

1969

# The effectiveness of client participation in the communication of test results in group counseling.

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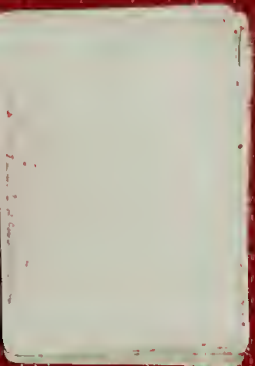
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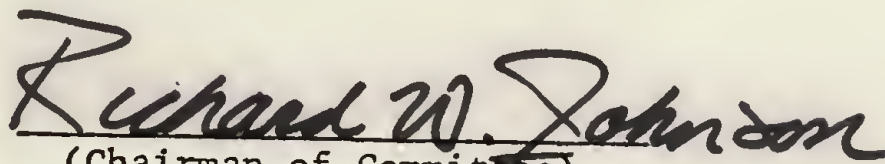
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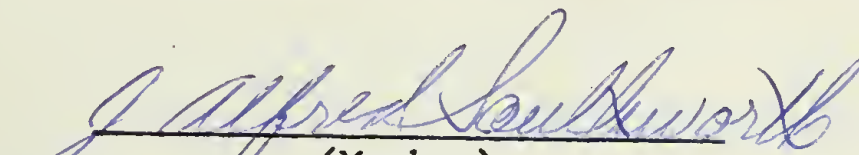
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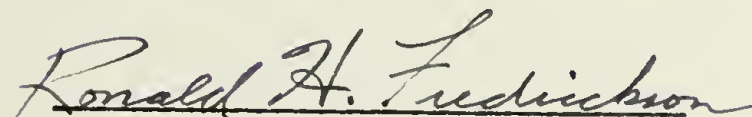
by

Stephen B. Carlton

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(Chairman of Committee)

  
(Member)

  
(Member)

January 1969

## PREFACE

I would like to extend my sincere thanks to a number of persons whose guidance, suggestions and assistance made this present research possible. My thesis committee, Dr. J. Alfred Southworth, Dr. Ronald Frederickson and, especially my committee chairman, Dr. Richard W. Johnson, all gave unstintingly of their time, advice and energy. I sincerely thank them for their continued interest and guidance.

I would also like to thank Mrs. Audrey Hindman, Mr. Donald Flammer, and Mr. Randolph Lee for the time and energy they gave in leading or assisting in the conduct of the group counseling sessions.

The test data which were used in this research (Strong Vocational Interest Blank) were collected pursuant to a contract with the United States Department of Health, Education and Welfare, Office of Education (Contract No. OEC-1-7-068710-3112; Dr. Richard W. Johnson, Principal Investigator) and its use is greatly appreciated.

The use of the computer center at the University of Massachusetts is also gratefully acknowledged.

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## TABLE OF CONTENTS

PREFACE.....	ii
TABLE OF CONTENTS.....	iii
ABSTRACT.....	v
REVIEW OF LITERATURE.....	1
Methods of Communicating Test Results.....	2
Criteria of Counseling Effectiveness.....	3
Outcome Studies.....	5
Client Participation or Involvement.....	7
PURPOSE.....	10
METHOD.....	10
Subjects.....	10
Procedure.....	10
Figure 1.....	12
Criteria of Effectiveness.....	13
Figure 2.....	14
Figure 3.....	20
Statistical Analysis.....	21
Hypotheses.....	21
RESULTS.....	22

DISCUSSION.....	30
SUMMARY AND CONCLUSIONS.....	39
REFERENCES.....	40
APPENDIX A...Student Information Form.....	42
APPENDIX B...Text of Tape-Recorded Standardized Presentation of Strong Vocational Interest Blank.....	43
APPENDIX C...Raw Data of Individual Scores for 17 Specific Criteria.....	48

The Effectiveness of Client Involvement  
In the Communication of  
Test Results in  
Group Counseling

Stephen B. Carlton

Abstract

This study attempted to determine whether the effectiveness of group test communication is influenced by an increase in student participation or involvement. An involved group of male, liberal arts, university freshmen was established by having students in this group rate themselves on the Strong Vocational Interest Blank before receiving their actual results. A control (non-involved) group was similarly counseled but did no such self-ratings.

