

THE EFFECTS OF SELF-CONFRONTATION
ON THE SELF-CONCEPT

A Dissertation

Presented to

The Research Committee

Dr. G. Robert Ward, Chairman

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and

Faculty of the College of Education

The University of Houston

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Carolyn Nelson Smith

May 1972

620861

Acknowledgements

The author wishes to thank the Research Committee Chairman, Dr. G. Robert Ward, and members, Dr. Joseph P. Carbonari, Dr. LaVerne Carmical, and Dr. Larry R. Judd, for their assistance in planning, conducting, and reporting this study. Appreciation is due to Bill Duer and to Wayne J. Harberson for guidance in the use of the computer for the statistical analysis of data.

To Dr. Wayne N. Thompson, Chairman of the University of Houston Speech Department, and to Dr. Don Olson, Director of the Basic Speech Course at the University of Houston, the author wishes to express indebtedness for making students and Teaching Fellows available for the collection of preliminary data. Sincere appreciation is also felt for the patience and flexibility of the three instructors, Dr. Robert Heath, Harriet Coleman, and Carin Attas, whose class schedules were affected by the experimental procedures.

Finally, to the student subjects who had no promise of gain nor gratification, the author wishes to express an appreciation of the time contributed and the acceptance of unexplained procedures during the study.

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Smith, Carolyn Nelson. "The Effects of Self-confrontation on the Self-concept." Unpublished doctoral dissertation. The University of Houston, 1972.

Committee Chairman: G. Robert Ward

Abstract

After the Semantic Differential scores of 408 students enrolled in basic speech course at The University of Houston in the fall, 1971, were factor analyzed, two factors emerged as the dimensions on which the target concept, self-concept, could be measured. The same instrument was used to measure the 80 subjects who participated in this study.

To determine whether a delay of one month after self-confrontation by videotape before measurement, the presence of a supportive companion during and after self-confrontation, the sex of a subject, or an interaction between any of these variables affect the self-concept after self-confrontation, 80 subjects were stratified by sex and randomly assigned to one of four treatments. All subjects were videotaped under constant conditions while making a five-minute expository speech before an audience. Treatment thereafter was governed by the group assignment of the subjects.

Subjects in the first group were shown their videotape by the female counselor, and left alone for ten minutes to complete an unrelated paper and pencil task used to equate the time spend with other subjects, before measurement with the Semantic Differential.

Subjects in the second group were given supportive companionship. As soon as the videotape began, the counselor took the seat near the subject. She engaged in the following behaviors that constitute supportive companionship:

(a) sitting beside the subject during the videotape replay and listening attentively to the speech, (b) inquiring about the feelings of the subject during the replay, (c) listening attentively and empathetically to the subject's responses, and (d) interspersing positive comments about the subject's behavior, voice quality, gestures, appearance, speech organization, topic choice, or whatever was commendable for ten minutes after the videotape finished playing. Then the measurement was made with the same instrument.

Subjects in the fourth group were treated as those in the third, except that they returned for measurement in a month.

The scores of subjects were multiplied by the factor weights assigned by the factor analysis, and then summed to produce two scores for each subject, one on the dynamism and one on the evaluative dimension. Two three-way analyses of variance were computed, one for each factor. Tests for homogeneity of variance and normality of distribution were made.

The results, at the .05 level of significance, indicated that null hypotheses stating that the timing of measurement,

the presence of supportive companionship, the sex of subjects, or an interaction of any of these variables would make no significant difference in the self-concept scores were not rejected with one exception.

The self-concept scores of undergraduate males and females were significantly different on the dynamism factor of self-concept. Female subjects rated themselves significantly less dynamic than male subjects rated themselves.

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THE EFFECTS OF SELF-CONFRONTATION
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Chapter I
Introduction

Electronic visual and auditory reproductions of human behavior can be made available minutes after the behavior occurs. Videotape recorders are used in the education of counselors, actors, athletes, speakers, and classroom teachers (Bradley, 1970). Frandsen, Larson, and Knapp (1968) reported experimental usage as diverse as aiding retarded subjects in rapid acquisition of table manners, and improving the culture contact and interaction abilities of the United States Air Force Commandos.

While some counselor educators and authors advocated the use of videotape in the education and evaluation of counselors (Buchheimer, Goodman, & Suci, 1965; Kagan, Krathwohl, & Miller, 1963; Poling, 1968; Ryan, 1969; Shapiro 1966), empirical studies did not always support their views. The experiments of Boyd and Sesney (1967), Ivey, Normington, Miller, Morrill, and Haase (1968), and Walz and Johnson (1963) supported the use of videotape. However, over the same span of time, the experiments of English and Jelenevsky (1971), Kagan, Krathwohl, and Farquhar (1965), Logue, Zenner, and Gohman (1968), and Markey, Fredrickson, Johnson and Julius (1970) showed no significant advantage of those using

videotape. Not only researchers disagree about the desirability of video tape, the reactions of subjects in the research also varies.

The reported reactions of students who have confronted films or videotapes of their behavior varies considerably. The key to the variations seems to be in the timing of the opinion sample. Nielsen (1962) found that confrontation with filmed behavior that clashed with internally held self-concepts caused subjects to reject, deny, or express embarrassment about actions recorded a week earlier. The emotion engendered by the self-confrontation was intense enough to interfere with recall of subjective experiences during filming. Nielsen said the subjects' "first and immediate response could be extremely emotional, sometimes shocking, but became more and more matter-of-fact as the experience was repeated (p. 189)." Other experimenters who used self-confrontation also noted discomfort if the observations were made before or during the confrontation.

Hawkins (1968) wrote that student reports of enthusiasm about being videotaped contrasted with visible signs of unease--fidgeting and squirming--during the self-confrontation. He attributed the strengthened self-concept found in videotaped subjects to culturally inappropriate measurement, rather than effects of self-confrontation. Hawkins used

subjects whom he described as under-achieving, culturally and socially disadvantaged college youth.

Frandsen, Larson, and Knapp (1968) found a majority of the 60% of the videotaped students who accepted the invitation to characterize their reactions did so with words of approval. Not only did these subjects report after the confrontation, but 40% did not choose to characterize the experience at all. The authors made no mention of student reactions before or during the confrontation. Therefore, all that is certain is that after confrontation with self, more than 30% indicated approval of the experience to the experimenters. Even after the experience, 17% expressed "reservations" or "anxiety".

That anxiety or discomfort is present before and during self-confrontation seems reasonable in the light of Wylie's observation that it is "implicit or explicitly assumed by all theorists that the self-concept is not entirely 'realistic,' and that lack of 'realism' may have psychodynamic significance and important behavioral consequence (1961, p. 5)." A videotape of an individual's voice, appearance, and behavior holds the potential of bringing into conflict the unrealistic self-concept and the more objectively perceived self. An instance of this was thought to occur in an experiment by Dieker, Crane, and Brown (1970).

Students who had not viewed their behavior, significantly increased their self-rating on all factors of the self-concept; while those who had seen their videotapes four times in the semester did not. Dieker, Crane, and Brown postulated that without the anchor in reality provided by self-confrontation, the classroom experience may have tended to inflate students' self-concept. The students not required to experience self-confrontation avoided the conflict between the covert self-concept and the overt image, sound, and behaviors reproduced on videotape, with the attendant cognitive dissonance.

Cognitive Dissonance

Leon Festinger (1957) theorized that when any cognition was contradicted by another cognition relevant to the first and to the individual, a state of cognitive dissonance existed. Cognition includes "any knowledge, opinion, or belief about the environment, about oneself, or about one's behavior (p. 3)." Cognitive dissonance, according to Festinger, is a motivation leading "to activity oriented toward dissonance reduction just as hunger leads to activity oriented to hunger reduction (p. 3)."

When two elements of cognition are relevant to one another, they are in dissonant relation if, "considering these two alone, the obverse of one element would follow from the other (Festinger, 1957, p. 13)." The individual

who believed himself graceful may experience cognitive dissonance when seeing an example of awkward behavior he had produced.

Festinger indicated that rarely do clusters of cognitive elements exist wholly without dissonant elements, but the total amount of dissonance between an element and the other elements "will depend on the proportion of relevant elements that are dissonant with the one in question (Festinger, 1957, p. 17)."

The elements which an individual believes to be true about himself are undeniably relevant to that individual. Self-confrontation by videotape provides a wealth of auditory, visual, and behavioral elements which may be dissonant with the self-concept that is always "unrealistic" to one degree or another, according to Wylie (1961).

Perhaps individuals facing self-confrontation sense that the vividness and completeness of videotape recording engenders problems like those of the student counselors in the Yenawine and Arbuckle study (1971). These counselor educators noticed a marked difference in the reactions of counselor trainees randomly assigned to a group that would have counseling interviews videotaped and those whose counseling interviews would be audiotaped. The videotape requirement was initially perceived as more threatening than the audiotape requirement. Yenawine and Arbuckle concluded

that videotape ought not be used in the early stages of counselor training so the beginning counselors could concentrate on identifying with the client, instead of themselves. Thus, both undergraduate and graduate students, in different fields of study, may react to videotape self-confrontation as a threat, because of the abundant new, possibly dissonant, cognitive elements the experience supplies to the "unrealistic" self-concept.

Background of the Problem

Bennis, Schein, Steele, and Berlew (1968, p. 217) stated that "every person has certain beliefs about who or what he is: taken together these beliefs are a person's self-image or identity." However, the words used to designate this collection of beliefs varies considerably.

J Definitions. Brammer and Shostrom (1968, p. 46) listed some of the terminological variations used in reference to the picture an individual calls "I" or "me" with that which authors call "concept of self," "self-image," or "self-structure." Bennis et al. (1968, p. 208) used the terms "identity," "self-image," or "self-concept" interchangeably, while Patterson (1969) used the terms "self-esteem" and "self-regard." Ellis (1969) preferred to name the construct "self-acceptance." All the terms listed above appear interchangeable in general practice, except perhaps "self-acceptance."

Brammer and Shostrom (1968) described concept of self as steadily differentiating, and containing awareness of the possessor's nature, capacities, values, and aspirations. Self-concept will be operationally defined here by numerical values on the Semantic Differential.

Self-confrontation means seeing and hearing a reproduction of the subject's previous behavior. Naive means, in this instance, that subjects have never before experienced self-confrontation, as defined above.

Origin, permeability, and importance of self-concept
The self-concept develops in early infancy, learned from the individual's experiences and interactions, and continues to develop, positively or negatively, throughout a lifetime (Brammer & Shostrom, 1968; Erickson, 1956).

