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A procedure for the utilization of subliminal perception to assess and modify personlity

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A PROCEDURE FOR THE UTILIZATION OF SUBLIMINAL PERCEPTION TO ASSESS AND MODIFY PERSONALITY

A Dissertation
Presented to the
Faculty of the School of Education
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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

---

by
Daniel R. Collins
June, 1974

APPROVAL SHEET

We the undersigned do certify that we have read this dissertation and that in our individual opinions it is acceptable in both scope and quality as a dissertation for the degree of Doctor of Education.

Accepted June 1974 by

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A PROCEDURE FOR THE UTILIZATION OF SUBLIMINAL PERCEPTION TO ASSESS AND MODIFY PERSONALITY

Chapter 1

Introduction

This paper poses two major questions:

a. are the responses which are made to stimuli, that were not consciously perceived, indicative of the respondent's personality; and

b. can stimuli, which do not enter conscious awareness, direct conscious behavior?

These questions presuppose that conscious awareness of a stimulus is not a necessary prerequisite for a response. Some may dispute that and state something like, "If I can not see it or hear it, how do I know it's there? If I do not know it is there, how can I respond to it [Dixon, 1971, p. 1]?" However, theory and research both suggest that a response can be made in the absence of conscious awareness of the stimulus. For instance, the R-R (Response-Response) condition of learning, which is particularly evident in motor skills, suggests that a response can be made without conscious awareness of the stimuli. Specifically, if conscious awareness of each stimulus preceded each response, it would be impossible to master certain skills and to perform certain acts, as Travers (1972) states, "The brain seems capable of running off whole sequences of commands to the muscles without waiting to see what happens to each [p. 26]." Also, there is experimental evidence that a stimulus not gaining conscious awareness, but being subliminally perceived, can influence conscious behavior (Eagle, 1959, Silverman, Klinger, Lustbader, Farrell, & Martin, 1972). The purpose of this investigation is to explore the application

of subliminal perception to two related aspects of human behavior: (a) personality assessment, and (b) personality modification.

Theoretical Background

The proposition of subliminal perception was suggested at least two thousand years ago, and is evident in the writings of Aristotle (Dixon, 1971), Democritus and Plato (Beare, 1906), and Leibniz (1698). However, its long history has not provided respectability nor even scientific agreement on its existence. This is a problem which must be considered before proceeding.

There are two major reasons for rejecting the large number of experimental findings which indicate the existence of subliminal perception. They are:

a. methodological confusion resulting from different writers using different definitions of the stimulus, i.e., "subliminal," "incidental," and "marginal"; and

b. the equation of subliminal perception with unconscious defense mechanisms (Dixon, 1971).

Dixon feels that both reasons are unjustifiable as determinants of the validity of subliminal perception. With respect to the former, he states, "That the same phenomenon may be given different names, is no more relevant to the question of validity than that the same name be used to cover different phenomena [p. 11]." The latter cause for rejection is probably most difficult to resolve, however, as Dixon asks, "why equate discrimination without awareness with unconscious defence mechanisms when either can occur without the other [pp. 4-5]?"

Further, both reasons can be eliminated:

a. The methodological confusion can be resolved by the formulation of meaningful operational definitions, and

b. the equation of subliminal perception with unconscious mechanisms should be considered inaccurate in the presence of a theoretical model for sensory stimulation and response in which neither becomes conscious.

There is a theoretical model which can explain, or at least allow, subliminal stimulation and response without requiring an active unconscious.

Dixon (1971) proposes that conscious awareness is neither a necessary result of a physiological process activated by sensory stimulation, nor is it required for an overt response; but, it is sometimes, the result of such stimulation. This requires "parallel processing" as illustrated in Figure 1, by which, "stimulation initiates sensory processes which affect overt response either directly or via perceptual processes [p. 2]."

Parallel processing requires two independent systems: (a) the physiological / behavioral, and (b) the physiological / phenomenal. The existence of these two systems is demonstrated by the independent functioning of the latter, "it is a common occurrence to have phenomenal representation in the absence of external stimulation [Dixon, 1971, p. 309]." Also, findings from investigations of subliminal perception support parallel processing and the independent operation of the physiological / behavioral system. Dixon, after an extensive review of the literature pertaining to subliminal perception, concludes, "It seems

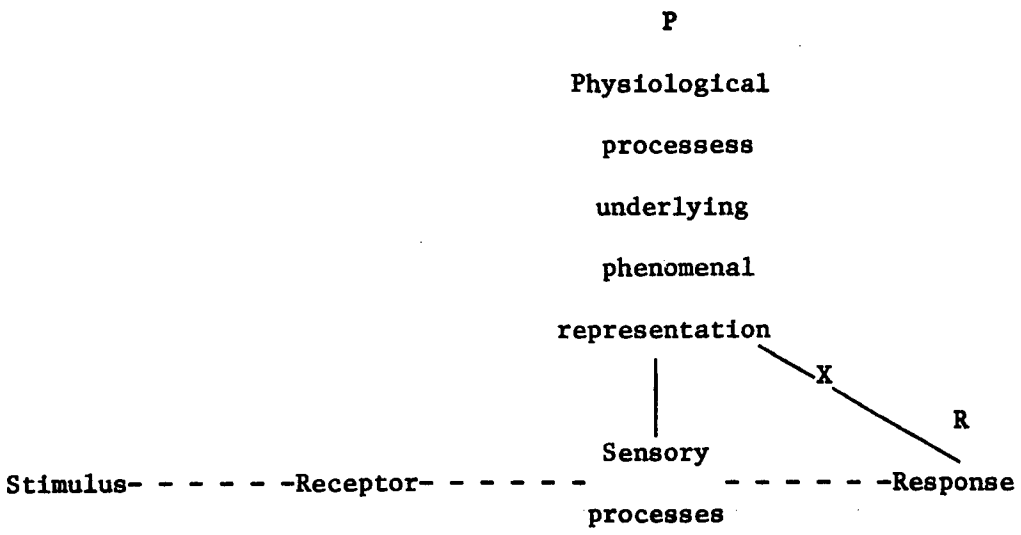


Fig. 1. Parallel Processing (Dixon, 1971, p. 2).

that stimuli can 'enter' the nervous system . . . without ever themselves achieving phenomenological status [p. 308]," and then influence behavior.

Parallel processing appears to be an acceptable model which allows subliminal perception, but does not require an active unconscious. It will, therefore, be accepted in this investigation as the theoretical basis for subliminal perception, which is assumed to be a normal mode of perceiving.

The significance of subliminal perception to education and to psychology has been stated by Hebb (1958), "The notion of subliminal processes which may become liminal with further stimulation is very valuable. In fact we cannot begin to understand behavior without it [p. 39]." Also, the effect that a stimulus, which does not enter consciousness, may have upon behavior has been considered by both therapists and researchers. An example of the former is C. R. Rogers' (1951) discussion of the failure of experience to be symbolized, in that he states that the denial of the perception may be conscious or nonconscious and that in nonconscious denial, which is similar to the Freudian concept of repression,

> it would appear that there is the organic experience, but there is no symbolization of this experience, or only a distorted symbolization, because an adequate conscious representation of it would be entirely inconsistent with the concept of self [p. 505].

C. R. Rogers uses the term "subception" to describe the, "discriminating evaluative physiological organismic response to experience, which may

precede the conscious perception of such experience [p. 507]." An example of the latter, the effects found in research, is evident in Dixon's (1971) summarization of the experimental findings, "subliminal stimulation has been shown to affect dreams, memory, adaptation level, conscious perception, verbal behaviour, emotional responses, drive related behaviour, and perceptual thresholds [p. 320]."

The current evidence suggests that directionality can be imposed upon conscious behavior by subliminally perceived suggestions. Dixon (1971) states that, "in the absence of a strong existing habit structure and/or contrary drive state a subliminal stimulus can impart direction to overt behaviour [p. 177]." For example, in considering the finding of Zuckerman (1960), that the subliminal suggestion to "Don't Write" or to "Write More" influenced the length of subjects' (Ss) responses to Thematic Apperception Test (TAT) cards, Dixon states, "a subliminal stimulus can by-pass processes of conscious intent, and . . . it may be impossible to resist instructions which are not consciously experienced [p. 177]." The latter part of that statement, "it may be impossible to resist instructions which are not consciously experienced," indicates that conscious behavior can be modified by a nonconscious stimulus and that instructions which may not be followed when consciously perceived may be, if they are nonconsciously perceived. The reality of the importance of the influence of subliminal perception upon conscious behavior becomes readily apparent when Skinner's (1953) position, that the prediction of behavior is made possible by the discovery and analysis of the conditions and events which effect human behavior,

is considered.

A somewhat different application of subliminal stimulation, although firmly based upon the position that the organism can experience, and respond to, sensory stimulation which does not enter consciousness, is in the investigation of personality and personal adjustment. Subliminal perception has been used as a technique for investigating nonconscious self-perception and Schlicht (1967) has proposed that it may be possible to use the discrepancy between conscious self-evaluation and nonconscious self-evaluation as an indicator of personal adjustment.

Statement of the Problem

The purpose of this investigation is to investigate the utilization of subliminal perception for personality assessment and modification. Specifically, the following questions are explored:

a. Is the discrepancy between conscious and nonconscious self-descriptions obtained through conscious and subliminal administrations of an objective personality inventory, indicative of personal adjustment?; and

b. What is the effect on objectively measured personality of subliminally perceived suggestions for personality change?

Hypotheses

The following hypotheses are made:

a. The magnitude of the difference between conscious and nonconscious self-descriptions is indicative of personal adjustment.

b. A personality change will follow the subliminal perception

of suggestions for personality change, but will not follow the liminal perception of the same suggestions.

c. The effect of subliminal suggestions phrased as either self-suggested (I Am) or other-directed (You Are) is significantly different.

Definition of Terms

The following terms are defined to facilitate an understanding of the related research and to operationally define the terms "conscious," "nonconscious," "stimulus presentation rate," "subliminal stimulus," and "threshold" as they are used in this investigation:

a. Conscious--Attaining conscious symbolization and awareness.

b. Day residues--Transient, momentarily unessential, and unnoticed registrations which achieve some kind of subjective representation, without fully or even partially entering consciousness, and affect the content of dreams (Klein, 1970).

c. Liminal stimulus--A particular physical stimulus that just barely evokes a sensory response, or that just barely brings a sense datum to awareness (English & English, 1958).

d. Nonconscious--Not entering conscious awareness. This is not the same as the analytical unconscious but is simply stimulation or behavior which is not conscious.

e. Poetzl phenomenon--Perceptions registered without awareness will appear in consciousness after a delay of minutes or hours, and then generally in altered or pathological states, such as dreams or hallucinations (Fisher, 1960).

f. Stimulus presentation rate--The rate at which the subliminal

stimulus is presented during the experimental sessions. It is determined by subtracting 5-millisecond (msec) from S's threshold.

g. Subception--"a process by which some kind of discrimination is made when the subject is unable to make a correct conscious discrimination [Lazarus & McCleary, 1951, p. 113]."

h. Subliminal--Stimuli that are too weak to be specifically apprehended and reported but not too weak to be influential on conscious processes or behavior, or the effects of such stimuli (English & English, 1958).

i. Subliminal stimulus--A stimulus which falls 5-msec below the lowest level at which S reports awareness of it during the descending series of the threshold determination.

j. Supraliminal--Above the threshold (English & English, 1958).

k. Threshold--The point on the descending presentation, of an ascending and descending series, at which S reports the complete absence of the stimulus.

Limitation of the Investigation

A rigorous definition of "subliminal perception" was imposed for the purpose of ensuring that the subliminal stimulus was, in fact, subliminal and that S did not receive any partial cues. This may have reduced the effect of the subliminal stimulus by causing it to be presented too far below S's threshold. However, it was considered necessary to ensure that partial cues were not received so that the findings, if any, could be accurately attributed to the subliminal stimulation.

Plan of Presentation

The presentation of this investigation is divided into five parts which have been designated chapters. Included in the present chapter are: (a) the purpose of the investigation, (b) the theoretical background, (c) the statement of the problem, (d) the hypotheses, (e) the definitions of selected terms, and (f) the limitation of the investigation.

The contents of the remaining chapters are: (a) Chapter 2, a review of the related research; (b) Chapter 3, the research methodology; (c) Chapter 4, an analysis of the collected data; and (d) Chapter 5, a review of the investigation and the presentation of the conclusions and recommendations drawn from it.

Chapter 2

Review of Related Research

This chapter presents a survey of the literature pertaining to:

a. the history of subliminal perception,

b. the subliminal perception of visual stimuli and their effect on behavior, and

c. nonconscious self-evaluation.

In an attempt to facilitate greater understanding of the findings, this review is divided into four sections:

a. history of subliminal perception,

b. subliminal perception of visual stimuli,

c. nonconscious self-evaluation, and

d. the effect of subliminal stimulation on conscious behavior.

History of Subliminal Perception

Historically, Democritus is the probable originator of the idea that people can be affected by stimuli which do not reach conscious awareness (Dixon, 1971). According to Beare (1906), an interpretation of Democritus, "'Much is perceptible which is not perceived by us, because it is not adapted to our senses' [p. 206]," suggests, "the germ of some such theory as that of so-called 'latent mental modification,' or that of 'perceptions insensibles' afterwards developed by Leibniz [p. 207]."