It was found that the increase in degree of involvement produced by student self-ratings produced a significant increase in the amount of dissonance felt by the experimental as compared to the control group. Contrary to expectations there were significant differences found on a number of the effectiveness criteria favoring the less-involved group. There was also found significantly greater variability in the experimental than the control group. The few differences which appeared may be best explained by the application of dissonance theory to the situation and by the procedures used in the sessions.



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Review of Literature

In academic settings the need for developmental counseling has become fully understood and accepted. On campuses throughout the country counselors are attempting to help their students face and explore many of the decisions which they will encounter in their years in and out of college. Vocational counseling is a specific and primary example of this type of concern. It has become the task of the college counselor to most effectively and efficiently foster vocational exploration and decision-making. The college years are for a great majority of students still years of exploration and change in the vocational decisions of their lives. The choices that students make during these years cannot be treated lightly nor can it be taken for granted that the students will, on their own, effectively deal with these decisions.

An integral part and a strong aid in the process of vocational counseling are the many vocational tests and inventories which have been developed over the years. They are used by many counselors in a variety of ways but primarily as a means of reality testing for their students and as a stimulus to further personal exploration. To most

effectively counsel students one must employ most fully and most effectively the range of resources which are at one's disposal. Proper usage of tests may well be conceived as one such resource.

A criticism has been stated by a number of persons (Brim, 1965; Goldman, 1961; Super & Crites, 1962) that tests, even when employed, are not effectively interpreted to the students. The great majority of persons who are concerned with vocational counseling, however, are convinced that test results should indeed be interpreted to the student so that he may most productively explore all the resources which are available to him for decision-making.

#### Methods of Communicating Test Results

There are three main situations in which test results are communicated to students: (a) individual, one-to-one counseling; (b) group or multiple counseling and (c) written communication to the student. Until recently, the primary means of communicating test results has been the traditional one-to-one, counselor-student arrangement. The use of this traditional approach has undoubtedly been productive but as many persons have noted, the expanded need to aid all students makes the exclusive reliance on this approach unfeasible. Volsky & Hewer(1960) have stated that 60-70% of their counseling center load is comprised of short-term vocational counseling which require from 2-3 sessions and are concerned with similar types of vocational exploration and decision-making. This situation appears to approximate quite closely the position of the majority of centers nation-wide. With this similarity in case load, and especially

if one desires to aid all students in vocational, developmental decision-making, one can only conclude that multiple or group counseling procedures must be employed to efficiently deal with the problems at hand.

To a certain degree, written reports of test results have been employed but this practice has been quite limited and certainly does not allow for the type of exploration and interaction which are present in individual and group counseling (Stone & Simos, 1948; Folds & Gazda, 1966).

If counselors, however, are to substitute multiple counseling in lieu of individual counseling, one must be certain that it is not only a more efficient method but also an equally effective method of counseling. A number of studies have been done in order to examine this question. First, however, it appears meaningful to examine the types of criteria which various studies have used to determine the effectiveness of a counseling session with regard to test interpretation and communication.

#### Criteria of Counseling Effectiveness

Wright (1963) has posited five measures of comparison between pre and post counseling: (a) accuracy of self-ratings, (b) the acquisition of information about the tests themselves, (c) the feasibility of the student's vocational choice - to be determined by unbiased judges, (d) counselee satisfaction and (e) the desire for further counseling sessions.

The accuracy of self-estimate criterion has been most widely used of all. Berdie (1954) for example, found that men could make more

accurate estimates of their test scores and their college success after counseling than they could before. Johnson (1953) likewise found an increase in the accuracy of self-estimates (using counselor estimates based on test scores as the criterion) and also a greater certainty in the student's self-estimates.. Froelich (1958) also used this criterion when comparing the effectiveness of multiple with individual counseling. Many other researchers have used this criterion and it is still the most common of all. It is, however, almost never used alone in recent studies, but rather in conjunction with other indices of effectiveness.

The need for multiple criteria is indicated in that degree of client satisfaction may not correlate with other indices of effectiveness (Dressel & Matteson, 1950). Also, there is a question as to the meaning of the criterion "desire for further counseling". It may mean either of two things. First, the session may have piqued the student's interest or second, it may have been so confusing that the students needed a separate interview to clarify the confusion. In turn, the lack of desire to return for counseling may either mean that 1) the student's interest and concern were not aroused or 2) that his thoughts and feelings had for the moment been well explored and did not impel him to seek further counseling. Such types of difficulty exist with all of these criteria and for this reason are now normally used in conjunction with each other.