That the self-concept is permeable during the late teen and early twenty years is attested to by the following empirical studies. Hountras and Pederson (1970) confirmed that external circumstances, such as group memberships resulted in significantly differing self-concepts for college students. Baird (1969) conducted a broader study in which one question was the effect of college students' living arrangements on their self-concept. Both scholarship and popularity were significantly affected by housing for male and female subjects, and expressiveness proved significantly affected in female subjects.

✓ A consistent and positive self-concept is central to a healthy personality (Bennis, Schein, Steele, & Berlew, 1968; Combs & Snygg, 1959; Hilgard, 1949; Maslow, 1954; Patterson, 1969; Stanton, 1956; White, 1956 & Wylie, 1961. Inadequate or negative self-concepts are characteristic of those who engage in belligerent, criminal, or despairing behavior (Combs & Snygg, 1959), and in extreme cases, of suicide (Alfert, 1969). Farnham-Diggory (1964) measured significantly lower self-concepts in a population of psychotic males among those classed as covert suicidal when compared to non-suicidal males in the same psychotic population. However, Alfert's work pertains more directly here, for her population was a normal college student body. In addition to the centrality of a positive and consistent self-concept for mental health, mentioned above, Kagan and Krathwohl (1967) determined that the healthy self-concept was one of two things that are basic elements in the learning process.

✓ Several variables thought to affect self-concept will be considered below.

Effect of time. Although some of Nielsen's subjects first rejected their filmed behavior, a year and a half later they all "owned" the behavior, and were able to report their covert feelings experienced during filming (1962). Possible explanations included subject maturation, integration of the viewing experience into a revised self-concept, or perspective gained within the elapsed time.

Time was also deemed an important variable in subjects' reaction to self-confrontation in a study by Dieker, Crane, and Brown (1968). They predicted that the difference in self- and ideal self-ratings on a Semantic Differential would be less after four speaking assignments and self-confrontations for the experimental group than for the control group without self-confrontation. They found the opposite and postulated that without the anchor in reality of self-confrontation, the class experience may have tended to inflate student's self-concept. Further, they thought timing--self-confrontation always occurred during the following class period with measurement immediately after the confrontation--may have affected the results. They allowed no break during the experience for analysis or reflection, which they subsequently thought may have been helpful.

Effect of companionship. To maximize the benefits of self-confrontation, Danet (1968) felt that not only analysis and reflection time might be needed, but possibly the presence of another person. In the studies of Kagan et al. (1965, 1967), the experimenters provided such a person, called an interrogator or recall interviewer. However, in the 1965 study, even the presence of another person did not produce judged, significant differences in the counseling process effectiveness under three conditions--self-viewing, self-hearing, and control. One explanation

offered was that this self-confrontation may overwhelm beginning counselors with insights and cause regression. Another explanation was that insufficient time for assimilation and integration might have been allowed.

Cole, Cunningham, and Landsman (1963) pointed out the importance of having another person indicate desired behavior before self-concept gains resulted. Although Cole et al. worked with sixth grade children, the principle of focusing attention for the subject during self-confrontation may hold with older subjects as well.

Effect of subject's sex. Allport (1961) found greater percentages of college females experienced feelings of physical, social, and intellectual inferiority than did college males. Berger (1968), with 272 undergraduates as subjects wrote that "females' self-evaluation stems from different sources than males' self-evaluation (p. 445)." Females, Berger thought, derived their self-concept from social certainty, in contrast to males who derived theirs from other sources. Therefore, male and female self-concept data should be analyzed separately.

Summary. Researchers, then, from different academic areas, suspect that self-confrontation, with a potential for disparity with the self-concept that can produce feelings of insecurity, inadequacy, or worthlessness (Brammer & Shostrom, 1968, p. 47), may interact with other variables.

Both the presence of a person with whom to analyze and integrate the self-confrontation experience, and timing of measurement have often been mentioned by investigators discussing outcomes that failed to confirm research hypotheses. The effect of sex group membership was also treated as a variable in this study.

Statement of the Problem

This study was designed to determine if timing of measurement, supportive companionship, subjects' sex, or the interaction of any of these affect self-concept after self-confrontation. Answers were sought for these questions:

1. Does delaying measurement for a month after self-confrontation affect subjects' self-concept?

2. Does the presence of a supportive companion during and after self-confrontation affect subjects' self-concept?

3. Does the sex of a subject affect the self-concept after self-confrontation?

4. Does an interaction between supportive companionship during and after self-confrontation, and delaying measurement for a month affect subjects' self-concept?

5. Does an interaction between supportive companionship during and after self-confrontation, and the sex of a subject affect subjects' self-concept?

6. Does an interaction between delaying measurement for a month after self-confrontation, and the sex of a subject affect subjects' self-concept?

7. Does an interaction between supportive companionship during and after self-confrontation, the sex of a subject, and the delay of measurement for a month after self-confrontation affect subjects' self-concept?

Hypotheses

To determine the effect of time, supportive companionship, sex of a subject, or the interaction of any of these variables on the self-concept after self-confrontation, the following hypotheses were tested for each factor found in a factor analysis of the Semantic Differential:

1. Self-concept scores of subjects for whom measurement was delayed for a month after self-confrontation were significantly different from subjects measured the day of self-confrontation.
2. Self-concept scores of subjects receiving supportive companionship during and after self-confrontation were significantly different from those of subjects who did not.
3. Self-concept scores of male subjects were significantly different from those of female subjects.
4. Self-concept scores of subjects receiving both supportive companionship during and after self-confrontation, and a months time before measurement were significantly different from subjects who did not.

5. Self-concept scores of male subjects receiving supportive companionship during and after self-confrontation were significantly different from other subjects.

6. Self-concept scores of male subjects measured a month after self-confrontation were significantly different from other subjects.

7. Self-concept scores of male subjects receiving a months delay after self-confrontation before measurement, and supportive companionship during and after self-confrontation were significantly different from other subjects.

Methodology

Subjects were selected from four randomly selected sections of The University of Houston Department of Speech introductory course in the fall of 1971. Only sections meeting between the hours of nine and eleven o'clock were eligible for random selection. Only naive subjects were included as actual subjects, although all class members that were willing were treated as subjects. Naive subjects were stratified by sex. Each male and each female was randomly assigned to one of four treatments. Every student in the selected classes was assigned to a treatment.

Measurement. Dieker, Crane, and Brown (1968) used the Semantic Differential developed with factor analytic techniques by Dieker and Jones in 1966 for measuring subjects' cover self-concepts. Dieker, Crane, and Brown named the

four factors emerging from the analysis "wisdom," "pleasantness," "authoritativeness," and "forcefulness." They further defined these factors as "the student's general relationship with the universe, or knowledge," "the student's relationship with others," "with himself," and "energy or activity level."

The adjectives employed by Dieker, Crane and Brown were distributed for self-rating by 408 University of Houston students, using the target concept of "self" and refactored for this population.

Procedure. The first portion of the treatment was identical for all subjects. Speaking on an expository speech assignment for five minutes, each subject was videotaped in the same classroom with the same equipment and operator utilized. An audience, constant in composition and location, was present for each subject's videotaping, which began with the first utterance of his performance.

The classroom was 202 Agnes Arnold Hall, and the equipment was a Sony Videocorder, CV 2200, and Sony Camera, CVC 2100A. The operator was the author. To insure accurate timing, videotape was metered and precut. The positioning of the speaker's stand in the front of the room, and of the videotaping equipment in the back of the room was the same for all subjects.

Three Teaching Fellows in the Speech Department, none with students in the subject group, were employed to be the audience. The subjects entered the room one at a time so that no subject saw another perform this assignment, nor had any experience with this audience.

Random assignment to treatments was expected to cancel possible effects on the self-concept due to instructional differences, as well as those arising from past experience, socio-economic status, intellectual capacities, and such other factors as many have been operating.

Immediately after a subject finished speaking, he was given his segment of videotape, asked to take it to room 102 in the Education Building, and give it to the female counselor who met him in the Department of Guidance and Counseling. The treatment given in the next fifteen minutes was governed by the group to which the subject was assigned.

A subject in the first group was shown his videotape by the counselor, and asked to write for the following ten minutes all of the words that could be constructed in that time from the letters in the name of the author of the text in his speech course. The subject was given paper and pencil, and left alone in the room to complete this task. At the end of ten minutes, the counselor returned, and asked the subject to complete the Semantic Differential.

The subjects in the second group were treated identically, except that they were not measured at this time. Instead, after completing the word-making task described above, they were asked to return in thirty days for the final portion of the experiment. They were telephoned and reminded when the measurement time approached. The same counselor made the measurement.

In the third treatment, the counselor left the videotape machine as soon as the tape was started, and sat with the subject. She was trained to act as a supportive companion. Supportive companionship was defined by (a) sitting beside the subject during the videotape replay and listening attentively to the speech, (b) inquiring about the feelings of the subject during the replay, (c) listening attentively and empathetically to the responses, and (d) interspersing positive comments about the subject's behavior, voice quality, gestures, appearance, speech organization, topic choice, or whatever else was commendable. After ten minutes, the subject was asked to complete the Semantic Differential.

Treatment of subjects assigned to the fourth group was the same as that for the third group, except that measurement was delayed for thirty days. These subjects were also asked to return to complete their portion of the experiment, appointments were made, and telephone reminders given as the time approached. The same counselor conducted the measurement.

Instructors in the subjects' speech courses agreed to withhold grades and critiques until all subjects were measured.

Analysis. A three-way analysis of variance was used on factor scores generated for each factor disclosed by a principal components analysis of the twelve pairs of adjectives in the Semantic Differential. The assumptions of normality of distribution and homogeneity of variance were checked with the Shapiro-Wilks W and the F-Maximum tests, respectively. The null hypotheses were tested at the .05 level of significance for each factor.

Report of the Study

The study is reported in five chapters. They are titled and ordered as follows: (a) Introduction, (b) Review of the Literature, (c) Design and Procedure, (d) Results, and (e) Summary and Discussion. References and Appendices will follow the final chapter.

Chapter II

Review of the Literature

A Theory, as defined by Kerlinger (1964), is a "set of interrelated constructs (concepts), definitions, and propositions that presents a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena (p. 11)." George Kelly's (1963) criteria included the requirements that a theory must provide a parsimonious explanation of facts, predict events subordinate to the theory, have appropriate focus and range of convenience, validity, modifiability, generality, and fertility in producing additional research by yielding testable hypotheses. Festinger's theory of cognitive dissonance has been attacked and supported from similar criterion.