Another early reference to the probability that some perceptions do not become conscious occurs in Plato's Philebus,

Suppose that some of the affections which are in the body from

> moment to moment exhaust themselves in the body alone before--or without--reaching the soul, thus leaving the latter unaffected [Beare, 1906, p. 210].

Also, Plato, in the Timaeus, speaks of the various bodily organs as being mobile (sight and hearing) or immobile (bones and hair), and suggests that an immobile substance receives stimulation but does not transmit it and thus, "they leave the recipient of the affection without sensation [p. 211]."

Dixon (1971) feels that Leibniz, "may be considered to have been the first to anticipate the Poetzl phenomenon and 'subception effect' [p. 7]." Leibniz (1698) states that, "it is not always safe to deny everything that is not perceived . . . . there are some perceptions too feeble to be noticed, although they are always retained [p. 24]."

However, the experimental investigation of subliminal perception appears to be a late nineteenth century development, beginning with Suslowa in 1863 (McConnell, Cutler, & McNeil, 1958). Suslowa investigated the ability of Ss to make threshold discriminations between one- and two-point electrical stimulation. Other nineteenth century researchers include Binet, who in 1896 found that a young girl could imagine and draw a picture of an engraved disk which had been pressed against her anesthetized neck (Klein, 1970).

Pierce and Jastrow, in 1884, found that Ss could discriminate between the weights of small objects, placed individually upon a finger, significantly better than chance, even though they had no confidence in their ability to do so (Adams, 1957). A similar finding was made by

Fullerton and Cattell in 1892.

Sidis (1898) found that Ss could distinguish between letters and numbers when they were presented at such a distance that they thought they were just guessing. Also, Sidis found that when Ss were presented with a piece of cardboard with the digits 26471538 on it and were instructed to choose one, they selected a digit, significantly more often than chance, which was also printed on the margin but which they had not consciously noticed.

Another early area of investigation was that of the effect of unnoticed stimuli in dreams. Freud discussed the phenomenon of "day residues" in dreams; however, it was Poetzl, and not Freud, who was the first to experimentally demonstrate that the content of dreams can include stimuli which were too brief to be consciously noticed (Klein, 1970).

The initial basis for Poetzl's (1917) investigation was Helmholtz's finding that visual stimuli which were not consciously perceived appeared in after-images (Fisher, 1960). Poetzl, in his basic experiment, showed Ss landscapes for about 1/100th of a second and then asked them to draw what they had seen, and on the following day, what they had dreamt about. Klein (1970) reports that Poetzl concluded that, "what had not been noted in the immediate report of the stimulus was more likely to appear in dreams than what had been noticed [p. 241]."

Extensive reviews of the literature have been conducted by Adams (1957), McConnell et al. (1958), and Dixon (1971). The remainder of this review is composed of studies directly related to the present

problem. Before proceeding, however, it must first be stated that although these and other early studies did not need to be explained by an unconscious process, statements made during this period by Freud and later by Jung, may have created such an association and may have greatly influenced objective consideration of the findings.

Freud (1895) stated that there is a kind of thought process other than consciousness and that it, "is indeed far the more frequent and by no means abnormal; it is our ordinary kind of thinking, unconscious, but with occasional intrusions into consciousness [p. 89]." Later, Jung (1934) stated, "The unconscious is not a demoniacal monster, but a natural entity which, as far as moral sense, aesthetic taste, and intellectual judgments go, is completely neutral [p. 52]." Despite the long history of subliminal perception and the supporting experimental evidence, such statements as those may have caused and may still be causing the equation of subliminal perception with unconscious mechanisms which was discussed earlier.

Subliminal Perception of Visual Stimuli

Conditions Facilitating Subliminal Perception

Spence and Holland (1962) investigated an earlier finding that, "the effect of an impoverished stimulus varies inversely with its intensity [p. 164]." They presented the stimulus word "cheese" to two groups under either subliminal or supraliminal conditions. Ss were then read a list of words and tested for recall of the word list. The threshold of Ss receiving the subliminal exposure was measured to allow

discrimination between those Ss receiving partial cues and those who did not. They found that Ss receiving partial cues recalled more structurally related words, i.e., chair, arch, hedge, and best; while Ss subliminally perceiving the stimulus recalled more cheese associated words.

A technique for ensuring that the stimulus is subliminal has been demonstrated by Haber and Hershenson (1965). They investigated the independent effects of exposure trials and exposure duration, and found that the perceptual threshold is a function of stimulus repetition as well as its energy and duration. For the first few trials, the probability of perceiving a stimulus increases from trial to trial until about the tenth trial, after which the probability decreases. However, when the stimulus is presented at 5-msec less than the measured threshold, the probability of its being consciously perceived is greatly reduced, even with repeated exposures.

The effect of the relationship of the subliminal stimulus to the supraliminal stimulus upon the completion of a conscious task has been explored by Goldstein and Barthol (1960). Slides of four different TAT cards were supraliminally projected and accompanied by the subliminal presentation of positive or negative words, or nonsense symbols. They found that when the TAT stimuli were clearly focused, the subliminal stimulus did not affect Ss' stories. However, when the TAT stimuli were deliberately misfocused, the subliminal stimuli did affect the emotional tone of the stories. Goldstein and Barthol suggest that there is a "hierarchy of perceptual cues" and that, "when the perceptual

cues that are high in the hierarchy are not sufficient for the organization of the stimulus situation, cues of lesser intensity are employed [p. 25]."

The possible affect of stimulus diffusity prompted Kragh's (1962) investigation of whether Ss' "perceptual defensive organization" was due to subliminally perceived threat or to stimulus diffusity causing ambiguity. TAT-like stimuli, containing a hero-figure and either a neutral or threatening peripherally placed person, were tachistoscopically presented to Ss. It was found that both subliminal threat and stimulus diffusity effected defensive reactions.

Another important determinant of the effect of a subliminal stimulus appears to be S's emotional state. Fiss (1966a) subliminally exposed double-profile images and blank slides to Ss and had them draw whatever mental pictures spontaneously occurred. He found that Ss who were relaxed recovered more of the subliminal stimulus, indicating that relaxation may cause a diffusion of attention and thereby increase sensitivity.

Spence, Fiss, and Varga (1968) selected 32 pairs of drawings made by Fiss's (1966a) Ss. They presented them to 14 Ss who attempted to select which of a pair of drawings had been made following the subliminal perception of a double-profile image. Each S's Galvanic Skin Reflex (GSR) was recorded during the trials, and S also rated the confidence he had in his judgments. They found that:

a. the number of correct choices was significantly greater than misses,

b. S's confidence was significantly higher for correct choices,

c. orienting responses were significantly lower for correct choices, and

d. relaxation during the judgments was significantly greater for correct choices.

The importance of relaxation to subliminal stimulation was previously noted by Fox (1960). Ss were shown a supraliminal neutral line drawing of a face and asked to rate it for pleasantness. At the same time, either the word "Happy" or "Angry" was subliminally presented with the face. It was found that the subliminal words affected the ratings and that the effect was strongest when Ss gave up attempting to be objective and expressed their feelings and fantasies about the face.

A similar experiment was conducted by Allison (1963), who subliminally presented either a happy or a sad face with a supraliminal neutral face. However, he first created two different impressions, one logical and one not, about the visible face. He found that Ss forming the logical initial impression were less influenced by the subliminal stimulus.

Fiss (1966b) investigated the problem of whether a subliminal stimulus would increase the tendency to think in physiognomic terms. He suggests, as has Eagle (1962), that the subliminal stimulus must be related to S's needs, drives, and personality before it can be expected to effect behavior. He found that only Ss who consciously admitted their own hostile feelings and thoughts, as measured by the Sarason

Hostility Scale, responded to the word "Angry" when it was subliminally presented with a supraliminal nonsense figure.

The influence of personality traits on subliminal perception has also been considered by Shevrin, Smith, and Fritzler (1969). They explored whether, "a dynamic personality factor, repressiveness, is related to subliminally stimulated brain and verbal effects [p. 262]." There were two stimuli which were subliminally presented in a tachistoscope while electroencephalogram and, subsequent to the presentation, free association data were obtained. They report that by 160-msec the two stimuli had been discriminated and that the personality factor repressiveness, "had already left its mark [p. 267]."

Subliminal Perception of Words

Lazarus and McCleary (1951) investigated discrimination, as indicated by S's GSR, without awareness. They conditioned an electric shock to five 5-letter nonsense syllables. These syllables, plus five additional 5-letter nonsense syllables which had not been paired with an electric shock, were subliminally presented by tachistoscopic projection. S's GSR was recorded during the subliminal exposure, as was his verbal report of which of the ten nonsense syllables had been projected. The major finding was, "subjects can make autonomic discrimination when they are unable to report conscious recognition [p. 118]."

McGinnies, Comer, and Lacey (1952) investigated the influence of word length, 5 to 11 letters, and the frequency of usage, as listed in the Thorndike-Lorge tables, on the recognition threshold. They found that:

a. low-frequency long words have higher recognition thresholds than do high-frequency long words, and

b. the threshold for long words is lowered more by frequency than is that of short words.

The results corroborated a previous finding of Howes and Solomon (1951) that frequency of usage lowers the recognition threshold.

Taylor (1958) questioned whether the "familiarity" of a stimulus meant:

a. the frequency of exposure to the letter pattern--as indicated by some type of word count--or

b. its meaningfulness to the individual.

Ss studied lists of nonsense syllables, which for some Ss were matched with common objects to give them meaning. When the visual duration threshold was tachistoscopically measured, it was found that the created meaning did not affect the threshold. However, when additional nonsense syllables, to which Ss had not been exposed, were also tachistoscopically presented the frequency of exposure factor affected the threshold. This indicates that "familiarity" is the perceptual familiarity of the letter pattern and not the meaningfulness of the pattern.

Spielberger and Denny (1963) noted that, although an inverse relationship between the recognition thresholds for words and the frequency of their use had been clearly demonstrated in a number of investigations, the variables which influence word frequency, such as verbal ability, had received little attention. They explored the relationship between S's measured verbal ability and word-frequency on visual

recognition thresholds. They found that Ss with high verbal ability recognized low-frequency words after fewer exposures than did Ss with low verbal ability. This suggests that high ability Ss are more familiar with low-frequency words than are low ability Ss. Also, they feel that S's level of perceptual organization may be a significant factor and that differences in verbal ability may reflect both the frequency of prior use of low-frequency words, and S's level of perceptual organization.

Nonconscious Self-Evaluation

Beloff and Beloff (1959) hypothesized that since,

a. nonconscious self-evaluation tends to be favorable, and

b. a composite of two faces is more pleasing than either of the faces viewed separately,

S viewing a composite image incorporating his own face, without the knowledge that his face was included, would respond more favorably to it than to a composite not utilizing his face. The hypothesis was supported as the self-composite was rated as more attractive than a composite of strangers.

Epstein (1955) investigated the unconscious self-evaluation process of both normal and schizophrenic Ss. He collected samples of each S's "expressive movements"--voice backwards and forwards, handwriting right-side-up and upside-down, first names, and drawings--and presented them for judging without S knowing that he was actually judging aspects of himself. Epstein found that,

a. all self-judgments, except voice backwards, tend to be

favorable;

b. schizophrenics evaluate themselves more highly than normals on all unconscious measures;

c. schizophrenics do not evaluate themselves significantly different than normals when making a conscious self-judgment; and

d. when the expressive movements were rated for similarity to S's own, schizophrenics were less able to identify similarities than were normals.

Huntley (1940) conducted two experiments designed to replicate and expand Wolff's (1932) findings that although S fails to consciously recognize his own voice, a picture of his hands, his mirrored handwriting, a silhouette of his profile, or a story which he had retold,

a. S tends to judge them either extremely favorably or unfavorably; and

b. S is preoccupied with his own unrecognized forms of expression as he uses approximately twice as many words to describe them as he does another's.

The results of Huntley's replication support Wolff's findings, with one exception: Huntley did not find Ss to be preoccupied with their own forms of expression. Additional findings by Huntley include:

a. There is a low incidence of the conscious recognition of S's own forms of expression and, when it occurs, it appears that S "finds" rather than recognizes his own forms as the identification is made by a process of elimination and a searching for significant details rather than a judgment on overall appearance.

b. S's unconscious self-judgments are more favorable than those made "by" or "of" others.

c. S's unconscious self-judgments are more extreme than are his conscious self-judgments.

Huntley proposes that, "the farther from the level of report recognition is, the more the normal inhibitions would be removed and hence the more extreme the S-judgments [p. 426]."

Rogers and Walsh (1959) investigated the effect of defensiveness upon self-evaluation without awareness. They hypothesized that highly defensive people have a greater dislike of the Self than do moderately defensive people. Ss were required to rate five subliminally projected photographs of people on attractiveness. Unknown to S, one of the photographs was S's own. Rogers and Walsh found that defensive Ss, defensiveness was defined as a high score on the K scale of the Minnesota Multiphasic Personality Inventory (MMPI), rated themselves significantly lower in attractiveness than did control Ss and suggest that: Defensive Ss' self-evaluations may have included a feeling of self dissatisfaction which is normally denied conscious expression to maintain self-esteem.

