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SOCIAL REINFORCEMENT IN THE INDIVIDUAL AND
MULTIPLE COUNSELING OF COLLEGE STUDENTS

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Ernest Spaights, B.S. Ed., M.A.

* * * * * *

The Ohio State University
1965

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CHAPTER I

INTRODUCTION AND STATEMENT OF THE PROBLEM

In the educational setting counseling is generally considered to be a relationship in which one person, a professionally trained counselor, endeavors to help another to identify and clarify problems which concern the latter. It is usually thought to be a relationship between two people in which a counselee is aided in improving his understanding of himself and his situation in order to define, examine, and test solutions for his problems, and to select alternatives on which he acts.

The idea of counseling, then, was conceived of as a face-to-face relationship. Because of this restricted concept of counseling, much controversy has arisen over the use of multiple counseling. On one side of this issue are those who would contend that while group procedures frequently serve to provide students with general information related to their needs, the ultimate solution of personal problems can be achieved only through personalized assistance. Opponents of multiple counseling further contend that individual counseling alone, within an atmosphere conducive to the counselor's scrutiny of personal assets and limitations,
adapts itself to the needs of the individual as he is confronted with problems and as he weighs possible courses of action.¹ A less rigid position has been taken by other opponents of multiple counseling. Their contention is that although multiple counseling might yield some benefits which counseling does not now yield, the training that is required by the effective group counselor would surpass in time and intensity the training that counselors are currently receiving.² This latter group of opponents call for research to evaluate the effectiveness of group counseling procedures.

On the other side of this issue are those proponents of multiple counseling who relegate the whole controversy of multiple versus individual counseling to a problem of semantics. Their contention is that counselors who work with groups have the same aims as counselors who work with individuals.³ Since the aims and many of the techniques of individual counseling are similar to those of multiple counseling, it would seem that modifiers such as "individual"


and "multiple" would be reserved to designate conditions under which counseling takes place and not be used to define the process itself.

Without denying some of the obvious benefits which can result from individual counseling, the investigator feels that certain advantages are inherent in multiple counseling relationships. First, it is through group interaction that individuals form the kind of cohesive in-group relationships so essential to the development of a satisfactory problem-solving atmosphere. Therefore, group interaction is particularly appropriate to the educational setting.

Second, multiple counseling affords an individual an opportunity to test his tentative solutions in a group of his peers and to obtain from them multiple reactions simultaneously, prior to translating his verbalizations into overt behavior. Thus, members learn to provide social reinforcement to others while they, in turn, are being helped. This on-going process of verbalization and mental reflection cannot only aid the adjustment of the counselor to the social group, but can foster critical thinking about the counselee's own plans and those offered by others. It is through this critical reflection that the counselee will be more open to new experiences and ideas.

Third, multiple counseling is particularly appropriate for the late adolescent because of his strong desire to
be like his peers. The high school or beginning college student is struggling for independence from the important adults in his life; therefore, it would seem reasonable that he would accept help from his peers as readily as from an adult. In obtaining help from his peers, the student solves his problems with the assistance of individuals whom he thinks understand him best. Although his eventual assessment of himself may not be highly accurate, the mere fact that the adolescent perceives that others understand him can greatly influence the impact that counseling will have on him. Then, too, the fact that others in his peer group have problems or concerns similar to his own reassures him, makes him feel that he is not alone with his concern. But even if all members of a group do not have the same problems, the awareness that others do have problems and the sharing of feeling about them tends to develop a sense of empathy in the understanding of self and others. A sense of belonging (social adjustment) or commonality develops out of the sharing of concerns or feelings. Inherent also in the multiple counseling situation is the opportunity for an individual to sit quietly and still benefit from verbal exchanges. When a group member finds discussion too painful or threatening, he can withdraw easily, sit in silence, and still participate through listening, thinking, and feeling.

The investigator does not wish to imply that group approaches to counseling automatically bring with them the
advantages outlined above. To provide counselees with a maximal growth situation, certain principles should govern the formation and processes of the multiple counseling situations. One principle which clearly undergirds successful group functioning is that the group members should be somewhat alike in their problem area. For example, all members may have the desire to assess their personal attitudes, values and capacities in relation to the teaching profession. Successful application of this principle necessitates the inclusion of counselees whose behavior falls within the normal range of adjustment. Extremes of any kind of behavior would be detrimental to individual growth within the group setting.

Counselees in multiple counseling (as in individual counseling) should be voluntarily involved in the process of counseling. A student's membership in a group should not come because of coercion. The counselee should be involved in the counseling relationship because he has a desire for counseling assistance rather than because it is merely the counselor's desire to help him. Each of the group members should have the freedom to leave the group at any time. In other words, the probability is slight that a counselee will make progress if he is compelled to continue counseling against his wishes.

In organizing a group for multiple counseling, the counselor should be aware that the size of the group can be
a barrier to the effectiveness of communication. The larger the counseled group, the more difficult it becomes to relate to each individual within the group. A suggested minimum number for an effective social unit is three to five. It is generally agreed by group counselors, however, that eight should be the maximum number. Loeser, for example, has several properties which he feels are characteristics of multiple counseled groups with four to eight members:

1. They are large enough to provide a variety of intergroup transference, potentialities to suit the needs of each person at any given time.

2. They are large enough to avoid the strong positive and negative polarity or reaction of the dyad (two member group) and triad (three member group) and hence are more enduring.

3. They are large enough to permit heterogeneity and diversification of psychodynamic types and thus implement group interaction process.

4. They are large enough to permit acting out in a diluted and workable manner.

5. They are small enough to operate without strong or numerous rules or regulations. Beyond a few simple rules such as hours, meeting places, etc., very few regulations need to be introduced.

6. They are small enough to permit each member a reasonable amount of attention and time, but large enough to remove the tensions of face-to-face talking.

---


So far consideration has been given to principles relating to the selection of group members and to the size of groups. Perhaps the most difficult aspect of multiple counseling is the selection of appropriate techniques. The problem of selecting appropriate techniques in individual counseling is most difficult indeed. The problem is more acute in selecting techniques for multiple counseling. It is therefore wise that the counselor not merely accept (at face value) techniques suggested by some one else and attempt to counsel by employing such techniques if the procedures suggested are not comfortable to him. Most certainly it would be foolhardy for a counselor committed to the client-centered approach to attempt social reinforcement in a multiple counseling situation. Therefore, the counselor contemplating the use of multiple counseling should identify those procedures which he found successful in dealing with individuals and utilize those procedures in a manner appropriate to the demands of particular group settings. It can be said, then, that if the counselor's technique of social reinforcement has proved to be effective in producing growth in individual counseling situations, it will also prove to be effective (when used by the same counselor) in multiple counseling relationships.

But the mere application of individual procedures is not enough if multiple counseling is to be most effective.
The counselor who would work with groups must not only be cognizant of the uniqueness of the multiple counseling situation, but he must also be skilled in the principles of good leadership and be able to guide interaction on the basis of solid understanding of group dynamics. In brief, acting as a leader from within the group, the counselor must provide a warm, permissive atmosphere in which interpersonal relations and group interaction may develop by each individual identifying with and contributing to a discussion of a problem which has relevance for him and some measure of commonality to the group as a whole.

THE PROBLEM

The purposes of this study are to (1) determine the effects of social reinforcement in individual and multiple counseling situations on accuracy of self-perceptions of college students in the areas of critical thinking, attitudes toward teaching, dogmatism, personal adjustment, and social adjustment; (2) ascertain the relative effectiveness of individual and multiple counseling in effecting growth in the areas of critical thinking, attitudes toward teaching, dogmatism, personal adjustment, and social adjustment; and (3) compare the degree of counselee satisfaction with individual and multiple counseling. The third and last purpose was included as part of this study because of the investigator's feeling that counselee satisfaction is an
important factor in any over-all evaluation of counseling
effectiveness. Counselors' feelings about the counseling
experience are most crucial, since in the long run it is the
counselor who must determine, in his own way, whether he is
any better or any worse off as a result of counseling.
Specifically, this study is designed to test the null
hypotheses listed below. Subjects of this study were
divided into individual counseling, multiple counseling,
and control groups. It is to these groups that the follow-
ing hypotheses refer.

1. There will be no significant difference between
   pre-counseling and post-counseling mean critical
   thinking scores for each group.

2. There will be no significant differences in post-
   counseling mean gain scores in critical thinking
   among the three groups.

3. There will be no significant difference between
   pre-counseling and post-counseling accuracy of
   self-perceived critical thinking for each group.

4. There will be no significant differences among
   groups in the accuracy of self-perceived critical
   thinking at the post-counseling stage.

5. There will be no significant difference between
   pre-counseling and post-counseling mean teaching
   attitude scores for each group.

6. There will be no significant difference in post-
   counseling mean gain scores in teaching attitude
   among the three groups.

7. There will be no significant difference between
   pre-counseling and post-counseling accuracy of
   self-perceived teaching attitudes for each group.
8. There will be no significant differences among groups in the accuracy of self-perceived teaching attitudes at the post-counseling stage.

9. There will be no significant difference between pre-counseling and post-counseling mean dogmatism scores for each group.

10. There will be no significant differences in post-counseling mean gain scores in dogmatism among the three groups.

11. There will be no significant difference between pre-counseling and post-counseling accuracy of self-perceived dogmatism for each group.

12. There will be no significant differences among groups in the accuracy of self-perceived dogmatism at the post-counseling stage.

13. There will be no significant difference between pre-counseling and post-counseling mean personal adjustment scores for each group.

14. There will be no significant differences in post-counseling mean gain scores in personal adjustment among the three groups.

15. There will be no significant difference between pre-counseling and post-counseling accuracy of self-perceived personal adjustment for each group.

16. There will be no significant differences among groups in the accuracy of self-perceived personal adjustment at the post-counseling stage.

17. There will be no significant difference between pre-counseling and post-counseling mean social adjustment scores for each group.

18. There will be no significant differences in post-counseling mean gain scores in social adjustment among the three groups.

19. There will be no significant difference between pre-counseling and post-counseling accuracy of self-perceived social adjustment for each group.

20. There will be no significant differences among groups in the accuracy of self-perceived social adjustment at the post-counseling stage.
21. There will be no significant difference between individual counseled students and multiple counseled students in their satisfaction with counseling.

IMPORTANCE OF THE STUDY

There is little doubt that educational administrators are vitally concerned about increasing enrollments. Counselors, too, are concerned about the tremendous rise of student populations in educational institutions. Large numbers of students are already placing considerable stress on counselors' time, and since predicted expansions see the situation as becoming more critical, it seems desirable to look ahead to the ultimate value of counseling in multiple situations. If, indeed, some of the outcomes of individual counseling can be achieved through multiple counseling, it would be only reasonable that multiple counseling should be employed. Counselors cannot afford to be encapsulated; they cannot afford to be tied to the old, tried, and tested approaches that have proven to be effective. The educational counselor must be future oriented. He must constantly strive, through experimentation and research, to extend his services to every student who needs them. This study, then, is based on the assumption that more efficient ways can be found for the utilization of counselors' time.
OPERATIONAL DEFINITIONS

This section is concerned with definitions of terms used in this study.

**Individual counseling**: a face-to-face relationship in which one trained person using sound professional principles endeavors to help another to identify and clarify problems which concern the latter.

**Multiple counseling**: the process by which one professionally trained counselor endeavors to aid several counselees simultaneously to clarify and seek solutions to their problems through the process of group interaction.

**Social reinforcement**: the strengthening of a response or response tendency by giving a social reward such as approval or attention.

**Critical thinking**: a process by which one is able to recognize the existence of logical relationships between propositions and appraise supporting assumptions and evidence. Level of critical thinking will be determined by students' scores on the *Watson-Glaser Critical Thinking Appraisal*.

**Dogmatism**: an outlook on life which is intolerant toward points-of-view other than those held by the individual. Degree of dogmatism will be assessed by use of the *Dogmatism Scale*.

**Personal adjustment**: the degree to which a given individual has a feeling of self-reliance, a sense of per-
sonal worth, a sense of personal freedom, a feeling of belonging, an absence of withdrawing tendencies, and an absence of nervous symptoms. Personal adjustment will be measured by use of the "Personal Adjustment" sub-test of the California Test of Personality.

Social adjustment: the ability to establish good relations with people in general as evidenced by students' scores on the "Social Adjustment" sub-test of the California Test of Personality.

Teaching attitude: the ability to establish rapport with children as evidenced by students' scores on the Minnesota Teacher Attitude Inventory.

Limitations of the study

Two factors serve to limit the validity of the conclusions that may be drawn from this study. The first pertains to the size and composition of the study group and the second to the instruments employed in this study. Seventy-eight students (out of a total population of 1,058) enrolled in the first course in Education at The Ohio State University in the Autumn Quarter of the 1964-65 academic year were randomly assigned to the study group; therefore, the conclusions emanating from this research have credence to the extent that the study group members are representative of first year teacher education students throughout the institution and the nation. Second, the results of this
study are valid only to the degree to which the instruments employed measure what they purport to measure.

Organization of the remainder of the dissertation

The foregoing material has comprised Chapter I of this study, Introduction and Statement of the Problem. The remaining chapters in the study are II, Review of Related Research; III, Research Design; IV, Findings and Discussion; and V, Summary, Conclusions and Implications.
CHAPTER II

REVIEW OF RELATED RESEARCH

This chapter presents a review of the research which is directly pertinent to the major concerns of the present study. Interest was centered solely on studies dealing with counseling outcomes. To facilitate coherence, the research review is organized under the headings of Individual Counseling, Multiple Counseling, and Individual and Multiple Counseling Compared.

The research studies cited in this chapter do not exhaust all of the published or unpublished research in the delimited fields of individual and multiple counseling, although the investigator sought to include representative studies which would reflect the nature of the extant research concerned with counseling outcomes in individual and multiple counseling situations.

There were several studies which were primarily concerned with technical descriptions of the counseling process. Studies of the counseling process, although not numerous, were difficult to classify. The investigator examined critically these research reports in order to determine what implications such process studies had for
any of the above rubrics. Each of these reports was then reviewed under the most appropriate category.

Individual counseling

Many studies have been conducted in order to show the effectiveness of individual counseling. Shepherd\(^6\) used graduation from college as the criterion for counseling effectiveness. His experimental group consisted of 295 students who had requested and received counseling at some time during their college careers. The control group consisted of classmates of the experimental group matched by sex, academic ability, and academic division. Five years after the subjects enrolled as freshmen, Shepherd ascertained that about 50 percent of the counseled group had graduated. There was no significant difference in academic ability between the graduates and non-graduates.

Freeman\(^7\) was also concerned with college graduation as a criterion of counseling success. In a follow-up study of low-ability students who received counseling, Freeman found that 14 of the 106 subjects that received counseling were graduated from college. Thirteen students of the group that received no counseling were graduated from


college. The author concluded that academic counseling for college students in the lowest decile on the college aptitude test was unprofitable.

Faries\(^8\) obtained quite different results in his study of randomly selected subjects. He compared 140 students entering City College of New York in 1947 and 1948 who took advantage of counseling offered during an orientation class with 140 control subjects matched with counseled students for high school ranking, entrance test scores, date of entrance, and degree field. Seventy-seven percent of the experimental group graduated from college, as compared with 51 percent of the control group. Although the difference between groups is significant, a valid interpretation of the Faries study is hampered by the fact that the two groups may have differed in original motivation.

Although few well designed studies have been conducted using college graduation as a criterion, a plethora of good studies have been published that use improved academic performance as a criterion of successful counseling outcomes. Studies concerned with in-school academic achievement were conducted by Goldstein and Crites\(^9\) and later by

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Searles. Goldstein studied the effect of brief counseling on grades earned by low-ability college freshmen. The experimental group was given brief counseling and the control group was not. A difference in grade point average favored the control group for the experimental period and for the following semester. Searles was disturbed by similar findings in his study of superior college freshmen. The experimental group members were afforded three interviews each during the fall semester; the control group members were afforded none. In this study the investigator was careful to describe his experimental treatment. It consisted primarily of informing the students about their academic ability and academic progress. At the end of the semester, the two groups were compared on several academic criteria. There were no significant differences between the two groups.

Conflicting results were obtained in studies by Scarborough and Wright\(^1\) and earlier by Cowley.\(^2\) Scarborough and Wright used control and experimental groups in a study designed to test the effectiveness of a pre-college

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educational guidance clinic. They found no statistically significant differences in grade point averages and persistence until graduation between those who did, and those who did not, attend the clinic. Cowley reported that the number of freshman athletes remaining eligible was greatly increased by a counseling program, but since his procedure constituted a more intensive effort including tutoring where needed, it is impossible to attribute the results to counseling alone.

Cole\textsuperscript{13} reported an evaluation of the counseling program in the Worcester Boys Club which has profound implications for personnel workers. One hundred counseled boys were compared with non-counseled boys after a five-year lapse of time. In many and significant respects the counseled group was superior to the non-counseled. More of the former were still in school, less retardation was evident, fewer had left school during a school term, more were employed, more obtained work immediately after school, more were in occupations that offered advancement, more were satisfied with their vocations, and fewer were delinquent. The counseled group had gained a distinct advantage over the non-counseled group with respect to every factor measured. Furthermore, the differences found are reported to be statistically significant.

Newland and Ackley\textsuperscript{14} studied the effects of remediation and counseling on high school sophomores. Cases of potential failures were matched with a control group. The academic status of each pupil in the experimental group was studied from several viewpoints in order for staff members to work more efficiently with individual students. The significance of the amount of academic superiority of the experimental group over the control group can be seen in that they showed greater improvement in grades and had fewer drop-outs. The researchers concluded that educational guidance, largely in the form of remedial and motivational work, is effective.

Hill and Morrow\textsuperscript{15} conducted a study to determine the effect of counseling services on the drop-out rate in schools. They obtained ratings of the guidance services of 19 schools by a jury of guidance specialists. The investigators then attempted to determine the relationship between a drop-out index and the rated adequacy of the schools' guidance services. A small but consistent relationship between the two variables was found. Additional comparisons revealed no difference between the drop-out index and


teachers' educational preparation, teacher-pupil ratio, teacher turnover, or number of transported pupils. It was concluded that the rated quality of the guidance services and quality of curricular offerings were more closely related to a low drop-out rate than the other variables.

Watson\textsuperscript{16} had more success in evaluating the effectiveness of counseling on college students with academic problems. Of all students who were referred to him because they possessed academic problems, sixty-six accepted the invitation for individual counseling and remained for approximately ten interviews each; forty-five students denied the need for counseling help; and twenty-three students made no response to the offer of counseling. The three groups were approximately equal in academic ability and academic performance at the time of the interview. Two years later, it was discovered that the percentage of counseled students who graduated from college was significantly higher than the non-counseled groups.