Cognitive Dissonance Theory

Three aspects of cognitive dissonance theory are particularly applicable here. The first discussed in Chapter I, is that any two relevant, but contradictory, cognitions arouse a state of cognitive dissonance which leads to activity oriented toward dissonance reduction. Cronkhite (1966) felt that this assumption had never been adequately tested, because other explanations might be offered for activities that Festinger assumed to be dissonance-reducing, and from which he inferred a previous state of dissonance.

However, if the theory of cognitive dissonance fulfills the requirements of offering a parsimonious explanation of facts, specifying relations among variables, and predicting events subordinate to the theory, Cronkhite's criticism need not interfere with the application of the theory. Early support for the theory's usefulness came from Osgood and Tannenbaum (1955).

The second relevant portion of dissonance theory is Festinger's idea that "changes in evaluation are always in the direction of increased congruity with the existing frame of reference (1957, p. 8)." This portion of the theory has been well supported in confrontation studies, not all of which were based in dissonance theory, nor were all the confrontations by videotape. Regardless of the theoretical base and the means of confrontation, in the following studies subjects moved toward congruence internally--as concepts about the ideal, public, and actual self--or congruence with external raters: Boyd and Sesney (1967), Braucht (1970), Cornelison and Arsenian (1960), Frandsen, Larson, and Knapp (1968), Gasswint (1968), Geertsma and Reivich (1965), Truax, Schuldt, and Wargo (1968), and Walz and Johnson (1963).

The third portion of dissonance theory pertinent here is one of the ways Festinger listed for reducing cognitive dissonance, adding new cognitive elements. Both the variables of time and supportive companionship provide opportunity

to reduce the confrontation-induced dissonance, as will be discussed later.

Brehm and Cohen (1962) were concerned that unless a person took overt action, there was difficulty stating with certainty that a state of cognitive dissonance existed. This reservation seems less applicable in the self-confrontation in view of Wylie's analysis (1961). She found a universal assumption among self theorists that self-concepts are to varying degrees unrealistic. If the self-concept is not veridical with the image seen on videotape playback, dissonance would logically ensue, for the concept of self is very relevant to self.

Evidence that new cognitions born of self-confrontation produced behavior usually construed as dissonance reducing came from Nielsen's study (1962). Some of the subjects denied that the filmed behavior was their own. Denial is one of the ways listed by Festinger as dissonance reducing (1957).

The particular strengths of cognitive dissonance theory seem to be research fertility (Aronson, 1968), and a wide range of convenience. For example, Festinger's theory has been applied in psychiatry (Boyd & Sesney, 1967), speech, Cronkhite (1965), social psychology (Janis & Feshback, 1953), psychology (Levy, 1963), and counseling (Staines, 1969).

Videotape Self-Confrontation

The apparent advantages of videotape playback in education, therapy, and training were stated by Nielsen (1962) with regard to film playbacks. He thought the "involved self-confrontation of the playback differs from the uninvolved self-confrontations which may occur in everyday life, e.g. when a person looks in a mirror to comb his hair (p. 34)" in the following ways. First, subjects know they have been filmed, and, so, have a set to look at themselves in the experimental situation. He compared this set to having someone ask an individual to come look at himself in the mirror, or unself-consciously doing the same without an observer. The former situation, he believed, forced a person to face their mirror-image in an emotional way.

Second, the presence of another person not only induces a set to be aware of self, but also strengthens emotional responses to the self for the perceiver is reacting to the other person's expectations and thoughts. Nielsen's third and fourth points were unique to his study, but the fifth and sixth have application here.

His fifth factor contributing to the intensity of self-awareness was "the fact that the subjects saw themselves . . . from the outside, as others might see them or as they see others. Thus, they are able to apply a set of person perception standards to seeing themselves which normally are

applied only to others (Nielsen, 1962, p. 35)." Finally, Nielsen felt the playback confrontation "contained most of, if not all the important ways in which a person can be confronted with himself in everyday life (p. 36)," that is, saw his body, ways of moving, heard his own voice, and evaluated his speech content.

Another advantage was observed by Stoller (1968), as a result of his work with groups. He found that with videotape playback there was no communication confusion due to another communication intervening between the subject and audiovisual image, and no way for the subject to reduce dissonance by distortion, avoidance, nor derogation of others. Working with T groups and videotape self-confrontations, Martin (1971) also expected videotape to be more effective than interpersonal feedback because it would circumvent subjective, biased, inaccurate, or delayed feedback, and could not be ignored nor denied by the receiver if personally threatening, nor could it alienate the receiver from the group as can feedback perceived to be judgmental. These advantages may also accrue to teachers, counseling practicum supervisors, or other using videotape instructionally, thus leaving teacher-learner relationship undisturbed.

For reasons similar to those given above, some writers thought videotape self-confrontation so impactful as to

cause immediate behavior change in marital, group, or psychotherapeutic situations (Alger & Hogan, 1967; Berger, Sherman, Spalding, & Westlake, 1968; Czajkoski, 1968). Others (Danet, 1967; Searle, 1968) concluded, after experimentation, that videotape self-confrontation did not necessarily produce the expected beneficial results, and might even prove disruptive or injurious unless other procedures were also instituted.

Results in both the expected and the unexpected direction appeared in Martin's study (1971). Measuring the variance of verbal quantity and frequency, the indicators of a democratic and sharing group atmosphere, in three videotaped T groups, Martin found that one group showed no effects from the self-confrontation, the variance of one group gradually decreased, at a statistically insignificant level, in both frequency and time. The other group significantly increased variance, indicating a "decrease in cooperation and mutual sharing behavior (p. 344)." Some time after, this latter group established a new trend of "progressive diminution in total time variance and frequency variance among group members (p. 345)", but the author gave no figures to indicate to what degree, nor made any attempt to relate the trend to the previous self-confrontation. Martin cautioned against drawing conclusions based on any one group since he expected all three groups to react in a similar way, decreasing variance.

A study (Lamb & Mahl, 1956) showed that even practicing psychiatrists were less at ease when their sessions were audiotaped. Niland, Duling, Allen and Panther (1971) reported results, unsurprising in view of the findings of Lamb and Mahl, that support the observations of Yenawine and Arbuckle (1971). Where Yenawine and Arbuckle deduced from counseling students' practicum diaries and comments that videotape recordings were initially perceived as more threatening than audiotape recordings, Niland's group administered Likert-type scales to 31 subjects who had experienced the counseling sessions in practicum under three conditions--nonmonitored, audiotaped, and videotaped. The analysis of variance of means for each treatment condition showed significant differences with videotaping representing the greatest threat of any condition. Therefore, professionals and students are uneasy in the presence of monitoring devices, and videotape constitutes the most threatening method of monitoring, whether or not followed by self-confrontation.

A common feature among the subjects in these studies was that they knew they were speaking and behaving before others. In 1965 Geer investigated 783 college students' fears, and found that they reported fear of public speaking to be among the five most intense fears. The intensity of this fear was corroborated by an experiment using physiological responses of subjects, both while anticipating the

need to make a public speech and while actually performing (Droppleman & McNair, 1971). The subjects were asked to report their general level of arousal or anxiety at each of five periods in the experiment which was completely replicated one week later. The reported feelings and the index of index finger sweat, when graphed, both rose rapidly during the anticipatory period, peaked during actual public speaking, and then dropped off sharply when the speaking was over. Noteworthy is the fact that this public speaking situation consisted of nothing more threatening than the experimenter and a tape-recorder placed twelve feet from the subject.

The sharp decline of physiologically measured and self-reported anxiety after the speaker finishes tends to corroborate observations made in Chapter I that the diversity among students' and subjects' reactions to videotape self-confrontation seems tied to the timing of the opinion sample. If the sample is taken right before, during, or when the memory has been refreshed, reports are primarily negative; if taken after the experience, opinions are somewhat more favorable.

Companionship and self-confrontation. In Martin's recent study (1971) of videotape confrontation effects in human relations training, he suggested that group members need to discuss videotape replays to insure significant and lasting gains from the experience. The need for

companionship and discussion was also indicated by Danet (1968), Kagan et al. (1965), and Dieker, Crane, and Brown (1968), working with populations drawn from groups varying from normal students to people diagnosed in need of psychotherapy. Nielsen (1962) provided companionship in the form of the experimenters themselves. He stated that they deliberately created a friendly atmosphere for the subjects, but did not specify any of the measures undertaken.

Cole, Cunningham, and Landsman (1963) stipulated that in order for children to change self-concept after confronting videotapes of their classroom behavior, someone must help them attend to the relevant details of their behavior. This idea was further developed by Stoller (1968). He believed the companion during self-confrontation should be supportive, particularly when the viewer's self-concept is poor, and should point out positive aspects of the videotaped performance.

Responding to a controversy in the field of counseling about the characteristics of a counselor approximating those of a woman, Carkhuff and Berenson (1969) reviewed empirical findings and concluded that it is not only traditional, but "most efficacious for the counselor to initiate counseling with a nurturant responsiveness (p. 25)." Although the initial client contacts call for the womanly qualities of the counselor, according to Carkhuff and Berenson, later

the more masculine qualities prove beneficial for client progress. These findings, combined with the recommendation of Niland, Duling, Allen, and Panther (1971) that students ought not be under threat of evaluation when first experiencing videotape self-confrontation, suggest a female counselor who has no supervisory powers, acting as supportive companion, would best match the descriptions given by the researchers above.

Time and self-confrontation. Although some of Nielsen's (1962) subjects were unable to recall subjective experiences of only a week before after watching a film of their behavior, a year and a half later the same subjects managed subjective recall after seeing the film again. Nielsen suggested that maturation time or time to integrate the experience might account for the change. Possibly, the self filmed a year and a half earlier did not seem to be the same self that was viewing the image.

Similarly, Martin's (1971) T group that moved in the opposite direction hypothesized for measures of verbal behavior after self-confrontation, later moved consistently and significantly toward decrease in variance on the measured variables. The decreased variance Martin took to be indicative of "democratic, cooperative, sharing group atmosphere wherein each group member is given the opportunity to participate (p. 342)."

The playbacks were shown in the sixteenth meeting of the hour and a half long sessions held twice each week. The final index of the desired atmosphere was taken during the twenty-eighth session, so the time interval needed for the presumed effect of the self-confrontation to reach maximum effectiveness was six weeks. The effect, however, was seen in only one of three groups, each of which Martin thought would serve to replicate the study at the same time that it was conducted.