Schlicht (1967) tachistoscopically exposed S's picture for conscious and unconscious self-evaluation, Q sort, and compared the discrepancy between them to an independent measure of adjustment; previously prepared ratings by dormitory counselors. He found that S could unconsciously identify S's own photograph when it was presented with others and could evaluate it. The size of the discrepancy between

the conscious and unconscious self-evaluation was significantly related to S's rated adjustment: A Spearman rank correlation was computed between the self-evaluations discrepancy and the counselor's rating, and the coefficient was -.82, significant between .05 and .01.

Schlicht, Carlson, Skeen, and Skurdal (1969) attempted to replicate and expand Schlicht's (1967) earlier study. Ss completed the Structured-Objective Rorschach Test (SORT), the Rotter Incomplete Sentence Blank (ISB), and three Q sorts:

a. as he is,

b. as the person tachistoscopically present is--a subliminal presentation of S's own face, and

c. as the person tachistoscopically presented is--a subliminal presentation of an unknown face.

The results did not support the hypothesis that,

> a direct relationship would be found between the discrepancy for conscious and unconscious self-images and the degree of maladjustment as shown by the ISB and by selected indices of the SORT [p. 240].

An unexpected sex-related response pattern appeared:

a. males had less of a tendency to "unconsciously recognize" their own photographs and seemed to rate the unknown control photograph just about the same as their own, and

b. females tended to rate the unknown control photograph just about the way they consciously rate themselves.

However, individuals below the median ISB score rated the tachistoscopic

self significantly lower than the control photograph, suggesting that more maladjusted individuals have a less favorable unconscious self-image.

The Effect of Subliminal Stimulation on Conscious Behavior

Arey (1960), investigating the assumption that male schizophrenics are more threatened by various aspects of sexuality than are normal males, hypothesized that normal Ss could be differentiated from schizophrenic Ss on the basis of, "the affective attitudes implied in the imagery of their respective prerecognition distortions [p. 430]." Arey found that the responses made to pictures of sexual content--sexual intercourse, birth, genitalia, et cetera--tachistoscopically presented just below the recognition threshold, .01-sec, distinguished between normal and schizophrenic males. The latter produced more non-sustaining imagery than did the former, indicating that they were more threatened by the sexuality of the subliminally perceived stimulus.

Baker (1937) investigated whether subliminal stimuli, both visual and auditory, could effect conscious verbal behavior. He found that:

a. conscious verbal behavior is influenced by subliminal stimulation,

b. physiological thresholds for stimulus perception are lower than conscious thresholds, and

c. the influence of subliminal stimuli is a function of the stimulus intensity and decreases as the intensity is reduced.

Eagle (1959) explored the effect of aggressive subliminal stimuli upon conscious cognitive behavior. He found that an aggressive stimulus, when subliminally presented immediately before a supraliminal picture, caused the picture to be viewed as more aggressive and more negative than when viewed without the presentation of the subliminal stimulus. He suggests that stimuli can register without conscious awareness and can influence conscious and cognitive behavior.

Fox (1960) found that the subliminal presentation of the words "Happy" or "Angry" influenced the perception of a supraliminally perceived neutral line drawing of a face. The face was rated as more pleasant when paired with "Happy" and more unpleasant when paired with "Angry." This indicates that S's conscious processes were influenced by words of which they were unaware, and that the words "Happy" and "Angry" were integrated into conscious processes more spontaneously and uncritically when subliminally perceived, as the supraliminal pairing of the words and drawing did not affect the rating.

Goldstein and Barthol (1960) employed subliminal perception to influence the stories told about TAT cards. They found that the emotional tone of the stories, (a) positive, (b) negative, or (c) neutral, resulted from the perception stimuli which Ss could not consciously discriminate.

Klein, Spence, Holt, and Gourevitch (1958) found that the perception of a supraliminal, sexually ambiguous, drawing of a person was affected by the subliminal presentation of sexual stimuli. The subliminal perception of male or female genitals caused the person to be

correspondingly perceived as more or less masculine.

Silverman et al. (1972) investigated the effect of subliminal perception of anal and oral aggressive stimuli on the speech of stutterers. Both stimuli increased S's stuttering when required to paraphrase a passage read to him, but neither affected his speech when required to tell stories about TAT cards.

Silverman (1966) conducted an experiment to,

a. test the relationship between aggression and pathological thinking,

b. further explore the utilization of subliminal stimulation to investigate psychodynamic relationships, and

c. expand the body of knowledge of subliminal effects.

The responses of schizophrenic Ss to inkblots were obtained before and after the subliminal presentation of aggressive and neutral stimuli. Pathological thinking, as assessed according to the primary-process scoring manual developed by Holt, increased as a result of aggressive stimulation. Later, Silverman (1971) found that the subliminal perception of aggressive stimuli also caused schizophrenics to increase their negative self-concepts.

Silverman and Goldweber (1966) investigated the effects of subliminally (a) aggressive, (b) neutral, and (c) libidinal, and (d) supraliminally perceived aggressive stimulation on nonpsychiatric Ss. Pre- and post-administrations of the Rorschach were conducted. They found that,

a. clinical phenomena were produced significantly more often

by subliminal aggressive stimulation than by subliminal neutral stimulation,

b. Ss having an impairment in their ability to neutralize aggression increased in pathological thinking after subliminal aggressive stimulation,

c. more clinical phenomena were produced by the subliminal aggressive condition than by the subliminal sexual condition, and

d. the subliminal aggressive condition produced more of the clinical phenomena than did the supraliminal condition.

Summary

The review of the literature presented in this chapter has been grouped into four sections and the major implications in each are:

a. History of subliminal perception--the concept of subliminal perception is at least two thousand years old and has been discussed by such eminent individuals as Democritus, Plato, and Leibniz (Dixon, 1971; Beare, 1906). However, it was not until late in the nineteenth century that the experimental investigation of subliminal perception was begun by Suslowa in 1863 (McConnell et al., 1958). Other early researchers include Binet, Pierce and Jastrow, Fullerton and Cattell, Sidis, and Poetzl.

b. Subliminal perception of visual stimuli--the probability of a subliminal stimulus having an effect is enhanced, and the strength of that effect increased, by utilizing certain conditions.

i. the stimulus must be presented at a level which is below conscious awareness and does not allow partial cues to enter

consciousness (Spence & Holland, 1962);

ii. S must be relaxed (Spence et al., 1968), and when required to respond, to do so subjectively rather than objectively (Fox, 1960);

iii. the subliminal stimulus must be related to S's personality structure, or rather, S's personality structure will affect the perception of the stimulus (Fiss, 1966b; Shevrin, Smith, & Fritzler, 1969).

The investigations also show that the visual recognition threshold for words is a function of,

i. word length (McGinnies et al., 1952);

ii. frequency of exposure to the letter pattern (Taylor, 1958); and

iii. individual differences in verbal ability and perceptual organization (Speilberger & Denny, 1963).

c. Nonconscious self-evaluation--a self-evaluation can be accomplished without the conscious awareness of doing so, and the resulting nonconscious self-evaluation,

i. tends to be either more favorable, or more unfavorable, than conscious self-evaluation (Huntley, 1940);

ii. the shift toward more or less favorability may be due to S's personality structure (Rogers & Walsh, 1959); and

iii. the size of the discrepancy between a conscious and a nonconscious self-evaluation may be a useful indicator of maladjustment (Schlicht, 1967).

d. The effect of subliminal stimulation on conscious behavior--

the failure to consciously perceive a stimulus does not mean that it will not cause a response, rather,

i. a subliminally perceived stimulus can effect conscious behavior (Eagle, 1959; Fox, 1960; Silverman et al., 1972); and

ii. the reaction to a subliminal stimulus can be used to differentiate between normal and schizophrenic Ss (Arey, 1960; Silverman, 1966).

Chapter 3

Methodology

The purpose of the investigation was to explore the application of subliminal perception to two aspects of human behavior:

a. the assessment of personal adjustment, and

b. the modification of personality.

Chapter 3 presents the procedures and methods of research, specifically, (a) research design, (b) subjects, (c) apparatus, (d) procedures, and (e) statistical methods.

Research Design

The overall design of this study is a pretest-posttest paradigm involving one control group and four experimental groups. Within this design are two studies which utilize common posttest data:

a. Part 1, the assessment of personal adjustment; an ex post facto study of the relationship of the discrepancy between conscious and nonconscious self-descriptions to an independent measure of personal adjustment.

b. Part 2, the modification of personality; an experimental investigation of the effect on objectively measured personality of subliminally perceived visual suggestions directing change.

Subjects

The subjects were graduate and undergraduate students, and their spouses and friends, at the College of William and Mary, who volunteered to participate in the investigation. Ss were informed that the study would be concerned with the relationship of personality to perception

and the effect of one upon the other.

Apparatus

Adjective Check List

The Adjective Check List (ACL) consists of 300 adjectives which are commonly used to describe attributes of personality. The ACL provides 24 scales for the measurement of personality, seven for self-perceptions, 15 for needs, and one indicating counseling readiness. Appendix A presents a brief description of each of the scales.

The ACL, "can be and frequently is employed by an individual in self-description, or in other ways, e.g., to characterize the ideal self [Gough & Heilbrun, 1965, p. 5]." That is, the ACL can be used to describe both the real-self, "As I am," and the ideal-self, "As I would like to be."

The ACL has also been used as a pretest and posttest measure to demonstrate changes,

a. in attitudes (Chinsky & Rappaport, 1970),

b. in the self-concept (Markwell, 1965), and

c. produced by different therapy conditions (Rehm & Marston, 1968).

California Psychological Inventory

The California Psychological Inventory (CPI), "Is intended primarily for use with 'normal' (nonpsychiatrically disturbed) subjects [Gough, 1957, p. 5]." It consists of 480 true-false items and yields 18 standard scores addressed, "principally to personality characteristics important for social living and social interaction [p. 5]."

However, in this investigation, Megargee's (1972) CPI-Factor 1, is used to assess personal adjustment. Appendix B presents a description of Factor 1.

The CPI has been used as a pretest and posttest measure to assess personality change following,

a. sensitivity training (Massarik & Carlson, 1960),

b. psychotherapy (Nichols & Beck, 1960),

c. completion of a reading improvement program (Sperrazzo & Shurr, 1965), and

d. completion of one year in college (Wessell & Flaherty, 1964).

Camera

The camera utilized to make a flash-assisted photograph of each experimental S was a Polaroid Swinger. The background was a beige cork bulletin board. The camera to S distance was six feet, with the flash-to-subject setting set at eight feet. This produced an overexposed picture, which was required to maintain a bright supraliminal image in the tachistoscope. The reason for this was that when the photograph was properly exposed, the supraliminal image was too dark to permit the subliminal presentation of the experimental stimuli. That is, the normally exposed photograph allowed the conscious perception of the stimulus.

Galvanic Skin Response Monitor

Lafayette Model 5818 Galvanic Skin Response monitor was utilized. This instrument is self-adjusting and automatically reset

itself to zero (0) for each S. GSR reactions were recorded in Part 1, however, there was not sufficient data to allow analysis.

Tachistoscope

A two-channel tachistoscope manufactured by the Polymetric Company, Hoboken, New Jersey, was utilized.

Visual Stimuli

There were 306, 5 X 4 1/2-inch cards prepared by typing the stimulus word on dark blue construction paper which was then glued to a 5 X 5 1/2-inch white index card for support. There was one stimulus card which was prepared for each of the 300 adjectives on the ACL, and for each of the six adjectives used during the threshold determination. Also, two cards, 5 X 2-inch, each containing one of the two-word suggestions, were prepared. The typewriter used was a Smith-Corona Electra 210, with elite type and a black nylon ribbon. An example of the stimuli is presented in Appendix C.

The stimuli were typed on dark blue construction paper, Number 1028. A white field was not used because, even at the most rapid setting on the tachistoscope, the light reflection was so great that an afterimage allowing the conscious identification of the stimulus was created. Therefore, the background had to be a light absorbing color which allowed the presentation of the stimulus for various durations without it entering conscious awareness. At the same time the background could not be too dark or it might allow the conscious perception of the stimulus, as did a normally exposed photograph. Various colors were tested, and only dark blue was found to be suitable,

as it absorbed sufficient light but not too much, and the color itself was not consciously perceived during a subliminal presentation.

Procedures

The 56 Ss were randomly assigned to one of five groups--one control and four experimental. There were four experimental groups which were required to satisfy the contrasts desired in Part 2. Figure 2 illustrates the design.

Pretest

All Ss were administered the ACL and the CPI. The ACL was administered under two conditions:

a. ACL-1, "As I am," describing the real-self, and

b. ACL-2, "As I would like to be," describing the ideal-self.

The CPI, CPI-1 was administered according to the normal directions on the measure. Following the completion of the pretest, there was no further contact with control Ss, not participating in Part 1, until the administration of the posttest.

Part 1: Nonconscious

Self-Assessment

Within a three-week period following S's completion of the pretest, the ACL, ACL-3 was tachistoscopically administered individually to 29 Ss. The administration was preceded by the determination of S's individual visual threshold for personality descriptive adjectives. After the administration of ACL-3, there was no additional contact with the control Ss until the administration of the posttest. Appendix D presents the instructions given to each S.

Experimental design

Part 1		Part 2	
Pretest	Nonconscious self-assessment	Suggested personality modification	Posttest
All subjects	N = 29	Control group, N = 10 Four experimental groups: 1. subliminal perception group receiving the suggestion "I Am," N = 11; 2. subliminal perception group receiving the suggestion "You Are," N = 12; 3. supraliminal perception group receiving the suggestion "I Am," N = 11; and 4. supraliminal perception group receiving the suggestion "You Are," N = 12.	All subjects

Fig. 2. Experimental design.