Young,\textsuperscript{17} whose subjects were college men in their freshman year, found that a 25-minute interview with a counselor during a three-week period following the first

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six weeks of classes, using a chart on which the relationship of ability and achievement test scores to college grades was shown, did not produce significant improvement in self-prediction of grades. A matched non-counseled group was used as a control. Overprediction of grades was common both before and after counseling. In spite of this lack of measurable influence, a large proportion of the counseled group rated the experience as helpful, 89 percent of them specifically mentioning the value of "knowing achievement test standings."

Holaday\(^\text{18}\) conducted a study at the University of Iowa of the lowest decile of the freshman class as determined by the entrance qualifying examinations. The experiment depended upon a carefully planned program of coaching of the experimental group members in order to determine the results of such a procedure. The help given consisted of personal data questionnaires and interviews, remedial work on physical troubles, training in study methods, improvement in speed and comprehension in reading, development of imagination, memory, and interest, and a planned daily program. The results for the experimental group were (1) a higher grade point average than would have otherwise been earned; (2) fewer students dropped for poor scholarship; (3) few

students leaving the University because of discouragement over poor grades; and (4) a more sincere effort on the part of the students to adjust themselves to university life.

Rothney and Rosens¹⁹ attempted an ambitious follow-up of two groups of 129 students, one counseled and the other not counseled, over a span of five junior and senior high-school grades. They found evidence to suggest gains in terms of academic outcomes, that is, less failure, fewer curriculum changes, higher grades, and higher rate of admission to college. There also were gains for non-college-going counseled students, based on the students' reports. These included greater employment, greater definiteness concerning vocational plans and means of attaining them, and better adjustment.

Two research studies that indicate students' adjustment to their academic environment after counseling were conducted by Williamson and Darley²⁰ and later by McLaughlin.²¹ Williamson and Darley reported the results of evaluation of clinical guidance in terms of grades and satisfaction with occupational and educational choice of 196


²¹ E. F. McLaughlin, "A Study of the Effectiveness of Personal Counseling with Seventh Grade Pupils" (doctoral dissertation, University of Houston, 1956).
college students. The adjustment and grades of students following advice was significantly higher than for those not following advice. McLaughlin indicated changes produced by counseling seventh-graders. He found significant differences between his 50 subjects and their matched controls on effort rating (report card), number of disciplinary referrals, and peer-group status after a brief period of personal counseling.

Kirchheimer, Axelrod, and Hickerson\(^\text{22}\) compared improvement in grades from one semester to the next for four groups of University of California veterans classified according to whether or not they had received counseling and whether or not they had changed their course of study. The only significant improvement was in the "Counseled-Change" group. In general, counseled groups made more improvement than non-counseled groups.

Guthrie and O'Neill\(^\text{23}\) found no differences in grades when they compared three groups of freshmen drawn from dormitories. Group I received systematic counseling on study habits and other educational problems, Group II simply had personal contact with dormitory counselors, and Group III had no contact at all. While the authors were


inclined to attribute their negative results to the fact that the counseled students had not asked for counseling nor had been made to feel that they were getting any special treatment, one cannot overlook the fact that most dormitory counseling programs operate in this relatively informal way.

Calhoun\textsuperscript{24} conducted a study to assess the effects of a program of individual counseling on the academic accomplishment of underachieving pupils in Grade Eight of the Gordon Junior High School in Coatesville, Pennsylvania. This was a controlled experiment carried on during the school year 1954-55. The 267 pupils were given achievement battery and mental ability tests to match 40 pairs of pupils (20 each of boys and girls) in chronological age, sex, I.Q. and number of months of underachievement. The pupils in the experimental group received individual counseling. In six comparisons of marks earned after counseling began, the experimental group excelled at a significant (.05 or smaller probability) level. Ratings on the intensity of "interest" for the experimental group were superior to those for the control group by a margin significant at the .02 level. The program of counseling did not bring about a statistically significant improvement in achievement. The author did not

\textsuperscript{24}S. R. Calhoun, "The Effect of Counseling on a Group of Underachievers," \textit{The School Review}, 64 (May, 1956), pp. 312-316.
find significant differences when the groups were compared on "industry" ratings.

Hackett\textsuperscript{25} investigated the value of the counseling provided for men on academic probation. The evaluation was carried out in four steps: (1) a statistical analysis of objective data; (2) a test-retest procedure using Borow's College Inventory of Academic Adjustment; (3) the securing of student opinions regarding the counseling; and (4) the examination of the counseling report form for useful information. All probation students showed higher achievement in terms of credit hours passed and higher grades. Although apparent differences favored the counseled students, there were no statistically significant differences between the achievement of counseled students and those not counseled. The author concluded that sufficient evidence was accumulated to justify the continuation of the counseling service. However, the results did not justify claiming that counseling would be of help to all students on probation.

Apostal\textsuperscript{26} compared the judgments of counseling adequacy based on case-folder data with the judged appropriate-ness of occupation chosen seven years after counseling and


\textsuperscript{26}Robert A. Apostal, "Two Methods of Evaluating Vocational Counseling," Journal of Counseling Psychology, 7 (Fall, 1960), pp. 171-175.
found no relationship between these two criteria. However, Gonyea\(^{27}\) in a separate study two years later, found that significant increase in appropriateness of vocational choice had occurred between the time that counseling had begun and terminated. Even after Gonyea's elaborate procedures, there was some question about whether this increase was still in effect a year after counseling had terminated.

Perhaps one of the most detailed reports of the effectiveness of individual counseling was conducted by Williams.\(^{28}\) He used different criteria for evaluating the outcomes of brief educational-vocational counseling, an index of personal adjustment, and an index of congruence between actual and ideal self. Williams used three groups—an experimental group who received typical vocational counseling of approximately two interviews conducted by an experienced counselor; a client-control group who had requested counseling, but were placed on a waiting list for the duration of the experimental period; and a non-client group. He found that counseling restored a normal level of personal adjustment and degree of congruence for the experimental group. However, no change was observed in the control


group. An aspect of Williams' study which is worthy of note is that the improvements were in effect a year after counseling had terminated.

Jesness\(^2^9\) did not find differences between 31 counseled college freshmen and 29 "wait" controls on any of nine variables having to do with vocational change. Both groups gained during the period of the study, but the difference between them was not significant. It is interesting that a difference did appear in the specific area of vocational planning. Sixteen of the experimental group, as compared with 7 of the controls, changed to new goals more appropriate to their aptitudes and interests. Williamson,\(^3^0\) at the college level, found significant net gains over control groups for occupational information classes from beginning to end of a term in knowledge both of occupations and of methods of choosing an occupation.

One of the best controlled and carefully conducted studies concerned with the value of counseling was conducted by Butler and Haigh.\(^3^1\) They sought to determine the changes


in the client's concept of self after client-centered therapy. The Q-sort for self and for ideal self was given to 25 clients before therapy started, after the conclusion of therapy, and at a follow-up point six to twelve months after the conclusion of therapy. Control groups were matched for age, sex and socio-economic status. The mean correlation at the pre-therapy state was -.01. At the conclusion of therapy the mean was .34, and at the follow-up point it was .31. For the control group the initial correlation was .58 and .59 at the follow-up point. The authors conclude that one of the changes associated with client-centered therapy is that self-perception is altered in a direction which makes the self more highly valued. Other studies examined in this chapter do not support the findings of Butler and Haigh.

Ewing\textsuperscript{32} has contributed some further evidence about the effects of personal counseling on self-concepts. Thirty-nine college students were asked to check adjectives at the beginning and the end of counseling, after several different sets of instructions. In general, the results showed that in improved cases all the kinds of self-descriptions were more alike than in unimproved cases. The actual self, the culturally approved self, the ideal self, and the

self as seen by parents and by the counselor tended to converge.

Berdie compared the correlations between self-ratings and test scores for counseled and control groups of college freshmen. Self-ratings were made during orientation week and again six months later, after the experimental subjects had participated in the counseling experience. For men, the counseled group showed significantly more increased correlations on the Strong Vocational Interest Blank than did the non-counseled and made a greater improvement in predicting their own grades. There was no trend in either group in MMPI self-estimates.

Serene's final report serves to illustrate the limitations in information obtained by studies designed solely for accounting purposes. One hundred and twenty-four ninth grade underachievers were counseled, with grades ten and twelve serving as controls. The correlation between ability and achievement in grade eleven jumped from .56 to .76 at the end of the period of counseling. Since one important aspect of the counseling included calling the student's attention to the discrepancy between his potential


and his actual achievements in a relatively non-threatening manner, one cannot help wondering whether challenging information delivered in a warm supporting manner may not be sufficient to account for the difference. Unless the researcher introduces variations in process as experimental variables, such questions are unanswerable.

Singer and Steffre35 questioned whether changes in correlations or in mean discrepancy ratings really were adequate techniques for determining whether self-estimates were improving. Working with high school seniors as subjects and the Occupational Interest Inventory as a testing instrument, they obtained self-estimates of interest before and three months after counseling. They compared both means and standard deviations of the discrepancy scores and analyzed male and female groups separately. For males, there was no significant change in means, but all standard deviations decreased, although only for the Mechanical scale was this decrease significant. Females showed a significant decrease in mean discrepancy scores on the Mechanical and Scientific scales and a significant decrease in standard deviation on the Personal-Social and Mechanical scales. The authors interpreted the decrease in standard deviation as a trend toward zero discrepancy. In other words, counseling may be

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helping those people whose estimates of their own traits are seriously in error to become more accurate in their evaluations, even though a moderate amount of inaccuracy persists in everybody. Neither a large overestimate in one case balanced by a large underestimate nor a small overestimate balanced by a small underestimate have any effect on the mean.

Observation of behavior change was the procedure used by Rothney in evaluating counseling effectiveness. He measured change in the students' attitudes toward themselves as students. A Situation Exercise was devised and presented to an experimental and a control group. The results were applied to a rating scale. A criteria was set up to measure change in the observable behavior of the students as reported by the students themselves, their teachers, and their parents. The students did not change their decisions concerning the situations, did not differ from the control group in their decisions, and did not change in their feelings of adequacy concerning the situation. In general, the findings of the study suggest that there was no immediate effect of a day of counseling and guidance upon the students' feelings about their adequacy as students. However, significant changes in behavior did appear.

Kemp\(^{37}\) studied the effect of dogmatism (close-mindedness versus open-mindedness) on counseling. Two experimental groups (high and low dogmatism) were given four individual counseling interviews during a 10-week period. The two control groups (high and low dogmatism) received no treatment. Neither of the control groups made any significant change in score on a problem check list, but the low-dogmatism experimental group did. In this study, a forced counseling situation exists, but in this study one may have a clue to what kind of person will profit from counseling under such conditions.

Watt\(^{38}\) evaluated non-directive counseling in the treatment of delinquents, comparing eleven experimental subjects with eleven controls matched with them for age, intelligence, grade placement and previous records. Statements made in the interviews indicated that six of the counseled subjects had attained the therapeutic objectives of free expression, insight, and decision and action. Significant differences between the groups showed up in gains on some of the MMPI scales, Hs, Pd, Pt, Sc, and Ma. No significant differences appeared in the other measures.


the California Test of Personality, and the Haggerty-Olson-Wickman behavior ratings.

A study which has direct relevance to the present study was conducted by Ryan and Krumboltz. The purpose of this study was to investigate the effectiveness of planned reinforcement counseling in increasing client decision and deliberation responses. The sample consisted of 60 male college students, assigned randomly to three treatment groups: (1) decision group, in which clients' decision responses were reinforced; (2) deliberation group, in which clients' deliberation responses were reinforced; and (3) control group, in which neither decision nor deliberation responses were reinforced. A semi-structured counseling interview was held with each client. During the treatment period of the interview, counselors reinforced appropriate decision and deliberation responses. Following the interview a projective-type story completion task was given as a classroom assignment to test the generalizability of behavior modification. Analyses of data revealed the following: (1) under reinforcement for deliberation responses the subjects increased deliberation response rate significantly and when reinforcement was withdrawn subjects decreased deliberation response rate; (2) under reinforcement for decision responses,

the subjects increased decision response rate significantly, and when reinforcement was withdrawn Ss decreased decision responses; (3) counselors varied in reinforcing effectiveness. In this study no attempt was made to control for personality differences. This study demonstrates that counselors have the power to influence the client's tendency to make either decision or deliberation responses; and that behavior modification in a counseling setting generalizes to a non-counseling environment.

Multiple counseling

Reporting on research being conducted at the University of Illinois, Ohlsen discussed a study in which twenty-nine high ability ninth grade students were randomly assigned to two experimental and two control groups for group counseling and no counseling, respectively. The experimental groups met twice a week for eight weeks. An evaluation of the measures on the criteria of academic performance, self-acceptance, and effectiveness of interpersonal relations indicated significant growth in the experimental groups over the control groups on at least two of the criteria. Group counseling given to the two control groups after the first experimental period produced similar improvement in one of these groups. Follow-up measures

eighteen months after counseling showed that achieved gains had been maintained.

Spielberger, Weitz, and Denny,\(^4\) in an elaborate study designed to evaluate the effectiveness of group counseling for improving the academic performance of anxious college freshmen, incorporated well-designed experimental controls in their study. The authors demonstrated that the experimental subjects who attended group counseling sessions regularly made significant improvements in academic performance over the non-counseled control group. However, in noting that only one-third of those who volunteered for the counseling attended regularly enough to realize any benefits, the authors questioned the applicability of group counseling as a preventive approach to academic underachievement of anxious college freshmen. They felt, instead, that group counseling would be indicated primarily for students with personality traits that would enable them to persist in counseling a sufficient number of times to benefit from the experience.

Comparing multiple counseling with an absence of counseling, Broedel\(^4\) used the following criteria: (a)


increases in school grades, (b) increases in achievement test scores, (c) increases in acceptance of self, and (d) reduction in incidence of stated problems. The sample consisted of 29 gifted, underachieving high-school freshmen divided at random into experimental and control groups. The experimental treatment consisted in having sixteen multiple-counseling sessions with the experimental group during an eight-week period and giving no counseling to the control subjects. Initial measures were compared with measures made at the end of the experimental period for both groups and, for the experimental group, with follow-up data obtained one week later and sixteen weeks later. Significant differences between experimental and control subjects were found only on the criterion of increases in acceptance of self. Significant differences were found for experimental subjects on scores on achievement tests given immediately after counseling and on those given sixteen weeks later.

Ofman\textsuperscript{43} attempted to hold motivational factors constant in evaluating group counseling. In his study grade point average (gpa) was chosen as the criterion for effectiveness. Five groups of 60 students each--the experimental group, control group, baseline control group, dropout group, and

and a wait group—were compared. The groups, while comparable in ability, differed in initial gpa. As a function of counseling, the Experimental Group's gpa became comparable to the Baseline Group's, and significantly higher than the Control and Dropout Groups' gpa. The Wait Group did not improve until after counseling. Grade point averages of the Control and Dropout Groups did not improve at all. Since this investigation stressed the control of relevant baseline, temporal, and critical motivational variables, it was concluded that the group counseling procedure described was effective in improving scholastic behavior.

Wool suggested that group counseling could be used successfully to help selected students to (1) reduce failures in subject matter, (2) improve work habits, (3) improve behavior. The group was given the name "club." The purpose of the club was indicated to the members and they were encouraged to talk about their problems, gripe, listen to ideas of other members, and make suggestions of their own. The greatest rate of improvement was in subject matter and work habit marks. The behavioral category indicated a lesser improvement as failing marks lessened by 33 per cent. The authors concluded that with the proper motivation and interest on the part of school personnel and with the easing of tension and anxiety made possible by the

club association, considerable improvement in subject matter, work habits, and behavior can be anticipated.

A less elaborate, but fully descriptive study was conducted by Volsky and Hewer. Their research was concerned with the effectiveness of short-term educational-vocational counseling. The group procedure consisted, essentially, of a case conference approach, in which educational-vocational plans of each group member were discussed by the group. The goal of each fifty minute session required that some acceptable decision be reached for an appropriate course of action to be followed by the individual discussed. The researchers did not offer the results of their study as conclusive evidence, but they did state that the results were favorable and group counseling warrants further study.

Caplan concentrated his efforts on group counseling for the junior high school student. He was concerned with the effects of group counseling with adolescents who had social problems. He was particularly interested in changing the self-concepts about school achievement and behavior held by boys attending a large junior high school in

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San Francisco. Group procedures were used in creating permissive situations in which the boys involved were given opportunities to better understand themselves and why they were in the group. As the meetings increased in number, there seemed to be evidence that the boys had come to a better understanding of some of the difficulties in their development. Caplan found significant differences in favor of the group-counseled boys as compared to the control group.

Two researchers who were concerned primarily with change in personality orientation of students after counseling are Heist\textsuperscript{47} and Klopfer.\textsuperscript{48} Heist found that there were some significant differences in personality orientation measured by several psychological and sociometric techniques in seven graduate students following a series of twelve group counseling sessions with a trained leader. Seven controls did not show these changes. Klopfer used the group Rorschach test with nine military patients before and after a three-week group psychotherapy program. He found that the group Rorschach could be used to measure the amount of


improvement obtained from such treatment and also to separate those who would benefit from those who were not likely to benefit from therapy.

Kemp made a comparison between group guidance (socio process) and group counseling (psyche process). His hypotheses were that (a) responses in group guidance will be superior (more in accord with its purposes) to those in group counseling; (b) responses in group counseling of open-minded graduate students will be superior to those of the close-minded students. Criteria by Coffey were used in making comparisons. Subjects with scores on Dogmatism Scale Form E (Rokeach) of 120 and below, were considered "Open," of 150 and above "Closed." Ninety graduate students participated for 15 class sessions in groups of six. Ratings were made by three adults and one student observer. Results of comparisons gave significant support to each hypothesis. Responses in group guidance were superior (more in accord with the purposes of the activity) in all groups. "Open" subjects recognized problems and made more progress in group counseling.

To determine how effective an orientation course is in helping students solve their own problems, Arbuckle

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49 C. G. Kemp, "Behavior in Group Guidance (Socio Process) and Group Counseling (Psyche Process)," *Journal of Counseling Psychology*, 10 (Fall, 1963), pp. 373-377.

employed group counseling with 160 students. The students were given adjustment inventories and then paired in different groups. All students met for one hour a week in a large group to listen to a lecture, and then split up into eight different groups for a group discussion of one hour. At the end of the course the inventories were again administered. In one inventory, three students in the directive group showed an increased maladjustment while all in the non-directive group showed a decrease in maladjustment. The results of the other inventory were similar with only the students in the directive group showing increased maladjustment.

Driver,\textsuperscript{51} in a series of three experiments, attempted to evaluate the effectiveness of multiple counseling with groups of high school and university students. Her groups were organized around a problem or interest which members of the group held in common. Among the members of her eight groups she found most universal agreement that multiple counseling was an "enjoyable and satisfying activity." A program of individual counseling was carried on as a complementary activity to the multiple sessions. Although substantiating evidence was not reported, Driver stated that multiple counseling facilitated rapport and counselor

efficiency in the individual relationship. Her over-all evaluation of the experiment was stated in these words: "Implications for high-school and college guidance programs are that multiple counseling can be made an integral part of the educative process."