Another criterion which is stressed by Ohlsen (1963) and by Lister and McKenzie (1966) is one which goes beyond the accuracy of self-estimate



to determine the extent to which the student accepts the interpretation of his test results. That is, they stress behavioral indices which indicate the integration of the test interpretation into the student's self concept, and in essence his acceptance of the interpretation. Thus, they believe criteria of effectiveness should be focused upon student recall, understanding, and acceptance of predictions derived from test results. Berdie (1954), for example, did this by determining whether the students used their test results in predicting their future college success.

### Outcome Studies

The very important question of the effectiveness of group counseling has been examined by a goodly number of researchers. Some have compared its efficacy in relation to a control group while others have compared it not only to controls but also to individual counseling.

Broedel et al (1960), for example, found that 3 of 4 groups of 9th grade underachievers significantly improved in their acceptance of themselves and others, in their ability to relate to others and even on achievement indices. In similar groups and with similar criteria Baymur and Patterson (1960) found that group procedures worked as well or better than individual counseling. Lallas (1956) also found that multiple counseling produced more accurate self-estimates than did control groups. The same results were found by Froelich (1958) but also, that the effectiveness of group counseling was equal to that of individual counseling.

In a comparison of the three methods of test interpretation Folds and Gazda (1966) found that all three procedures improved self-estimates

compared to the control. Again, it was found that multiple counseling was equally effective to individual. A minor, although non-significant difference was found, however, in that group counseling produced less satisfaction with counseling than did individual.

Wright (1963) published a study specifically atuned to this question, "A Comparison of Individual and Multiple Counseling for Test Interpretation Interview". As mentioned above he employed the five criteria of 1) accuracy of self ratings 2) acquisition of information about the tests 3) feasibility of the student's occupational choice 4) student satisfaction and 5) desire to return for counseling. The tests which Wright employed were both ability and interest tests. Overall it was found that both individual and multiple counseling groups improved on all criteria (with the exception of desire to return for counseling which was very low for both). The improvement was especially great for accuracy of self ratings. The one primary difference which appeared was that those counseled in groups did not show significant improvement over the non-counseled groups when estimating vocational interest items. The individually counseled, however, did show significant improvement. Overall, however, both experimental groups, (individually and multiple counseled) did show marked improvement from pre to post counseling indices while the control group did not. Unlike Folds and Gazda (1966) Wright did not find less satisfaction with the multiple than the individually counseled groups.

In essence, it appears that the great majority of evidence indicates that group counseling methods of communicating test results may both

efficiently and effectively be substituted for individual counseling procedures.

The questions which now face us are those related to the means of providing the most effective group counseling session. Just as the quality of individual counseling may vary so may that of multiple counseling. Counselors are now at the point where they must examine those dimensions which help make a group session effective and meaningful to students.

#### Client Participation or Involvement

A factor which is alluded to by many writers but researched by very few is that of client participation or involvement in the counseling situation. Rogers (1946) very early felt that the client's full participation in the choice and interpretation of tests was a necessity since counseling for him was viewed as a learning process wherein the client comes to better understand himself. The counselor's role is not to make a decision for the client. Bordin and Bixler (1946) felt that test selection was an integral part of the process of counseling; that the client's participation was better for his understanding and for his motivation for the testing program. They suggested that it helped focus the responsibility for counseling even more fully on the client and that it made him more open to the test results.

In 1950, Dressel and Matteson (1950) examined the effects of client participation in test interpretation (in individual counseling). They found that the clients of those counselors who elicited greater client participation were more certain of their vocational choice and that they

made more accurate estimates of their test scores. They also found that degree of satisfaction was not related to the amount of client participation. In addition it was found that all counselors were not equally able to elicit high levels of client participation.

Torrance (1954) also researched this factor but from a slightly different framework. He produced client participation by having the students evaluate (rate) themselves on the Strong Vocational Interest Blank (SVIB) and on some achievement indices before receiving their actual profiles. He found that re-estimates after individual counseling were more accurate than before. There was, however, no control group of either non-involved or non-counseled students. Consequently, it was impossible to determine what influence the self-evaluation procedures had upon the counseling session. The counselors simply used the students' self-evaluation as a meaningful part of the counseling discussion. Torrance's conclusion from his data was that the self-evaluation procedures contribute to development of a more realistic self concept i.e. that they produce a set for self-evaluation.