Threshold measurement. Each S's threshold was determined by ascending and descending tachistoscopic presentations of "Bashful," "Daydreamer," and "Naive." There was a duration of 10-sec, or more if required for the return to S's basal GSR, between each stimulus presentation. The ascending series began at 15-msec and was increased by increments of 5-msec until S correctly identified the stimulus word. The descending series began immediately, at S's recognition level, and was decreased by increments of 5-msec until S reported the total absence of the stimulus. That exposure duration--when S reported the total absence of the stimulus, not merely the inability to read the word but the complete absence of even the residual blur or smudge--was considered to be S's threshold. Following the identification of S's threshold, the subliminal stimulus presentation rate (SPR) was determined by subtracting 5-msec from the threshold. Subsequent to the determination of S's SPR, three trial administrations were conducted utilizing the words "Wordy," "Lonesome," and "Materialistic." Each stimulus was repeated 10 times at S's SPR, with a minimum duration of 10-sec, and the return to S's basal GSR, between presentations.

The six adjectives used for the determination of the threshold and the trials were selected from Anderson's (1968) list of personality-trait words. The selection was based on their neutral, central, position of likability, high degree of meaningfulness, and varying size.

ACL-3 administration. Each of the 300 ACL adjectives was presented subliminally, at S's SPR, with a minimum interval of 10-sec, and

the return to S's basal GSR, between each presentation. Following the stimulus exposure, S stated "Yes" or "No" indicating whether the stimulus described him as he is. The total time required for this administration was approximately 70-min for each S.

Part 2: Suggested Personality Modification

Part 2 was conducted for all but four Ss within a 10-week period following the completion of the pretest. The remaining four Ss had previously completed the measures and were not retested prior to participating.

The suggestions for personality change contained those adjectives that S had used to describe his ideal-self, but not also his real-self. Each S's own picture was used as the supraliminal image in the tachistoscope. The suggestions were presented supraliminally, for 1-sec, to two groups, and subliminally to two groups. For the Ss receiving the subliminal suggestion, it was necessary to determine each S's SPR. Appendix E contains the instructions given to each S.

Threshold measurement. Each S's threshold and SPR were determined by the same procedure used in Part 1. However, the format of the stimulus and the supraliminal fixation image were different. The stimulus, containing three words, was individually prepared for each S--the phrase "I Am" or "You Are" and an adjective which S had used in both of the pretest self-descriptions. That is, the stimulus adjectives were selected from those which S had used to describe both his real-self and his ideal-self. The supraliminal image was S's head and

shoulders photograph which was made at the start of the session. Subsequent to the determination of S's threshold and SPR, three trial presentations were conducted utilizing three additional adjectives.

Personality modification. The number of suggestions presented to each S was individually determined by the discrepancy between S's pretest real-self and ideal-self. Specifically, those adjectives S had used to describe the way he would like to be but was not, were used in the suggestions. Each suggestion was presented three times to Ss receiving the subliminal suggestions, and once to Ss receiving the supraliminal suggestion. A minimum interval of 10-sec was maintained between the presentations and S's basal GSR (0) was returned to prior to each presentation.

S's own face was supraliminally presented and the stimulus consisting of:

a. "I Am" plus an adjective was supraliminally presented for a 1-sec duration to one of the supraliminal groups, and subliminally, at each S's SPR, to one of the subliminal groups; or

b. "You Are" plus an adjective was supraliminally presented for a 1-sec duration to one of the supraliminal groups, and subliminally, at each S's SPR, to one of the subliminal groups.

It must be clearly understood that the suggestions each S received were based entirely on his ideal-self versus real-self indication of how he would like to be. Also, the suggestions were tachistoscopically presented to each S individually, and the time required for the presentation of the suggestions ranged from 10-min to 30-min.

Posttest

All Ss were administered the ACL, (a) ACL-4, "As I am"; and (b) ACL-5, "As I would like to be"; and the CPI, CPI-2, according to its standard directions. Ss were allowed to take the measures with them to complete at their convenience. There was at least a six-week period between the completion of the pretest and the posttest.

Processing the Data

Each of the 24 scales on the ACLs, and 10 of the scales on the CPIs were scored. Upon the return of the instruments, S's responses were key punched on IBM cards and raw scores were calculated on an IBM 360/50 digital computer at the College of William and Mary Computer Center. The raw scores were converted, by hand, to standard scores prior to statistical manipulation.

Statistical Methods

The statistical methods employed in the treatment of the data were designed to:

a. Part 1--determine if the discrepancy between the conscious and the nonconscious self-evaluations is indicative of personal adjustment. This was accomplished by correlating the CPI-1 score (which is a measure of personal adjustment, as discussed in Appendix B) with the scores on the mean and each of the scales of ACL-1, ACL-3, and the discrepancy (D) between them. D was obtained by subtracting each ACL-3 score from the corresponding ACL-1 score and disregarding the sign. The mean was calculated by summing the scores on the scales and dividing by 24. Although the ACL mean is not an interpretable score, it was

calculated for use as an indication of the consistency of the scores between the conscious and subliminal ACL administrations. The correlations were computed by using the "Pearson Corr" procedure from the Statistical Package for the Social Sciences (Nie, Bent, & Hull, 1970).

b. Part 2--determine if a personality change followed the suggestions for such change and to determine if the condition (liminal versus subliminal), and/or the phrasing (I Am versus You Are) of the suggestion influenced the amount of change. This was accomplished by analysis of covariance utilizing the "Multivariate Analysis of Variance on Large Computers" (MANOVA) package. Analysis of covariance was computed for,

i. the posttest use (word count) of desired adjectives, ACL-4 with the number of desired adjectives indicated by the pretest (those used on ACL-2 but not on ACL-1) as a covariate;

ii. ACL-4 with both ACL-1 and ACL-2 used as covariates, both ACL pretests are used as covariates as it is the difference between them that provided the adjectives used in the suggestions for change; and

iii. CPI-2 with CPI-1 used as a covariate.

In addition to the F ratios calculated for the three measures, "special contrasts" were computed between, (a) the subliminal groups and the liminal groups, (b) both subliminal groups, (c) the control group and both subliminal groups, (d) the control group and the experimental group receiving the subliminal suggestion "I Am," (e) the control group and the experimental group receiving the

subliminal suggestion "You Are," (f) the control group and both liminal groups, (g) the control group and the experimental group receiving the liminal suggestion "I Am," and (h) the control group and the experimental group receiving the liminal suggestion "You Are." The special contrasts present the numerical difference between the posttest means, adjusted for the covariate(s), of the contrasted groups, as well as F ratios.

Chapter 4

Results

The results of the investigation of the utilization of subliminal perception for (a) the assessment of personal adjustment, and (b) the modification of personality, are contained in Chapter 4. The results are presented in the following order:

a. Part 1--nonconscious self-assessment; and

b. Part 2--suggested personality modification,

i. posttest use of desired adjectives,

ii. posttest ACL indications of personality change, and

iii. posttest CPI indications of personality change.

Part 1--Nonconscious Self-Assessment

Personal adjustment, as indicated by the pretest CPI Factor-1, was correlated with, (a) ACL-1, the real-self; (b) ACL-3, the subliminal self-assessment; and (c) the discrepancy between them. The means and standard deviations of each measure are presented in Appendix E.

As illustrated in Table 1, CPI-1 correlates significantly ($p < .05$) with, (a) 19 ACL-1 scales, (b) one ACL-3 scale, and of primary importance in this investigation, (c) seven D scales: Mean, .44; Defensiveness, .42; Number of favorable adjectives, .51; Achievement, .38; Nurturance, .40; Affiliation, .36; and Exhibition, -.45. However, several observations concerning the significant D correlations must be noted:

a. with the exception of Exhibition, significant D correlations

TABLE 1

Correlation of Personal Adjustment with (1) Conscious and (2) Nonconscious Adjective Check List (ACL) Self-descriptions, and with (3) the Discrepancy between Them

(N = 29)

Adjective check list	Adjective check list administrations: Conscious (ACL-1) correlation	Subliminal (ACL-3) correlation	Discrepancy correlation
Mean	.56***	.09	.44**
Scales			
1. Number checked	.12	.17	-.22
2. Defensiveness	.69***	-.11	.42**
3. Number favorable	.65***	-.14	.51**
4. Number unfavorable	-.67***	.07	.14
5. Selfconfidence	.38*	.02	.13
6. Selfcontrol	.47**	-.29	.07
7. Lability	.45**	.27	-.07
8. Personal adjustment	.58***	-.01	.29
9. Achievement	.37*	.01	.38*

TABLE 1 (continued)

Adjective check list		Adjective check list administrations		
		Conscious (ACL-1) correlation	Subliminal (ACL-3) correlation	Discrepancy correlation
10.	Dominance	.41**	-.07	.008
11.	Endurance	.57***	-.03	.30
12.	Order	.33*	.03	.12
13.	Intraception	.61***	-.18	.19
14.	Nurturance	.67***	-.26	.40*
15.	Affiliation	.75***	-.16	.36*
16.	Heterosexuality	.34*	.12	.12
17.	Exhibition	-.12	-.19	-.45**
18.	Autonomy	-.09	-.14	-.12
19.	Aggression	-.55***	.21	-.08
20.	Change	.02	-.003	.03
21.	Succorance	-.79***	-.07	-.31
22.	Abasement	-.56***	.008	-.30
23.	Deference	.09	.20	-.26

TABLE 1 (continued)

Adjective check list	Adjective check list administrations		
	Conscious (ACL-1) correlation	Subliminal (ACL-3) correlation	Discrepancy correlation
24. Counseling readiness	-.28	.65***	.04

*$p < .05$.

**$p < .01$.

***$p < .001$.

are found only on the scales on which there are also significant ACL-1 correlations;

b. the D correlations are all in the same direction as the respective ACL-1 correlations, and, with the exceptions of the Mean, Achievement, and Exhibition, are in the opposite direction of the respective ACL-3 correlations; and

c. with the exceptions of Achievement and Exhibition, the D correlations are smaller than the respective ACL-1 correlations.

Part 2--Suggested Personality Modification

Posttest Use of Desired Adjectives

The posttest real-self, ACL-4, use of the suggested adjectives, those which S had indicated as being desired on the pretest (adjectives used to describe the ideal-self, ACL-2, but not the real-self, ACL-1) was assessed through an analysis of covariance. The posttest and pretest means, standard deviations, and the F ratios are presented in Appendix G. No significant difference in the posttest use of suggested adjectives was found ($F = .107$, $p < .979$), nor are there any significant differences in the special contrasts.

ACL Indications of Personality Change

Analysis of covariance was performed with the posttest real-self, ACL-4, mean and each scale. Both the pretest real-self, ACL-1, and the ideal-self, ACL-2, were used as covariates as the difference between them was the source of the adjectives used in the suggestions for

personality change. The posttest and pretest means, standard deviations, and the F ratios are presented in Appendix H.

No significant difference in the ACL-4 means, nor on any of the scales was found. However, four of the ACL scales do show significant differences ($p < .05$) in the special contrasts:

a. Table 13, ACL-Personal adjustment, there is a 6.3 t score difference between the Means of the two subliminal groups;

b. Table 19, ACL-Nurturance, there is a 5.69 t score difference between the means of the control group and the experimental group which received the subliminal suggestion "You Are";

c. Table 23, ACL-Autonomy, there is a 9.212 t score difference between the means of both of the subliminal groups and that of both of the liminal groups, and there is an 8.242 t score difference between the means of the subliminal groups; and

d. Table 24, ACL-Aggression, there is a -5.844 t score difference between the means of the control group and the experimental group which received the subliminal suggestion "You Are."

CPI Indications of Personality

Change

Analysis of covariance was performed with the CPI posttest score, using the CPI pretest score as a covariate. The posttest and pretest means, standard deviations, and the F ratios are presented in Table 2.

No significant difference in the posttest was found. However, there are significant differences ($p < .05$) in the special contrasts:

TABLE 2

California Psychological Inventory, Factor 1,

Indications of Personality Change

Group	Posttest		Pretest	
	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	46.96	7.75	48.85	8.82
2. Subliminal "I Am" (N = 11)	50.16	8.49	50.26	7.57
3. Subliminal "You Are" (N = 12)	45.03	8.32	43.03	7.23
4. Liminal "I Am" (N = 11)	53.50	3.13	52.16	3.89
5. Liminal "You Are" (N = 12)	50.60	9.29	49.85	8.41

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
California Psychological Inventory		1.631	.181
Subliminal and liminal groups	.837	.137	.713
Subliminal groups "I Am" and "You Are"	1.585	.973	.329

TABLE 2 (continued)

	Special contrasts[a]	F ratio	Signif-icance level
Control and both subliminal groups	-2.682	.973	.060
Control and subliminal group "I Am"	-1.889	1.393	.243
Control and subliminal group "You Are"	-3.474	4.616	.037
Control and both liminal groups	-3.084	4.899	.031
Control and liminal group "I Am"	-3.459	4.591	.037
Control and liminal group "You Are"	-2.710	2.990	.090

[a]The difference of the posttest means; adjusted for the pre-test covariate.

a. there is a -3.474 t-score difference between the means of the control group and the experimental group receiving the subliminal suggestion "You Are,"

b. there is a -3.084 t-score difference between the means of the control group and both of the liminal groups, and

c. there is a -3.459 t-score difference between the means of the control group and the experimental group which received the liminal suggestion "I Am."