A modest study was recently conducted by Schulz. His was an effort to demonstrate the techniques of conducting group counseling sessions with adolescents. Emphasis was placed on the identification of both verbal and non-verbal clues as expressions of interpersonal behavior. The goal of group counseling was directed toward helping each individual identify his own reaction pattern to stress situations, describe the pattern, and offer alternative patterns for change. Nine students participated in six counseling sessions under the leadership of a trained counselor. Although no statistical analysis was conducted, the counselor observed that one student's grades were improving, another student had a reduction in the number of problem situations causing him concern, and three students began the process of analyzing the way in which they reacted to stress situations. The researcher stated, however, that verification would have to be made over a longer period of

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time before any credence can be given to students' statements.

Lodato, Sokoloff and Schwartz\textsuperscript{53} sought to determine whether group counseling could produce changes in slow-learning students in the areas of attitude toward school, the learning situation, their peers and teachers, development of more adequate self concepts, the reduction of truancy and dropout frequency, reduction in setting-out behavior, and changes in attitude toward slow-learning students on the part of faculty members and other students. Six groups of students were selected, four on the elementary and two on the junior high level. With numbers in each group varying from seven to eleven students for a total of forty-nine students. The groups met from three to five times a week with one or more counselors. In addition, conferences were held with the students' teachers in order to provide progress information. It was found that (1) positive changes in attitudes toward learning and toward authority figures were observed in a large majority of the students as judged by teacher ratings on a behavior and attitude rating scale; (2) there was an increase in self concept of most of the students as indicated by figure-drawing projectives; (3) there was a significantly improved record of the students.

in the study; and (4) there was increased tolerance, insights, and understanding by classroom teachers of students who present these kinds of difficulties. The authors concluded that group counseling is effective in modifying negative attitudes among slow learning students, toward their studies and school in general.

Robinson\(^5^4\) set up experimental and control discussion groups to ascertain the effects of group discussion upon the attitudes of college sophomores toward war and capital punishment. He administered Thurstone Attitude Scales before and after the discussions. All discussion groups showed significant changes of attitude. The greater range of shifts was made in the direction of the initially strong attitudes. Shifts of opinion from reading were greater than those produced by group discussion, but discussion tended to shift persons in the opposite direction from the change made after reading. Larger shifts were made by men and were associated with low emotional stability and less information.

Miller and Biggs\(^5^5\) investigated the effectiveness of free group discussion on attitudes towards racial groups when the discussion groups were sociometrically structured.


Secondary school students from one school constituted experimental and control subjects. Two experimental groups were formed; members of one group had sociographs considered high in cohesion, and members of the other, low. A control group was selected without reference to sociometric structure. An attitude scale, administered to both experimental and control groups before and after a period of free group discussion with experimental subjects constituted the experimental measure, and the discussion itself was the experimental treatment. Significant positive changes in attitudes were shown for both experimental groups, whereas attitudes of control subjects remained unchanged. No difference in changes in attitude was observed between the two experimental groups.

Ohlsen and Oelke\textsuperscript{56} investigated the relationship between client growth and (1) the topics discussed; (2) the affect associated with topics which were discussed; (3) self talk; and (4) amount of talk. The investigators also compared those who grew most and those who grew least in each group with the entire group in which they functioned. The verbal interactions of two groups of adolescents and three groups of prospective counselors were analyzed with reference to topic, affect, and client growth. Within the

framework of this study and the classification system used, no clear-cut relationship was found between client growth, and any of the elements noted above. In every group, however, the behavior for those who grew most differed from those who grew least. The adolescents spent significantly larger proportions of their time discussing impersonal topics than did the adults.

In a study which had as its purpose to determine the effects of short-term group counseling on prospective counselors, Gazda and Ohlsen\(^57\) studied graduate students in counseling groups. Each of the counseling groups met twice a week for one-hour sessions, over a period of seven weeks. All sessions for all groups were recorded with the subjects' knowledge. Control groups were selected from students enrolled in a regular term. The clients appeared less well adjusted at the close of counseling than they were at the beginning. After a six-month follow-up, however, they appeared better adjusted than they were prior to counseling. The fourteen-month follow-up suggested that gains in adjustment had continued beyond the six-month follow-up period. This study indicated that group counseling is effective in the training programs of prospective counselors.

Individual and multiple counseling

Stockey sought to study the effectiveness of counseling and employment in reducing aggressive behavior in boys who had difficulty adjusting to school. All boys entering the Continuation Division of Milwaukee Vocational and Adult Schools were given the following tests: Cook's H Q Scale, Taylor's Manifest Anxiety Scale, the California Short Form Test of Mental Maturity, the California Reading Tests, K-D Delinquency Proneness Test and the Mooney Problem Checklist. Random assignment was made to four groups—control, group counseling, individual counseling, and an employed group. There were fifteen, sixteen, fourteen and fifteen boys respectively in each group. Criteria for possible change in attitude toward self were based on teachers' evaluations, academic achievement, and attendance. Groups met, seven in a group, for twenty sessions. Individually counseled boys met for ten sessions over ten weeks. Members of the control group and a fourth group composed of employed adolescents received no counseling. It was found that a significantly more consistent pattern of improved adjustment was shown by pupils counseled individually and in groups. The control and employed groups showed no change.

Davis was more concerned with the effect of multiple and individual counseling on citizenship behavior. He studied the effect of group counseling and individual counseling on school citizenship. From a group of seventy high school seniors, Davis identified the thirty with the lowest citizenship grades for that past year. He assigned these thirty at random to three groups. Members of Group A were provided twenty periods of group counseling, Group B, two individual counseling sessions, and Group C, no treatment. Group C showed no improvement in citizenship grades during the experimental period. Groups A and B showed significant improvement, with A exhibiting the most improvement. Each subject in Group A, of course, received ten times as much counselor time as did subjects in Group B. The counselor spent an equal amount of time with Groups A and B (in hours).

One of the most significant reports of research concerned with the use of the cumulative record in counseling data is reported by Froehlich. He used cumulative record data and class schedules in assigning forty-two students to two groups. Students in one group were

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counseled on a five-point scale in each area measured by the Differential Aptitude Test. The test was administered at the beginning and again at the end of the experimental period. Although a significant relationship did not exist before counseling, it was found that a significant relationship existed between groups (0.05 level) at the end of the experimental period. Froehlich concluded that multiple counseling can be as effective with some youngsters as individual counseling. The writer added, however, that the cumulative folder, if well kept, can help determine those with whom multiple counseling works best.

Baymur and Patterson, in their classic study identified thirty-two underachieving high school juniors and assigned them to four matched groups of eight students each. Group A received individual counseling, ten to twelve sessions per pupil; Group B received group counseling for nine sessions. Group C received a one session group experience in which students were informed that they were underachievers and exhorted to do something about it. Group D received no treatment. Criterion data, obtained at the beginning and at the end of the experimental period of one semester, were (1) a measure of personal adjustment, (2) study skills, and (3) change in grade point average over previous semester. It was found that the four groups

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did not differ significantly on any of the criteria prior to counseling. However, a comparison of the combined counseled groups with the combined non-counseled indicated that the counseled groups made significant gains in personal adjustment and grade point average.

Perhaps the most comprehensive and rigidly controlled study comparing individual and multiple counseling was conducted by Wright. He compared the relative effectiveness of individual and multiple counseling for disseminating and interpreting test data to students. Both counseled groups were also compared with a non-counseled control group. Comparisons were made in terms of pre- and post-counseling measures on four criteria. Accuracy of self-concept, acquisition of information about tests, feasibility of vocational choice, and counselee satisfaction. The results showed that both counseled groups made significant gains on post-counseling criteria measures over pre-counseling measured, and that these gains, through counseling, represented a significant improvement over the non-counseled group. However, no differences of any significance were found between the individual-counseled and multiple-counseled groups.

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62E. Wayne Wright, "A Comparison of Individual and Multiple Counseling in the Dissemination and Interpretation of Test Data" (doctoral dissertation, University of California, 1957).
One of the best designed studies on academic counseling in recent literature was by Rusalem and Darer.\(^6^3\)
The study, which represented considerably more than the typical subject matter unit, was conducted in conjunction with a double-period, modified English class over a two-year period. During this time, the experimental classes spent one 80-minute period each week discussing topics related to vocational guidance goals. In addition to the modified curriculum, the experimental groups received individual and group counseling, teacher consultation, and parent counseling. Six groups of tenth graders, with 25 boys and girls in each group, constituted the study sample. Three of the groups made up the experimental group, and the other three served as controls. Comparisons on several criteria showed significant differences between experimental and control groups, with all gains being in favor of the experimental group.

Hewer\(^6^4\) used as subjects college students enrolled in a course entitled "Choosing Your Vocation." Her criteria were the changes in certainty and realism of vocational choice and satisfaction with vocational choice. She found


no significant differences during one academic quarter between forty-eight subjects receiving multiple counseling and forty-five subjects receiving individual counseling.

Landy\textsuperscript{65} reported on the means by which a secondary school can get valid information about the degree of occupational adjustment of its school-leavers and clues concerning desirable changes in the guidance and educational programs of the school. The sample consisted of 914 young people, including boys and girls, both withdrawals and graduates. The youth had been out of school one and a half to five and a half years. The data were collected by means of a carefully controlled interview technique. The conclusions of the study indicated that "specific training of attitudes and habits in specific job situations with opportunity for self-direction and self-control seem to make for better adjustment on the actual job." Definite attempts at instructing youth in planning and self-appraisal through such means as individual counseling, group counseling, a comprehensive testing program, and an enlistment of the entire faculty in helping to guide the pupils are practices which the investigators thought to be valuable.

To investigate the effectiveness of educational advising provided by dormitory advisers for freshmen who

\textsuperscript{65}E. Landy, \textit{Occupational Adjustment and the School} (Washington: National Education Association, 1940).
lived in men's residence halls, Sander used individual and group counseling. From each of 29 sections in two dormitories, five freshmen were randomly assigned to treatment Group A, another five to Group B, and another to Group C. Each subject in treatment Group A received four one-hour individual interviews with the resident adviser in his section. Group B participated in four one-hour group sessions and Group C received no special educational advising. The highest mean first semester grade point average was found in treatment Group A, Group B was next and the lowest was Group C, but the differences were not statistically significant. No significant relationship was found between various experimental treatments and persistence in college work.

Speegle sought to determine whether or not group counseling or individual counseling would improve students of varying scholastic aptitude on academic probation. Students were assigned at random within two aptitude levels to three groups as follows: high and low aptitude to receive individual counseling, and high and low aptitude to receive no counseling; and high and low aptitude to receive group counseling. The counseling sessions were concerned

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with the identification of the students' difficulty, the teaching study skill, and providing positive reinforcement for success in college. It was found that students who participated in group counseling remained in college in greater numbers than those students who did not participate in group counseling.

Using a composite rating of realism or lack of realism of the chosen vocational objective as the evaluative measure, the problem of Bilovsky's study was to determine significant differences between the realism of vocational objectives of students who participated in individual counseling and those who participated in group counseling. Realism was determined by general background, school adjustment, and individual appraisal data. Two hundred and one twelfth grade boys who received group counseling were compared with a similar number of boys who received individual counseling the previous year. With the aid of a psychologist, boys in group counseling sections were explained the results of the tests. The same was true in individual sessions with boys in the individual counseled group. It was found that 57.71 percent of the group counseled and 58.20 percent of individually counseled students made realistic choices. It was concluded that no significant

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difference exists between individually and multiple coun-
seled students in realism of vocational objectives.

Krumboltz and Thoresen included 192 eleventh grade
students from high schools in the immediate vicinity of
Stanford University. Students working with six counselors
were assigned to two experimental groups and one control
group. They were also divided for group and individual
counseling. The following four procedures were used by
counselors in both individual and multiple situations:
(a) reinforcement of verbal information-seeking behavior,
(b) presentation of a tape-recorded model interview fol-
lowed by reinforcement counseling, (c) presentation of film
or filmstrip plus discussion as a control procedure, and
(d) inactive control. The investigators found that: (1)
model-reinforcement and reinforcement counseling produced
more external information-seeking behavior than control
procedures; (2) with a male model, model-reinforcement
counseling surpassed reinforcement counseling for males but
not for females; and (3) group and individual settings were
about equally effective on the information seeking behavior.

69 J. D. Krumboltz and Carl E. Thoresen, "The Effect of
Behavioral Counseling in Group and Individual Settings
on Information Seeking Behavior," Journal of Counseling
Summary

As previously stated, this chapter does not purport to present an exhaustive review of research in individual and multiple counseling. Nevertheless, an examination of some of the typical research which has been conducted would lend support to the following generalizations:

1. Research in individual and multiple counseling may be roughly divided into two general areas of emphasis. The first area is concerned with investigations into the value of counseling in individual and group settings. The second area is concerned with investigations of the processes of individual and group counseling, such as group interaction, amount of emotionally laden responses, personality factors, and differential roles of group members. This review of the research reveals that the first kind of research is far more prevalent.

2. Although the majority of the studies reviewed would indicate that individual and multiple counseling are more effective than no counseling, research results do not exist which would support the assertion that counseling is definitely more effective than no counseling.

3. Comparatively few studies exist which use objective-type paper and pencil tests as criterion measures for successful counseling. The most popular criteria of counseling success were grade point average, improved behavior as evidenced by direct observation, and the ability to remain in a particular educational institution.
4. In the overwhelming majority of studies, in both individual and multiple counseling situations, the researchers did not define clearly the nature of their techniques. This lack of description is limiting from an evaluative standpoint, particularly when the reader wishes to compare the relative effectiveness of counseling in individual and multiple settings. The basis of this criticism lies in the awareness that counseling is not always counseling—there are differences, not only among individuals but among general approaches or points of view.

5. Too many studies reviewed in this chapter did not indicate the kind and extent of training possessed by counselors offering the experimental treatment. For the reader to evaluate most accurately the effectiveness of a particular approach, he must not only be familiar with the research methodology and statistical treatment employed, but they must also have knowledge of the qualifications of the person conducting the experimental treatment.

6. In the few comparative studies of individual and multiple counseling in which the same experimental treatment was employed for both settings, multiple counseling was as effective in bringing about counselee growth as individual counseling.

In the next chapter is presented a detailed discussion of the research design of the study.
CHAPTER III

RESEARCH DESIGN

This chapter will present the details of the research design used in this study. First, attention is focused on the setting in which this study was done. Second, the students who served as subjects for this experiment are described, and the method by which they were chosen is explained. Third, the instruments employed in this study were briefly described. Fourth, the experimental treatment was described in detail. Fifth, information relative to the collection and treatment is presented. Since the statistical tools used to analyze the data are closely interwoven in the research methodology, it was thought they should be discussed together.

The setting

This study was conducted in the College of Education of The Ohio State University in the Autumn Quarter of the 1964-65 academic year. The Ohio State University was founded in 1870 as a land-grant institution and designated as the Ohio Agricultural and Mechanical College. The institution admitted its first students in 1873. The University's present name was given in 1878, the year the
first class was graduated. Presently the departments of instruction of the University are grouped into divisions called "Colleges." The Ohio State University comprises ten Colleges and a Graduate School, each under the administration of a Dean and College Faculty. They are as follows: The Graduate School, College of Agriculture and Home Economics, College of Arts and Sciences, College of Commerce and Administration, College of Dentistry, College of Education, College of Engineering, College of Law, College of Medicine, College of Pharmacy, and the College of Veterinary Medicine.71

The Ohio State University serves a student population of over 33,000, 80 per cent of whom reside within the State of Ohio. Any graduate of an Ohio high school who ranks in the upper two-thirds of his graduating class is granted unconditional admission. Applicants from Ohio ranking in the lowest third of the high school graduating class are not approved for admission to the Columbus campus in the Autumn Quarter unless their composite scores of the American College Test (ACT) place them in the upper two-thirds of college bound students. Non-resident applicants are not approved for admission unless they rank in the upper one-third of their classes. The required fifteen units of secondary school work may vary in pattern according to the course of study the student intends to pursue in college, but in

general it is suggested by college officials that students have at least three years of English, two years of mathematics, two years of social science, and two years of a laboratory science. 72

Last school year out of 7,720 applications for admission to the University, 7,348 freshmen were enrolled. University officials estimate that at the end of the first year 32 per cent of the freshman class drop out, 42 per cent remain to graduate and 3 per cent of the graduates continue in graduate study. The students who remain find that social fraternities are an integral part of student life. Twenty-one per cent of the women and 30 per cent of the men are affiliated with Greek letter organizations. Approximately 10 per cent of the female students live in sorority houses and 34 per cent of the male students live in fraternity houses; another 39 per cent of the undergraduate students are housed in campus dormitories which accommodate 2,498 women and 2,704 men. Even with this vast number of students living on the campus or in the immediate vicinity of the University, resident students account for only 30 per cent of the total enrollment. 73

73 Ibid.
The College of Education was established in 1907 to provide the professional education of teachers and other educational workers. More specifically, it is involved in the professional preparation of teachers and other educational workers in administration, psychology, service, and research; the preparation of artists in the fields of fine arts and music; the preparation of personnel in the fields of fine arts and music; the preparation of personnel in the fields of psychology and occupational therapy; the conduct of investigation into education and allied fields; and the providing of services to other colleges of the University and to the schools, colleges, and social agencies.74

The teacher education program in the College of Education is divided into two distinct parts: The Division of Pre-professional Education and The Division of Professional Education. The Division of Pre-professional Education is a program which covers the first two years of college through the completion of approximately 100 quarter hours of credit. The entrance requirements are the same as the entrance requirements for the University. The Division of Professional Education is a program which includes all work completed by the student beyond the 100 quarter hours of the Division of Pre-professional Education. The requirements for acceptance in the Division of Professional Education in

74The Ohio State University Bulletin (Columbus: The Ohio State University, 1964-65), p. 257.
the College of Education are as follows: (1) attainment of a cumulative point hour ratio of 2.25 (out of a possible 4.00) or above in all college work undertaken at The Ohio State University; (2) satisfactory evidence of skill in English as exhibited by obtaining an average of 2.00 or better in freshman English courses; (3) satisfactory rating of the student's progress and potentiality as evidence by a rating from the College of Education area faculty adviser with whom the student is working; and (4) adequate speech, hearing, and health status to perform the functions required of a teacher. 75

Presently, the College of Education enrolls approximately 20 per cent of all students attending The Ohio State University. For the academic year of 1963-64, there were 7,425 students enrolled in the College, 2,422 of whom were men and 5,003 of whom were women. Such an enrollment places the Education College second in the number of students enrolled. The Education College's enrollment was exceeded by the College of Arts and Science which had approximately 10,000 students enrolled at the beginning of the 1963-64 school year. 76

75Ibid.