Holmes (1964) research has also supported the notion that client participation is important in effective counseling. She made comparisons between three groups of individually counseled students: 1) in which the counselor was dominant and evaluative (giving his opinions and reactions); 2) in which the counselor was dominant but reflective (no opinions or judgments expressed); and 3) in which the student was dominant out of a learning set (the student rated himself before receiving his



results, chose the order of interpretation of the tests and had the responsibility of drawing conclusions and forming opinions for himself). Although it was found that students in all groups at the end of the sessions had the same attitude toward their respective counselor it was also discovered that those students who had received the third form of counseling were better able to recall their test scores after a week's time. This difference increased even more over time. Holmes' conclusion is that the effectiveness of the counseling session is directly related to the degree of client participation which exists. This research of Holmes is one of the few studies which is at least in theory quite similar to the present study and the relationship between the two will be discussed more fully later in this paper.

Goldman (1961) concludes that there definitely are advantages in client participation. The student: (1) "is more accepting and less defensive about the interpretations, since they are in part his"; (2) "learns about himself more effectively and will remember better and longer what he has learned, because he was an active participant in the learning process"; (3) "brings in more new relevant data about himself and family, his experiences, and so on, so that the interpretations finally arrived at are more valid than would be true otherwise."

In summary, the many suggestions that client participation is important and the few studies which at least minimally and tentatively support this hypothesis focus upon client participation as a factor which may influence the effectiveness of group counseling procedures.

## Purpose

The present study attempts to determine whether the effectiveness of communicating test results in group counseling sessions is influenced by increased student participation.

## Method

### Subjects

Subjects (N = 42) were drawn from a population of male, liberal arts, University of Massachusetts freshmen who had taken an interest inventory during the summer preceding their freshman year as part of another research study (Johnson, 1968). At the time of this study they were just beginning their second semester at the university. All subjects were completely voluntary as they responded to a letter sent to them from the Counseling Center at the university inviting them to have their interest inventory results interpreted and discussed with them in small groups. Thirty percent of the sample of 145 responded and appeared the evening that was set aside for this purpose.

### Procedure

The test results for the Strong Vocational Interest Blank (SVIB), (Strong and Campbell, 1966), an inventory which measures the degree of similarity between a student's interests and those of persons actually employed in various occupational fields, were interpreted to the students. Results were given for 48 specific occupational scales and 9 occupational groupings.

Utilizing a suggestion by Goldman (1961) the SVIB profile sheets, used both in the self-ratings of the experimental groups and in the return of the actual SVIB results, were of a less complicated and more easily understood form (Johnson, 1967) than that of the actual SVIB profile sheet which is commonly used. This form is found in Figure 1 and along with it the categories of the SVIB which correspond to such headings as "Very Similar", "Similar", etcetera.

An involved group (E) was produced by having the students rate themselves before counseling as to the degree of similarity which they felt existed between their interests and those of persons employed in each of the 48 occupational fields of the SVIB (N = 21). This was done on the modified SVIB profile (Johnson, 1967). A non-involved group (C) did not do these self-ratings and are thus considered to be control groups (N = 21).

As the students arrived at the Counseling Center they were assigned in succession to the four groups to insure relatively equal numbers of subjects in all groups.

In all, there were eight groups run; 4 E and 4 C. Two sessions of four groups each (2 E and 2 C) were held. The numbers of students per group ranged from 5 to 6 for the first session and 4 to 5 for the second session.

In order to eliminate any moderator effects such as sex or skill of the counselor, all four counselors were male and alternated between E and C conditions. Thus, each counselor participated in one E and one



Job Title	1	2	3	4	5	6	7	8	9	10
Psychiatrist										
Psychologist										
Biologist										
Architect										
Mathematician										
Physician										
Chemist										
Engineer										
Production Manager										
Army Officer										
Air Force Officer										
Gaspar										
Patrol Service Div										
Warrior										
Mark-Reference Technician										
Printer										
Religious										
Personnel Director										
Public Administrator										
Rehabilitation Comm.										
Wild Secretary										
Social Worker										
Social Sci. Teacher										
Gen. Capt.										
Minister										
Historian										
Artist										
Musical Director										
Music Teacher										
Off. Clerk										
Senior CPA										
Accountant										
Office Worker										
Marketing Agent										
Teacher										
Librarian										
Statistician										
Travel Manager										
Hotel/Restaurant Salesman										
Auto/Truck Salesman										
Advertising Man										
Editor										
Insurance Underwriter										
Production Mfg. Co. Inc.	C	C	C	C	C+	B-	B	B+	A	A
SVIB Headings	Very Dissimilar	Dissimilar			In-determinate		Similar		Very Similar	Similar

Figure 1



C session. Three of the four counselors were graduate students in counseling psychology and the fourth a professor in the same field. The counselor effect is statistically analyzed at a later point.