Summary

The brevity of this chapter caused by placing most of the tables in Appendices F, G, and H almost makes the inclusion of a summary superfluous. However, a brief summarization must be made by stating that,

a. significant correlations were found between personal adjustment and the discrepancy between conscious and nonconscious self-assessment, and

b. no significant F ratios were found in the analysis of covariance of the posttests, although

c. significant F ratios were found in some of the special contrasts performed between specific groups.

Chapter 5

Summary, Conclusions, and Recommendations

Chapter 5 includes a summary of the study with the findings resulting from,

a. the analysis of the relationship of the discrepancy between conscious and nonconscious self-evaluations to personal adjustment, and

b. the affect on objectively measured personality of suggestions directing personality change.

Also included are conclusions drawn from the study and recommendations for further research.

Summary

The purpose of this investigation is to explore the application of subliminal perception to personality assessment, and personality modification. It is a pretest-posttest paradigm with two individual parts which share the pretest data, (a) Part 1, nonconscious self-assessment, an ex post facto study; and (b) Part 2, personality modification, an experimental investigation. The shared pretest data consists of:

a. a measure of personal adjustment, the California Psychological Inventory, Factor-1; and

b. measures of the real-self and the ideal-self obtained through the completion of the Adjective Check List twice, "As I am" and "As I would like to be." The ACL provides 24 scales for the measurement of personality.

Part 1--Nonconscious Self-Assessment

The purpose of this part of the study is to explore the relation of the discrepancy between conscious and nonconscious self-assessments to personal adjustment. There were 29 Ss' visual thresholds for personality descriptive adjectives which were individually determined. The ACL adjectives were tachistoscopically presented, one at a time, to each S at 5-msec less than S's threshold. The absolute value of the discrepancy between the subliminal administration (ACL-3) and the pretest conscious real-self (ACL-1) was determined and correlated with personal adjustment.

There were seven significant correlations which were found between the discrepancy and personal adjustment: (a) Mean, .44; (b) Defensiveness, .42; (c) Number of favorable adjectives, .51; (d) Achievement, .38; (e) Nurturance, .40; (f) Affiliation, .36; and (g) Exhibition, -.45.

Part 2--Personality Modification

The purpose of this part of the study is to explore the utilization of subliminal suggestion to modify personality. There were 56 Ss randomly assigned to five groups and suggestions directing personality change were presented to 46 Ss in four experimental groups. The suggestions consisted of one of two phrases, "I Am" or "You Are," plus the adjectives which S had used on the pretests to describe his ideal-self, but not his real-self. Each suggestion was presented both subliminally and supraliminally, thus requiring the four experimental groups. The 10 control Ss were only pretested and posttested.

In two experimental groups, N = 11 and 12, each S's visual threshold for personality descriptive adjectives was determined and subliminal suggestions directing personality changes were tachistoscopically presented at 5-msec less than S's threshold. In the other two experimental groups, N = 11 and 12, the suggestions were presented supraliminally for 1-sec; 24-hours subsequent to the presentation of the suggestions Ss were posttested with the CPI and the ACL.

No significant F ratios were found in the analysis of covariance of:

a. the posttest frequency (word count) with which the suggested adjectives were used on the ACL,

b. the posttest ACL t scores, or

c. the posttest CPI.

However, several significant F ratios were found in the special contrasts on the ACL scales:

a. ACL-Personal adjustment, there is a 6.3 t-score difference between the means of the two subliminal groups;

b. ACL-Nurturance, there is a 5.69 t-score difference between the means of the control group and the experimental group which received the subliminal suggestion "You Are";

c. ACL-Autonomy, there is a 9.212 t-score difference between the means of both of the subliminal groups and that of both of the liminal groups, and there is an 8.242 t-score difference between the means of the subliminal groups; and

d. ACL-Aggression, there is a -5.844 t-score difference between

the means of the control group and the experimental group which received the subliminal suggestion, "You Are."

Also there are significant differences in the special contrasts on the CPI:

a. there is a -3.474 t-score difference between the means of the control group and the experimental group receiving the subliminal suggestion, "You Are";

b. there is a -3.084 t-score difference between the means of the control group and both of the liminal groups; and

c. there is a -3.459 t-score difference between the means of the control group and the experimental group which received the supraliminal suggestion, "I Am."

Conclusions

The utilization of the ACL to indicate desired personality change, and the utilization of the CPI to assess such change, is considered to be applicable in the present investigation. The conclusions concerning the hypotheses are presented in Part 1 and Part 2.

Part 1

The hypothesis tested in Part 1 is, "The magnitude of the difference between conscious and nonconscious self-descriptions is indicative of personal adjustment." The hypothesis is supported by the seven discrepancy measures which correlate significantly with personal adjustment. However, the hypothesis is rejected for the following reasons:

a. with the exception of Exhibition, the correlations are positive, and, based on Schlicht's (1967) finding, negative correlations

should have been obtained; and

b. the significant discrepancy correlations appear to be the result of the significant correlations between the conscious measure and personal adjustment.

The latter is concluded because,

a. with the exception of Exhibition, significant discrepancy correlations are found only on the scales on which there are also significant ACL-1 correlations;

b. the discrepancy correlations are in the same direction as the respective ACL-1 correlations, and, with the exceptions of the Mean, Achievement, and Exhibition, are in the opposite direction of the respective ACL-3 correlations; and

c. with the exceptions of Achievement and Exhibition, the discrepancy correlations are smaller than the respective ACL-1 correlations.

Therefore, ACL-3 is considered to be the product of random responses and the correlations are considered to be due to the chance relationship of randomly obtained scores to valid scores.

Part 2

The lack of significance in the posttest use of the suggested adjectives ($F = .107$, $p < .979$) appears to indicate that neither the subliminal nor the liminal perception of adjectives contained in the suggestions for personality change affected the frequency with which those specific adjectives were used in the posttest self-description. This is also apparent in the lack of a significant F ratio on the ACL. Therefore, the significance shown in the special contrasts

on four of the ACL scales is disregarded.

However, although the frequency of the use of specific adjectives was not effected by suggestion, there may have been personality changes which were not reported by the repetitious use of the adjectives but were expressed in the posttest CPI. Specifically, if the change indicated by the CPI ($F = 1.631$, $p < .181$) is assumed to be an accurate measure of the experimental effect, the utilization of more Ss would have increased the F ratio, and decreased the significance level (Friedman, 1972). Therefore, although the two hypotheses tested in Part 2 may be immediately rejected for lack of significance, the following discussion is presented for those choosing not to do so.

The first hypothesis states, "A personality change will follow the subliminal perception of suggestions for personality change, but will not follow the liminal perception of the same suggestions." The hypothesis is rejected because, although the suggestion, "You Are" was only effective when subliminally perceived, the suggestion, "I Am" was only effective when liminally perceived. It appears that both the phrasing of the suggestion and the condition of presentation are responsible for the effect. More importantly, perhaps, it must be noted that in the cases where the suggestions were effective, the experimental groups show a 3.5 t-score increase in personal adjustment over the control group. Specifically, with the proper suggestion format, the subliminal suggestion was as effective as the liminal suggestion.

The second hypothesis states, "The effect of subliminal

suggestions phrased as either self-suggested (I Am) or other-directed (You Are) is significantly different." Although the F ratio obtained in the test of this hypothesis did not reach significance ($p < .329$), it is tentatively accepted as only one of the subliminal suggestions, "You Are," had a significant effect.

Recommendations

The most obvious recommendation is that Part 2 be replicated with a larger number of Ss. However, certain modifications such as only using the two suggestions which appear to be effective and, perhaps, presenting the suggestions in more than one session, would be interesting and possibly productive.

APPENDICES

Appendix A

Adjective Check List: Scales and Purposes

The following are the 24 Adjective Check List scales (Gough & Heilbrun, 1965) and the purposes of each:

a. Total number of adjectives checked.

> The tendency to check more or fewer words obviously reflects certain personological dispositions, . . . Checking many adjectives seems to reflect surgency and drive, and a relative absence of repressive tendencies [p. 7].

b. Defensiveness. "if scores on Df [Defensiveness] are highly deviant (greater than 70 or less than 30), an interpretation of dissimulation should probably be entertained.[p. 7]." However, within that range, "The higher-scoring person is apt to be self-controlled and resolute in both attitude and behavior, and insistent and even stubborn in seeking his objectives [p. 7]."

c. Number of favorable adjectives checked.

> The individual who checks many of the words . . . appears to be motivated by a strong desire to do well and to impress others, but always by virtue of hard work and conventional endeavor . . . . The low scoring subject is much more of an individualist . . . he also more often experiences anxiety, self-doubts, and perplexities [p. 8].

d. Number of unfavorable adjectives checked.

> it appears that checking of unfavorable adjectives does not spring from a sense of humility and self-effacement, but more from a

kind of impulsive lack of control over the hostile and unattractive aspects of one's personality [p. 8].

e. Self-confidence. The purpose of this scale is to assess such traits as, "poise, self-confidence, self-assurance, and the like [p. 8]."

f. Self-control.

High scorers tend to be serious, sober individuals, interested in and responsive to their obligations . . . . At the other end of the scale one seems to find the inadequately socialized person [p. 8].

g. Lability. "Although there is a facet of high ego strength in this scale, . . . the main emphasis seems to be upon an inner restlessness and an inability to tolerate consistency and routine [p. 9]."

h. Personal adjustment.

This scale seems to depict a positive attitude toward life more than an absence of problems and worries. This attitudinal set is one of optimism, cheerfulness, interest in others, and a readiness to adapt [p. 9].

i. Achievement. "To strive to be outstanding in pursuits of socially recognized significance [p. 9]."

j. Dominance. "To seek and sustain leadership roles in groups or to be influential and controlling in individual relationships [p. 9]."

k. Endurance. "To persist in any task undertaken [p. 9]."

1. Order. "To place special emphasis on neatness, organization, and planning in one's activities [p. 10]."

m. Intraception. "To engage in attempts to understand one's own behavior or the behavior of others [p. 10]."

n. Nurturance. "To engage in behaviors which extend material or emotional benefits to others [p. 10]."

o. Affiliation. "To seek and sustain numerous personal friendships [p. 10]."

p. Heterosexuality. "To seek the company of and derive emotional satisfactions from interactions with opposite-sexed peers [p. 10]."

q. Exhibition. "To behave in such a way as to elicit the immediate attention of others [p. 10]."

r. Autonomy. "To act independently of others or of social values and expectations [p. 10]."

s. Aggression. "To engage in behaviors which attack or hurt others [p. 10]."

t. Change. "To seek novelty of experience and avoid routine [p. 11]."

u. Succorance. "To solicit sympathy, affection, or emotional support from others [p. 11]."

v. Abasement. "To express feelings of inferiority through self-criticism, guilt, or social impotence [p. 11]."

w. Deference. "To seek and sustain subordinate roles in relationship with others [p. 11]."

x. Counseling readiness. "The main function of Crs [Counseling readiness] is to help in identifying counseling clients who are ready

for help and who seem likely to profit from it [p. 11]."

Appendix B

California Psychological Inventory

Factor 1: Personal Adjustment

Megargee (1972) presents and discusses 20 factor analyses of the California Psychological Inventory. Factor 1 is usually the largest factor found, in terms of the variance it accounts for and the number of scales which it includes with high loadings. The scales, and the purpose of each, that are normally found on Factor 1, are as follows:

a. Sense of well-being. "To identify persons who minimize their worries and complaints, and who are relatively free from self-doubt and disillusionment [Gough, 1957, p. 10]."

b. Responsibility. "To identify persons of conscientious, responsible, and dependable disposition and temperament [Gough, 1957, p. 10]."

c. Socialization. "To indicate the degree of social maturity, integrity, and rectitude which the individual has attained [Gough, 1957, p. 10]."

d. Self-control. "To assess the degree and adequacy of self-regulation and self-control and freedom from impulsivity and self-centeredness [Gough, 1957, p. 10]."

e. Tolerance. "To identify persons with permissive, accepting, and nonjudgmental social beliefs and attitudes [Gough, 1957, p. 10]."

f. Good impression. "To identify persons capable of creating a favorable impression, and who are concerned about how others react to

them [Gough, 1957, p. 10]."

g. Achievement via conformance. "To identify those factors of interest and motivation which facilitate achievement in any setting where conformance is a positive behavior [Gough, 1957, p. 11]."

h. Achievement via independence. "To identify those factors of interst and motivation which facilitate achievement in any setting where autonomy and independence are positive behaviors [Gough, 1957, p. 11]."