The study group

The subjects for this study were students enrolled in the course Introduction to the Study of Education (Education 408) for the Autumn Quarter of the 1964-65 academic year. Education 408 is a three-hour, three-credit course built around the idea of an integrated large group and small group presentation of concepts and subject matter. Twice weekly students assemble in a large group (approximately 500 students) for a lecture pertinent to the purposes of the course. The third session each week is presented as a discussion group in which students are encouraged to discuss problems or interest's which are derived from lectures given by guest speakers. The course has seven major purposes:

1) to gain an understanding of the function of education in American society 

2) to more fully comprehend the job of the teacher and what constitutes effective teaching 

3) to acquire familiarity with the current-status and working conditions of the professional educator 

4) to assess one's personal values and potential capacities as they apply to teaching 

5) to achieve an understanding of the preparation of professional educators 

6) to broaden and deepen the prospective teacher's perceptions of teaching-learning situation 

7) to build an appreciation of the bases for professional decision-making through an examination of research findings and through reputable philosophic viewpoints
The overwhelming majority of students registered for this guidance-oriented course are freshman students; however, the course is not restricted to freshman students alone. Students are registered in Education 408 who are classified as sophomores, juniors and seniors.

The total study group was composed of seventy-eight students. Twenty-six students were assigned to the group which received individual counseling (Group A); twenty-six students were assigned to a group which received counseling in a multiple setting (Group B); and twenty-six students were assigned to the control group (Group C). Students in Group A received four counseling interviews with the investigator. Students in Group B were divided into four sub-groups of six or seven students each. Each of the four sub-groups participated in multiple counseling for four counseling sessions. Students in the control group received no counseling for the experimental period but were encouraged to participate in counseling at a later time. Each of the three groups in the study were composed of intact discussion groups which were taught by the investigator. The counseling time was in addition to the regular didactic experiences of the course.

To be considered a member of the study group, a student had to be enrolled in Education 408 during the Autumn Quarter, 1964, and have a schedule which would allow him to
be assigned to a discussion group conducted by the investigator. Out of 1,058 students registered for the course, a total of 718 or 67.1 per cent of the students met this qualification. With an eligible group of 718 students, the investigator employed systematic sampling. This process necessitates the listing of all cases in the population to be sampled and dividing the total number by the desired size of the total study group. Since the desired study group size was set at seventy-eight students, approximately every ninth student was chosen out of the eligible group of students. The seventy-eight students were then randomly assigned to three discussion sections which became the experimental and control groups. 77

Instruments

Six instruments were used for this study. The Student Self-Rating Sheet (SSRS) was devised by the investigator. It contains five statements related to the areas of critical thinking, attitudes about teaching, personal adjustment, social adjustment, and dogmatism. Each student was asked to rank his standing on each of the characteristics by circling a number (1, 2, 3, 4) corresponding to the quartile in which he ranks himself on each characteristic. Each

student was advised to rate himself in relation to other members of his Education 408 discussion group.

The Watson-Glaser Critical Thinking Appraisal (W-GCTA) is a standardized test designed to provide problems and situations which required the application of some of the important abilities involved in critical thinking. Items of the W-GCTA are mostly of a realistic type, involving problems, statements, agreements, and interpretation of data similar to those which a citizen in a democracy might encounter in his daily life as he works, reads the newspaper, hears speeches, and participates in discussions on various issues. The W-GCTA contains 99 items and can be completed in less than 40 minutes by most persons with the equivalent of a ninth-grade education. The 99 items are distributed over five sub-areas. They are Inference (20 items), Recognition of Assumptions (16 items), Deductions (25 items), and Evaluation of Arguments (14 items). The reliability of the W-GCTA is .84 (determined by the split-half method). Validation of the test was based on the judgment of thirty-five persons selected for their advanced training in logic and language meaning, plus their demonstrated leadership in such fields as psychology, education, and business administration. The criterion judges agreed unanimously that the answer key is logically correct and that responses to the questions
require some of the most important skills or abilities fundamental to critical thinking.78

The primary purpose of the Dogmatism Scale (DS) is to measure individual differences in openness and closeness of belief systems. The scale also has as its purpose, the measurement of general authoritarianism and general intolerance. Some of the items appearing in the Dogmatism Scale were inspired by spontaneous remarks made by persons thought intuitively to be closed minded. The subjects are asked to indicate disagreement or agreement with each of forty items on a scale ranging from -3 to +3, with the 0 point excluded in order to force responses toward agreement or disagreement. The scale is subsequently converted for scoring purposes, to a 1-to-7 scale by adding a constant of 4 to each item score. The total score is the sum of scores obtained on all items of the test. The reliability coefficient for Ohio State University students is .84, on a test-retest basis.79

The Minnesota Teacher Attitude Inventory (MTAI) is designed to measure those attitudes of a teacher which predict how well he will get along with pupils in interpersonal relationships and indirectly how well satisfied he will be

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with teaching as a vocation. The MTAI has 150 items. Each item can be scored either plus one or minus one. Thus, the score range of the test is from plus 150 to minus 150. The manual reports that the split-half reliability of the MTAI is .93 and the validity coefficients between MTAI scores and composite criterion (i.e., pupils', principals', and experts' ratings) are .63 and .43 respectively.80

The California Test of Personality (CTP) is organized around the concept of life adjustment as a balance between personal and social adjustment. Personal adjustment is assumed by the authors to be based on personal security and social adjustment on feelings of social security. The items in the "Personal Adjustment" half of the test are designed to measure evidences of components of personal security (self-reliance, sense of personal worth, sense of personal freedom, feeling of belonging, withdrawing tendencies, and nervous symptom. Items in the "Social Adjustment" half of the test are designed to measure six components of social security (social standards, social skills, anti-social tendencies, family relations, school relations, occupation relations, and community relations).81


The sixth instrument, one specially designed for this study, is the Counseling Evaluation Sheet (CES). This instrument was designed to assess attitudes of students who participated in individual and multiple counseling. The CES is a one-page mimeographed sheet with a total of ten items. Examples of items appearing on the CES are as follows: "I found counseling unpleasant and upsetting at times," "I had plenty of opportunity to express my feelings during counseling," and "I felt that the counselor was directing my thinking."

Experimental treatment

The use of social reinforcement is based, first of all, on the assumption that most human behavior is learned. This behavioristic approach to counseling is largely based on the works of Skinner and Guthrie. More recently, theorist-researchers such as Mowrer and Shoben have attempted to apply principles of behavioristic learning theory to counseling. All these investigations begin from the conceptual base that the person has drives. These drives


are primarily physiological, but through social learning, a vast hierarchy of secondary motives is acquired. These drives and motives propel the individual toward his goals.

A key concept of the behavioral approach is that of reinforcement. This is a rewarding condition which occurs when a stimulus-response sequence has been completed. The stimulus-response pattern then tends to be repeated under similar circumstances and generalizes to other types of responses which are similar to the learned pattern. Also, response patterns which are not repeated and reinforced periodically tend to disappear or to be extinguished. The process of substituting one stimulus for another to get the same response is called social reinforcement.

After the students had been assigned to groups for individual and multiple counseling, a structuring statement was made to each of the four multiple counseling sub-groups and to each person who participated in individual counseling. The statement is as follows:

These sessions have two main purposes. First, it is hoped that you can begin to identify those characteristics and attitudes inherent in a good teacher. It is hoped secondly that you will be able to assess yourself in relation to the desired characteristics.


87 In this case social reinforcement consisted of the investigator's verbal approval (or certain statements expressed by students.)
as identified by you during our sessions together. During the interviews I would like for you to do most of the talking. Lastly, express your ideas and thoughts freely. From time to time, I might clarify a point or initiate a statement. You are free to take issue with me (or anyone else) during our sessions together. I shall like to begin this first session by asking this question: What kind of people should teachers be?

The investigator carefully listened during each of the sessions for any responses which he judged to be examples of critical thinking, acceptable attitudes toward teaching, openness to new ideas, personal, or social adjustment. The investigator reinforced those statements which related to the above five areas. The following statements are representative of the kind of statements which were reinforced by the investigator.

1. "You say that an administrator can give the same achievement test to the students of two teachers to discover which one is the better teacher. I don't feel he can make a judgment solely on that basis because there are other factors to be considered such as motivation, initial intelligence, and even the time of the day." (critical thinking)

2. "I see what you are getting at, Mary. The administrator should reserve his final judgment until all of the facts have been considered. Your statement seems reasonable to me now." (openness to new ideas)

3. "Teachers should seek to create a climate which would motivate children to think for themselves instead of repeating everything written in the textbook." (good attitude toward teaching)

4. "I believe that a person should live according to ideals set by himself, although he might not always voice those ideals." (individual adjustment)
5. "I just don't know many people who are completely without admirable qualities." (social adjustment)

Only positive statements relating to the five areas of concern were reinforced. Such verbal reinforcements as "Yes, that is a good idea," "good thinking," "that is a most perceptive comment," were the most frequent comments made by the investigator, although an occasional comment such as "mm-hum" was used to encourage continuation of an idea expressed by a particular student.

Collection and treatment of data

This study has a classic three-group experimental design, employing one control and two experimental groups. In order to avoid a prevalent weakness of such a design, the investigator sought to minimize the Hawthorne effect by setting up a placebo situation for the control group before the experimental period. The investigator met with members of the control group for two sessions prior to the experimental period. Social reinforcement was not used with the control group members. The sessions consisted of general discussion among students on topics of their interests. A detailed discussion of the research design, the research methodology and statistical procedures will be discussed in three phases.

Phase One. In the pre-counseling stage each student was asked to indicate the quartile in which he ranked himself in relation to other members of his discussion group in the
areas of critical thinking, attitudes toward teaching, dogmatism, personal adjustment, and social adjustment. The Student Self-Rating Sheet (SSRS) was used for this purpose. The number circled by the student became his self-rating score. In addition, students were asked to complete the W-GCTA, the DS, the MTAI, and the CTP. Students' earned scores on the standardized instruments were placed in numerical order (descending) and divided into quartiles. Thus, if a student received a standardized test score that fell in the highest quartile, he was assigned an actual score of one. Other weights were assigned (2, 3, or 4), depending on the quartile in which the student scored on the tests. On a master sheet each students' self-rating score was placed beside his actual score in each of the five areas. The scores were analyzed by Guilford's product—movement correlation formula for original measures.88 This formula reads as follows:

(Formula 1)

\[ r_{xy} = \sqrt{\frac{N \sum xy - \left( \sum x \right) \left( \sum y \right)}{\sqrt{\left[ N \sum x^2 - \left( \sum x \right)^2 \right] \left[ N \sum y^2 - \left( \sum y \right)^2 \right]}}} \]

where, \( x \) and \( y \) are original scores in variables \( X \) and \( Y \), and \( N \) is the number of cases.

In order to determine if the differences between correlation coefficients were significant, the investigator converted the coefficients into Fisher's Z functions. The significance of difference between Z functions was then determined. The formula for determining the significance of difference between Z's is as follows:

(Formula II)

\[
\sigma_{DZ} = \sigma_{Z1} - Z = \sqrt{\frac{1}{N_1-3} + \frac{1}{N_2-3}}
\]

Where \( \sigma_Z = \frac{1}{\sqrt{(N-3)}} \) and \( N_1 \) and \( N_2 \) are the sizes of the two samples.

By dividing the \( \sigma_{DZ} \) by the difference between transformed Z's, a critical ratio (CR) was obtained. The CR was checked for significance level by reference to the table of t's.

Phase Two. Upon initial completion of the W-GCTA, the DS, the MTAI, and the CTP by all student group members, the tests were scored and mean scores obtained for each of the three groups (individual counseled, multiple counseled, and control). Scores were then compared by analysis of variance. Since the variance ratio did not reach the 5 percent level of confidence, the investigator assumed that the three groups were strictly random and no significant differences existed among scores of the three groups of the
pre-counseling stage. The formula employed for computation of the analysis of variance was outlined by Dixon and Massey. It reads as follows:

(Formula III)

\[
SM^2 = \frac{\frac{T_1^2}{N_1} + \frac{T_2^2}{N_2} + \frac{T_3^2}{N_3} - \frac{T_{++}^2}{N}}{3-1}
\]

Sum of squares within conditions (Sp^2)

\[
SP^2 = \sum \sum X_{ij}^2 - \sum (T_i + \frac{2}{n_i})
\]

Where \(T_{++} = \sum \sum X_{ij}\) = total of all observations

\(N = \sum n_i\) = total number of observations

To determine the F ratio, it was necessary to divide the sum of squares within means by the sum of squares within conditions (SM^2/Sp^2). The resulting F ratio was then checked for level of significance by use of Pearson's F distribution table.

Analysis of variance was again employed after the experimental treatment. Although the F ratio was significant (.01 level) at the post-counseling stage, subsequent use of the t test was necessary before the investigator could 

ascertain where the differences between mean gain scores lay. The formula outlined by Koenker\(^9\) was used to test the difference between means at the pre-counseling stage. It reads as follows:

(Formula IV)

\[
T = \frac{M_{G1} - M_{G2}}{\sqrt{\frac{N(\bar{E}D^2) - \bar{E}D^2}{N^2(N-1)}}}
\]

The level of confidence was determined by reference to Fisher's Table of t's.

Formula IV is a test commonly employed for determining the significance of difference between the mean gain scores of two independent groups. A closely related problem is concerned with the significance of the difference between correlated means obtained from the same test administered to the same group upon two occasions.

This experimental design is called the single-group method. The investigator wished to discover if each of the three groups made significant progress from the pre-counseling to the post-counseling stage. The formula used to determine the significance of difference between pre and post mean

scores of each group was discussed by Garrett.\textsuperscript{91} This formula reads as follows:

\[
SE_D = \sqrt{\sigma^2 M_1 + \sigma^2 M_2 - 2r_{12} \sigma_{M_1} \sigma_{M_2}}
\]

in which \(\sigma_{M_1}\) and \(\sigma_{M_2}\) are the standard errors of the initial and final test means, and \(r_{12}\) is the coefficient of correlation between scores made on initial and final tests.

In order to obtain the \(t\) ratio, the actual difference between means was divided by the \(SE_D\). The \(t\) ratio was then tested for significance in Fisher's table of \(t\)'s.

\textbf{Phase Three.} One week following the experimental period, students in the two experimental groups were asked to complete a ten item questionnaire, the \textit{Counseling Evaluation Sheet} (CES). This questionnaire has as its aim the assessment of students attitudes toward counseling experiences. Students were asked to respond either "yes" or "no" to short statements about counseling. The statements were written in such a way as to be pertinent to individual and multiple counseling situations. The percentages of affirmative responses was computed for each group on each item. Percentages for both groups were then compared by use

of the $t$ test designed for testing the significance of the
difference between two percentages or proportions. The
formula was presented by Koenker$^{92}$ and reads as follows:

(Formula VI)

$$
t = \sqrt{\frac{P_1 Q_1}{N_1} + \frac{P_2 Q_2}{N_2}}
$$

Where

$P_1 =$ per cent of group one replying in the
affirmative

$Q_1 =$ per cent of group one replying in the
negative

$P_2 =$ per cent of group two replying in the
affirmative

$Q_2 =$ per cent of group two replying in the
negative

Summary

In this chapter it was shown that the subjects of
this study were enrolled in a first course in Education in
the College of Education at The Ohio State University. The
instruments employed in the study were briefly described.
Attention was focused directly toward the manner of exper-
imental treatment which took place. Lastly, considerable
attention was focused upon an explanation of the research
methodology and the statistical tools employed in the study.
In Chapter IV are presented the findings of the study.

CHAPTER IV

FINDINGS AND DISCUSSION

This chapter is concerned with the findings of this study. Major attention will be centered on the extent to which the null hypotheses stated in Chapter I can or cannot be rejected. For each hypothesis, the following information will be presented: a statement of the hypothesis; the manner of testing the hypothesis; and a discussion of data resulting from a test of each hypothesis. The hypotheses will be discussed under the following headings: Level of Critical Thinking, Attitudes Toward Teaching, Degree of Dogmatism, Degree of Personal Adjustment, Degree of Social Adjustment, and Counselor Satisfaction.

Level of critical thinking

Hypothesis 1: There will be no significant difference between pre-counseling and post-counseling mean critical thinking scores for each group. In testing this hypothesis, the means and standard deviations were computed for each group at the pre-counseling and post-counseling stages. To determine the significance or difference between means obtained from the same test administered to the same group upon two occasions, the standard errors of the differences between pre- and post-counseling scores were computed.
TABLE 1

SIGNIFICANCE OF DIFFERENCE BETWEEN PRE-COUNSELING AND POST-COUNSELING MEAN W-GCTA SCORES FOR EACH GROUP

<table>
<thead>
<tr>
<th>Groups</th>
<th>Counseling</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
<th>Gain</th>
<th>SE&lt;sub&gt;D&lt;/sub&gt;</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>N = 26</td>
<td>57.6</td>
<td>7.7</td>
<td>65.7</td>
<td>9.8</td>
<td>1.6</td>
</tr>
<tr>
<td>Individual</td>
<td>N = 26</td>
<td>55.3</td>
<td>7.8</td>
<td>62.7</td>
<td>8.4</td>
<td>7.4</td>
</tr>
<tr>
<td>Control</td>
<td>N = 26</td>
<td>55.6</td>
<td>7.2</td>
<td>56.8</td>
<td>7.6</td>
<td>1.2</td>
</tr>
</tbody>
</table>

*Significant at the .01 level.

In Table 1 are shown the means and standard deviations for each group before and after counseling. It can be seen that the mean scores on the W-GCTA for students assigned to multiple counseling was 57.6 before the experimental treatment and 65.7 at the end of the experimental period. The mean gain score was 8.1 for students who experienced multiple counseling. Statistical analysis of this difference yielded a t-ratio of 5.06 (0.01 level). Such a t-ratio clearly indicates that multiple counseling was of some value in producing growth in critical thinking among students who experienced it. For study group members who experienced counseling in an individual setting, the pre- and post-counseling mean W-GCTA scores were 55.3 and 62.7, respectively. The mean gain scores for the individual counseled students was 7.4. Statistical analysis of the difference
between pre- and post-counseling mean scores of students who received individual counseling yielded a t-ratio of 3.52 (0.01 level). In individual counseling, as well as in multiple counseling situations, there seems to be some benefits in the use of social reinforcement counseling. This is evidenced by the high confidence level of the difference between pre- and post-counseling mean W-GCTA scores.

The only group which did not have a significant mean change difference between pre- and post-counseling scores was the control group. Before counseling the control group had a mean score of 55.6 on the W-GCTA and 56.8 after counseling. The difference between scores of the control group was .8. Statistical analysis of this difference resulted in a t-ratio of 1.5. By referring to the table of t's, it was found that the t-ratio of 1.5 was not significant at the 5 per cent level of confidence. In light of data contained in Table 1, the hypothesis that there will be no significant difference between pre-counseling and post-counseling mean critical thinking scores for each group must be rejected for the multiple and individually counseled groups. This hypothesis cannot be rejected for the control group.