Elapsed time after self-confrontation by videotape was also necessary in the study of Yenawine and Arbuckle (1971). While the counseling students initially experienced more anxiety when assigned to a videotape group than when assigned to an audiotape group, over the period of the semester two changes were observed. The videotape practicum subjects' level of anxiety, reported and observed, fell below that of the audiotape practicum subjects. The practicum supervisor judged the videotape group to show an increasing pattern of openness, not noted in the other group. The effect of time also appeared in the results of Robinson (1968). Videotape was most effective in the quick reduction of specific unwanted behaviors, but the self-concept took additional time to show measureable changes.

Working in a psychiatric, rather than educational, setting, Braucht (1970) found immediate self-concept accuracy

change among the patients. He also found significant interaction between the treatment condition, diagnosis, and length of stay in the hospital. The experimental and control groups showed no significant difference in self-concept with immediate measurement. Braucht did not report making any measurement at a later time.

In summary, the studies of the effects of videotape self-confrontation that allowed some time to elapse before measuring or observing the dependent variables seemed to have greater likelihood of finding changes. The speculations about maturation or integration time have not yet been empirically tested. However, by allowing intervening time between self-confrontation and measurement, and by supply a supportive companion who focuses the subjects' attention on positive aspects of their performance, there were opportunities for the new cognitions to operate on dissonance reduction, with the increased congruity tending in a positive direction, as Festinger's theory would predict.

Chapter III

Design and Procedure

To determine the effect of time, supportive companionship, sex of subject, or the interaction of any of these variables on the self-concept after self-confrontation, the following null hypotheses were tested at the .05 level of confidence in an analysis of variance for scores on each factor found in the Semantic Differential:

1. There is no difference in self-concept scores due to the effect of delaying measurement for a month after self-confrontation.
2. There is no difference in self-concept scores due to the effect of supportive companionship.
3. There is no difference in self-concept scores due to the effect of subjects' sex.
4. There is no difference in self-concept scores due to the interaction of the effect of supportive companionship and delaying measurement for a month after self-confrontation.
5. There is no difference in self-concept scores due to the interaction of the effect of supportive companionship and the subjects' sex.
6. There is no difference in self-concept scores due to the interaction of the effect of subjects' sex and delaying measurement for a month after self-confrontation.

7. There is no difference in self-concept scores due to the interaction of the effect of supportive companionship delaying measurement for a month after self-confrontation, and the subject's sex.

Subjects

The 80 subjects in this study came from four randomly selected sections of The University of Houston Speech Department's beginning speech course, fall, 1971. Sections were limited to 25 students. Every student in the selected sections, meeting between the hours of nine and eleven o'clock in the morning, was asked to participate, and most agreed.

The University of Houston had approximately 27,500 students enrolled at the time of this study, but only about five percent lived on campus. The remainder mostly commuted from homes in Houston and nearby cities.

Table 1 shows the means and frequency of subjects' age by groups. The average age of female subjects was 20.95 years, and for males, 20.60 years. Ages ranged from 18 to 36 years, but only eight of 80 subjects were not between 18 and 22 years. The greatest disparity between group means was 2.20 years. Both of these means occurred in female groups. Group I produced the largest mean 21.90 and Group IV produced the smallest mean, 19.70. A t test was calculated to determine if there was a significant difference between the means of 21.90 and 19.70. The results indicated the means were not significantly different.

TABLE 1

Ages of Subjects by Sex and Treatment Groups

Males by Treatment Group	18	19	20	21	22	23	24	27	28	29 . .	36	X
I			3	6		1						20.90
III	3	1	4	1						1		20.30
III	3	1	2	3			1					20.00
IV		2	3	2	2				1			21.20
Females by Treatment Group												
I	1	4	1	1					1		1	21.90
II		2	2	3	2			1				21.20
III	1	1	3	2	2			1				21.00
IV	2	3	1	4							1	29.70
Combined male average age												20.600
Combined female average age												20.950*
Average age												29.775

* a t test between the means of Female Groups I and IV, the most disparate, resulted in a t of 1.191 with 18 degrees of freedom, indicating no significant difference between the means beyond the .05 level of confidence.

Table 2 shows the current majors and classifications of subjects. The most striking imbalance is the number of education majors among female subjects compared to males. There were 18 education majors among the females, but only three among male subjects. Other majors represented in the female population included four in English, three in journalism, three in political science, two in business technology, two in mathematics, and one each in art, home economics, unspecified, biochemistry, history, psychology, French, and Spanish. The other majors represented in the male population included five in political science, four in journalism and in economics, three in chemistry and history, two in radio-television, engineering, English, mathematics, and psychology. There was a male student majoring in each of the following: German, music, physics, architecture, premedical, biology, sociology, and hotel-restaurant management. Table 2 shows the distribution of majors.

The educational level of subjects ranged from freshman to post-graduate. Among the females there were three freshmen, 20 sophomores, eight juniors, eight seniors, and one post-graduate. There were five freshmen, 11 sophomores, 15 juniors, eight seniors, and one post-graduate among the male subjects.

Despite the fact that subjects were drawn from sections of a beginning course in the speech department, there were

TABLE 2

Majors and Classifications of Subjects by Sex and Treatments

Majors	Males				Females			
Group	I	II	III	IV	I	II	III	IV
Architect.			1					
Art					1			
Biochem.						1		
Biology				1				
Bus. Tech.							2	
Chemistry	1	1	1					
Economics	2	1	1					
Education		1		2	5	6	5	2
Engineering				2				
English	1			1	1	1	1	1
French								1
German			1					
History		2	1					1
Home Econ.								1
Hotel Mgmt.				1				
Journalism	2	1		1	2			1
Mathematics		2				1		1
Music			1					
Physics				1				
Pol. Science	2	1	1	1			1	2
Premedical	1							
Psychology		1	1			1		
Radio-TV	1		1					
Sociology			1					
Spanish							1	
Unspecified					1			
Classifications								
Freshman		1	2	2	1			2
Sophomore	1	3	3	4	6	4	6	4
Junior	6	2	4	3	2	2	2	2
Senior	3	3	1	1	1	4	1	2
Post-graduate		1					1	

no speech majors among the subjects, most of the subjects were sophomores and juniors, and 20.78 was the overall average age.

Measurement

The twelve pairs of bi-polar adjectives factor analyzed by Dieker and Jones in 1966, and used in the experiment of Dieker, Crane, and Brown (1968), were used to measure subjects' self-concept. The adjectives were randomized for order and polarity. A copy of this measuring instrument, called a Semantic Differential, (SD), is in Appendix A.

Osgood, Suci, and Tannenbaum (1957) developed the SD to objectively measure connotative meaning of target concepts by locating them in semantic space, defined as "a region of some unknown dimensionality and Euclidian in character (p. 25)." The authors further specified that the larger and more representative the sample of adjectives scaled on the target concept, the better defined was the space, but for maximum efficiency, the minimum number of orthogonal dimensions that will exhaust the dimensionality of the space for any given concept needs to be determined.

Although Osgood, Suci, and Tannenbaum usually found three dimensions by factor analysis and called them the activity, potency, and evaluative factors, in certain studies more or fewer factors emerged. Miron and Osgood (1966) indicated that the activity and potency dimensions sometimes

coalesce into a dynamism factor, but that evaluation was the most dependable factor of all. Thus, only two factors emerged in some studies, and four developed in the Dieker and Jones analysis. For that reason the SD to be used in this experiment was distributed to students registered for Speech 131 on the first day of fall, 1971, classes. A copy of directions read by the instructors is in Appendix B. The 408 SDs returned were factor analyzed by the principal components, varimax rotation method to determine the factors operating in this population from which a sample would be chosen to be subjects.

Preliminary Procedures

Before any experimental procedures could be instituted, the cooperation of individuals, directly and indirectly involved, had to be secured. Facilities and equipment had to be readied and reserved.

Agreements. Since subjects came for the Department of Speech classes, the permission of the department chairman was sought, and granted. Particularly because of the pedagogical irregularity of withholding the grades and critiques of students' performances, both department chairman and the class instructors had to agree to the procedures.

One of the instructors was a Teaching Fellow, one an Assistant Professor, and one a part-time lecturer. Two sections of the part-time instructor were randomly selected, one meeting at nine, and one at ten o'clock in the morning.

The experimenter met with the three instructors, and asked that they excuse five subjects per class day until all that were willing had been videotaped. Explanation was given for withholding grades and performance critiques. Each agreed to the procedure, and supplied class rolls so subjects could be pooled for randomization. Pooling before random assignment to treatment should have nullified any effects due to instructional differences.

Finally, permission was secured from each instructor for the experimenter to read to each class a request for the students' cooperation in this research.

The final copy of the request was approved by the department chairman, and read by the experimenter to each of the selected sections. Student questions were then answered if they did not violate the disguise of the experimental purpose. Typical questions asked were: "Will we have to make an extra speech if we participate?" and "Will we have to put in any extra time out of class?" These questions were answered in the negative. Questions such as "What are we doing this for?" could not be answered, and the experimenter explained that the most helpful responses subjects could make were the most honest ones. Appendix C contains a copy of the request.

Facilities, personnel, and equipment. Two rooms were needed, one for videotaping students and one for viewing of

the videotapes. All videotapes were made in 202 Agnes Arnold Hall, and viewed in 102 Education Building. Both rooms are rectangular, white-walled, of adequate size for the activity that was required, and in relatively new buildings. The personnel, furniture, and equipment arrangement never changed in the video-taping room, but did change in the viewing room, according to the treatment assigned a specific subject. The variation will be described under the heading of experimental procedure.

The equipment used consisted of two Sony Videocorders, CV 2200, Sony Cameras, CVC 2100A, Sony Video Tape, V-32, and stop-watches. Placement of the equipment was kept constant in both rooms for all taping, viewing, and measurement, including videotape equipment for those who returned a month later for measurement being placed back in the room in order that the appearance would be identical to that in which some subjects viewed themselves and were measured the same day.

Four persons were employed by the experimenter. The first was a certified counselor who administered all the treatments and conducted all measurement. The other three were graduate students employed to provide an audience that was identical for all subjects. Two were male, and one was female. All of them were less than five years older than the typical age range of these subjects, that is 19 to 21.

They sat in the same seats, centered in the third and fourth row, each day of videotaping. The graduate students were all Teaching Fellows in speech courses and so needed no special training for their task. They were asked to listen to all speeches interestedly, but not to interact with the subjects. None of the subjects came from sections taught by those employed as the audience. The experimenter conducted students into the room, provided the instructions, and operated the videotape equipment from the back of the room.