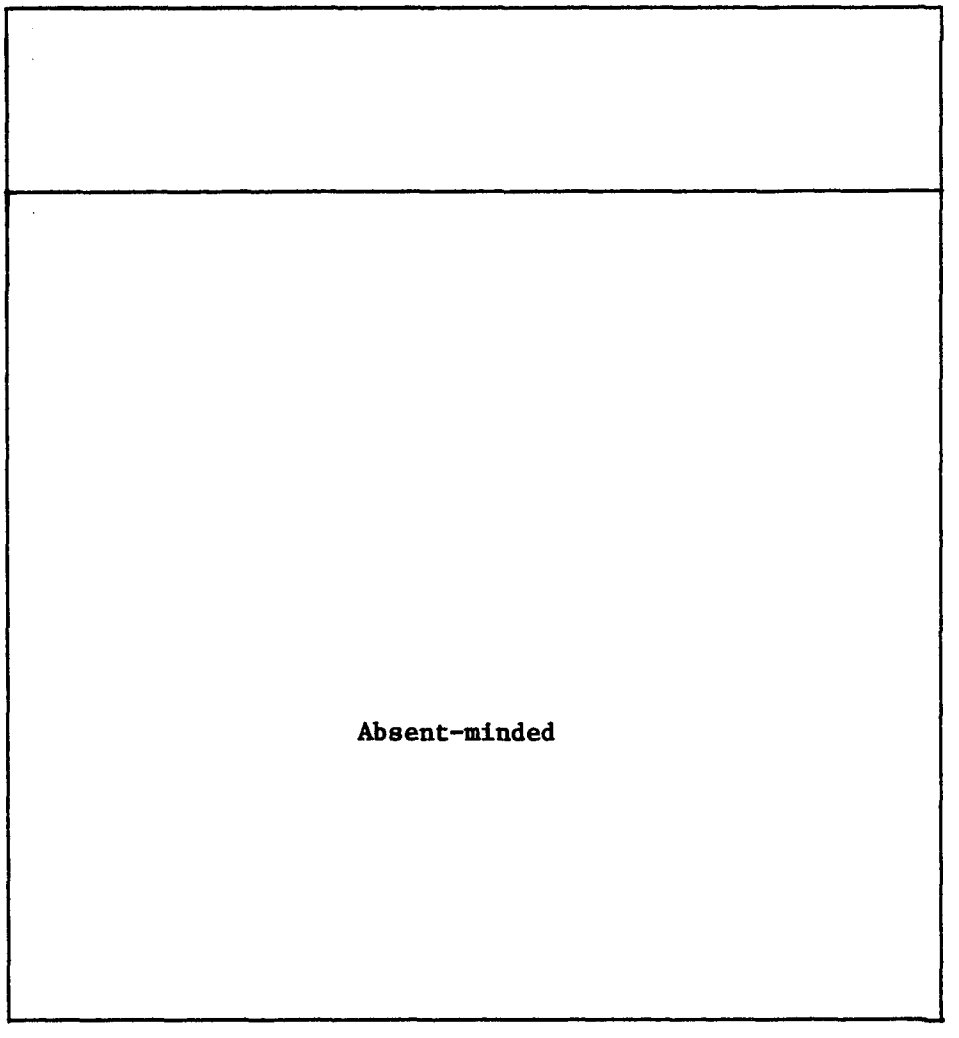
i. Intellectual efficiency. "To indicate the degree of personal and intellectual efficiency which the individual has attained [Gough, 1957, p. 11]."

j. Psychological-mindedness. "To measure the degree to which the individual is interested in, and responsive to, the inner needs, motives and experiences of others [Gough, 1957, p. 11]."

Factor 1 is a measure of positive adjustment and high scores appear to indicate, "a stable, well-socialized, controlled individual with a conventional value system who is sensitive to social demands and tries to behave so as not to offend others [Megargee, 1972, p. 120]." For the purpose of this investigation, S's Factor 1 score is the average of his t scores on the 10 scales comprising Factor 1.

Appendix C

Visual Stimuli



Appendix D

Instructions Given to Subjects: Part 1

Threshold Measurement

Today, we are going to do three things:

a. measure how fast you can see words,

b. measure your physiological reaction to words, and

c. identify words which describe you as you are.

I am going to show you the 300 words that are on that checklist you filled out, however, the words may not be in the same order. First, though, this is a galvanic skin response monitor and I must attach these wires to your fingers. You may forget that they are there as we proceed, for this is only a monitor; it will not shock you. O.K., look in here and make yourself as comfortable as you can. Do you see an "X" in the lighted area? In a moment, I will present a word to you where that "X" is, and I will ask you to tell me what you see. The first few times you will probably only see a flicker of light, but that flicker will contain a word. Gradually, I will slow down the flicker until you can see the word. Just before I present the word to you, I will say "Ready." Then, after the flicker, tell me what you saw. There will be about 10 seconds between each presentation.

After S correctly identified the stimulus, the following instructions were given:

Now that you know what the word is, it will be easier for you to see it. I am going to speed it up again, and I want you to tell me when it is entirely gone. As I speed it up, you will find that you

cannot see the whole word, but just some letters. Then, the letters will disappear, but a blur or smudge will remain. Then, the smudge will also disappear and when that happens, tell me.

After S's threshold and stimulus presentation rate (5-msec less than S's threshold) was determined, S was told:

I am going to present some words to you, several times each. Tell me what you see.

Adjective Check List-3 Administration

Now, after I present each of these words to you, state either "Yes" or "No" indicating whether the word describes you as you are--not as you might like to be, but as you are. This is just what you did on the Adjective Check List when you marked the adjectives that describe you as you are. But the words may not be in the same order, and they will be presented at the same rate as those last three. In other words, you will not be able to see these words. All you will probably see is that flicker. I know it may seem strange to say that something you were not able to see does or does not describe you, but do not worry about that. Just relax, relax, and say either "Yes" or "No" after each flicker. If you think you see anything, anything at all, tell me; otherwise just relax and say "Yes" or "No."

Appendix E

Instructions Given to Subjects: Part 2

Threshold Measurement

Today, I am going to present some phrases to you. First, though, I must take your picture and put it into the tachistoscope for you to look at. Also, before we begin, this is a galvanic skin response monitor, and I must attach these wires to your fingers. You may forget about them as we proceed, for it is merely a monitor, and it will not shock you. O.K., make yourself as comfortable as you can and look in here. Do you see your picture? I am going to show you some three-word phrases, and I want you to tell me when you can read them. The first few times you will probably only see a flicker of light, but that flicker will contain the phrase. Gradually, I will slow down the flicker until you can see the phrase. Just before I present the phrase to you, I will say "Ready." Then, after the flicker, tell me what you saw. There will be about 10 seconds between each presentation.

After S correctly identified the stimulus, the following instructions were given:

Now that you know what the phrase is, it will be easier for you to see it. I am going to speed it up again, and I want you to tell me when it is entirely gone. As I speed it up, you will find that you can see parts of the phrase. Then, that will disappear, but a blue or smudge will remain. Then, the smudge will also disappear, and when that happens, tell me.

After S's threshold and stimulus presentation rate (5-msec less than S's threshold) was determined, S was told:

I am going to present some more phrases to you, several times each. Tell me what you see.

Suggested Personality Modification

For Ss Receiving the

Subliminal Suggestion

I am going to show you some more phrases, but you will probably not see anything other than the flicker. You do not need to say anything unless you think you see something. Then, please tell me what it was. There will be about 10 seconds between each presentation. Now, just look in here and relax.

For Ss Receiving the

Liminal Suggestion

I am going to show you some phrases, and I want you to look at them. If you are unable to read any of them, tell me. Otherwise, just look in here at your picture and relax.

Appendix F

Means and Standard Deviations of (1) the Conscious and Subliminal Adjective Check List (ACL) Administrations and of (2) the Discrepancy between the Scores

TABLE 3

Means and Standard Deviations of (1) the Conscious and Subliminal Adjective Check List (ACL) Administrations and of (2) the Discrepancy Between the Scores (N = 29)

Adjective check list	Adjective check list administrations					
	Conscious (ACL-1)		Subliminal (ACL-3)		Discrepancy	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Mean	49.1	7.6	42.3	2.5	6.9	4.2
Scales						
1. Number checked	37.8	12.6	46.8	15.9	15.1	10.2
2. Defensiveness	48.2	13.1	29.0	7.3	21.2	11.2
3. Number favorable	48.2	13.4	26.7	10.1	22.1	15.5

TABLE 3 (continued)

Adjective check list	Adjective Check List administrations: Conscious (ACL-1) Mean	Conscious (ACL-1) Standard deviation	Subliminal (ACL-3) Mean	Subliminal (ACL-3) Standard deviation	Discrepancy Mean	Discrepancy Standard deviation
4. Number unfavorable	53.1	13.9	69.2	14.1	22.3	11.0
5. Self-confidence	50.1	9.0	41.9	8.4	11.1	7.9
6. Self-control	49.5	11.3	40.6	5.8	13.6	9.2
7. Lability	49.1	10.4	36.9	10.8	16.4	11.5
8. Personal adjustment	47.1	12.9	32.3	7.6	16.9	10.0
9. Achievement	50.8	9.5	37.4	5.9	14.6	9.0
10. Dominance	50.4	10.2	37.1	6.6	15.6	8.7
11. Endurance	50.4	9.7	38.7	6.2	13.7	9.5
12. Order	51.1	8.3	42.1	5.6	10.8	8.5
13. Intraception	50.2	15.3	33.4	7.6	12.2	12.8

TABLE 3 (continued)

Adjective check list	Adjective Check List administrations					
	Conscious (ACL-1)		Subliminal (ACL-3)		Discrepancy	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
14. Nurturance	49.9	14.5	25.6	7.8	27.6	10.8
15. Affiliation	46.2	13.3	23.9	10.4	24.9	14.5
16. Heterosexuality	48.9	10.3	35.6	9.2	15.2	9.2
17. Exhibition	48.7	9.8	49.6	5.2	8.9	8.2
18. Autonomy	48.9	10.2	53.2	9.2	11.2	6.9
19. Aggression	51.1	14.3	61.9	6.0	16.9	8.8
20. Change	48.3	8.2	38.3	7.5	11.7	8.4
21. Succorance	51.7	12.4	56.8	6.1	10.9	7.6
22. Abasement	49.7	10.8	49.8	7.9	8.9	8.5
23. Deference	50.8	11.3	42.0	8.4	12.8	9.1
24. Counseling readiness	53.2	10.6	62.7	7.6	13.9	7.5

Appendix G

Adjective Check List Posttest Use (Word Count) of Desired Adjectives: Adjectives Used on the Pretests to Describe the Ideal-self but, Not the Real-self

TABLE 4

Posttest Use of Desired Adjectives

Group	Posttest use of desired adjectives		Number of pretest desired adjectives	
	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	11.50	5.17	35.30	17.63
2. Subliminal "I Am" (N = 11)	13.09	5.07	44.00	24.98
3. Subliminal "You Are" (N = 12)	12.25	8.44	39.58	17.90
4. Liminal "I Am" (N = 11)	10.09	6.40	24.64	10.58
5. Liminal "You Are" (N = 12)	13.00	8.24	36.67	24.36

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Real-self, posttest use of desired adjectives		.107	.979

TABLE 4 (continued)

	Special contrasts[a]	F ratio	Signif-icance level
Subliminal and liminal groups	.641	.034	.855
Subliminal groups "I Am" and "You Are"	- .013	.000	.998
Control and both subliminal groups	.047	.000	.984
Control and subliminal group "I Am"	.040	.000	.988
Control and subliminal group "You Are"	.053	.000	.984
Control and both liminal groups	- .917	.168	.683
Control and liminal group "I Am"	- .590	.051	.822
Control and liminal group "You Are"	-1.244	.244	.623

[a]The difference of the posttest means; adjusted for the pre-test covariate.

Appendix H

Adjective Check List Indications of Personality Change

Adjective Check List scores were used in the calculations.

TABLE 5

Adjective Check List: Means, Standard Deviations, and F Ratios

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	50.74	10.07	49.17	10.19	54.29	10.07
2. Subliminal "I Am" (N = 11)	49.84	11.30	49.84	12.68	52.25	10.99
3. Subliminal "You Are" (N = 12)	49.90	13.58	48.87	13.54	50.83	10.91
4. Liminal "I Am" (N = 11)	50.85	9.62	50.47	9.23	50.46	10.66
5. Liminal "You Are" (N = 12)	50.52	12.35	49.40	12.34	50.81	10.73

TABLE 5 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list		1.215	.302
Subliminal and liminal groups	1.389	2.597	.107
Subliminal groups "I Am" and "You Are"	1.002	2.702	.100
Control and both subliminal groups	.544	.967	.327
Control and subliminal group "I Am"	1.045	2.675	.102
Control and subliminal group "You Are"	.043	.007	.932
Control and both liminal groups	.005	- .001	1.000
Control and liminal group "I Am"	.198	.095	.757
Control and liminal group "You Are"	- .189	.093	.760

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 6

Adjective Check List Scale: Number Checked

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard division	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	38.70	16.53	43.10	14.00	40.60	10.83
2. Subliminal "I Am" (N = 11)	34.09	18.28	34.73	14.61	41.27	16.26
3. Subliminal "You Are" (N = 12)	38.83	16.11	36.92	16.62	32.33	21.97
4. Liminal "I Am" (N = 11)	43.36	7.23	45.18	9.71	28.27	15.36
5. Liminal "You Are" (N = 12)	37.58	15.25	40.08	10.86	33.50	22.34

TABLE 6 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--number checked		.710	.589
Subliminal and liminal groups	3.813	.461	.500
Subliminal groups "I Am" and "You Are"	5.087	1.587	.214
Control and both subliminal groups	-3.569	.976	.328
Control and subliminal group "I Am"	-1.025	.059	.810
Control and subliminal group "You Are"	-6.112	2.283	.137
Control and both liminal groups	-3.074	.747	.392
Control and liminal group "I Am"	-3.711	.820	.370
Control and liminal group "You Are"	-2.437	.367	.548