There was a significant difference (in a positive direction) between pre-counseling and post-counseling mean W-GCTA scores for students who participated in multiple and individual counseling, but no significant difference
was found between before and after mean W-GCTA scores for students who received no counseling. It is not surprising that students who experienced reinforcement counseling had significant growth in critical thinking, for reinforcement was only given to students whose remarks were analytical with respect to issues and who demonstrated usage of the correct principles of logic. In essence, students learned how to think critically by being encouraged to do so in a non-threatening situation. Members of the control group did not have the opportunity for such an intensive experience in the practice of critical thinking. This could account, in part, for the failure of the control group to make higher W-GCTA scores during the experimental period.

Hypothesis 2: There will be no significant difference in post-counseling mean gain scores in critical thinking among the three group. In testing this hypothesis variance analysis was employed. Variance analysis of mean W-GCTA at the pre-counseling stage yielded an F-ratio of 3.10 which was not significant at the 5 per cent level of confidence. This F-ratio indicates that the three groups had equal ability in critical thinking before the experimental period. At the end of the experimental period another analysis of variance was employed. The second variance analysis yielded an F-ratio of 4.92 (0.01 level). An F-ratio of this magnitude
indicates that a significant difference exists among groups in the mean scores they received on the W-GCTA.

**TABLE 2**

**SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING MEAN GAIN SCORES ON THE W-GCTA**

<table>
<thead>
<tr>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td></td>
<td>Control</td>
<td>1.2</td>
<td>6.9</td>
<td>2.91*</td>
</tr>
<tr>
<td>N = 26</td>
<td>8.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td></td>
<td>Control</td>
<td>1.2</td>
<td>6.2</td>
<td>2.86*</td>
</tr>
<tr>
<td>N = 26</td>
<td>7.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td></td>
<td>Individual</td>
<td>7.4</td>
<td>0.7</td>
<td>0.50 NS</td>
</tr>
<tr>
<td>N = 26</td>
<td>8.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01.

In Table 2 are shown the mean gain scores of each group. Study group members who experienced multiple counseling and no counseling had mean gain scores of 7.4 and 1.2, respectively. In Table 2 are also shown the differences between mean gain scores. The mean gain score difference between students who participated in multiple counseling and those who received no counseling was 6.9. Statistical analysis of this difference yielded a t-ratio of 2.91 (0.01 level). Comparison of the mean gain score difference of students who experienced individual counseling and those who received no counseling revealed that the former group had a mean gain score 6.2 points higher than the mean gain score of the control group. T-test analysis of this difference
resulted in a t-ratio of 2.86 (0.01 level). The lowest mean score difference resulted from a comparison of multiple and individually counseled students. The difference between these groups was 0.7. T-test analysis revealed this difference to be insignificant. In the light of data contained in Table 2, the hypothesis that there will be no difference in post-counseling mean gain scores in critical thinking among the three groups must be rejected. Students who participated in individual and multiple counseling had post-counseling mean W-GCTA gain scores which were significantly higher than the mean gain scores of the control group. Although the multiple counseled group had the highest mean gain score, it was not significantly higher than the mean score of the individually counseled group.

Hypothesis 3: There will be no significant difference between pre-counseling and post-counseling accuracy of self-perceived level of critical thinking for each group. To test this hypothesis each student was asked to indicate on the SSRS the quartile in which he ranked himself in critical thinking in relation to other members of his group. The number circled by the student became his self-rating score. In addition, scores earned by students on the W-GCTA were placed in numerical order (descending) and divided into quartiles. Table 3 shows the means and standard deviations of perceived and actual levels of critical
thinking for each group at the pre- and post-counseling stages.

**TABLE 3**

MEANS AND STANDARD DEVIATIONS OF SELF-RATING AND EARNED SCORES ON THE W-GCTA AT THE PRE- AND POST-COUNSELING STAGES

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR</td>
<td>SD</td>
</tr>
<tr>
<td>Multiple</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=26</td>
<td>2.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Individual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=26</td>
<td>2.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N=26</td>
<td>2.6</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Students who participated in multiple counseling had a mean self-rating score of 2.3 and a mean earned score of 2.5 before counseling. After counseling the self-rating and earned scores were 2.3 and 2.5, respectively. Individually counseled students had mean ratings of 2.6 and 2.4 for self-rating and earned scores at the pre-counseling stage and mean self-rating and earned scores of 2.5 and 2.5 after counseling. The control group had mean self-rating scores of 2.6 and 2.5 at the pre- and post-counseling stages and earned scores of 2.5 and 2.5 before and after counseling.

Pre- and post-counseling self-rating and earned scores were correlated, and the significance of difference
was determined between pre- and post-counseling correlation coefficients. In table 4 are shown the t-ratios resulting from an analysis of the difference between z functions for each of the three groups under study.

**TABLE 4**

SIGNIFICANCE OF DIFFERENCE BETWEEN PRE- AND POST-COUNSELING CORRELATION COEFFICIENTS OF SELF-RATING AND EARNED SCORES ON THE W-GCTA

<table>
<thead>
<tr>
<th>Counseling Groups</th>
<th>Pre-Counseling $r$ (z functions)</th>
<th>Post-Counseling $r$ (z functions)</th>
<th>Difference between $z$'s</th>
<th>$t$</th>
<th>$t$-ratio</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Multiple</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>.43</td>
<td>.46</td>
<td>.72</td>
<td>.91</td>
<td></td>
<td>.45</td>
</tr>
<tr>
<td><strong>Individual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>.52</td>
<td>.53</td>
<td>.84</td>
<td>1.22</td>
<td>.64</td>
<td>2.21 NS</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>.47</td>
<td>.51</td>
<td>.60</td>
<td>.69</td>
<td>.18</td>
<td>.60 NS</td>
</tr>
</tbody>
</table>

It can be seen in Table 4 that the coefficient which resulted from a correlation of the SR and ES scores was .43 ($z = .46$) at the pre-counseling stage and .72 ($z = .91$) at the post-counseling stage for the multiple counseled group. The difference between $z$'s was .45. A test of the significance of the difference between $z$'s yielded a t-ratio of 1.55 which was not significant at the 5 per cent level of confidence. Individually counseled students had SR and ES scores which correlated .52 ($z = .58$) and .84 ($z = 1.22$) at the pre- and post-counseling stages. The difference between pre- and post-counseling $z$'s of the individual
counseled group was .64. Statistical analysis of this difference yielded a t-ratio of .60 which was not significant at the 5 per cent level of confidence. In light of data contained in Table 4, the null hypothesis that there will be no significant difference between pre- and post-counseling accuracy of self-perceived level of critical thinking for each group cannot be rejected. There were no significant differences among groups in their ability to estimate their level of critical thinking on the W-GCTA after social reinforcement counseling. This finding was particularly surprising. It was thought that the counseling process, with its emphasis on self-understanding, would better aid students to estimate more accurately their level of critical thinking.

Hypothesis 4: There will be no significant difference among groups in the accuracy of self-perceived level of critical thinking at the post counseling stage. To test this hypothesis, the significance of the difference between mean gain scores was determined. Table 5 shows the mean gain scores for students who participated in multiple, individual, and no counseling. Multiple counseled students had a gain score which was .27 points higher than that of the control group. Statistical analysis of this difference yielded a t-ratio of .80 which was not significant at the 5 per cent level of confidence.
TABLE 5

SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING CORRELATION COEFFICIENTS OF SELF-RATING AND EARNED SCORES ON THE W-GCTA*

<table>
<thead>
<tr>
<th></th>
<th>Post- Counseling Gain Scores (z Functions)</th>
<th>Post- Counseling Gain Scores (z Function)</th>
<th>Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>.45 (Control)</td>
<td>.18</td>
<td>.27</td>
<td>.80 NS</td>
</tr>
<tr>
<td>Individual</td>
<td>.64 (Control)</td>
<td>.18</td>
<td>.46</td>
<td>1.59 NS</td>
</tr>
<tr>
<td>Individual</td>
<td>.64 (Multiple)</td>
<td>.45</td>
<td>.19</td>
<td>.63 NS</td>
</tr>
</tbody>
</table>

*Coefficients expressed as z functions.

Students who received counseling in an individual setting had a gain score which was .46 z points higher than the gain score of the control group. Application of the t-test revealed that the difference of .46 z points had a t-ratio of 1.59 which was not significant at the 5 per cent level of confidence. In comparing the gain scores of the individual counseled students with students who participated in multiple counseling, it was found that the former group had scores which were .19 z points higher than the gain score of the latter group. The t-test showed that this difference of .19 points to have a t-ratio of .63 which was not significant. In light of data contained in Table 5, the null hypothesis that there will be no difference among groups in the accuracy of perceived level of critical think-
ing at the post-counseling stage cannot be rejected. Data contained in Table 5 clearly indicate that social reinforcement counseling, in either individual or multiple settings, is not superior to no counseling in increasing students' ability to estimate accurately their level of critical thinking.

**Attitudes toward teaching**

Hypothesis 5: There will be no significant difference between pre-counseling and post-counseling mean teaching attitude scores for each group. In testing this hypothesis, the means and standard deviations were computed for each group at the pre-counseling and post-counseling stages. To determine the significance of difference between means obtained from the same test administered to the same group upon two occasions, the standard errors of the differences between pre- and post-scores were computed.

**TABLE 6**

SIGNIFICANCE OF DIFFERENCE BETWEEN PRE-COUNSELING AND POST-COUNSELING MEAN MTAI SCORES FOR EACH GROUP

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
<th>Gain</th>
<th>SED</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean SD</td>
<td>Mean SD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>16.8 29.3</td>
<td>55.3 34.7</td>
<td>38.50</td>
<td>5.0</td>
<td>7.7*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>17.2 30.1</td>
<td>54.2 36.2</td>
<td>37.00</td>
<td>7.0</td>
<td>5.3*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>16.4 30.0</td>
<td>50.4 32.1</td>
<td>30.00</td>
<td>4.5</td>
<td>6.7*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01 level.
In Table 6 are shown the means and standard deviations for each group before and after counseling. It can be seen that the mean scores on the MTAI for students assigned to multiple counseling was 16.8 before the experimental treatment and 55.3 at the end of the experimental period. The mean gain score was 38.50 for students who experienced multiple counseling. Statistical analysis of this difference yielded a t-ratio of 7.7 (0.01 level). Students who participated in multiple counseling improved significantly in their attitudes toward teaching during the experimental period. For study group members who experienced counseling in an individual setting, the pre- and post-counseling mean MTAI scores were 17.2 and 54.2, respectively. The mean gain scores for the individual counseled students was 37.0. Statistical analysis of the difference between pre- and post-counseling mean scores of students who received individual counseling yielded a t-ratio of 5.3 (0.01 level). A t-ratio of this magnitude clearly indicates that students who participated in individual counseling, like students who received counseling in a multiple setting, made significant improvement in their attitudes toward teaching during the counseling period.

The control group also had a significant mean change difference between pre- and post-counseling scores. Before counseling the control group had a mean score of 16.4 on
the MTAI and after counseling a mean score of 32.1. The difference between scores of the control group was 30.0. Statistical analysis of this difference resulted in a t-ratio of 6.7. By referring to the table of t's, it was found that the t-ratio of 6.7 was significant at the 1 per cent level of confidence. In light of data contained in Table 6, the hypothesis that there will be no significant difference between pre-counseling and post-counseling mean MTAI scores for each group must be rejected for each of the three groups.

Hypothesis 6: There will be no significant differences in post-counseling mean gain scores in attitude toward teaching among the three groups. In testing this hypothesis variance analysis was employed. Variance analysis of mean MTAI scores at the pre-counseling stage yielded an F-ratio of 2.68 which was not significant at the 5 per cent level of confidence. At the end of the experimental period another analysis of variance was employed. The second variance analysis yielded an F-ratio of 5.32 which was significant at the 0.01 level. The second F-ratio indicated that a significant difference existed among the mean MTAI scores earned by the three groups at the post-counseling stage. A simple t-test was used to test the significance of the difference between each two sets of mean gain scores at the post-counseling stage.
TABLE 7
SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING MEAN GAIN SCORES ON THE MTAI

<table>
<thead>
<tr>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td></td>
<td>Control</td>
<td>30.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>38.50</td>
<td></td>
<td></td>
<td>8.5</td>
<td>3.0*</td>
</tr>
<tr>
<td>Individual</td>
<td></td>
<td>Control</td>
<td>30.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>37.00</td>
<td></td>
<td></td>
<td>7.0</td>
<td>2.7*</td>
</tr>
<tr>
<td>Multiple</td>
<td></td>
<td>Individual</td>
<td>37.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>38.50</td>
<td></td>
<td></td>
<td>1.5</td>
<td>1.6NS</td>
</tr>
</tbody>
</table>

*Significant at the 0.01 level.

In Table 7 are shown the mean gain scores of each group. Study group members who experienced multiple counseling and no counseling had mean gain scores of 38.5 and 30.0, respectively. In Table 7 are also shown the differences between mean gain scores. The mean gain score difference between students who participated in multiple counseling and those who received no counseling was 8.5. Statistical analysis of this difference yielded a t-ratio of 3.00 (0.01 level). Data in Table 7 indicate that students who participated in multiple counseling had significantly greater improvement in their attitudes toward teaching than did the control group. Multiple counseling, then, is more effective than no counseling in changing students' attitudes toward teaching in a positive direction. Comparison of the mean gain score difference of students who
experienced individual counseling and those who received no counseling revealed that the former group had a mean gain score 7.0 points higher than the mean gain score of the control group. T-test analysis of this difference resulted in a t-ratio of 2.7 (0.01 level). Thus, students who participated in individual counseling made greater improvement in their attitudes toward teaching than did students who experienced no counseling. The lowest mean score difference resulted from a comparison of multiple and individually counseled students. The mean gain score difference between these two groups was 1.5. T-test analysis revealed that this difference was not significant. In light of data contained in Table 7, the hypothesis that there will be no difference in post-counseling mean gain scores in attitudes toward teaching among the three groups must be rejected.

Students who participated in individual and multiple counseling had post-counseling mean MTAI gain scores which were significantly higher than the mean score of the control group. Although there was a difference between MTAI mean gain scores of the individually and multiple counseled students, this difference was too slight to be significant. This finding was not surprising because most students of the experimental groups came to the counseling sessions with strong motivation to improve their attitudes toward teaching. This strong motivation created a climate in which social reinforcement could be used with ease.
Hypothesis 7: There will be no significant difference between pre-counseling and post-counseling accuracy of self-perceived attitudes toward teaching for each group. To test this hypothesis each student was asked to indicate on the SSRS the quartile in which he ranked himself in teaching attitudes in relation to other members of his group. The number circled by the student became his self-rating score. In addition, students' scores on the MTAI were placed in numerical order (descending) and divided into quartiles. Table 8 shows the means and standard deviations of perceived and actual levels of teaching attitudes for each group at the pre- and post-counseling stages.

### Table 8

<table>
<thead>
<tr>
<th></th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR</td>
<td>SD</td>
</tr>
<tr>
<td>Multiple</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>3.1</td>
<td>.9</td>
</tr>
<tr>
<td>Individual</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>3.3</td>
<td>.8</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>3.5</td>
<td>.9</td>
</tr>
</tbody>
</table>

Students who participated in multiple counseling had a mean self-rating score of 3.1 and a mean earned score of 2.5 before counseling. After counseling the self-rating
and earned scores were 3.6 and 2.6, respectively. Individual counseled students had mean ratings of 3.3 and 2.5 for self-rating and earned scores at the pre-counseling stage and mean self-rating and earned scores of 3.4 and 2.5 after counseling. The control group had mean self-rating scores of 3.5 and 3.6 at the pre- and post-counseling stages and earned scores of 2.5 and 2.5 before and after counseling.

Pre- and post-counseling self-rating and earned scores were correlated, and the significance of differences were determined between paired pre- and post-counseling correlation coefficients. In Table 9 are shown the t-ratios resulting from an analysis of the difference between z functions for each of the three groups under study.

**TABLE 9**

SIGNIFICANCE OF DIFFERENCE BETWEEN PRE- AND POST-COUNSELING CORRELATION COEFFICIENTS OF SELF-RATING AND EARNED SCORES ON THE MTAI FOR EACH STUDY GROUP

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
<th>Difference between z's</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Counseling</td>
<td>Post-Counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>z' functions</td>
<td>z' functions</td>
<td>z' functions</td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>N = 26</td>
<td>.31</td>
<td>.32</td>
<td>.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.73</td>
<td>.41</td>
<td>1.36</td>
</tr>
<tr>
<td></td>
<td>Individual</td>
<td>N = 26</td>
<td>.47</td>
<td>.51</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.51</td>
<td>.67</td>
<td>.81</td>
</tr>
<tr>
<td></td>
<td></td>
<td>.29</td>
<td>.97</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control</td>
<td>N = 26</td>
<td>.41</td>
<td>.44</td>
</tr>
<tr>
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<td></td>
<td>.47</td>
<td>.47</td>
<td></td>
</tr>
</tbody>
</table>

NS
It can be seen in Table 9 that the coefficient which resulted from a correlation of the SR and ES scores was .31 ($z = .32$) at the pre-counseling stage and .62 ($z = .73$) at the post-counseling stage for the multiple counseled group. The difference between $z$'s was .41. A test of significance of difference between $z$'s yielded a t-ratio of 1.36 which is not significant at the 5 per cent level of confidence.

Individual counseled students had SR and ES scores which correlated .47 ($z = .51$) and .67 ($z = .81$) at the pre- and post-counseling stages. The difference between pre- and post-counseling $z$'s of the individual counseled group was .29. Statistical analysis of this difference yielded a t-ratio of .97 (insignificant). The control group had less change in $z$ points than did the two experimental groups.

For the control group the difference between the coefficient of .41 ($z = .44$) at the pre-counseling stage and .52 ($z = .58$) at the post-counseling stage was .14 $z$ points. A $t$-test analysis of the differences between $z$'s of the latter group yielded a t-ratio of .47 which was not significant at the 5 per cent level of confidence. In light of data contained in Table 9 the null hypothesis that there will be no significant difference between pre- and post-counseling accuracy of self-perceived teaching attitudes for each group cannot be rejected. Students who were counseled in individual and multiple counseling settings, as well as
students who received no counseling, do not improve significantly from pre- to post-counseling in their ability to estimate their attitudes toward teaching.

Hypothesis 8: There will be no significant difference among groups in the accuracy of self-perceived attitudes toward teaching at the post-counseling stage. To test this hypothesis, the significance of the difference between mean gain scores was determined. Table 10 shows the mean gain scores for students who participated in multiple, individual, and no counseling. Multiple counseled students had a gain score which was .27 z points higher than that of the control group. Statistical analysis of this difference yielded a t-ratio of .90 which was not significant at the 5 per cent level of confidence.

