately afterwards.

In the experiment, sensory deprivation was specified operationally by the careful control established to limit social communication and stimuli arising from kinesthesis, vision, and audition. The persuasive message was an original five minute recorded speech attacking the Democratic Party. Remmers' (1954)

Scale for Measurement of Attitude toward Any Institution was employed to assess attitude change. Necessary scale values for the items were established by Thurstone's method of judges' ratings along a nine point equal-appearing interval scale, and reliability of the scale was reaffirmed by test, retest methods.

Only the group which was pre- and post-tested over a two hour interval during which they heard the persuasive message demonstrated any significant attitude change. Three experimental subjects reported subjective experiences of an hallucinatory nature. The striking nonsignificance of the experimental findings was particularly evident in the correlation of .85 between pre- and post-tests for the prime experimental group, a correlation exceeding the established reliability (.77) for the attitude scale itself. Further evidence corroborated the nonsignificance when that part of the experimental group hypothetically most amenable to attitude change was analyzed without different results from the entire group.

Several explanations for these negative findings were suggested, including the possible frustration and hostility of the subjects, the thinly veiled test expectations, the rather unsubtle persuasive message, and the very brief two hour period of sensory deprivation.

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# APPENDIX A

## PERSUASIVE MESSAGE

Scandals in Democratic politics have become in recent years a commonplace for Chicagoans. The involvement of syndicate hoodlums in ward politics is well-known, to such an extent even that Chicago's first ward remains theirs exclusively. Numerous departments of city government have been repeatedly shown to be rotten with the corruption of bribery, embezzlement, ghost payrolls, pay-offs, and the like. The Democratic Party reveals its true colors most blatantly in showing contempt for that elementary symbol of American democracy - the ballot box. Few, if any, elections have occurred in remembered Chicago history in which the Democratic Party has not scandalously defrauded the people by illegal irregularities at the polls. The rolls of suspended policemen and the numbers of red-faced politicians testify to this ill-concealed contempt. Bargaining for votes has become a way of life for the Democratic Party. Politicians do a favor, fix a ticket, overlook building code violations, award government jobs to the unqualified, influence judicial decisions in the juvenile and criminal courts. In return, those who have been so favored, at the tax-payer's disproportionate expense, are constrained to contribute heavily to Democratic treasuries and solicit votes for Machine candidates - thus perpetuating a system of graft and corruption in which public funds and properties are

sold for the Party's private enrichment.

In a recent survey by the Inter-Racial Council of Greater Chicago, strong evidence was presented that certain Democratic ward party workers had given occasion to racial disturbances and exploited the political consequences in South Chicago. The report further pointed out the involvement of Democratic city employees in the slum landlord business, taking advantage of the depressed social conditions to snowball Democratic Party enthusiasm - based on the fallacious principle of supporting the common man.

Cardinal McIntyre of Los Angeles commented recently at an archdiocesan Eucharistic Congress that he could not see how Chicago Democratic Party workers, involved in such systematically immoral behavior, could justify their continued active participation in the party program. The Cardinal noted the example of the Christian Government Reorganization Committee in San Diego and suggested Catholic Democrats could do much in other cities, such as Chicago, to allay the desperate need for a reformed Democratic Party structure.

Cardinal Meyer himself emphasized the need in a recent address. He urged Chicagoans concerned with decent government not to dissociate themselves from partisan politics, but rather to contribute their courageous support in the task of wresting control of Democratic politics out of the hands of organized criminals and fellow-travelers and effecting a thorough reform.

But one must not confine his view to city politics only to appreciate adequately the scope and magnitude of Democratic Party corruption. A top story in the news recently revealed the interstate quest by the FBI and a California grand jury for the son of the Illinois State Democratic Committee Chairman - wanted for negotiating the sale of fraudulent securities in several states.

The Democratic Party has been the object of several intensive investigations by the Justice Department, stemming from popular arousal over fixed elections, irregularities in dispersion of municipal funds, and hoodlum activities in the Democratic Party functioning.

Better government associations, the American Bar Association, the American Medical Association, and many other professional organizations have united in castigating the Democratic Party for its inherent corruption, for its flaunting with contempt the traditional practices of true democratic government. The Catholic Church has spoken out repeatedly in warning against allowing such corruption to continue. International fascism came to power through similar techniques - exploiting the common man's indifference or willingness to sell so cheaply his political rights. Ward politics, reinforced through hoodlum participation, bears a frightful resemblance to those earlier groups of political persuaders, the black-shirted enforcers of the '30s in Germany and Italy.

# APPENDIX B

## ATTITUDE SCALE

Name_____Grade in College_____

Place a plus in the parentheses before any statement with which you agree. Leave blank any item with which you disagree.

( ) 1. The world could not exist without the democratic party.

( ) 2. The democratic party is an ideal.