With the exception of the self-ratings of the E group before the actual counseling session the conditions and group process from this point on were exactly the same. The process itself consisted of two portions. First, a brief information form was filled out by the students (Appendix A) and then an approximately seven minute audiotaped, standardized explanation of the SVIB and its meaning was presented. This was accompanied by a mimeographed copy of the presentation (Appendix B) which the student could follow as the tape progressed. This same tape was used by both E and C conditions and by all counselors so that differences in the initial explanation and discussion of the SVIB would not contaminate the results.

The second portion of the session (thirty minutes) was allotted to group discussion of the SVIB and the students' profiles. These were all tape-recorded for future reference.

#### Criteria of Effectiveness

After this discussion period was finished all the students were asked to respond anonymously to a questionnaire which contained the various criteria for determining the relative effectiveness of the E and C conditions (Figure 2). These criteria are an amalgam of the types of criteria previously used by other researchers noted earlier in this paper. A number of additional criteria were also added.

The following questions are designed to help evaluate the effectiveness of the group counseling sessions. Your assistance in providing this information is greatly appreciated. This questionnaire has been coded for research identification purposes only.

1. I feel that the counseling session was beneficial to me.
  - Strongly agree
  - Agree
  - Uncertain
  - Disagree
  - Strongly disagree
  
2. My occupational interest scores were approximately what I expected them to be.
  - Strongly agree
  - Agree
  - Uncertain
  - Disagree
  - Strongly disagree
  
3. I would like to return to the Counseling Center for additional counseling.
  - Strongly agree
  - Agree
  - Uncertain
  - Disagree
  - Strongly disagree
  
4. My interest scores support my present academic major.
  - Strongly agree
  - Agree
  - Uncertain
  - Disagree
  - Strongly disagree
  
5. My interest scores support my occupational plans ( as previously stated).
  - Strongly agree
  - Agree
  - Uncertain
  - Disagree
  - Strongly disagree

6. Scores on the Strong Vocational Interest Blank will change considerably for the typical college freshman male student.  
 True  
 False
  
7. Scores on the Strong reflect probability of success in a particular occupation.  
 True  
 False
  
8. The Strong scores indicate the degree to which the individual possesses interests in common with a particular occupational group.  
 True  
 False
  
9. A student receives a low score on the Physician key of the Strong. This means that he lacks the ability to succeed in the medical profession.  
 True  
 False
  
10. Interest scores on the Strong are most predictive of eventual occupational engagement.  
 True  
 False

11. On which of the following occupational scales did you receive your five (5) highest scores and five (5) lowest scores? Make a + mark beside the five occupations upon which you recall having received your highest scores. Make a - mark beside the five occupations upon which you recall having received your lowest scores.

- |                    |       |                       |       |
|--------------------|-------|-----------------------|-------|
| Dentist            | _____ | Personal Director     | _____ |
| Osteopath          | _____ | Public Administrator  | _____ |
| Veterinarian       | _____ | Rehabilitation Couns. | _____ |
| Physician          | _____ | YMCA Secretary        | _____ |
| Psychiatrist       | _____ | Social Worker         | _____ |
| Psychologist       | _____ | Social Sci. Teacher   | _____ |
| Biologist          | _____ | School Supt.          | _____ |
|                    |       | Minister              | _____ |
| Architect          | _____ |                       |       |
| Mathematician      | _____ | Librarian             | _____ |
| Physicist          | _____ | Artist                | _____ |
| Chemist            | _____ | Musician Performer    | _____ |
| Engineer           | _____ | Music Teacher         | _____ |
|                    |       |                       |       |
| Production Manager | _____ | CPA Owner             | _____ |
| Army Officer       | _____ |                       |       |
| Air Force Officer  | _____ | Senior CPA            | _____ |
|                    |       | Accountant            | _____ |
| Carpenter          | _____ | Office Worker         | _____ |
| Forest Service Man | _____ | Purchasing Agent      | _____ |
| Farmer             | _____ | Banker                | _____ |
| Math-Sci. Teacher  | _____ | Pharmacist            | _____ |
| Printer            | _____ | Mortician             | _____ |
| Policeman          | _____ |                       |       |
|                    |       | Sales Manager         | _____ |
|                    |       | Real Estate Salesman  | _____ |
|                    |       | Life Ins. Salesman    | _____ |
|                    |       |                       |       |
|                    |       | Advertising Man       | _____ |
|                    |       | Lawyer                | _____ |
|                    |       | Author-Journalist     | _____ |
|                    |       |                       |       |
|                    |       | President-Mfg. Conc.  | _____ |