<table>
<thead>
<tr>
<th>TABLE 10</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING CORRELATION COEFFICIENTS OF SELF-RATING AND EARNED SCORES ON THE MTAI</td>
<td></td>
</tr>
<tr>
<td>Post-Counseling Gain Scores (z-functions)</td>
<td>Post-Counseling Gain Scores (z functions)</td>
</tr>
<tr>
<td>Multiple N = 26</td>
<td>.41</td>
</tr>
<tr>
<td>Individual N = 26</td>
<td>.29</td>
</tr>
<tr>
<td>Multiple N = 26</td>
<td>.41</td>
</tr>
</tbody>
</table>
Students who received counseling in an individual setting had a gain score which was .15 z points higher than gain score of the control group. Application of the t-test revealed that the difference of .15 z points had a t-ratio of .50 which was not significant at the 5 per cent level of confidence. In comparing the gain scores of the individual counseled students with scores of students who participated in multiple counseling, it was found that the former group had scores which were .12 z points higher than the gain score of the latter group. The t-test showed that this difference of .12 z points had a t-ratio of 1.40 (insignificant). In light of data contained in Table 10, the null hypothesis that there will be no difference among groups in the accuracy of perceived attitudes toward teaching at the post-counseling stage cannot be rejected. There was no significant difference among groups in their ability to accurately estimate their attitudes toward teaching at the post-counseling stages. Thus, the three groups are equally ineffective in predicting their attitudes toward teaching after counseling.

Degree of dogmatism

Hypothesis 9: There will be no significant difference between pre-counseling and post-counseling mean dogmatism scores for each group. In testing this hypothesis, the means and standard deviations were computed for each group
at the pre-counseling and post-counseling stages. To determine the significance of difference between means obtained from the same test administered to the same group upon two occasions, the standard errors of the differences between pre- and post-scores on the DS were computed.

**Table 11**

**SIGNIFICANCE OF DIFFERENCE BETWEEN PRE-COUNSELING AND POST-COUNSELING MEAN DS SCORES FOR EACH GROUP**

<table>
<thead>
<tr>
<th>Counseling Groups</th>
<th>Pre-Counseling Mean SD</th>
<th>Post-Counseling Mean SD</th>
<th>Gain</th>
<th>SE</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>142.8 26.4</td>
<td>137.3 27.6</td>
<td>5.5</td>
<td>2.3</td>
<td>2.39**</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>149.8 27.9</td>
<td>142.7 29.1</td>
<td>7.1</td>
<td>2.9</td>
<td>2.44**</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>139.5 23.2</td>
<td>135.1 28.8</td>
<td>4.4</td>
<td>1.7</td>
<td>2.58**</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at 0.05 level.**

Table 11 shows the means and standard deviations for each group before and after counseling. It can be seen that the mean scores on the DS for students assigned to multiple counseling was 142.8 before the experimental treatment and 137.3 at the end of the experimental period. The mean gain score was 5.5 for students who experienced multiple counseling. Statistical analysis of this difference yielded a t-ratio of 2.39 (0.05 level). For study group members who experienced counseling in an individual setting, the pre-
and post-counseling mean DS scores were 149.8 and 142.7, respectively. The mean gain scores for the individually counseled students was 7.1. Statistical analysis of the difference between pre- and post-counseling mean scores of students who received individual counseling yielded a t-ratio of 2.44 (0.05 level). Since the mean gain scores for both the individual and multiple counseling groups changed significantly from pre- to post-counseling stages at the 5 per cent level, it can be asserted that both groups improved in the reduction of dogmatism during the experimental period. It is surprising that the control group also had a significant reduction of dogmatism during the experimental period.

The control group also had a significant mean change difference between pre- and post-counseling scores. Before counseling the control group had a mean score of 139.5 on the DS and 135.1 after counseling. The difference between scores of the control group was 4.4. Statistical analysis of this difference resulted in a t-ratio of 2.58. By referring to the table of t's it was found that the t-ratio of 2.58 is significant at the 5 per cent level of confidence.

In light of data contained in Table 11, the hypothesis that there will be no significant difference between pre-counseling and post-counseling mean dogmatism scores for each group must be rejected for each of the groups. There was a
significant difference between pre-counseling and post-counseling mean DS scores for students who participated in multiple, individual, and no counseling. Each group had a reduction in dogmatism during the experimental period.

Hypothesis 10. There will be no significant difference in post-counseling mean gain scores in dogmatism among the three groups. In testing this hypothesis variance analysis was employed. Variance analysis of scores at the pre-counseling stage yielded an F-ratio of 2.56 which was not significant at the 5 per cent level of confidence. This pre-counseling F-ratio indicates that the mean DS scores were equal at the pre-counseling stage. At the end of the experimental period another analysis of variance was employed. The second variance analysis yielded an F-ratio of 3.17 which was significant at the 0.05 level. The F-ratio signifies that a significant difference exists among the post-counseling mean DS scores. A simple t-test was used to test the significance of difference between each two sets of mean DS gain scores at the post-counseling stage.

Table 11 shows the mean gain scores of each group. Study group members who experienced multiple counseling and no counseling had mean gain scores of 7.1 and 4.4, respectively. In Table 11 are also shown the differences between mean gain scores. The mean gain scores difference between students who participated in multiple counseling and those
TABLE 12

SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING MEAN GAIN SCORES ON THE DS

<table>
<thead>
<tr>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>7.1</td>
<td>Control</td>
<td>4.4</td>
<td>2.7</td>
<td>2.32**</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>5.5</td>
<td>Control</td>
<td>4.4</td>
<td>1.1</td>
<td>2.01 NS</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>7.1</td>
<td>Individual</td>
<td>5.5</td>
<td>1.6</td>
<td>2.17**</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at 0.05 level.

who received no counseling was 2.7. Statistical analysis of this difference yielded a t-ratio of 2.32 (0.05 level). Comparison of the mean gain score difference of students who experienced individual counseling and those who received no counseling revealed that the former group had a mean gain score 1.1 points higher than the mean gain score of the control group. T-test analysis of this difference resulted in a t-ratio of 2.01 (insignificant). The second lowest mean score difference resulted from a comparison of multiple and individually counseled students. The difference between these groups was 1.6. T-test analysis revealed this difference to be significant at the 0.05 level. In light of data contained in Table 12, the hypothesis that there will be no difference in post-counseling mean gain scores in dogmatism among the three groups must be rejected.
Students who participated in multiple counseling had a mean post-counseling DS score which was significantly higher than the mean scores of the individually counseled or control groups. No significant difference was found between the mean DS score of the individually counseled students and the mean DS score of the control group at the post-counseling stage.

Hypothesis II: There will be no significant difference between pre-counseling and post-counseling accuracy of self-perceived level of dogmatism for each group. To test this hypothesis each student was asked to indicate on the SSRS the quartile in which he ranked himself on degree of dogmatism in relation to other members of his group. The number circled by the student became his self-rating score. In addition, students' earned scores on the DS were placed in numerical order (descending) and divided into quartiles. Table 13 shows the means and standard deviations of perceived and actual levels of dogmatism for each group at the pre- and post-counseling stages.

Students who participated in multiple counseling had a mean self-rating score of 3.6 and a mean earned score of 2.5 before counseling. After counseling the self-rating and earned scores were 3.1 and 2.5, respectively. Individually counseled students had mean ratings of 3.1 and 2.5 for self-rating and earned scores at the pre-counseling stage and
mean self-rating and earned scores of 3.5 and 2.5 after counseling. The control group had mean self-rating scores of 3.0 and 3.3 at the pre- and post-counseling stages and earned scores of 2.5 and 2.5 before and after counseling.

**TABLE 13**

MEANS AND STANDARD DEVIATIONS OF SELF-RATING AND EARNED SCORES ON THE DS AT THE PRE- AND POST-COUNSELING STAGES

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR</td>
<td>SD</td>
</tr>
<tr>
<td>Multiple</td>
<td>3.6</td>
<td>1.4</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>3.1</td>
<td>1.8</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>3.0</td>
<td>1.7</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ore- and post-counseling self-rating and earned scores were correlated, and the significance of differences were determined between paired pre- and post-counseling correlation coefficients. In Table 14 are shown the t-ratios resulting from an analysis of the difference between z functions for each of the three groups under study.

It can be seen in Table 14 that the coefficient which resulted from a correlation of the SR and ES scores of the DS was .41 (z = .44) at the pre-counseling stage and .57 (z = .65) at the post-counseling stage for the multiple
TABLE 14
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE- AND POST-COUNSELING CORRELATION COEFFICIENTS OF SELF-RATING AND EARNED SCORES ON THE DS FOR EACH GROUP

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
<th>Difference between z's</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>(z functions)</td>
<td>r</td>
<td>(z functions)</td>
</tr>
<tr>
<td>Multiple</td>
<td>.41</td>
<td>.44</td>
<td>.57</td>
<td>.65</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.70</td>
</tr>
<tr>
<td>Individual</td>
<td>.37</td>
<td>.39</td>
<td>.52</td>
<td>.58</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td>.19</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.63</td>
</tr>
<tr>
<td>Control</td>
<td>.45</td>
<td>.48</td>
<td>.47</td>
<td>.51</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td>.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NS</td>
</tr>
</tbody>
</table>

counseled group. The difference between z's was .21. A test of significance of difference between z's yielded a t-ratio of .70 which was not significant at the 5 per cent level of confidence. Individually counseled students had SR and ES scores which correlated .37 (z = .39) and .52 (z = .58) at the pre- and post-counseling stages. The difference between pre- and post-counseling z's of the individual counseled group was .19. Statistical analysis of this difference yielded a t-ratio of .63. The control group had less change in z's points than did the two experimental groups. For the control group the difference between the coefficient of .45 (z = .48) at the pre-counseling stage and .47 (z = .51) at the post-counseling stage was .03 z points. A t-test analysis of the difference between z's of the
latter group yielded a t-ratio of .10 which was not signifi-
cant at the 5 per cent level of confidence. In light of
data contained in Table 14, the null hypothesis that there
will be no significant difference between pre- and post-
counseling accuracy of self-perceived degree of dogmatism
for each group cannot be rejected. Students who were coun-
seled in a multiple setting as well as students of the
individual and no counseling groups did not improve signifi-
cantly in their ability to estimate their level of dogmatism
as a result of social reinforcement counseling.

Hypothesis 12: There will be no significant difference
among groups in the accuracy of self-perceived degree of
dogmatism at the post-counseling stage. To test this
hypothesis, the significance of the difference between mean
gain scores was determined. Table 15 shows the mean gain
scores for students who participated in multiple, individual,
and no counseling. Multiple counseled students had a gain
score which was .18 z points higher than the gain score of
the control group. Statistical analysis of this difference
yielded a t-ratio of .60 which was not significant at the
5 per cent level of confidence.
TABLE 15
SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING
CORRELATION COEFFICIENTS OF SELF-RATING
AND EARNED SCORES ON THE DS

<table>
<thead>
<tr>
<th>Post-Counseling</th>
<th>Gain Scores (z-functions)</th>
<th>Post-Counseling</th>
<th>Gain Scores (z-functions)</th>
<th>Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>.21</td>
<td>Control</td>
<td>.03</td>
<td>.18</td>
<td>.60 NS</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>.19</td>
<td>Control</td>
<td>.03</td>
<td>.16</td>
<td>.53 NS</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>.21</td>
<td>Individual</td>
<td>.19</td>
<td>.03</td>
<td>.10 NS</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students who received counseling in an individual setting had a gain score which was .16 z points higher than gain score of the control group. Application of the t-test revealed that the difference of .16 z points had a t-ratio of .53 which was not significant at the 5 per cent level of confidence. In comparing the gain scores of the individually counseled students with students who participated in multiple counseling, it was found that former group had scores which were .03 z points higher than the gain scores of the latter group. The t-test showed that this difference of .03 points had a t-ratio of .10 (not significant). In light of data contained in Table 15, the null hypothesis that there will be no difference among groups in the accuracy of perceived level of dogmatism at the post-counseling stage cannot be
rejected. There was no significant difference among groups in their ability to estimate their degree of dogmatism. Members of no one group were superior to the others in accurately estimating their degree of dogmatism after counseling.

**Level of personal adjustment**

Hypothesis 13: There will be no significant difference between pre-counseling and post-counseling mean personal adjustment scores for each group. In testing this hypothesis, the means and standard deviations were computed for each group at the pre-counseling and post-counseling stages. To determine the significance of difference between means obtained from the same test administered to the same group upon two occasions, the standard errors of the differences between pre- and post-counseling scores were computed.

TABLE 16

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling Mean</th>
<th>SD</th>
<th>Post-Counseling Mean</th>
<th>SD</th>
<th>Gain</th>
<th>SED</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>66.5</td>
<td>18.7</td>
<td>77.2</td>
<td>19.7</td>
<td>10.7</td>
<td>3.1</td>
<td>3.45*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>69.2</td>
<td>19.2</td>
<td>78.1</td>
<td>19.1</td>
<td>8.9</td>
<td>2.7</td>
<td>3.29*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>65.4</td>
<td>18.3</td>
<td>66.6</td>
<td>18.7</td>
<td>1.2</td>
<td>1.4</td>
<td>.85</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01 level.
Table 16 shows the means and standard deviations for each group before and after counseling. It can be seen that the mean score on the CTP (personal adjustment) for students assigned to multiple counseling was 66.5 before the experimental treatment and 77.2 at the end of the experimental period. The mean gain score was 10.7 for students who experienced counseling. Statistical analysis of this difference yielded a t-ratio of 3.45 (0.01 level). For study group members who experienced counseling in an individual setting, the pre- and post-counseling mean CTP (personal adjustment) scores were 69.2 and 78.1, respectively. The mean gain scores for the individually counseled students was 8.9. Statistical analysis of the difference between pre- and post-counseling mean scores of students who received individual counseling yielded a t-ratio of 3.29 (0.01 level). It is clear that both the multiple counseled and individually counseled students made significant progress in personal adjustment during counseling.

The only group which did not have a significant mean change difference between pre- and post-counseling scores was the control group. Before counseling the control group had a mean score of 65.4 on the CTP and a mean score of 66.6 after counseling. The difference between scores of the control group was 1.2. Statistical analysis of this difference resulted in a t-ratio of .85. By referring to
the table of t's, it was found that the t-ratio of .85 was not significant at the 5 per cent level of confidence. In light of data contained in Table 16, the hypothesis that there will be no significant difference between pre-counseling and post-counseling mean (personal adjustment) scores for each group must be rejected for the multiple and individually counseled students. The hypothesis cannot be rejected for the control group. There were significant differences between pre-counseling and post-counseling mean CTP (personal adjustment) scores for students who participated in multiple and individual counseling, but no significant difference was found between pre-counseling and post-counseling mean CTP (personal adjustment) scores for students in the control group.

Hypothesis 14: There will be no significant difference in post-counseling mean gain scores in personal adjustment among the three groups. In testing this hypothesis variance analysis was employed. Variance analysis of scores at the pre-counseling stage yielded an F-ratio of 3.01 which was not significant at the 5 per cent level of confidence. Students of the three groups earned initial mean CTP scores which were essentially equal. At the end of the experimental period another analysis of variance was employed. The second variance analysis yielded an F-ratio of 5.27 which was significant at the 0.01 level. As evidenced by this F-ratio,
there was a significant difference among mean CTP (personal adjustment) scores at the post-counseling stage. A simple t-test was used to test the significance of difference between each two sets of mean gain scores at the post-counseling stage.

**TABLE 17**

**SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING MEAN GAIN SCORES ON THE CTP (PERSONAL ADJUSTMENT)**

<table>
<thead>
<tr>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>10.7</td>
<td>Control</td>
<td>1.2</td>
<td>9.5</td>
<td>4.69*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>8.9</td>
<td>Control</td>
<td>1.2</td>
<td>7.7</td>
<td>3.72*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>10.7</td>
<td>Individual</td>
<td>8.9</td>
<td>1.8</td>
<td>1.96 NS</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01 level.

Table 17 shows the mean gain scores of each group. Study group members who experienced multiple counseling and no counseling had mean gain scores of 10.7 and 1.2, respectively. Table 17 also shows the differences between mean gain scores. The mean gain score difference between students who participated in multiple counseling and those who received no counseling was 9.5. Statistical analysis of the difference yielded a t-ratio of 4.69 (0.01 level). Comparison of the mean gain score difference of students who experienced
individual counseling and those who received no counseling revealed that the former group had a mean gain score 7.7 points higher than the mean gain score of the control group. T-test analysis of this difference resulted in a t-ratio of 3.72 (0.01 level). The lowest mean score difference resulted from a comparison of multiple and individual counseled students. The difference between these groups was 1.8. T-test analysis revealed this difference to be insignificant. In light of data contained in Table 17, the hypothesis that there will be no difference in post-counseling mean gain scores in personal adjustment among the three groups must be rejected. Students who participated in individual and multiple counseling had post-counseling mean gain CTP (personal adjustment) scores which were significantly higher than the mean gain score of the control group. There was no significant difference between the mean gain scores of the individual and multiple counseled groups.

Hypothesis 15: There will be no significant difference between pre-counseling and post-counseling accuracy of self-perceived personal adjustment for each group. To test this hypothesis each student was asked to indicate on the SSRS the quartile in which he ranked himself in personal adjustment in relation to other members of his group. The number circled by the student became his self-rating score. In addition, students' CTP (personal adjustment) scores were placed
in numerical order (descending) and divided into quartiles. Table 18 shows the means and standard deviations of perceived and actual levels of personal adjustment for each group at the pre- and post-counseling stages.

**Table 18**

SIGNIFICANCE OF DIFFERENCE BETWEEN PRE-COUNSELING AND POST-COUNSELING MEAN CTP (PERSONAL ADJUSTMENT) SCORES FOR EACH GROUP

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR</td>
<td>SD</td>
</tr>
<tr>
<td>Multiple</td>
<td>3.4</td>
<td>1.6</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>3.3</td>
<td>1.7</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>3.6</td>
<td>1.5</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students who participated in multiple counseling had a mean self-rating score of 3.4 and a mean earned score of 2.5 before counseling. After counseling the self-rating and earned scores were 3.5 and 2.5, respectively. Individually counseled students had mean ratings of 3.3 and 2.5 for self-rating and earned scores at the pre-counseling stage and mean self-rating and earned scores of 3.3 and 2.5 after counseling. The control group had mean self-rating scores of 3.6 and 3.5 at the pre- and post-counseling stages and earned scores of 2.5 and 2.5 before and after counseling.
Pre- and post-counseling self-rating and earned scores were correlated, and the significance of differences were determined between paired pre- and post-counseling correlations, and the significance of differences between pre- and post-counseling correlation coefficients were determined. Table 19 shows the t-ratios resulting from an analysis of the difference between z functions for each of the three groups under study.