The counselor was trained in the specific behaviors expected of her, using videotapes of student speakers made the previous year. Her undergraduate training in speech made the task relatively simple because she already had the vocabulary and focus speech students were accustomed to expect. She was rehearsed with the experimenter role-playing student reactions until she produced naturally the behaviors described in the section on experimental procedures.

Experimental Procedures

Videotaping. Each instructor received a schedule, as did every subject, of the day and time subjects were to be videotaped. A copy of one schedule is in Appendix D. When subjects reported to the designated room, they were seated in the hall outside. One at a time, a subject was brought into the room by the experimenter and requested to go directly

to the speaker's stand. The subject was warned that five minutes after he began speaking, the videotaping would be stopped. He could, however, complete his speech if he wished. A copy of the assignment (Judd, Sico, & Luke, 1968, p. 19) guiding each student's speech is in Appendix E.

After five minutes of videotape was recorded, the tape was rewound, boxed, and given to the subjects, along with both oral directions and a map to room 102 in the Guidance and Counseling Department suite. If not the first subject of the day, he was also warned he would have to wait in the lounge area outside room 102.

This delay was necessitated by the difference in time needed to orient, videotape, and direct a subject, and that needed to view tapes, allow an intervening ten minutes, and sometimes to make measurement. Finally, each subject received a coded form telling the counselor of the treatment and measurement specifics for this subject. A copy of this form and map is in Appendix F.

Treatments. The counselor greeted all subjects in a friendly manner and took from each the videotape and form indicating to which treatment group the subject was assigned. In each case, the counselor first prepared his videotape for viewing and seated the subject facing the monitor.

In the first treatment, the counselor did not take the seat beside the subject, but sat beside the monitor watching the subject as he watched his videotaped performance. After the tape, the counselor supplied each subject in this treatment with a pencil and a sheet of paper on which he was asked to make all the words possible from the letters in his textbook author's name. Thus, each subject received 15-minute treatments. A copy of this form is in Appendix G. Subjects were left alone in the room for ten minutes, timed by a stop watch, to complete the task. The counselor then returned and supplied a copy of the SD, and asked that it be filled out.

Subjects assigned the second treatment were handled identically, except that they were not measured immediately after the cognitive task. Instead, they were asked to return in thirty days, and told they would be excused from class for the few minutes necessary. Subsequently, measurement schedules were distributed to all instructors and subjects involved, and each subject was called the day before his appointment.

In the third treatment, the counselor left the videotape equipment as soon as the tape started, and sat beside the subject during the viewing, listening attentively to the performance. Personal proximity and attention to the performance was the first behavior of the counselor designed to provide supportive companionship during the self-confrontation. In addition, she inquired about the feelings of

the subject after the replay, listened attentively and empathetically to the responses, and interspersed positive comments about the subject's behavior, voice quality, gestures, appearance, speech content, organization, topic choice, or whatever else was commendable. After ten minutes, the subject was asked to complete the SD.

Treatment of subjects assigned to the fourth group was the same as that for the third group, except that measurement was delayed for thirty days. These subjects were asked to return to complete their participation in the experiment, appointments were made, schedules distributed to them and to their instructors, and telephone reminders given them the day before they returned for measurement.

Attrition and Reactions. Although 84 subjects were videotape recorded, only 82 were measured by the last day scheduled for measurement. All but one subject was measured on the day scheduled. One male in the second treatment, described above, was measured 35 days after self-confrontation. Of the 82 subjects, one was disqualified as not naive, and one was randomly removed, leaving 80, and achieving numerical balance in all treatments.

One subject inquired about a feature of the viewing room in the Guidance and Counseling Department, asking if anyone was watching from behind the two-way mirror.

The thought may have occurred to other subjects, but only one voiced the question. The counselor reported that during viewing the subjects' expressed attitudes were generally negative--"I don't want to see this" or "Can't we just skip this and go on to the next part?" She also reported neutral questions, as "When will I know about this?"

During measurement, typical subject reactions reported were: "Oh, I thought this was going to be about my speech, not about me." and in reference to the "safe-dangerous or "strong-weak" adjectives, "Is it about my character or my physique?"

Several of the subjects showed signs of nervousness during the videotaping. Voice trembles and shaking of hands occurred, but only two subjects, females, seemed severely distressed. Videotaping had to be postponed until one finished weeping. Another began to cry during her performance, but was able to complete it without interruption.

Data Analysis

All SDs were scored with the aid of an overlay on which the numerical values were superimposed. The scores of the 408 student who completed the SD on the first day of the fall semester classes were punched onto computer cards, factor analyzed by the principal components method, and rotated by the varimax method. Two factors emerged. The weights attached to each scale in the SD were used to multiply the scores of the 80 subjects in this experiment, and then added to yield one score for each subject on each factor.

A three-way analysis of variance was computed for the weighted scores for each factor. The assumptions of normality of distribution and homogeneity of variance were checked with the Shapiro-Wilks W and the F-Maximum, respectively. The results of the analysis will be reported in Chapter IV.

Chapter IV

Results

This chapter presents the results of the factor analysis of 408 Semantic Differentials that were marked by students enrolled in the basic speech course in the fall semester of 1971 at The University of Houston. The factors are named and evaluated for reliability.

Chapter IV also presents the two analyses of variance that were computed on the factor scores of 80 subjects in the experiment, and information about the tests for homogeneity of variance between groups and normality of distribution within groups.

Finally, in Chapter IV the null hypotheses are accepted or rejected with the F values and the .05 level of significance as the criterion.

From the factor analysis of 408 SDs, two factors emerged. Factor I produced an alpha coefficient of .965, and an eigenvalue of 8.644. Factor II had a alpha coefficient of .766, and an eigenvalue of 3.359. After the varimax rotation was applied to the data, the weights tabled below were used as the multiplicands of raw data from the 80 subjects. Each subject's weighted scores were then summed to produce one score on each factor for the two analyses of variance that were conducted. See Table 3 for the data weights.

Table 3
Weights for Raw Data in Each Factor

Scales	Factor I	Factor II
Wise-Foolish	.14748	.08009
Forceless-Forceful	.24483	-.08431
Unpleasant-Pleasant	-.06346	.29377
Authoritative-Unauthoritative	.25313	-.07147
Uninteresting-Interesting	.11053	.14785
Successful-Unsuccessful	.16891	.06168
Safe-Dangerous	-.11424	.29590
Strong-Weak	.23475	-.05005
Important-Unimportant	.09710	.14159
Bad-Good	-.11077	.33589
Gracious-Crude	.00992	.22254
Bold-Timid	.28963	-.14346

Although all the adjectives contributed to both factors, in some degree, the adjectives loading more the .500 on the two factors appear in Table 4. Apparently the potency and activity factors coalesced into one similar to that which was called dynamism by Miron and Osgood (1966) when they noted the phenomenon. As they also reported, the most reliable factor was the evaluative one. Evaluation appeared to be the second factor of this factor analysis. The loadings of the major contributors to the dynamism and evaluative factors are shown in Table 4.

Table 4

Major Contributors of the Dynamism and Evaluation Factors

Adjectives	Dynamism	Evaluation
Bold-Timid	.756	
Authoritative-Unauthoritative	.710	
Strong-Weak	.674	
Forceful-Forceless	.673	
Successful-Unsuccessful	.575	
Wise-Foolish	.526	
Good-Bad		.784
Pleasant-Unpleasant		.716
Safe-Dangerous		.675
Gracious-Crude		.596

The Important-Unimportant and Interesting-Uninteresting dichotomies divided their loadings nearly evenly between the factors, and so failed to exceed 500 on either factor.

The three-way analysis of variance for the dynamism factor resulted in the F values shown in Table 5. One of these values was significant beyond the .01 level of confidence. The effects of delayed measurement after self-confrontation, of supportive companionship during and after self-confrontation, or of an interaction were not significant. The subjects' sex significantly affected the way subjects marked the SD.

Table 5
Analysis of Variance on the Dynamism Factor

Source*	SS	df	MS	F
T	.0328	1	.0328	.0447
C	.3709	1	.3709	.5062
S	12.7576	1	12.7576	17.4121**
T X C	.7333	1	.7333	1.0001
T X S	1.5761	1	1.5761	2.1512
C X S	1.4095	1	1.4095	1.9238
T X C X S	.0127	1	.0127	.0173
Within Cells	52.7535	72	.7327	

*T Indicates effect due to presence or absence of a month after self-confrontation before measurement.
 C Means effect due to the presence or absence of supportive companionship during and after self-confrontation.
 S Means effect due to the sex of the subjects.
 X Indicates effects due to interaction of the variables.

** Significant beyond the .01 level of significance.

The significant results concerning the sex of the subjects causing different self-concepts after self-confrontation was in line with predictions. The lack of effects from time and companionship manipulations were not predicted.

The three-way analysis of variance for the evaluative factor resulted in the F values shown in Table 6. None of these values proved significant, indicating not only variations in treatment, but also that the sex of the subject did not affect self-concept on the evaluative dimension.

Table 6
Analysis of Variance on the Evaluation Factor

Source*	SS	df	MS	F
T	1.0297	1	1.0297	1.1461
C	.0398	1	.0398	.0443
S	.0596	1	.0596	.0664
T X C	1.0406	1	1.0406	1.1583
T X S	.4886	1	.4886	.5439
C X S	.6897	1	.6897	.7677
T X C X S	.0440	1	.0440	.0490
Within Cells	64.6832	72	.8984	

*T Means effect due to the presence or absence of a month after self-confrontation before measurement.
 C Means effect due to the presence or absence of supportive companionship during and after self-confrontation.
 S Means effect due to the sex of the subject.
 X Indicates effects due to interaction of the variables.

All predictions were disconfirmed on the evaluative factor. Subjects' raw and factor scores are in Appendix H.

Tests for Homogeneity and Normality

The Shapiro-Wilks W test for normality of distribution of scores in each cell, and for both factors, were all significant. The results are tabled in Appendix I. Significant results indicate that the distributions could have come from a normal distribution.

The F-Maximum test for homogeneity of variances indicated that the most divergent variances in each factor could not be called significantly different.

Null Hypotheses

Taking each null hypothesis separately, the results for each factor indicate the following:

1. There is no significant difference in self-concept scores due to the effect of delaying measurement for a month after self-confrontation. The first null hypotheses was not rejected on the basis of the analysis of scores on both the dynamism and evaluative factors.

2. There is no significant difference in self-concept scores due to the effect of supportive companionship during and after self-confrontation. The second null hypothesis was not rejected for either factor.