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 7

Adjective Check List Scale: Defensiveness

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	55.90	8.57	51.40	8.71	59.60	3.03
2. Subliminal "I Am" (N = 11)	49.09	12.11	47.46	14.36	56.27	12.01
3. Subliminal "You Are" (N = 12)	28.33	14.31	46.67	9.35	53.25	10.52
4. Liminal "I Am" (N = 11)	54.91	7.58	53.64	6.71	50.91	11.57
5. Liminal "You Are" (N = 12)	50.42	9.13	47.00	14.67	51.00	10.68

TABLE 7 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--defensiveness		.488	.744
Subliminal and liminal groups	- .276	.003	.954
Subliminal groups "I Am" and "You Are"	- .023	.000	.992
Control and both subliminal groups	4.042	1.746	.193
Control and subliminal group "I Am"	4.031	1.335	.253
Control and subliminal group "You Are"	4.053	1.364	.249
Control and both liminal groups	1.884	.360	.551
Control and liminal group "I Am"	1.757	.238	.628
Control and liminal group "You Are"	2.011	.326	.570

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 8

Adjective Check List Scale: Number of Favorable Adjectives Checked (means, standard deviations, and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	53.00	14.02	52.50	12.14	69.10	5.65
2. Subliminal "I Am" (N = 11)	50.46	12.31	48.62	16.29	59.18	12.67
3. Subliminal "You Are" (N = 12)	48.58	14.80	47.00	13.06	59.33	13.17
4. Liminal "I Am" (N = 11)	55.55	8.97	51.64	4.97	52.91	16.95
5. Liminal "You Are" (N = 12)	53.00	15.92	47.67	13.45	57.25	11.83

TABLE 8 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--number of favorable adjectives checked		.546	.703
Subliminal and liminal groups	-0.749	.016	.899
Subliminal groups "I Am" and "You Are"	-0.691	.028	.867
Control and both subliminal groups	-0.863	.049	.826
Control and subliminal group "I Am"	-1.209	.074	.787
Control and subliminal group "You Are"	-0.517	.014	.906
Control and both liminal groups	-4.644	1.342	.252
Control and liminal group "I Am"	-4.701	1.021	.317
Control and liminal group "You Are"	-4.644	1.101	.299

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 9

Adjective Check List Scale: Number of Unfavorable Adjectives Checked (means, standard deviations, and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	45.30	6.22	45.00	5.48	39.90	2.23
2. Subliminal "I Am" (N = 11)	51.09	12.61	51.82	14.34	40.55	5.85
3. Subliminal "You Are" (N = 12)	58.42	15.58	63.67	13.50	41.00	5.27
4. Liminal "I Am" (N = 11)	43.82	3.66	48.73	10.68	39.36	2.50
5. Liminal "You Are" (N = 12)	47.00	14.46	50.75	16.80	41.33	5.99

TABLE 9 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--number of unfavorable adjectives checked		1.004	.414
Subliminal and liminal groups	1.056	.061	.806
Subliminal groups "I Am" and "You Are"	-1.114	.134	.716
Control and both subliminal groups	-0.465	.027	.870
Control and subliminal group "I Am"	-1.021	.110	.742
Control and subliminal group "You Are"	.092	.001	.976
Control and both liminal groups	3.206	1.453	.234
Control and liminal group "I Am"	4.290	1.981	.166
Control and liminal group "You Are"	2.121	.491	.487

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 10

Adjective Check List Scale: Self-confidence

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	47.20	10.12	45.10	10.38	56.90	6.28
2. Subliminal "I Am" (N = 11)	51.27	6.41	53.46	8.20	58.46	6.30
3. Subliminal "You Are" (N = 12)	55.33	13.91	53.50	13.14	58.33	5.55
4. Liminal "I Am" (N = 11)	50.62	12.74	50.82	12.18	58.36	7.67
5. Liminal "You Are" (N = 12)	48.42	8.36	45.82	8.87	53.50	6.97

TABLE 10 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--self-confidence		.472	.756
Subliminal and liminal groups	5.555	1.521	.223
Subliminal groups "I Am" and "You Are"	4.031	1.666	.203
Control and both subliminal groups	.002	-0.000	1.000
Control and subliminal group "I Am"	2.018	.358	.552
Control and subliminal group "You Are"	-2.013	.370	.546
Control and both liminal groups	-0.019	.000	.997
Control and liminal group "I Am"	.743	.050	.824
Control and liminal group "You Are"	-0.781	.058	.811

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 11

Adjective Check List Scale: Self-control

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	58.20	6.49	54.70	6.82	62.00	2.58
2. Subliminal "I Am" (N = 11)	48.91	12.07	47.23	15.45	55.91	10.65
3. Subliminal "You Are" (N = 12)	46.25	9.80	45.48	11.69	55.25	7.64
4. Liminal "I Am" (N = 11)	53.91	8.36	49.18	9.55	53.46	8.81
5. Liminal "You Are" (N = 12)	54.17	14.91	53.50	10.73	56.17	7.43

TABLE 11 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--self-control		1.274	.293
Subliminal and liminal groups	-4.384	1.350	.251
Subliminal groups "I Am" and "You Are"	-1.349	.256	.615
Control and both subliminal groups	4.380	2.899	.095
Control and subliminal group "I Am"	3.706	1.629	.208
Control and subliminal group "You Are"	5.055	3.058	.087
Control and both liminal groups	1.881	.545	.464
Control and liminal group "I Am"	.363	.015	.903
Control and liminal group "You Are"	3.398	1.465	.232

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 12

Adjective Check List Scale: Lability

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	47.90	6.94	43.30	3.83	56.90	6.62
2. Subliminal "I Am" (N = 11)	53.46	15.56	54.82	13.53	57.55	10.33
3. Subliminal "You Are" (N = 12)	47.67	11.80	45.50	8.86	53.83	7.47
4. Liminal "I Am" (N = 11)	54.09	6.88	54.27	6.54	51.64	9.10
5. Liminal "You Are" (N = 12)	53.08	10.63	49.42	10.80	54.42	8.49

TABLE 12 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--lability		.540	.707
Subliminal and liminal groups	3.575	.581	.449
Subliminal groups "I Am" and "You Are"	2.067	.398	.531
Control and both subliminal groups	1.802	.372	.545
Control and subliminal group "I Am"	2.835	.651	.424
Control and subliminal group "You Are"	.768	.056	.813
Control and both liminal groups	-0.920	.088	.768
Control and liminal group "I Am"	-0.166	.002	.965
Control and liminal group "You Are"	-1.674	.256	.615

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 13

Adjective Check List Scale: Personal Adjustment (means, standard deviations, and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	54.60	6.80	51.60	11.02	62.30	4.92
2. Subliminal "I Am" (N = 11)	51.27	10.83	44.55	14.31	54.09	11.38
3. Subliminal "You Are" (N = 12)	45.42	12.56	45.17	8.86	54.00	10.79
4. Liminal "I Am" (N = 11)	54.62	7.23	53.00	7.13	52.27	12.88
5. Liminal "You Are" (N = 12)	51.25	15.81	47.92	15.46	57.17	10.44

TABLE 13 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--personal adjustment		1.077	.378
Subliminal and liminal groups	-6.332	2.053	.158
Subliminal groups "I Am" and "You Are"	-6.300	4.169	.047
Control and both subliminal groups	.822	.078	.781
Control and subliminal group "I Am"	-2.328	.481	.491
Control and subliminal group "You Are"	3.972	1.458	.233
Control and both liminal groups	.325	.013	.911
Control and liminal group "I Am"	.308	.008	.928
Control and liminal group "You Are"	.341	.011	.916

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 14

Adjective Check List Scale: Achievement

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	55.00	12.54	49.70	11.34	61.60	6.31
2. Subliminal "I Am" (N = 11)	52.55	7.15	52.64	10.67	57.82	6.45
3. Subliminal "You Are" (N = 12)	53.58	16.06	53.58	12.46	55.58	7.90
4. Liminal "I Am" (N = 11)	53.91	9.64	52.55	7.76	56.18	9.22
5. Liminal "You Are" (N = 12)	51.75	11.83	49.58	7.74	54.67	8.75

TABLE 14 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--achievement		.547	.702
Subliminal and liminal groups	1.243	.074	.787
Subliminal groups "I Am" and "You Are"	.510	.025	.875
Control and both subliminal groups	4.295	2.034	.160
Control and subliminal group "I Am"	4.550	1.775	.189
Control and subliminal group "You Are"	4.040	1.397	.243
Control and both liminal groups	2.499	.676	.415
Control and liminal group "I Am"	2.866	.688	.411
Control and liminal group "You Are"	2.133	.386	.537

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 15

Adjective Check List Scale: Dominance

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	52.70	9.96	49.50	9.23	60.70	4.86
2. Subliminal "I Am" (N = 11)	54.09	5.84	54.91	6.16	59.00	4.58
3. Subliminal "You Are" (N = 12)	57.33	16.27	52.67	14.87	56.58	8.19
4. Liminal "I Am" (N = 11)	55.18	9.57	53.09	7.91	57.82	8.41
5. Liminal "You Are" (N = 12)	45.83	11.13	47.33	8.54	55.42	7.14

TABLE 15 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--dominance		1.327	.273
Subliminal and liminal groups	1.256	.065	.800
Subliminal groups "I Am" and "You Are"	5.570	2.665	.109
Control and both subliminal groups	-0.425	.018	.893
Control and subliminal group "I Am"	2.360	.428	.516
Control and subliminal group "You Are"	-3.210	.815	.371
Control and both liminal groups	1.731	.303	.584
Control and liminal group "I Am"	-0.426	.014	.906
Control and liminal group "You Are"	3.889	1.180	.283

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 16

Adjective Check List Scale: Endurance

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	55.30	9.27	50.90	11.31	59.90	5.93
2. Subliminal "I Am" (N = 11)	51.36	9.95	51.00	11.69	57.82	10.83
3. Subliminal "You Are" (N = 12)	51.92	14.30	49.67	9.75	56.17	7.38
4. Liminal "I Am" (N = 11)	54.64	9.41	51.55	9.99	55.55	7.58
5. Liminal "You Are" (N = 12)	51.92	11.41	50.67	8.77	55.00	7.14

TABLE 16 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--endurance		.576	.681
Subliminal and liminal groups	-0.008	.000	.992
Subliminal groups "I Am" and "You Are"	1.890	.487	.489
Control and both subliminal groups	2.854	1.330	.254
Control and subliminal group "I Am"	3.799	1.792	.187
Control and subliminal group "You Are"	1.909	.464	.499
Control and both liminal groups	1.704	.460	.501
Control and liminal group "I Am"	.755	.069	.794
Control and liminal group "You Are"	2.652	.880	.353

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 17

Adjective Check List Scale: Order

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	54.80	9.15	53.70	7.54	57.80	4.71
2. Subliminal "I Am" (N = 11)	50.09	11.38	49.73	11.23	55.46	10.78
3. Subliminal "You Are" (N = 12)	51.42	14.18	50.83	10.81	52.58	7.15
4. Liminal "I Am" (N = 11)	53.36	9.71	53.09	12.07	53.55	7.83
5. Liminal "You Are" (N = 12)	54.25	9.73	52.42	7.75	55.92	7.54

TABLE 17 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--order		.143	.965
Subliminal and liminal groups	1.987	.348	.558
Subliminal groups "I Am" and "You Are"	1.231	.262	.611
Control and both subliminal groups	-0.077	.001	.973
Control and subliminal group "I Am"	.539	.046	.832
Control and subliminal group "You Are"	-0.692	.076	.783
Control and both liminal groups	-0.759	.121	.729
Control and liminal group "I Am"	-0.381	.022	.882
Control and liminal group "You Are"	-1.138	.215	.645

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 18

Adjective Check List Scale: Intraception

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	54.90	9.71	53.10	6.45	63.90	4.65
2. Subliminal "I Am" (N = 11)	50.18	14.97	49.55	18.55	58.09	12.56
3. Subliminal "You Are" (N = 12)	48.92	11.16	48.42	9.74	57.00	10.15
4. Liminal "I Am" (N = 11)	55.09	10.31	51.27	12.95	53.46	14.40
5. Liminal "You Are" (N = 12)	56.00	12.18	50.25	16.51	55.25	12.01

TABLE 18 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--intraception		1.283	.290
Subliminal and liminal groups	.660	.016	.898
Subliminal groups "I Am" and "You Are"	-0.408	.013	.911
Control and both subliminal groups	1.695	.251	.618
Control and subliminal group "I Am"	1.491	.149	.701
Control and subliminal group "You Are"	1.899	.248	.621
Control and both liminal groups	-4.041	1.366	.248
Control and liminal group "I Am"	-3.507	.781	.381
Control and liminal group "You Are"	-4.574	1.414	.240

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 19

Adjective Check List Scale: Nurturance

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	56.60	7.31	54.20	11.07	61.00	3.77
2. Subliminal "I Am" (N = 11)	52.18	12.13	49.64	14.41	55.46	9.32
3. Subliminal "You Are" (N = 12)	44.75	10.92	43.33	14.14	54.58	10.01
4. Liminal "I Am" (N = 11)	54.73	4.63	54.27	7.90	51.73	10.39
5. Liminal "You Are" (N = 12)	53.00	14.39	48.53	17.06	52.33	9.46