**TABLE 19**

**MEANS AND STANDARD DEVIATIONS OF SELF-RATING AND EARNED SCORES ON THE CTP (PERSONAL ADJUSTMENT) AT THE PRE- AND POST-COUNSELING STAGES**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
<th>Difference between z's</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r (z functions)</td>
<td>r (z functions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>.38</td>
<td>.40</td>
<td>.63</td>
<td>.74</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td>.34</td>
<td>1.13</td>
</tr>
<tr>
<td>Individual</td>
<td>.38</td>
<td>.40</td>
<td>.67</td>
<td>.81</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td>.41</td>
<td>1.36</td>
</tr>
<tr>
<td>Control</td>
<td>.41</td>
<td>.44</td>
<td>.52</td>
<td>.58</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td>.14</td>
<td>.47</td>
</tr>
</tbody>
</table>

It can be seen in Table 19 that the coefficient which resulted from correlating the SR and ES scores was .38 (z = .40) at the pre-counseling stage and .63 (z = .74) at the post-counseling stage for the multiple counseled group. The difference between z's is .34. A test of significance of difference between z's yielded a t-ratio of 1.3 which was
not significant at the 5 per cent level of confidence. Individually counseled students had SR and ES scores which correlated .38 (z = .40) and .67 (z = .81) at the pre- and post-counseling stages. The difference between pre- and post-counseling z's of the individually counseled group was .41. Statistical analysis of this difference yielded a t-ratio of 1.36. The control group had less change in z's points than did the two experimental groups. For the control group the difference between the coefficient of .41 (z = .44) at the pre-counseling stage and .52 (z = .48) at the post-counseling stage was .14 z points. A t-test analysis of the difference between z's of the latter group yielded a t-ratio of .47 which was not significant at the 5 per cent level of confidence. In light of data contained in Table 19, the null hypothesis that there will be no significant difference among groups in the accuracy of self-perceived personal adjustment scores for each group cannot be rejected. Students who were counseled in multiple situations, as well as students who received no counseling, did not improve significantly in their ability to estimate their levels of personal adjustment on the CTP.

Hypothesis 16: There will be no significant difference among groups in the accuracy of self-perceived level of personal adjustment at the post-counseling stage. To test this hypothesis, the significance of the difference between mean gain scores was determined. Table 20 shows the mean
gain scores for students who participated in multiple, individual, and no counseling. Multiple counseled students had a gain score which was .20 z points higher than the gain score of the control group. Statistical analysis of this difference yielded a t-ratio of .67 which was not significant at the 5 per cent level of confidence.

TABLE 20
SIGNIFICANCE OF DIFFERENCE BETWEEN PRE- AND POST-COUNSELING CORRELATION COEFFICIENTS OF SELF-RATING AND EARNED SCORES OF THE CTP (PERSONAL ADJUSTMENT)

<table>
<thead>
<tr>
<th></th>
<th>Gain Scores (z functions)</th>
<th>Gain Scores (z functions)</th>
<th>Difference t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post- Counseling</td>
<td>Post- Counseling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>.34</td>
<td>Control</td>
<td>.14</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td>.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.67 NS</td>
</tr>
<tr>
<td>Individual</td>
<td>.41</td>
<td>Control</td>
<td>.14</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td>.27</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.90 NS</td>
</tr>
<tr>
<td>Individual</td>
<td>.41</td>
<td>Multiple</td>
<td>.34</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td>.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>.02 NS</td>
</tr>
</tbody>
</table>

Students who received counseling in an individual setting had a gain score which was .27 z points higher than gain scores of the control group. Application of the t-test revealed that the difference of .27 z points had a t-ratio of .90 which was not significant at the 5 per cent level of confidence. In comparing the gain scores of the individually counseled students with students who participated in multiple counseling, it was found that the former group had
scores which were .7 \( z \) points higher than the gain score of the latter group. The t-test showed that this difference of .7 points had a t-ratio of .02 (not significant). In light of data contained in Table 20, the null hypothesis that there will be no difference among groups in the accuracy of perceived level of personal adjustment at the post-counseling stage cannot be rejected. There were no significant differences among groups in the accuracy of their ability to estimate their level of personal adjustment.

**Level of social adjustment**

Hypothesis 17: There will be no significant difference between pre-counseling and post-counseling mean social adjustment scores for each group. In testing this hypothesis, the means and standard deviations of CTP (social adjustment) were computed for each group at the pre-counseling and post-counseling stages. To determine the significance of difference between means obtained from the same test administered to the same group upon two occasions, the standard errors of the differences between pre- and post-counseling scores were computed.

In Table 16 are shown the means and standard deviations for each group before and after counseling. It can be seen that the mean scores on the CTP (social adjustment) for students assigned to multiple counseling was 55.2 before the experimental treatment and 62.8 at the end of the
experimental period. The mean gain score was 7.6 for students who experienced multiple counseling. Statistical analysis of this difference yielded a t-ratio of 3.61 (0.01 level). Multiple counseled students received significantly higher scores at the end of the experimental period than they received at the initial stage.

**TABLE 21**

SIGNIFICANCE OF DIFFERENCE BETWEEN PRE-COUNSELING AND POST-COUNSELING MEAN CTP (SOCIAL ADJUSTMENT) SCORES FOR EACH GROUP

<table>
<thead>
<tr>
<th>Counseling Groups</th>
<th>Pre-Counseling Mean</th>
<th>Pre-Counseling SD</th>
<th>Post-Counseling Mean</th>
<th>Post-Counseling SD</th>
<th>Gain</th>
<th>SE</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>55.2</td>
<td>19.2</td>
<td>62.8</td>
<td>20.1</td>
<td>7.6</td>
<td>2.1</td>
<td>3.61*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>53.4</td>
<td>18.6</td>
<td>71.1</td>
<td>18.4</td>
<td>17.7</td>
<td>3.7</td>
<td>4.78*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>57.1</td>
<td>20.7</td>
<td>60.2</td>
<td>18.7</td>
<td>3.1</td>
<td>2.7</td>
<td>1.14 NS</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01 level.

For study group members who experienced counseling in an individual setting, the pre- and post-counseling mean CTP (social adjustment) scores were 53.4 and 71.1, respectively. The mean gain scores for the individually counseled students was 17.7. Statistical analysis of the difference between pre- and post-counseling mean scores of students who received individual counseling yielded a t-ratio of 4.78 (0.01 level). This t-ratio indicates that individually counseled students
made significant progress in social adjustment during the experimental period.

The only group which did not have a significant mean change difference between pre- and post-counseling scores was the control group. Before counseling the control group had a mean score of 57.1 on the CTP (social adjustment) and 60.2 after counseling. The difference between scores of the control group was 3.1. Statistical analysis of this difference resulted in a t-ratio of 1.14. By referring to the table of t's, it was found that the t-ratio of 1.14 was not significant at the 5 per cent level of confidence. In light of data contained in Table 21, the hypothesis that there will be no significant difference between pre-counseling and post-counseling mean social adjustment scores for each group must be rejected for the multiple and individually counseled students. The hypothesis cannot be rejected for the control group. There was a significant difference between pre-counseling and post-counseling mean CTP (social adjustment) scores for students who participated in multiple and individual counseling, but no significant difference was found between pre-counseling and post-counseling mean CTP (social adjustment) scores for students of the control group.

Hypothesis 18: There will be no significant difference in post-counseling mean gain scores in social adjustment among the three groups. In testing this hypothesis variance analysis was employed. Variance analysis of scores at the
pre-counseling stage yielded an F-ratio of 2.78 which was not significant at the 5 per cent level of confidence. At the end of the experimental period another analysis of variance was employed. The second variance analysis yielded an F-ratio which was significant at the 0.01 level. A simple t-test was used to test the significance of difference between each two sets of mean gain scores at the post-counseling stage.

**TABLE 22**

**SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING MEAN GAIN SCORES ON THE CTP (SOCIAL ADJUSTMENT)**

<table>
<thead>
<tr>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Post-Counseling</th>
<th>Gain</th>
<th>Difference</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>7.1</td>
<td>Control</td>
<td>2.7</td>
<td>4.4</td>
<td>3.91*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>17.7</td>
<td>Control</td>
<td>2.7</td>
<td>15.0</td>
<td>5.62*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>17.7</td>
<td>Multiple</td>
<td>7.6</td>
<td>10.1</td>
<td>4.86*</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01 level.

In Table 22 are shown the mean gain scores of each group. Study group members who experienced multiple counseling and no counseling had mean gain scores of 7.1 and 2.7, respectively. In Table 22 are shown also the differences between gain scores. The mean gain score difference between students who participated in multiple counseling and those who received no counseling was 4.4. Statistical analysis of this difference yielded a t-ratio of 3.91 (0.01
level). Comparison of the mean gain score difference of students who experienced individual counseling and those who received no counseling revealed that the former group had a mean gain score 15.0 points higher than the mean gain score of the control group. T-test analysis of this difference resulted in a t-ratio of 5.62 (0.01 level). The second highest mean score difference resulted from a comparison of multiple and individually counseled students. The difference between these groups was 10.1 (t = 4.86). T-test analysis revealed this difference to be significant at the 0.01 level. In light of data contained in Table 22, the hypothesis that there will be no difference in post-counseling mean gain scores in social adjustment among the three groups must be rejected. Students who participated in individual and multiple counseling had post-counseling mean CTP (social adjustment) scores which were significantly higher than the mean gain score of the control group. The individually counseled students also had a mean gain score which was significantly higher than that of the multiple counseled students.

Hypothesis 19: There will be no significant differences between pre-counseling and post-counseling accuracy of self-perceived social adjustment for each group. To test this hypothesis each student was asked to indicate on the SSRS the quartile in which he ranked himself in social adjustment
in relation to other members of his group. The number circled by the student became his self-rating score. In addition, CTP (social adjustment) scores were placed in numerical order (descending) and divided into quartiles. Table 23 shows the means and standard deviations of perceived and actual levels of social adjustment for each group at the pre- and post-counseling stages.

**TABLE 23**

MEANS AND STANDARD DEVIATIONS OF SELF-RATING AND EARNED SCORES ON THE CTP (SOCIAL ADJUSTMENT) AT THE PRE- AND POST-COUNSELING STAGES

<table>
<thead>
<tr>
<th></th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SR</td>
<td>SD</td>
</tr>
<tr>
<td>Multiple</td>
<td>2.3</td>
<td>1.2</td>
</tr>
<tr>
<td>N=26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>2.6</td>
<td>1.6</td>
</tr>
<tr>
<td>N=26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>2.6</td>
<td>1.3</td>
</tr>
<tr>
<td>N=26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students who participated in multiple counseling had a mean self-rating score of 2.3 and a mean earned score of 2.5 before counseling. After counseling the self-rating and earned scores were 2.3 and 2.5, respectively. Individually counseled students had mean ratings of 2.6 and 2.4 for self-rating and earned scores at the pre-counseling stage and mean self-rating and earned scores of 2.5 and 2.5 after counseling. The control group had mean self-rating scores
of 2.6 and 2.5 at the pre- and post-counseling stages and earned scores of 2.5 and 2.5 before and after counseling.

Pre- and post-counseling self-rating and earned scores were correlated, and the significance of difference was determined between pre- and post-counseling correlation coefficients. In Table 24 are shown the t-ratios resulting from an analysis of the difference between $z$ functions for each of the three groups under study.

### Table 24

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-Counseling</th>
<th>Post-Counseling</th>
<th>Difference between $z$'s</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(z functions)</td>
<td>(z functions)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple</td>
<td>r</td>
<td>r</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>.57</td>
<td>.65</td>
<td>.68</td>
<td>.83</td>
</tr>
<tr>
<td></td>
<td>.18</td>
<td>.60</td>
<td></td>
<td>NS</td>
</tr>
<tr>
<td>Individual</td>
<td>.61</td>
<td>.71</td>
<td>.87</td>
<td>1.33</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td>.62</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.05</td>
</tr>
<tr>
<td>Control</td>
<td>.59</td>
<td>.68</td>
<td>.62</td>
<td>.73</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
<td></td>
<td>.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.01</td>
</tr>
</tbody>
</table>

It can be seen in Table 24 that the coefficient which resulted from a correlation of the SR and ES scores was .57 ($z = .65$) at the pre-counseling stage and .68 ($z = .83$) at the post-counseling stage for the multiple counseled group. The difference between $z$'s was .18. A test of significance of difference between $z$'s yielded a t-ratio of .60 which is not significant at the 5 per cent level of confidence.
Individual counseled students had SR and ES scores which correlated .61 (z = .71) and .87 (z = 1.33) at the pre- and post-counseling stages. The difference between pre- and post-counseling z's of the individually counseled group was .62. Statistical analysis of this difference yielded a t-ratio of 2.05. The control group had less change in z points than did the two experimental groups. For the control group the difference between the coefficient of .59 (z = .68) at the pre-counseling stage and .62 (z = .73) at the post-counseling stage was .05. A t-test analysis of the differences between z's of the latter group yielded a t-ratio of .01 which was not significant at the 5 per cent level of confidence. In light of data contained in Table 24, the null hypothesis that there will be no significant difference between pre- and post-counseling accuracy of self-perceived social adjustment for each group cannot be rejected. Students who participated in counseling and students who received no counseling did not change significantly in their ability to estimate their level of social adjustment during the experimental period.

Hypothesis 20: There will be no significant difference among groups in the accuracy of self-perceived social adjustment at the post-counseling stage. To test this hypothesis, the significance of the difference between mean gain scores was determined. Table 25 shows the mean gain scores for
students who participated in multiple, individual, and no counseling. Multiple counseled students had a gain score which was 13 \( z \) points higher than that of the control group. Statistical analysis of this difference yielded a \( t \)-ratio of .43 which was not significant at the 5 per cent level of confidence.

**TABLE 25**

**SIGNIFICANCE OF DIFFERENCE BETWEEN POST-COUNSELING CORRELATION COEFFICIENTS OF SELF-RATING AND EARNED SCORES ON THE CTP (SOCIAL ADJUSTMENT)**

<table>
<thead>
<tr>
<th>Post-Counseling</th>
<th>Gain Scores (z-functions)</th>
<th>Post-Counseling</th>
<th>Gain Scores Difference (z-functions)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple</td>
<td>.18</td>
<td>Control</td>
<td>.05</td>
<td>.43 NS</td>
</tr>
<tr>
<td>( N = 26 )</td>
<td></td>
<td>( N = 26 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>.62</td>
<td>Control</td>
<td>.05</td>
<td>.57 1.90 NS</td>
</tr>
<tr>
<td>( N = 26 )</td>
<td></td>
<td>( N = 26 )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual</td>
<td>.62</td>
<td>Multiple</td>
<td>.18</td>
<td>.44 1.46 NS</td>
</tr>
<tr>
<td>( N = 26 )</td>
<td></td>
<td>( N = 26 )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Students who received counseling in an individual setting had a gain score which was .57 \( z \) points higher than gain score of the control group. Application of the \( t \)-test revealed that the difference of .57 \( z \) points had a \( t \)-ratio of 1.90 which was not significant at the 5 per cent level of confidence. In comparing the gain scores of the individually counseled students with students who participated in multiple counseling, it was found that former group had
scores which were .44 z points higher than the gain score of
the latter group. The t-test showed that this difference of
.44 points had a t-ratio of 1.46 (not significant). In light
of data contained in Table 25, the null hypothesis that there
will be no difference among groups in the accuracy of per-
ceived level of social adjustment at the post-counseling
stage cannot be rejected. There were no significant differ-
ences among groups in their ability to estimate their level
of social adjustment at the post-counseling stage.

Counselee satisfaction

Hypothesis 21: There will be no significant differ-
ences between individual counseled students and multiple
counseled students in their satisfaction with counseling.
In order to test this hypothesis, students of the two experi-
mental groups were asked to complete a ten item questionnnaire
which was designed to assess student attitudes toward coun-
seling in individual and multiple settings. Students were
requested to respond either "yes" or "no" to short statements
about counseling. The percentages of affirmative responses
were computed for each group and on each item. The percen-
tages of both groups were compared by use of the t-test.

Table 26 shows the differences between percentage
responses of the two experimental groups on each of the
items of the questionnaire. For most of the items, there
were no significant differences between affirmative responses
<table>
<thead>
<tr>
<th>Items</th>
<th>Multiple N = 26</th>
<th>Individual N = 26</th>
<th>Difference between Percentages</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I found counseling unpleasant and upsetting at times.</td>
<td>7 26.9 5 19.2</td>
<td>7.7</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>2. I had plenty of opportunity to express my feelings during counseling.</td>
<td>20 76.9 22 84.6</td>
<td>7.7</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>3. I felt that the counselor was directing my thinking.</td>
<td>3 11.5 2 7.7</td>
<td>3.8</td>
<td>.53</td>
<td></td>
</tr>
<tr>
<td>4. I often got discouraged because we seemed to get nowhere.</td>
<td>4 15.4 9 34.7</td>
<td>19.3</td>
<td>2.00</td>
<td></td>
</tr>
<tr>
<td>5. I felt free to discuss my personal feelings during counseling.</td>
<td>14 53.8 21 80.8</td>
<td>27.0</td>
<td>2.78*</td>
<td></td>
</tr>
<tr>
<td>6. I felt the counselor showed interest in me as a person.</td>
<td>24 92.3 26 100.0</td>
<td>7.7</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>7. I wanted concrete advice and didn't get it.</td>
<td>8 30.8 7 26.9</td>
<td>3.9</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>8. I felt better able to assess my capacities in relation to the teaching profession.</td>
<td>24 92.3 23 88.5</td>
<td>3.8</td>
<td>.53</td>
<td></td>
</tr>
<tr>
<td>9. I feel that counseling should be available for all students.</td>
<td>22 84.6 23 88.5</td>
<td>3.9</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>10. I felt that the counseling sessions were too few in number.</td>
<td>8 30.8 5 19.2</td>
<td>11.6</td>
<td>1.50</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.01 level.
of the individually and multiple counseled groups. However, a significantly higher percentage of students who experienced individual counseling responded that they felt free to discuss their personal feelings during counseling. It is shown on Table 26 that of the 26 students in the individually counseled group, 21 students (80.8 per cent) replied that they felt free to discuss their personal feelings. Only 14 (53.8 per cent) of the students of the multiple counseled group responded in a similar manner. A t-test analysis of the difference between these two percentages yielded a t-ratio 2.78 (significant at 0.01 level). In light of data contained in Table 26, the hypothesis that there will be no significant difference between individually counseled students and multiple counseled students in their satisfaction with counseling must be accepted for all items of the CES except Item 5. There was a significant difference between response percentages of the groups in the freedom they felt to discuss personal feelings during counseling.