3. There is no significant difference in self-concept scores due to the effect of the subjects' sex. The third null hypothesis was rejected on the first factor, but not rejected on the second. The mean of male scores on this coalescence of the activity and potency factors was .2762, and the female mean was -.5225, showing that males felt a positive relationship between themselves and dynamism, while females perceived a negative relationship between themselves and dynamism.

4. There is no significant difference in self-concept scores due to interaction of the effect of supportive companionship and delaying measurement for a month after self-confrontation. The fourth null hypothesis was not rejected for either factor.

5. There is no significant difference in self-concept scores due to the interaction of the effect of supportive companionship and the sex of the subject. The analyses indicates the fifth null hypothesis could not be rejected for either factor.

6. There is no significant difference in self-concept scores due to the interaction of the effects of the sex of the subject and of delaying measurement for a month after self-confrontation. The sixth null hypothesis was not rejected for either factor.

7. There is no significant difference in self-concept scores due to interaction of the effect of supportive companionship during and after self-confrontation, delaying measurement for a month after self-confrontation, and the sex of the subject. The final null hypothesis could not be rejected on the basis of the analysis of variance for scores on both the dynamism and evaluation factors.

Summary

Two reliable factors emerged from the factor analysis of 408 SDs marked by a population of The University of Houston students enrolled in the fall semester, 1971, beginning speech course. The factors seemed to represent evaluation on one dimension, and potency-activity, or dynamism, on the other.

The weighted scores of 80 subjects on an identical SD indicated that in this study there were no significant effects on self-concept after self-confrontation as a result of delaying measurement for a month, nor from providing supportive companionship during and after self-confrontation. On the evaluative dimension there were no significant differences due to the sex of the subjects. There were, however, significant differences between male and female scores on the dynamism factor that were decisive enough to exceed the .01 level of confidence.

Chapter V

Summary and Discussion

This experiment was designed to find the effects of assimilation time, supportive companionship, the sex of subjects, or interactions of these independent variables on the self-concept of naive subjects after self-confrontation by videotape.

Summary

After the Semantic Differential scores of 408 undergraduate students enrolled in a speech course at The University of Houston in the fall, 1971, were factor analyzed, two reliable factors emerged as the dimensions on which the target concept, self-concept, could be measured. The same instrument was used to measure the 80 subjects who participated in this experiment.

To determine whether a delay of a month after self-confrontation before measurement, the presence of a supportive companion during and after self-confrontation, the sex of a subject, or an interaction between any of these variables affect the self-concept after self-confrontation, 80 subjects were stratified by sex and randomly assigned to one of four treatments. All subjects were videotaped under constant conditions, but treatment thereafter depended upon group assignment.

Subjects in the first group were shown their videotape by the counselor, and then given ten minutes alone to complete a paper and pencil task before measurement with the Semantic Differential. The counselor acted only as equipment operator and giver of instructions.

Subjects in the second group were treated identically, except that they returned for measurement in a month.

Subjects in the third group were given supportive companionship. As soon as the tape was started, the counselor left the equipment and sat near the subject. She had been trained in the following behaviors that constituted supportive companionship in this instance: (a) sitting beside the subject during the videotape replay and listening attentively to the speech. (b) inquiring about the feelings of the subject during the replay, (c) listening attentively and empathetically to the subject's responses, and (d) interspersing positive comments about the subject's behavior, voice quality, gestures, appearance, speech organization, topic choice, or whatever else was commendable for ten minutes after the videotape had been viewed. Then measurement was made with the same instrument.

Subjects in the fourth group were treated as those in the third, except that they returned for measurement in a month.

The scores of subjects were multiplied by the factor weights assigned by the factor analysis and summed to produce two scores for each subject, one on the dynamism and one on the evaluative dimension. Two three-way analyses of variance were computed, one for each factor. Tests for homogeneity of variance and normality of distribution were made. Results of these tests made both assumptions tenable. The results, at the .05 level of confidence, indicated that null hypotheses stating that the timing of measurement, the presence of supportive companionship, the sex of subjects, or an interaction of any of these variables would make no significant difference in the self-concept scores must be accepted with one exception.

The self-concept scores of undergraduate males and females were significantly different on the dynamism factor, a merger of the potency and activity factors. The self-concept of female subjects were negatively related to dynamism. Male subjects rated themselves in a positive relationship to dynamism.

Findings

Taking each null hypothesis separately, the results for each factor indicated the following:

1. There is no significant difference in self-concept scores due to the effect of delaying measurement for a month after self-confrontation. The first null hypothesis was accepted on the basis of the analysis of scores on both the dynamism and evaluative factors.

2. There is no significant difference in self-concept scores due to the effect of supportive companionship during and after self-confrontation. The second null hypothesis was accepted for both factors.

3. There is no significant difference in self-concept scores due to the effect of the subjects' sex. The third null hypothesis was rejected on the first factor, but accepted on the second. The mean of male scores on this coalescence of the activity and potency factors was .2762, and the female mean was -.5225, showing that males felt a positive relationship between themselves and dynamism, while females perceived a negative relationship between themselves and dynamism.

4. There is no significant difference in self-concept scores due to interaction of the effect of supportive companionship and delaying measurement for a month after self-confrontation. The fourth null hypothesis was accepted for both factors.

5. There is no significant difference in self-concept scores due to the interaction of the effect of supportive companionship and the sex of the subject. The analyses indicates the fifth null hypothesis should be accepted for both factors.

6. There is no significant difference in self-concept scores due to the interaction of the effects of the sex of the subject and of delaying measurement for a month after self-confrontation. The sixth null hypothesis was accepted for both factors.

7. There is no significant difference in self-concept scores due to interaction of the effect of supportive companionship during and after self-confrontation, delaying measurement for a month after self-confrontation, and the sex of the subject. The final null hypotheses was accepted on the basis of the analysis of variance for scores on both the dynamism and evaluation factors.

Conclusions

Based on the results of the analysis of variance of the dynamism and evaluative factors that emerged from the factor analysis of the Semantic Differential used in this study, the research questions were answered in the following ways:

1. Does delaying measurement for a month after self-confrontation affect subjects' self-concept? There were no significant differences in subjects' self-concept scores on either the dynamism or the evaluative factor, whether they were measured on the same day of the self-confrontation or a month later. Therefore, the first question was answered in this case in the negative.

2. Does the presence of a supportive companion during and after self-confrontation affect subjects' self-concept? Since there was no significant differences between the scores of subjects who received supportive companionship and those who did not, the answer to this question was negative.

3. Does the sex of a subject affect the self-concept after self-confrontation? Because there was a significant difference between the scores of males and females on the

dynamism factor, but not on the evaluative factor, this question must be answered in two parts. An affirmative answer was appropriate on the first factor, the coalescence of the potency and activity factors. However, no significant differences were found between male and female factor scores on the evaluative dimension, and a negative answer to the question was dictated by the results on the second factor.

4. Does an interaction between supportive companionship during and after self-confrontation, and delaying measurement for a month affect subjects' self-concept? The analyses of variance indicated no significant differences between scores of subjects who received both supportive companionship and a delay of one month before measurement, and those who did not. Under this circumstance, the question was answered negatively.

5. Does an interaction between supportive companionship during and after self-confrontation, and the sex of a subject affect subjects' self-concept? Because there were no significant differences resultant from the analyses of the interaction, the answer was negative.

6. Does an interaction between delaying measurement for a month after self-confrontation and the sex of a subject affect subjects' self-concept? The lack of significant differences indicated a negative answer to the question.

7. Does an interaction between supportive companionship during and after self-confrontation, the sex of a subject, and the delay of measurement for a month after self-confrontation affect subjects' self-concept? The final answer was negative because the analyses showed no significant differences on either the evaluation or the dynamism factor.

Most of the variance in both analyses was accounted for within cells or groups, rather than between identification or treatment groups. The independent variable that did affect self-concept scores was the sex of subjects. Female subjects did not perceive themselves positively related to dynamism, but male subjects rated themselves in a positive relationship with dynamism.

Discussion and Implications

The significant difference in the way male and female subjects rated themselves on the dynamism dimension of self-concept in this study seems to relate to Allport's (1961) findings. He found greater percentages of college females experienced feelings of physical, social, and intellectual inferiority than did college males. More than a decade later, the college females measured in this study developed a negative mean score ($-.5225$) on the dynamism dimension, defined by these adjective pairs: bold-timid, authoritative-unauthoritative, strong-weak, forceful-forceless, successful-unsuccessful, and wise-foolish. Male college students in this

study rated themselves with a positive mean score (.2762) in relation to the same adjective pairs, indicating that the males felt they possessed more boldness, authoritativeness, strength, successfulness, and wiseness than the females believed themselves to have. Allport's early findings of rather generalized, and more frequent feelings of inferiority in females held true in this population on the dynamism factor. However, there was no significant difference in male and female self-concept on the evaluative dimension, comprised of the good-bad, pleasant-unpleasant, safe-dangerous, and gracious-crude adjective pairs.

Delaying measurement was expected to affect self-concept scores in this study. Working with undergraduates, Nielsen (1962) found the passage of a year and a half sufficient for subjects to own their behavior in a stressful dyadic situation, although they had sometimes disowned their behavior when viewed a week after the filming. He speculated that in the intervening time they had matured and assimilated the new information about themselves.

Stating Neilsen's speculations in terms of cognitive dissonance theory, the observed and dissonant behavioral elements may have been added to the cluster concerned with self-concept in a year and a half. Other studies using undergraduate subjects indicate a month, as this study allowed, or a semester (Dieker, Crane & Brown, 1968) was not

sufficient time for self-concept changes after self-confrontation. Kerber's (1967) dissertation study attempted, without success, to identify self-concept changes after confronting student teachers with longer samples of videotaped teaching performances. These and other studies indicate that with undergraduate, non-pathological populations, self-confrontation does not measureably influence self-concept in a period ranging from the same day of the confrontation to the end of the semester. A month may have been insufficient time for the cognitive elements supplied by the self-confrontation and the counselor to have measureably affected self-concept.

Supportive companionship during and after self-confrontation was also predicted to affect self-concept in this study. Roberts (1971), working with males only in a vocational community college, found significant differences between positive and negative reinforcement conditions of videotape replay, but not between positive and no reinforcement, which was analogous to treatments used here. Measureable changes may be discernable only in studies testing differences between positive and negative feedback after self-confrontation.

Knowing of the power of videotaped self-confrontation to cause behavior change in psychiatric, as well as normal, populations, discussed in Chapter 2, the failure of the same procedure to cause changes in self-concepts of a normal,

undergraduate population is puzzling. The assumption of the self-theorists that, to some degree, all self-concepts are unrealistic, may be in error, or the self-concept may be impervious to the new cognitions brought by a videotaped self-confrontation and supportive companionship in the time allowed here.