TABLE 19 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--nurturance		1.336	.270
Subliminal and liminal groups	-1.207	.107	.745
Subliminal groups "I Am" and "You Are"	-3.376	1.709	.197
Control and both subliminal groups	4.002	2.746	.104
Control and subliminal group "I Am"	2.313	.719	.401
Control and subliminal group "You Are"	5.690	4.284	.044
Control and both liminal groups	2.406	.951	.334
Control and liminal group "I Am"	3.491	1.534	.221
Control and liminal group "You Are"	1.321	.231	.633

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 20

Adjective Check List Scale: Affiliation

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	50.70	8.03	47.90	9.92	59.40	2.80
2. Subliminal "I Am" (N = 11)	48.27	10.13	46.82	12.42	50.55	11.43
3. Subliminal "You Are" (N = 12)	43.33	12.22	41.83	12.52	51.92	9.41
4. Liminal "I Am" (N = 11)	51.91	5.11	51.18	4.49	49.64	12.31
5. Liminal "You Are" (N = 12)	48.58	15.05	45.50	14.99	49.17	11.34

TABLE 20 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--affiliation		.299	.877
Subliminal and liminal groups	-0.746	.032	.858
Subliminal groups "I Am" and "You Are"	-1.538	.281	.598
Control and both subliminal groups	1.369	.253	.617
Control and subliminal group "I Am"	.600	.037	.848
Control and subliminal group "You Are"	2.138	.491	.487
Control and both liminal groups	-0.421	.023	.880
Control and liminal group "I Am"	-0.025	.000	.991
Control and liminal group "You Are"	-0.817	.070	.793

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 21

Adjective Check List Scale:

Heterosexuality

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	52.40	9.91	49.10	15.07	56.60	7.93
2. Subliminal "I Am" (N = 11)	52.27	10.00	51.46	9.61	56.00	7.68
3. Subliminal "You Are" (N = 12)	49.50	10.82	45.08	10.79	54.83	8.91
4. Liminal "I Am" (N = 11)	52.73	6.31	50.64	7.12	52.73	9.06
5. Liminal "You Are" (N = 12)	53.83	12.29	50.42	13.39	55.50	8.84

TABLE 21 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--heterosexuality		.306	.872
Subliminal and liminal groups	1.616	.191	.664
Subliminal groups "I Am" and "You Are"	1.333	.258	.614
Control and both subliminal groups	-0.404	.029	.866
Control and subliminal group "I Am"	.262	.009	.925
Control and subliminal group "You Are"	-1.071	.158	.693
Control and both liminal groups	-1.932	.634	.430
Control and liminal group "I Am"	-1.790	.405	.528
Control and liminal group "You Are"	-2.073	.594	.445

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 22

Adjective Check List Scale: Exhibition

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	44.80	8.16	44.50	8.82	55.00	2.54
2. Subliminal "I Am" (N = 11)	54.91	8.69	53.36	10.28	54.55	6.82
3. Subliminal "You Are" (N = 12)	55.58	14.06	53.58	15.07	53.75	5.79
4. Liminal "I Am" (N = 11)	51.46	9.92	48.73	10.03	54.46	6.46
5. Liminal "You Are" (N = 12)	48.50	10.35	47.25	10.38	52.42	4.40

TABLE 22 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--exhibition		.691	.602
Subliminal and liminal groups	-1.535	.245	.623
Subliminal groups "I Am" and "You Are"	.406	.035	.853
Control and both subliminal groups	-2.877	1.922	.172
Control and subliminal group "I Am"	-2.674	1.286	.262
Control and subliminal group "You Are"	-3.080	1.748	.192
Control and both liminal groups	-2.103	1.099	.300
Control and liminal group "I Am"	-3.073	1.789	.187
Control and liminal group "You Are"	-1.132	.248	.621

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 23

Adjective Check List Scale: Autonomy

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	43.00	6.27	43.50	8.06	48.00	5.31
2. Subliminal "I Am" (N = 11)	48.64	11.69	53.36	9.97	53.82	5.62
3. Subliminal "You Are" (N = 12)	59.42	9.14	58.25	13.34	50.67	6.56
4. Liminal "I Am" (N = 11)	49.27	11.35	48.82	9.55	51.73	6.70
5. Liminal "You Are" (N = 12)	47.33	11.16	44.67	9.17	50.83	6.07

TABLE 23 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--autonomy		1.985	.112
Subliminal and liminal groups	9.212	4.537	.038
Subliminal groups "I Am" and "You Are"	8.242	6.860	.012
Control and both subliminal groups	-2.066	.475	.494
Control and subliminal group "I Am"	2.055	.375	.543
Control and subliminal group "You Are"	-6.187	3.283	.076
Control and both liminal groups	-2.487	.796	.377
Control and liminal group "I Am"	-2.002	.385	.538
Control and liminal group "You Are"	-2.972	.905	.346

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 24

Adjective Check List Scale: Aggression

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	44.20	2.04	45.60	5.44	42.50	3.87
2. Subliminal "I Am" (N = 11)	52.46	12.59	54.36	15.02	48.09	9.56
3. Subliminal "You Are" (N = 12)	58.58	11.01	58.33	11.68	48.33	6.24
4. Liminal "I Am" (N = 11)	47.27	9.71	48.55	10.91	49.55	8.23
5. Liminal "You Are" (N = 12)	47.50	13.62	50.83	15.66	46.83	6.24

TABLE 24 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--aggression		1.879	.129
Subliminal and liminal groups	1.083	.106	.746
Subliminal groups "I Am" and "You Are"	3.149	1.823	.183
Control and both subliminal groups	-4.270	3.550	.065
Control and subliminal group "I Am"	-2.696	1.127	.294
Control and subliminal group "You Are"	-5.844	5.237	.026
Control and both liminal groups	-1.214	.305	.583
Control and liminal group "I Am"	-2.247	.779	.382
Control and liminal group "You Are"	-0.181	.006	.940

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 25

Adjective Check List Scale: Change

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	44.60	8.85	42.80	8.44	50.90	5.30
2. Subliminal "I Am" (N = 11)	47.36	10.41	50.46	11.29	52.00	8.87
3. Subliminal "You Are" (N = 12)	48.25	10.96	46.67	12.93	48.17	7.47
4. Liminal "I Am" (N = 11)	50.00	10.95	50.09	9.45	48.00	8.30
5. Liminal "You Are" (N = 12)	50.17	8.24	48.08	9.29	48.58	7.96

TABLE 25 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--change		1.043	.395
Subliminal and liminal groups	5.588	2.559	.116
Subliminal groups "I Am" and "You Are"	3.949	2.529	.118
Control and both subliminal groups	1.069	.214	.645
Control and subliminal group "I Am"	3.043	1.321	.256
Control and subliminal group "You Are"	-0.905	.122	.729
Control and both liminal groups	-0.915	.148	.702
Control and liminal group "I Am"	-0.096	.001	.972
Control and liminal group "You Are"	-1.735	.440	.510

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 26

Adjective Check List Scale: Succorance

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	49.10	7.19	47.90	11.12	40.50	3.54
2. Subliminal "I Am" (N = 11)	48.73	8.42	47.46	11.41	39.73	6.23
3. Subliminal "You Are" (N = 12)	48.67	10.34	48.42	10.65	42.58	5.93
4. Liminal "I Am" (N = 11)	42.36	7.87	45.82	11.69	42.00	4.94
5. Liminal "You Are" (N = 12)	52.00	12.27	54.50	12.65	43.25	5.72

TABLE 26 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--succorance		1.300	.283
Subliminal and liminal groups	3.512	.745	.392
Subliminal groups "I Am" and "You Are"	-0.819	.084	.773
Control and both subliminal groups	.466	.034	.854
Control and subliminal group "I Am"	.056	.000	.985
Control and subliminal group "You Are"	.875	.083	.762
Control and both liminal groups	3.412	1.784	.188
Control and liminal group "I Am"	5.577	3.644	.062
Control and liminal group "You Are"	1.246	.180	.673

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 27

Adjective Check List Scale: Abasement

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	51.40	7.47	52.50	10.00	43.40	5.17
2. Subliminal "I Am" (N = 11)	45.46	6.65	48.55	6.53	41.36	3.01
3. Subliminal "You Are" (N - 12)	41.75	12.62	41.33	14.16	42.75	5.38
4. Liminal "I Am" (N = 11)	41.27	11.59	45.73	9.12	43.36	4.20
5. Liminal "You Are" (N = 12)	52.08	8.36	54.75	9.09	45.92	6.74

TABLE 27 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Signif-icance level
Adjective check list--abasement		.973	.431
Subliminal and liminal groups	5.738	1.875	.177
Subliminal groups "I Am" and "You Are"	1.102	.133	.717
Control and both subliminal groups	2.654	.934	.339
Control and subliminal group "I Am"	3.205	1.075	.305
Control and subliminal group "You Are"	2.103	.438	.511
Control and both liminal groups	3.245	1.478	.230
Control and liminal group "I Am"	5.563	3.176	.081
Control and liminal group "You Are"	.927	.094	.761

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 28

Adjective Check List Scale: Deference

(means, standard deviations,

and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N = 10)	58.60	7.89	57.30	8.93	48.00	7.44
2. Subliminal "I Am" (N = 11)	48.18	8.59	47.91	10.95	44.64	5.28
3. Subliminal "You Are" (N = 12)	41.83	11.22	40.25	15.16	44.17	6.56
4. Liminal "I Am" (N =11)	47.82	10.29	48.82	10.36	45.82	7.78
5. Liminal "You Are" (N = 12)	55.33	11.28	55.25	10.77	46.75	8.05

TABLE 28 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--deference		.975	.430
Subliminal and liminal groups	1.960	.346	.559
Subliminal groups "I Am" and "You Are"	-0.879	.133	.717
Control and both subliminal groups	3.723	2.537	.118
Control and subliminal group "I Am"	3.283	1.640	.206
Control and subliminal group "You Are"	4.162	2.385	.129
Control and both liminal groups	3.049	1.969	.167
Control and liminal group "I Am"	4.469	3.099	.085
Control and liminal group "You Are"	1.630	.452	.505

[a]The difference of the posttest means; adjusted for the two pretest covariates.

TABLE 29

Adjective Check List Scale: Counseling Readiness (means, standard deviations, and F ratios)

Group	Posttest		Pretest			
	Real-self		Real-self		Ideal-self	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
1. Control (N =10)	48.90	7.36	51.20	11.12	43.50	7.41
2. Subliminal "I Am" (N = 11)	49.82	7.55	52.27	10.89	46.27	7.43
3. Subliminal "You Are" (N = 12)	54.00	10.47	56.50	12.10	42.92	6.14
4. Liminal "I Am" (N = 11)	48.36	9.47	50.64	7.81	48.18	7.60
5. Liminal "You Are" (N = 12)	49.50	10.41	53.42	13.53	47.33	9.98

TABLE 29 (continued)

Analysis of Covariance

	Special contrasts[a]	F ratio	Significance level
Adjective check list--counseling readiness		.297	.879
Subliminal and liminal groups	1.723	.160	.691
Subliminal groups "I Am" and "You Are"	2.036	.448	.506
Control and both subliminal groups	-1.291	.227	.636
Control and subliminal group "I Am"	-0.273	.008	.931
Control and subliminal group "You Are"	-2.309	.559	.458
Control and both liminal groups	.525	.036	.850
Control and liminal group "I Am"	.368	.013	.908
Control and liminal group "You Are"	.681	.049	.826

[a]The difference of the posttest means; adjusted for the two pretest covariates.

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Abstract

The purpose of the investigation was to explore the application of subliminal perception to personality assessment and personality modification. The California Psychological Inventory (CPI) was administered as a pretest and posttest, and the Factor 1 score, a combination of 10 scales, was used as an objective assessment of personal adjustment. The Adjective Check List (ACL) was,

a. tachistoscopically administered, at a subliminal level individually determined for each S, to obtain a nonconscious self-description; and

b. consciously administered as a pretest and posttest to obtain real-self and ideal-self descriptions.

Part 1 explored the relation of the discrepancy between conscious and nonconscious self-descriptions to personal adjustment. The relation was analyzed by correlating the pretest CPI Factor 1 score with the absolute discrepancy between the descriptions obtained from the conscious real-self and subliminal ACL administrations. Significant correlations were hypothesized and seven (six positive and one negative) were found. However, only negative correlations were expected. Therefore, it was concluded that,

a. subjects' responses made during the subliminal ACL administration were random, and

b. the seven significant correlations are artifacts.

Part 2 explored the effect of subliminally perceived suggestions directing personality changes. One control and four experimental groups

were used. The suggestions, utilizing two different phrases ("I Am" and "You Are") and adjectives used only on the pretest ACL ideal-self, were presented (a) subliminally to two groups, and (b) supraliminally to two groups. The suggestions each experimental subject received included only the adjectives descriptive of subject's ideal-self. No significant F ratios were found in the analysis of covariance of the posttest.

a. frequency (word count) with which the suggested adjectives were used to describe the real-self ($p < .979$);

b. real-self ACL Mean ($p < .302$), nor any of the ACL scales; or

c. CPI Factor 1 score ($p < .181$).

However, the latter may indicate the possibility of effect and the special contrasts performed among the groups suggests that the subliminal perception of "You Are" and the supraliminal perception of "I Am" may both be effective ($p < .037$) in producing personality changes.

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