( ) 3. The democratic party has done more for society than any other party.

( ) 4. The democratic party benefits everybody.

( ) 5. The democratic party has more good points than any other other party.

( ) 6. The democratic party appeals to man's highest nature.

( ) 7. The democratic party develops good character.

( ) 8. The democratic party furthers the most lasting satisfactions in life.

( ) 9. The democratic party has a long and useful life before it.

( ) 10. The democratic party is a powerful agency for promoting individual and social efficiency.

( ) 11. The democratic party is of real value to the civilized individual.

( ) 12. The democratic party gives real help in meeting economic problems.

( ) 13. The democratic party encourages moral improvement.

( ) 14. The democratic party is fundamentally sound.

( ) 15. The democratic party is retained in the civilized world because of its value to mankind.

( ) 16. The democratic party offers opportunity for individual initiative.

( ) 17. The democratic party is increasing in its value to society.

( ) 18. The democratic party is improving in its services to mankind.

( ) 19. The democratic party is necessary as a means of controlling society.

( ) 20. The democratic party is in the process of changing and will come out a fit instrument.

( ) 21. The democratic party is not sufficiently appreciated by the general public.

( ) 22. The good and bad points of the democratic party balance each other.

( ) 23. The democratic party has not yet proved itself indispensable to society.

( ) 24. The democratic party is too conservative.

( ) 25. The democratic party is retained in the civilized world because of sentimentality.

( ) 26. The democratic party is decreasing in its value to society.

( ) 27. The democratic party is too changeable in its policies.

( ) 28. The democratic party regulates the individual's life too minutely.

( ) 29. The democratic party grew up in frontier days and does not fit our industrial civilization.

( ) 30. The democratic party is too radical in its views and actions.

( ) 31. The democratic party is unfair to the individual.

( ) 32. The democratic party is a tool of the mercenary.

( ) 33. The democratic party is developing into a racket.

( ) 34. The democratic party is a tool of the unscrupulous.

( ) 35. The democratic party is disgraced by its past.

( ) 36. The democratic party is fundamentally unsound.

( ) 37. The democratic party is out of control of society and is running wild.

( ) 38. The democratic party appeals to man's lowest nature.

( ) 39. The democratic party is an enemy of truth.

( ) 40. The democratic party has always cheated society.

( ) 41. The democratic party thrives on the avarice, jealousy, hatred, and greed in man.

( ) 42. The democratic party must be discarded at once.

( ) 43. The democratic party has more bad points than any other party.

( ) 44. The democratic party is the most despicable of parties.

( ) 45. The democratic party is the most hateful of parties.

## Appendix C

### Statistical Data on Attitude Scale Construction

(Derived from ratings on a 9 point equal-appearing interval scale of 25 independent judges)

| Item Number | Quartile Range | Scale Value | Item Number | Quartile Range | Scale Value |
|---|---|---|---|---|---|
| 1 | .50 | .69 | 24 | .74 | 5.62 |
| 2 | 1.75 | 3.58 | 25 | 1.10 | 6.30 |
| 3 | .64 | 1.35 | 26 | 1.19 | 5.87 |
| 4 | .68 | 1.45 | 27 | .71 | 6.06 |
| 5 | .78 | 1.58 | 28 | .64 | 6.31 |
| 6 | .61 | .96 | 29 | 1.10 | 7.07 |
| 7 | .79 | 2.78 | 30 | .87 | 6.21 |
| 8 | 1.48 | 1.64 | 31 | .69 | 6.86 |
| 9 | .82 | 3.13 | 32 | .82 | 7.50 |
| 10 | 1.04 | 2.07 | 33 | .60 | 6.80 |
| 11 | .62 | 2.18 | 34 | .67 | 8.03 |
| 12 | .81 | 1.92 | 35 | .67 | 7.16 |
| 13 | 1.13 | 2.62 | 36 | .77 | 7.56 |
| 14 | 1.06 | 2.50 | 37 | .67 | 7.72 |
| 15 | .79 | 3.18 | 38 | .72 | 7.92 |
| 16 | .83 | 2.56 | 39 | .49 | 8.26 |
| 17 | .19 | 3.13 | 40 | .61 | 8.10 |
| 18 | 1.60 | 3.12 | 41 | .31 | 8.37 |
| 19 | .56 | 3.12 | 42 | .67 | 8.10 |
| 20 | 1.60 | 4.27 | 43 | .78 | 7.06 |
| 21 | 1.10 | 3.74 | 44 | .31 | 8.37 |
| 22 | .30 | 4.40 | 45 | .30 | 8.40 |
| 23 | .95 | 4.35 | | | |

## APPROVAL SHEET

The thesis submitted by John W. McCloskey has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

March 1, 1965
Date

Frank J. Mobley
Signature of Adviser