Another viable explanation comes from the finding of Geer (1965) that fear of public speaking was ranked among the top five fears in the self-reports of 783 undergraduates, combined with the experimental, physiological verification provided by Droppleman and McNair (1971). Anxiety may mask the effect of inundating the subjects with so many new cognitive bits of information about the appearance, behavior, and sound of self, or block the perception of that information.

According to Kelly (1963), one of the defenses against anxiety is to tighten up the construct system, making present beliefs about self, for instance, impermeable to new information. Paul stated that "the effects of debilitating performance anxiety on relevant behaviors appear to differ in no qualitative way from the effects produced by more widespread neurotic anxiety reactions, and that "performance anxiety is a form of anxiety hysteria (1966,p. 8)."

Ramifications for the present study rise out of Paul's findings that even in a psychiatrically normal population of students there was a "relatively high incidence of interpersonal-performance anxiety (1966, p. 9)." Although Paul does not define "relatively high incidence" specifically, he did select by means of their scores on six different tests for anxiety 96 of 710 students for his high-anxiety subjects. Therefore, operationally, the definition of relatively high incidence seems to be about one in seven students suffers from interpersonal-performance anxiety.

Within the 80 subjects used in this experiment, should Paul's one in seven ratio hold, there were more than 11 high-anxiety subjects. Because the subjects were divided into eight groups of 10 each, there were probably one or more subjects suffering from temporary "anxiety hysteria" (Paul, 1966, p. 8) in each group. An unknown number of the subjects may have suffered forms of anxiety less severe, but potent enough to arouse either perceptual defenses or to rigidify constructs held about the self.

After comparing the effects of videotape in counselor training with audiotape and control condition, Ward, Kagan, and Krathwohl, (1972) stated: "No matter what the potential of this device, the effectiveness depends upon understanding what the device can do and then wisely apply it (p. 186)."

To that might be added a statement about understanding what the device--videotape used for self-confrontation--is doing already, in anxiety arousal, for instance, that we may or may not understand.

Recommendations

Due to the definitive difference in the scores males and females in this undergraduate population gave themselves on self-concept in the dynamic dimension, populations should be divided by sex in self-concept research. This recommendation is supported, not only by the results of this study, but by that of Berger (1968) and Allport (1961) who used different instruments for measurement and a geographically different undergraduate population.

The second recommendation rises out of the findings of Geer (1965) and Paul (1966). Since all videotaped self-confrontation, whether of a counseling interview, practice teaching, or a public speech, involves the potential for interpersonal-performance anxiety, the researcher interested in self-concept should screen his population in one of two ways--a reliable battery of anxiety tests, as Paul (1966) did, or by physiological monitoring, as did Droppleman and McNair (1971). The experimenter may then deal with the levels of anxiety as a research variable, or test the effects of the treatment of interest on subjects with a specified and determinable anxiety level.

The third and final recommendation is aimed not at researchers, but at utilizers of videotape in teaching and training programs. Paul (1966) used therapists with different theoretical orientations to compare the relative efficacy of insight oriented psychotherapy and modified systematic desensitization therapy for alleviation of anxiety. The superiority of desensitization techniques held whether administered by a therapist originally oriented toward them, or a therapist who had been trained in them for the purpose of the experiment. Where fear and anxiety are known to be so great that more than one in seven students suffer from a form of temporary interpersonal-performance anxiety and where at least one effective form of alleviation has been fully described, there is little to recommend the sensitivity of instructors or trainers that force students to suffer the symptoms without some attempt to relieve the attendant anxiety.

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Appendix A

Semantic Differential: Self-Rating Questionnaire

Appendix A

Semantic Differential:

SELF-RATING QUESTIONNAIRE

Name _____ Major _____ Date _____
Section _____ Age _____ Sex _____ Classification _____

D I R E C T I O N S

On the following page, you are asked to rate yourself. Please indicate your judgment of yourself on the scales listed by placing a check mark on each scale. For example, here is a single scale:

Rate yourself (as YOU see yourself) on this scale:

Skilled: _____:_____:_____:_____:_____:_____:_____ : Unskilled

If you feel that you are, in general, extremely skilled, you would place a check mark in the space closest to the word "skilled."

In general, consider the positions on the above scale to represent the following judgments:

Skilled:

extremely skilled

quite skilled

slightly skilled

neither skilled nor unskilled: I can't choose one alternative over the other: scale doesn't apply

slightly unskilled

quite unskilled

extremely unskilled

Unskilled:

Be sure to put one check mark, and only one, along each scale. Do not omit any scales.

Please rate yourself (as YOU see yourself) on these scales:

Wise: ____:____:____:____:____:____:____: Foolish

Forceless: ____:____:____:____:____:____:____: Forceful

Unpleasant: ____:____:____:____:____:____:____: Pleasant

Authoritative: ____:____:____:____:____:____:____: Unauthoritative

Uninteresting: ____:____:____:____:____:____:____: Interesting

Successful: ____:____:____:____:____:____:____: Unsuccessful

Safe: ____:____:____:____:____:____:____: Dangerous

Strong: ____:____:____:____:____:____:____: Weak

Important: ____:____:____:____:____:____:____: Unimportant

Bad: ____:____:____:____:____:____:____: Good

Gracious: ____:____:____:____:____:____:____: Crude

Bold: ____:____:____:____:____:____:____: Timid

Appendix B

Oral Directions to Students
Who Completed SDs for Refactoring at
The University of Houston

Appendix B

Oral Directions to Students

Who Completed SDs for Refactoring at
The University of Houston

Please read the instructions quoted below after passing the SD scales to your students during your first class meeting:

"A dissertation concerning speech students will be written this year. Each of you is asked to voluntarily help by (a) reading the instructions on the cover page, and (b) making 12 clear marks on the scales attached. By adding your bit, you will help to create a picture of how speech students at the U of H typically see themselves. Cooperating, or not, will not affect your grade. This information will be coded by number so that you are guaranteed anonymity."

When the students finish, please fill in the blanks below, and return all the materials to 104-C WOA. There you will receive my blessings, indenture, or free coffee. Your choice!

Instructor's Name _____ Section Number _____
Section Number _____ Hour Meets _____
Hours meets _____

Appendix C

Request for Participation

Appendix C

Request for Participation

I'd like to ask each of you to participate in an experiment, but don't be concerned. There are no painful procedures, no penalties, and no tricks.

In the regular plan for Speech 131, each of you would have one of your speeches videorecorded and played back, so that you, your class, and your instructor would see it. The only proposed change here is some variations in the conditions in which you give and see your videorecording. In addition, each of you will be asked to fill out a few rating scales.

The only inconvenience I can foresee is that some of you will be asked to complete the scales a month later than others, and I've asked that none of you receive grades or critiques on your class work until all of you have completed the ratings. I do understand that most of us like, and learn best, from immediate feedback, but I hope you'll agree to the delay.

If any of you are unwilling to participate--and please know that your participation, or refusal, will have no affect on your grades--please indicate this to your instructor. You will not be scheduled for videorecording, nor asked to make the ratings.

The only reward that I can offer to you is the satisfaction you may feel at possibly helping to make the usage of the educational tool, videotape, more effective, plus an anonymous place in my dissertation, a prominent place in my regard, and a report of the results as soon as the data is collected and processed.

Will you help me, please? And do you have any questions?

Appendix D

Sample Videotape Schedule

Appendix D

Sample Videotape Schedule

Students in Speech 131, Section 3211, meeting MWF at 10:00:

On the date under which your name is listed, please report to 202 Agnes Arnold Hall (carefully disguised behind a door numbered 206). Your instructor will excuse your absence when your attendance at 202 AH is reported. Please be prepared with an expository speech at least five minutes in length. Your cooperation is deeply appreciated.

September 15, Wednesday

Tom Crosby
Sharon Sanders
Hal Roberts
Dedra Swinton
David Randell

September 17, Friday

Mike Gymel
Sharon Buckner
George Vetek
Charles Cox
Charlene Miller

September 20, Monday

Alton Carmichael
Colleen Langly
Joan Moon
Bill Wood
Jay Youell

September 22, Wednesday

Eddie Dupree
Barbara Jordan
Stephen Blong
Ronald Pry
Elizabeth Martin

September 24, Friday

Barb Chaffee
Don Lafferty
Ronnie Bement
Ricky Terrell
Stuart Snow

Thank you, one and all!!

Carolyn Smith

Appendix E

Expository Speech Assignment

Appendix E

Expository Speech Assignment

One Point Speech of Exposition: Explain (define and illustrate) some rhetorical concept from the textbook in a 5-minute speech. You may be given concepts such as "patterns of arrangement," "gestures," "analogy," "cause-effect argument," etc. You may use your textbook as the sole source of information, or if you wish, go to other speech texts available in the library. The outline and evaluation form is on pages 37-38.

Appendix F

Treatment Code Form and Student Map

Appendix F

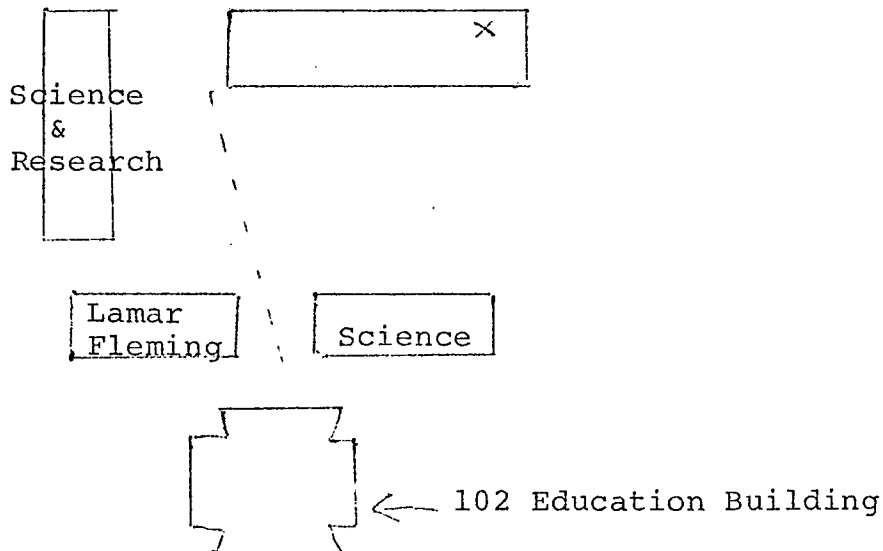
Treatment Code Form and Student Map

NAME
TELEPHONE NUMBER
GROUP NUMBER DATE OF MEASUREMENT

Please take your videotape and this map to the area just outside room 102 in Education. See the map below for directions. There is a lounge area (behind dark glass) in which you can wait until a lady comes to show you your videotape. Please give her this sheet of paper and your videotape when she comes for you.