12. On which of the following occupational fields did you receive your two (2) highest and two (2) lowest scores? Make a + mark beside the two occupational fields upon which you recall having received your highest scores. Make a - mark beside the two fields upon which you recall having received your lowest scores.

- |                              |       |
|------------------------------|-------|
| Biological Science           | _____ |
| Physical Science             | _____ |
| Technical Supervision        | _____ |
| Technical and Skilled Trades | _____ |
| Social Service               | _____ |
| Aesthetic-Cultural           | _____ |
| Business and Accounting      | _____ |
| Sales                        | _____ |





In all, 18 specific criteria were used. Seventeen of these criteria may be grouped into 4 categories pertaining to counseling effectiveness:

1. Student satisfaction with the counseling session (12 specific criteria). These were comprised of: item 1, which asked if the counseling session was beneficial to the student; item 13, a set of eight semantic differential scales (and a total score) concerned with the value of the counseling session to the student; item 3, the student's desire to return to the Counseling Center for further counseling, and, finally, the number of students who actually returned to the Counseling Center within the next four weeks.

2. Knowledge of the student's own SVIB profile (2 specific criteria). These were items 11 and 12, which determined the accuracy of the student's recall of his high and low scores on the specific scales and on the occupational groupings of the SVIB. This was done on a form different from the SVIB profile sheet so that familiarity effects would not influence the results.

3. Understanding of the SVIB itself, what it is and what it means (1 criterion). Items 6 through 10 were scored so that a high score indicated accurate understanding. The total score on these five items was used as the criterion.

4. Application of the SVIB results to the student's own educational and career plans (2 criteria). The student's responses

to items 4 and 5 were compared with his choice of career and academic major (as stated on the information form, Appendix A) and with his SVIB results.

In order to do this it was first necessary to categorize each career and academic major into one of the SVIB occupational groupings. This was done by two judges who were very familiar with the SVIB and its application to career counseling. Then, the student's corresponding SVIB score was compared with his response to items 4 and 5 and this degree of similarity was rated on a 5 point scale (4 = great similarity; 0 = great dissimilarity). For example, if a student chose "biologist" as a career choice, had a corresponding SVIB score of A and "strongly agreed" that his SVIB results supported his career choice, then he scored a 4. If, however, he had said he "strongly disagreed" he would have scored a 0. Figure 3 indicates the manner in which these scores were derived. Again, a high score indicates high accuracy in ability to apply SVIB results to choice of career and major field. A number of responses were unclassifiable and were not included in the analysis.

The eighteenth specific criterion measured the amount of dissonance aroused by the self-rating procedure. Item 2 was included to measure the degree to which the student's occupational scores were what he expected them to be.

This questionnaire was developed by the author specifically for this study and has not been tested for reliability or validity. Consequently, conclusions drawn must be somewhat tempered and reserved.

Response to Items  
4 or 5

		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
	A	4	3	2	1	0
SVIB score on grouping corres- ponding to choice of career or academic major	B+,B	3	4	3	2	1
	B-,C+	2	3	4	3	2
	C	1	2	3	4	3
	C	0	1	2	3	4

Scoring Method for Items 4 or 5

Figure 3



### Statistical Analysis

Analysis of the resultant data employed a Least Squares Analysis of Variance for Unequal Subclasses entitled: G4 UMAS, UNEQFREQ, taken from the program library at the Computer Center of the University of Massachusetts. Since the F-test is an extremely robust test the rather small N and the lack of homogeneity of variance (noted in the Results section) were not considered to be important factors affecting the statistical analysis.

### Hypotheses

I-XVII It was predicted that a significant difference would be found between the E condition of increased student involvement and the C condition on all 17 specific criteria of effectiveness of communication of test results. It was further predicted that the direction of the difference would be in that of greater effectiveness for the more involved (E) group than the C group.