Summary

In this chapter major attention was focused on the extent to which the null hypotheses stated in Chapter I were or were not rejected. Of the 21 hypotheses stated in Chapter I, seven were not rejected, nine were rejected, and five hypotheses were partially rejected. In the next
chapter are presented a summary of the study with a digest of the findings; the conclusions drawn from an interpretation of data presented in this chapter; and the implications of these conclusions for teacher education.
CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This final chapter is divided into four parts. The first part of the chapter contains a brief summary of the study. The second part is concerned with conclusions based on the findings of the study. The third section of Chapter V consists of implications for the education of teachers. The chapter concludes with recommendations for further research directly related to the subject of the present investigation.

Summary of the study

As noted in Chapter I the purposes of this study were to (1) determine the effects of social reinforcement in individual and multiple counseling situations on accuracy of self perceptions of college students in the areas of critical thinking, attitudes toward teaching, dogmatism, personal adjustment, and social adjustment; (2) ascertain the relative effectiveness of individual and multiple counseling in effecting growth in the areas of critical thinking, attitudes toward teaching, reduction in dogmatism, personal adjustment, and social adjustment; and (3) compare the
degree of counselee satisfaction with individual and multiple counseling.

The subjects for this study were students enrolled in the course "Introduction to the Study of Education" for the academic year 1964-65 at The Ohio State University in Columbus, Ohio. The total study group was composed of 78 students, 26 students in the individual counseled group; 26 students in the multiple counseled group; and 26 students in the control group. Individually counseled students participated for four counseling sessions, with the investigator serving as counselor. Students who received multiple counseling were assigned to four sub-groups of six or seven each. They also participated in counseling for four sessions. Students in the control group received no counseling for the experimental period but were kept on a waiting list and encouraged to participate in counseling at a later date.

Before counseling, each student in the total study group was asked to complete a Student Self-Rating Sheet in addition to the Watson-Glaser Critical Thinking Appraisal, the Dogmatism Scale, the Minnesota Teacher Attitude Inventory, and the California Test of Personality. Variance analysis and the t-test were used to analyze the differences among and between mean scores of the two experimental and control groups. The last procedural phase of the study consisted of a statistical analysis of the responses on the
Counseling Evaluation Sheet which was designed to assess the degree of counselee satisfaction with counseling.

The review of related literature contained in Chapter II revealed that research in individual and multiple counseling can be roughly divided into two general areas of emphasis. The first area is concerned with a description of the counseling process, and the second area is concerned with counseling effectiveness. The analysis of the studies reviewed in Chapter II indicated that counseling is more effective than no counseling in aiding students to increase grade point averages, acquire socially accepted behavior, and intensify the desire to remain in school. A further examination of the literature also revealed that researchers rarely define clearly the nature of the techniques employed in testing the relative effectiveness of the counseling which takes place in individual and multiple settings. Finally, in the few comparative studies of individual and multiple counseling, multiple counseling was found to be as effective in producing change as individual counseling.

The findings of the study were presented and discussed in Chapter IV. A brief summary of these findings is presented below:

1. There was a significant difference (0.01 level) between pre-counseling and post-counseling mean W-GCTA scores for students who participated in multiple and
individual counseling, but no significant difference was found between before and after mean W-GCTA scores for students who received no counseling.

2. Students who participated in individual and multiple counseling had post-counseling mean W-GCTA gain scores which were significantly higher (0.01 level) than the mean gain scores of the control group. Although the multiple counseled group had the highest mean gain score, it was not significantly higher than the mean gain score of the individual counseled group.

3. Students who were counseled in individual and multiple counseling situations as well as students who received no counseling did not improve significantly in their ability to estimate their level of critical thinking.

4. There were no significant differences among groups in their ability to estimate their level of critical thinking on the W-GCTA after social reinforcement counseling had been experienced.

5. The post-counseling mean MTAI scores of the individual counseled, multiple counseled, and control groups were significantly higher (0.01 level) than their mean pre-counseling MTAI scores. All groups made significant gains on the MTAI during the experimental period.

6. Students who participated in individual and multiple counseling had post-counseling mean MTAI gain scores
which were significantly higher (0.01 level) than the mean gain score of the control group. Although there was a difference in MTAI mean gain scores between the individual and multiple counseled students, this difference was too slight to be significant.

7. Students who were counseled in individual and multiple counseling settings, as well as students who received no counseling, did not improve significantly from pre- to post-counseling in their ability to estimate their attitudes toward teaching.

8. There was no significant difference among groups in their ability to estimate accurately their attitudes toward teaching at the post-counseling stage.

9. There were significant differences between pre-counseling and post-counseling mean DS scores for students who participated in multiple, individual, and no counseling. Each group had a reduction in the level of dogmatism during the experimental period.

10. Students who participated in multiple counseling had a mean post-counseling DS score which was significantly higher (0.05 level) than those mean scores of the individually counseled or control groups. No significant difference was found between the mean DS score for the individual counseled students when compared to the mean DS of the control group at the post-counseling stage.
11. Students who were counseled in a multiple setting as well as students of the individual and no counseling groups did not improve significantly as a result of counseling in their ability to estimate their level of dogmatism.

12. There was no significant difference among groups in their ability to estimate their level of dogmatism on the DS after social reinforcement counseling.

13. There were significant differences (0.01 level) between pre-counseling and post-counseling mean CTP (personal adjustment) scores for students who participated in multiple and individual counseling, but no significant difference was found between pre-counseling and post-counseling mean CTP (personal adjustment) scores for students in the control group.

14. Students who participated in individual and multiple counseling had post-counseling mean gain CTP (personal adjustment) scores which were significantly higher (0.01 level) than the mean gain score of the control group. There was no significant difference between the mean gain scores of the individual and multiple counseled groups.

15. Students who were counseled in multiple counseled situations as well as students who received no counseling did not improve significantly in their ability to estimate their level of personal adjustment on the CTP.
16. There were no significant differences among groups in the accuracy of their ability to estimate their level of personal adjustment on the CTP.

17. There was a significant difference (0.01 level) between pre-counseling and post-counseling mean CTP (social adjustment) scores for students who participated in multiple and individual counseling, but no significant difference was found between pre-counseling and post-counseling mean CTP (social adjustment) scores for students in the control group.

18. Students who participated in individual and multiple counseling had post-counseling mean CTP (social adjustment) scores which were significantly higher (0.01 level) than the mean gain score of the control group. The individually counseled students also had a mean gain score which was significantly higher (0.01 level) than that of the multiple counseled students.

19. Students who participated in counseling and students who received no counseling did not change significantly in their ability to estimate their level of social adjustment during the experimental period.

20. There were no significant differences among groups in their ability to estimate their level of social adjustment at the post-counseling stage.

21. Students counseled in an individual setting felt freer to express their personal feelings than did those
students who were counseled in a multiple setting; but on
nine of the ten statements related to counselee attitudes,
the two groups responded quite similarly.

Conclusions

From the findings noted above, a number of conclusions
may be drawn. The first conclusion is that individual or
multiple social reinforcement counseling, when combined with
regular didactic experiences, is effective in stimulating
growth among beginning education students in the areas of
critical thinking, receptivity to new ideas, individual
adjustment, and social adjustment. It can further be con­
cluded that the interaction dynamics inherent in the regular
classroom approach to the teaching of the beginning course
in education at The Ohio State University provides the
foundation for significant improvement in students' atti­
tudes toward teaching even if counseling is not provided as
a concomitant experience. In the regular Education 408
course; every effort is made to acquaint students with the
nature of the teaching process by having them listen to
lectures and read selected literature. The emphasis placed
on the mastery by students of concepts and ideas which were
derived from lectures and printed matter could well be the
reason for the improvement in students' attitudes toward
teaching.
The second conclusion is that social reinforcement counseling in individual and multiple settings is significantly more effective than no counseling in stimulating growth in the areas of critical thinking, acceptable attitudes toward teaching, receptivity to new ideas, individual adjustment, and social adjustment. Although students who received no counseling had a significant positive change in teaching attitude scores from pre-experimental to post-experimental stages, their mean gain score on the MTAI was significantly lower than the mean gain scores of the two student groups that experienced counseling in addition to regular classroom activities.

A third conclusion is that multiple counseling is more effective than individual counseling in reducing the degree of dogmatism in beginning education students. However, social reinforcement counseling in an individual setting proved to be more effective than multiple counseling in increasing the level of personal adjustment of students. In the areas of critical thinking, attitudes toward teaching, and social adjustment, individual counseling was as effective as multiple counseling in stimulating growth.

A fourth conclusion is that although social reinforcement counseling in individual and multiple settings tended to increase students' ability to estimate their level of critical thinking, attitudes toward teaching, degree of dogmatism, level of individual adjustment, and level of
social adjustment, the increase was not significantly higher than the control group.

A fifth conclusion is that social reinforcement counseling in individual and multiple settings is not superior to no counseling in producing significant positive changes in students' ability to estimate accurately their level of critical thinking, attitudes toward teaching, degree of dogmatism, level of personal adjustment, or level of social adjustment.

A sixth and last conclusion is that students who participate in counseling in a multiple setting are less free to discuss their personal feelings during counseling than are students who receive individual counseling. Multiple counseling, then, inhibits free expression of personal feelings among the students who engage in it.

Implications for teacher education

Critical Thinking: Critical thinking is a process by which solutions to problems are found. As such, the significance of fostering critical thinking in teacher education programs is clear. If the abilities involved in critical thinking can be improved (and the results of this study show that they can), then the ability to learn can at the same time be improved, for higher learning requires critical thought. In this sense, the objective of critical thinking
can be equated with the objective of acquiring higher level learning.

This stress placed on the development of critical thinking is not intended as a total repudiation of traditional subject-centered approaches to the education of teachers. It is only reasonable to assume that critical thought requires content and materials to be thought about. Few people in the field of teacher-education would deny that knowledge is a requisite to critical thinking. The main question, then, is not whether or not knowledge is a requisite to critical thinking, but whether or not the traditional definition of knowledge can be extended to include knowledge of self. The thesis offered here is that both knowledge of self and knowledge of material are equally important in the education of teachers who can think critically.

Teacher educators have done an adequate job of imparting factual materials to teacher education students by the use of commonly accepted modes of didactic experiences, but in two very important areas extant practices in teacher education have not lent themselves to the creation of the product almost all educators would like to see—the teacher who can think critically about his own capacities in relation to the stimulational factors of his environment. First, although teacher educators have generally taught factual
material efficiently, they have not motivated students to examine critically the verbal and written material presented to them for logical fallacies and distortions. Second, and perhaps more important, is that the personal values of students are virtually neglected as content worthy or being known and examined critically by prospective teachers.

If teacher educators seek to develop critical thinking among prospective teachers, it will be necessary for a different program to be established. A program is clearly needed which will provide the optimum amount of opportunity for students to express their views and have their points of view challenged by other persons who are genuinely interested in their problems. Both individual and multiple counseling offer teacher educators bold and different approaches to the development of critical thinking in prospective teachers.

Attitudes Toward Teaching: College students, upon entering the beginning program for prospective teachers, have had twelve years of experience in schools. To a great degree the perceptions of what a school should be and how a teacher should behave toward his pupils are colored by the prospective teacher's past experiences. It is the purpose of teacher education programs to recognize weaknesses in students' attitudes toward teaching and attempt to minimize those weaknesses by offering different concepts which might eventually aid students in reshaping their personal conceptual framework about the teaching process.
One important idea undergirding the rationale of this study was that attitudes toward teaching could be changed by creating an imbalance in the prospective teacher's perception of his own values as his values relate to his conduct with school-age youth. Imbalance may be said to exist whenever a person finds that he holds an attitude toward an event which is contrary to the attitude held by another with whom he identifies. A person in such a state of imbalance is motivated to do something or change in order to restore an internal attitudinal balance. Thus, if rapport is established among small groups of students, a student will be confronted with referent attitudes in terms of which his own attitudes can be modeled. Judicious use of social reinforcement on the part of teacher educators can aid the student in differentiating between those attitudes he should accept and those which should be rejected.

Although individual and multiple counseling situations may offer some measurable advantages over regular classroom approaches in improving student attitudes toward teaching, the results of this investigation do support the notion that regular procedures current used in the beginning education course at The Ohio State University afford an opportunity (without concomitant counseling) for students to improve their attitudes toward teaching. It is evident that students do find acceptable attitudinal models which serve as
referents for the improvement of their attitudes toward teaching. If the main objective of teacher educators is to improve the attitudes of students toward teaching, the benefits that can be gained from counseling as a adjunct to regular classroom practices would be too minimal to warrant the additional expense.

Degree of Dogmatism: Dogmatism, a form of resistance to change, may be defined in its most derogatory sense as a positiveness in the assertion of unwarranted opinion. C. Gratton Kemp concludes that the inner directed "high dogmatic" is characterized by a lack of "openmindedness" and cannot "easily tolerate ambiguity."93 In teaching, such a condition could well prove fatal to both the closedminded teacher and the pupils with whom he comes in contact. There is little doubt that educators of teachers have long realized the danger of producing teachers who are un receptive to new ideas and different points of view, but instead of resorting to procedures which would lower dogmatism, teacher educators have been content to verbalize the distress they feel over the dogmatic tendencies of education students.

It is realized, of course, that attitudes, beliefs, and behavior patterns which are deeply rooted in the individual's emotional life are most resistant to change. When

a certain belief is emotionally interwoven with thousands of other beliefs and attitudes, it is next to impossible for a person to alter the one belief without also reorganizing most of the other beliefs that he possesses. All the logic and polemics that can be mustered in a traditional classroom setting, may not affect such a belief unless the psychological climate of the classroom makes a complete reorganization of the belief system possible. In the traditional classroom situation, where there is little sympathy for an individual's undesirable status and even less group cohesiveness, the teacher education student normally, through fear, would take steps to protect his complicated system of related beliefs from assault.

With proper safeguards, the teacher education student can be spared this fear. Teacher educators who are also skilled in the counseling process can create a climate which will be more conducive to a change in rigid values and beliefs. The prospective teacher in a non-threatening counseling situation will be free to examine his ideas with the help of a non-critical person who is interested in the student as a person, and also as a future competent teacher.

Personal and Social Adjustment: Teacher-educators are giving increasing support for the idea that psychological normality and individual adjustment should be fostered in teacher education curricula. It is well that such concern
should exist, for good adjustment is the foundation of good teaching. Good adjustment is a process of becoming rather than the attainment of a static condition. This notion of adjustment stresses what can be rather than what is, either in terms of the individual or as judged by one's social group. But a consideration of the dynamic status of adjustment (as viewed in this context), also stresses the interaction between the individual and his social group.

Thus, personal and social betterment often go together and are mutually supportive; however, there are times when personal satisfaction and group norms conflict. When one has an internalized ideal of conduct which conflicts with the approved practices of a social group to which he belongs, the individual is faced with a situation in which personal uneasiness or social disapproval are the alternatives. Teacher educators should be concerned with the possibility of conflict between the individual and the group of which he wants to become a member. It is axiomatic that one cannot work well with children if he has a high degree of personal maladjustment. Certainly, one cannot hope to have much of an impact within the school setting if he has constant conflicts with his colleagues. To be a successful teacher, one must have an adequate degree of personal adjustment and he must also be able to adjust to his colleagues and the pupils who will be placed in his care.
In dealing with adjustment as it is related to teacher education, teacher educators need to ask themselves what kind of atmosphere best promotes personal and social adjustment, and what policies encouraged by the administration or by an effective group within the institution can best help individuals toward increased adjustment. A nonauthoritative, yet regulated, counseling program seems to be the answer, particularly if counseling experiences are viewed as an ongoing part of the teacher-education program. Only in a nonauthoritative climate can prospective teachers examine their personal and social conflicts in relation to the kinds of personal and social constructs required by competent teachers.

Recommendations for further research

The findings of this study give rise to a number of problems which further research alone can answer. It is recommended that further research be concerned with the following problems:

1. To what extent is multiple counseling an effective prelude to effective individual counseling of teacher education students?

2. Is there a difference based on sex in the amount of benefit which can be derived from counseling in individual and/or multiple settings?
3. Do low-dogmatic teacher education students make greater progress in individual and social adjustment than do high-dogmatic teacher education students?

4. To what extent can the same counseling techniques commonly applied in individual counseling be applied to the multiple counseling situation?

5. Is there a relationship between counseling effectiveness and the personality of the person doing the counseling? Are certain counselor's personalities more conducive to counselee growth in multiple counseling than in individual counseling?

6. To what extent do counselees retain the gains made as a result of social reinforcement counseling over a four year period?

7. Do counselees who are satisfied with the counseling experience evidence more growth in personal adjustment than dissatisfied counselees?
APPENDIX
STUDENT SELF-RATING SHEET

DIRECTIONS
You have had a chance to observe other students in your class. Please indicate by circling the number which best describes how you rank on the characteristics below in relation to other students in Education 408. The scale is listed below.

1--1 rank in the first 25 per cent on this characteristic.
2--1 rank in the second 25 per cent on this characteristic.
3--1 rank in the third 25 per cent on this characteristic.
4--1 rank in the fourth 25 per cent on this characteristic.

CHARACTERISTICS

A. Have ability to comprehend and use language for accurate and discriminating communication of thought, recognize the existence (or non-existence) of logical relationships between propositions, interpret data and draw warranted conclusions or generalizations, appraise the adequacy of alleged evidence, weigh it and judge between degrees of probability of certain conclusions, recognize unstated assumptions, and evaluate arguments.

1 2 3 4

B. Have attitudes which would serve to foster rapport with pupils in interpersonal relations.

1 2 3 4

C. Possess personal (or individual) adjustment in meeting and challenges of daily living.

1 2 3 4

D. Possess social (or group) adjustment to one's friends, family, acquaintances, and fellow students.

1 2 3 4

E. Have an outlook on life which is tolerant toward those with opposing beliefs. A general openness to new ideas regardless of the nature of those ideas.

1 2 3 4

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COUNSELING EVALUATION SHEET

1. I found counseling unpleasant and upsetting at times. [Yes No]

2. I had plenty of opportunity to express my feelings during counseling. [Yes No]

3. I felt that the counselor was directing my thinking. [Yes No]

4. I often got discouraged because we seemed to get nowhere. [Yes No]

5. I felt free to discuss my personal feelings during counseling. [Yes No]

6. I felt that the counselor showed interest in me as an individual. [Yes No]

7. I wanted concrete advice on self-improvement. [Yes No]

8. I felt better able to assess my capacities in relation to the teaching profession. [Yes No]

9. I feel that counseling should be available to all college students. [Yes No]

10. I felt that the counseling sessions were too few in number. [Yes No]
Books


Articles and Periodicals


Kemp, C. G. "Behavior in Group Guidance (Socio Process) and Group Counseling (Psyche Process)," Journal of Counseling Psychology, 10 (Fall, 1963), pp. 373-377.


Unpublished Material