Please follow the dotted line.

You are here in 202 Agnes Arnold



Appendix G

Paper and Pencil Task

Appendix G

Paper and Pencil Task

The author of your Speech 131 textbook is James C. McCroskey. Make as many different words from the letters in his name as you can in the next ten minutes.

For example "am," "jam," and "mess" are words created of letters that occur in his name.

J A M E S C M C C R O S K E Y

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.

Appendix H
Raw and Factor Scores

Appendix H
Raw and Factor Scores

Subjects' Group,* Sex, and Number	Raw Scores	Factor I Scores	Factor II Scores
1101	6,3,5,5,5,5,7,4,6,6,6,3	-.678	.932
1102	5,2,4,4,3,4,6,5,5,2,6,4	-.745	-1.281
1103	4,4,6,5,6,5,5,5,5,6,6,5	-.122	.329
1104	5,5,6,5,5,3,5,5,5,6,5,2	-.701	.188
1105	4,4,6,6,5,6,7,6,6,6,6,5	.192	.694
1106	5,6,7,3,7,7,7,6,6,7,7,6	.544	1.816
1107	3,3,5,5,4,5,4,6,5,4,6,5	.011	-1.383
1108	5,6,5,5,4,5,6,5,4,5,5,5	.192	- .660
1109	6,6,7,6,7,7,7,7,7,7,7,6	1.543	1.819
1110	5,3,7,5,4,4,7,4,4,4,5,3	-1.168	.173
1221	5,5,7,4,5,5,7,5,4,6,6,6	- .189	.761
1212	4,3,3,4,4,4,4,3,2,4,4,2	-1.573	-1.892
1213	6,5,6,7,7,5,7,7,7,6,6,6	1.425	.971
1214	5,2,5,4,6,3,7,6,5,6,6,2	-1.234	.906
1215	5,6,6,5,5,4,5,5,5,6,6,5	.183	.096
1216	4,5,5,5,5,6,6,6,6,6,5,5	.325	- .004
1217	5,7,6,5,6,6,4,5,4,4,5,6	1.118	- .945
1218	6,5,3,5,3,5,6,6,6,3,5,6	.896	-1.675
1219	6,5,6,5,5,5,7,6,7,6,6,3	.094	1.108
1220	4,4,6,6,4,7,7,4,6,5,4,7	.296	- .196

* Group, Treatment I, is represented by the initial number.
Sex is indicated by a 1 if female, 2 if male.
The last two digits of the number represent subject number.

Appendix H--continued

Subjects' Group,* Sex, and Number	Raw Scores	Factor I Scores	Factor II Scores
2121	5,2,5,2,5,4,5,3,5,6,5,1	-2.200	- .115
2122	5,5,5,5,6,2,5,4,5,5,3,5	- .406	- .823
2123	5,4,6,5,6,6,4,1,6,5,6,2	- .860	.500
2124	5,5,6,6,5,5,6,5,6,6,5,5	.302	.291
2125	5,2,6,7,6,5,4,4,5,5,5,5	.028	- .232
2126	6,6,6,6,5,6,7,6,5,6,6,6	1.001	.531
2127	5,4,7,5,6,5,6,5,4,5,7,7	.196	.804
2128	5,3,6,5,6,6,5,6,5,4,6,2	- .192	.176
2129	3,3,5,3,5,5,5,5,3,4,5,2	-1.430	- .744
2130	5,2,6,3,6,6,6,3,3,6,6,1	-1.940	1.133
2231	6,5,5,4,5,5,6,5,4,6,7,5	- .001	.382
2232	6,5,6,5,7,7,7,3,4,7,7,4	- .128	1.660
2233	5,6,6,5,5,6,7,7,5,4,6,7	1.211	- .223
2234	6,7,7,6,7,7,7,5,6,7,7,2	.546	2.081
2235	4,5,5,5,5,5,4,5,5,4,5,3	- .078	- .971
2236	5,5,4,6,4,4,6,6,4,4,4,4	.207	-1.407
2237	6,6,7,4,5,6,7,6,4,6,6,6	.481	.792
2238	5,6,6,4,6,5,6,6,5,6,5,5	.322	.319
2239	5,6,4,5,5,4,5,4,4,5,5,5	.123	-1.014
2240	5,4,6,5,5,6,5,5,4,5,6,5	.207	-1.407

* Group, Treatment II, is represented by the initial number.
 Sex is indicated by a 1 if females, 2 if male.
 The last two digits of the number represent subject number.

Appendix H--continued

Subjects' Group,* Sex, and Number	Raw Scores	Factor I Scores	Factor II Scores
3141	6,5,5,5,5,5,5,4,5,6,6,5	.160	.067
3142	4,2,5,2,5,4,6,3,5,4,6,3	-1.882	.051
3143	5,3,6,6,5,6,6,4,6,6,6,2	- .676	.982
3144	3,2,6,2,4,4,7,4,3,6,5,2	-2.470	.428
3145	5,5,5,4,5,5,6,7,5,5,4,7	.726	- .742
3146	4,3,6,2,6,6,7,5,6,6,7,6	- .647	1.263
3147	6,5,4,5,7,3,4,2,5,4,4,2	- .496	- .867
3148	5,6,5,4,6,5,5,7,5,6,5,1	- .088	.158
3149	4,5,6,5,5,2,4,2,2,5,4,6	- .879	-1.255
3150	3,4,5,5,5,3,4,4,3,4,4,4	- .863	-1.573
3251	5,6,6,5,6,6,6,6,6,6,4,5	.716	.231
3252	5,4,6,6,6,5,4,5,5,6,6,3	- .054	.328
3253	4,2,7,1,6,6,6,5,6,7,5,5	-1.302	1.423
3254	6,4,5,4,6,3,4,4,5,6,4,4	- .498	- .292
3255	4,3,3,5,5,4,7,5,5,4,5,4	- .542	- .866
3256	5,6,7,6,6,6,7,6,7,6,7,7	1.239	1.194
3257	4,2,4,7,4,3,4,5,7,4,4,6	.123	-1.631
3258	4,5,5,5,5,4,4,5,5,5,5,5	.061	- .907
3259	4,5,5,5,7,6,4,6,4,4,6,5	.749	- .779
3260	5,4,5,6,5,6,5,5,5,5,4,5	.479	- .910

* Group, Treatment III, is represented by the initial number.
Sex is indicated by a 1 if female, 2 if male.

The last two digits of the number represent subject number.

Appendix H--continued

Subjects' Group,* Sex, and Number	Raw Scores	Factor I Scores	Factor II Scores
4161	4,4,6,4,4,5,5,4,5,5,4,2	-1.183	- .280
4162	5,4,6,3,4,6,6,3,4,6,4,3	-1.341	.254
4163	6,3,6,4,5,2,7,6,7,7,6,3	- .971	1.443
4164	4,2,5,2,2,2,7,3,7,5,2,2	-2.707	- .430
4165	5,5,6,3,5,6,6,5,6,6,6,4	- .314	.790
4166	4,5,6,6,6,2,5,5,6,6,6,5	- .057	.181
4167	6,4,4,4,5,6,6,5,4,5,7,5	.096	- .069
4168	4,4,4,4,4,4,5,3,5,5,5,2	-1.374	- .629
4169	5,3,6,4,5,5,6,5,5,6,6,5	- .531	.612
4270	6,3,5,6,6,6,4,6,5,4,5,6	1.031	- .842
4271	5,6,5,5,6,6,6,6,5,6,6,5	.712	.243
4272	6,7,5,6,5,6,3,7,6,5,5,6	1.938	-1.092
4273	5,4,5,5,5,6,6,5,5,6,6,4	- .144	.363
4274	6,5,5,5,5,5,7,5,6,6,5,5	.247	.380
4275	6,4,6,6,5,7,7,4,6,6,6,6	.462	.905
4276	5,4,7,5,6,5,6,5,5,6,6,3	- .471	1.087
4277	6,6,6,6,6,7,7,6,5,5,6,6	1.336	.426
4278	6,5,6,3,4,6,7,5,5,4,6,3	- .411	.340
4279	6,5,6,6,6,6,7,7,6,5,6,6	1.278	.520
4280	6,5,6,6,6,6,7,7,6,7,6,5	.899	1.201

* Group, Treatment IV, is represented by the initial number.
 Sex is indicated by a 1 if female; 2 if male.
 The last two digits of the number represent subject number.

Appendix I
Tests of Significance

Appendix I

Tests of Significance

Shapiro-Wilks Test for Normality of Distribution*

Factor	Sex	Treatment	Value of W	Conclusion and Probability
I	F	I	.9393	Normal, .01
I	M	I	.9320	Normal, .01
I	F	II	.9629	Normal, .01
I	M	II	.8741	Normal, .01
I	F	III	.9520	Normal, .01
I	M	III	.9804	Normal, .01
I	F	IV	.9477	Normal, .01
I	M	IV	.9418	Normal, .01
II	F	I	.9341	Normal, .01
II	M	I	.9838	Normal, .01
II	F	II	.9639	Normal, .01
II	M	II	.9222	Normal, .01
II	F	III	.9580	Normal, .01
II	M	III	.9342	Normal, .01
II	F	IV	.9704	Normal, .01
II	M	IV	.8309	Normal, .01

* All values of W exceeding .781 call for the conclusion that the distribution tested could be from a normally distributed variable, with the .01 level of confidence.

Appendix I--continued

F-Maximum Test for Homogeneity of Variance

Group	Sex	Factor I	Factor II
I	F	5,548.990	11,426.762
I	M	8,171.909	10,820.734
II	F	9,696.105 (L)	3,648.197
II	M	1,387.768 (S)	13,936.680 (L)
III	F	7,779.933	7,904.924
III	M	4,980.533	8,876.513
IV	F	9,408.599	4,444.746
IV	M	5,872.319	3,625.840 (S)

(L) indicates the largest variance in each factor.

(S) indicates the smallest variance in each factor.

Factor I F-Maximum = 6.9868, df = 9, k = 8.

Factor II F-Maximum = 3.8437, df = 9, k = 8.

The critical value of F-Maximum for df = 9, and k = 8 is 8.95 at the .05 level of confidence. Therefore, the variances are assumed to be homogenous.