XVIII It was predicted that increased involvement would produce greater dissonance and that there would exist a significant difference between E and C groups on this measure.

## Results

Table I contains the means and standard deviations of the responses for both the experimental and control conditions. All of the outcome criteria (except number of students returning for counseling) and the dissonance measure (Item 2) are included in this table. No comparison was made on those who actually returned to the Counseling Center for further counseling since none of the entire group returned during the following four week period.

The tests for the significance of difference between the means of the experimental and control groups are found in Table II. This table contains the F-values for the two main effects (degree of student involvement and counselor effect) and their interaction. The F-value required for significance at the .05 and .01 level for the involvement effect with 1 and 34 degrees of freedom are 4.13 and 7.44 respectively. For the counselor effect and also for the interaction effect with 3 and 34 degrees of freedom an F-value of 2.88 and 4.41 are required for .05 and .01 levels of significance respectively.

As one can observe from studying Table II the degree of involvement main effect shows three significant differences between the experimental and control groups. Two of these are beyond the .01 level of significance and the other is beyond the .05 level. The most striking difference ( $F=17.16$ ) is found not on a criterion of the effectiveness of test communication but upon item 2 which is a measure of the degree to which the student's interest scores compared with those which he had

Means and Standard Deviations  
of Responses of E Versus C To  
Criteria of Effectiveness

<u>Criterion</u>	<u>Maximum Possible Score</u>	<u>Experimental (involved) N=21</u>		<u>Control (non-involved) N=21</u>	
		<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
1. Session Beneficial (Item 1)	5	3.714	.845	3.905	.539
2. Score Expected (Item 2)	5	2.905	1.221	4.100	.625
3. Desire Return For Counseling (Item 3)	5	3.810	1.078	3.714	1.101
4. Understanding of SVIB (Items 6-10)	5	4.000	.837	4.143	.727
5. Application of SVIB to Educational Plans (Item 4)	5	3.529	.514	3.550	.616
6. Application of SVIB to Occupational Plans (Item 5)	5	3.125	.719	3.737	.562
7. Recall of SVIB Specific Occupational Scales (Item 11)	10	5.571	1.469	6.810	1.504

TABLE I  
(cont.)

<u>Criterion</u>	<u>Maximum Possible Score</u>	<u>Experimental (involved) N=21</u>		<u>Control (non-involved) N=21</u>	
		<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
8. Recall of SVIB Occupational Groupings (Item 12)	4	2.762	.700	2.857	.727
Semantic Differential (Item 13)					
9. Skillful	7	5.143	1.153	5.381	1.071
10. Comfortable	7	5.333	1.426	6.000	1.140
11. Positive	7	5.286	1.384	5.619	1.117
12. Sufficient	7	4.190	1.364	4.809	1.123
13. Good	7	5.143	1.389	5.571	.926
14. Meaningful	7	5.286	1.707	6.714	.703
15. Successful	7	4.952	1.532	4.714	1.347
16. Important	7	5.333	1.426	5.190	1.078
17. Semantic Differential Total	56	40.667	9.367	42.571	5.537



F-Values For Analysis of Variance Tests

<u>Criterion</u>	<u>Involvement</u> (d.f. = 1,34)	<u>Counselor</u> (d.f. = 3,34)	<u>Involvement-Counselor</u> <u>Interaction</u> (d.f. = 3,34)
1. Session Beneficial (Item 1)	.645	.447	.135
2. Score Expected (Item 2)	17.165**	1.839	.859
3. Desire Return For Counseling (Item 3)	.086	.240	.489
4. Understanding of SVIB (Items 6-10)	.231	.349	.026
5. Application of SVIB to Educational Plans (Item 4)	.014	2.511	.057
6. Application of SVIB to Occupational Plans (Item 5)	7.724**	1.198	.389
7. Recall of SVIB Specific Occupational Scales (Item 11)	6.921*	.333	1.464
8. Recall of SVIB Occupational Groupings (Item 12)	.423	3.769*	.392

\*\*Significant beyond the .01 level.

\*Significant beyond the .05 level.

TABLE II  
(cont.)

<u>Criterion</u>	<u>Involvement</u> (d.f. = 1,34)	<u>Counselor</u> (d.f. = 3,34)	<u>Involvement-Counselor</u> <u>Interaction</u> (d.f. = 3,34)
Semantic Differential (Item 13)			
9. Skillful	.264	1.235	.698
10. Comfortable	3.348	1.343	1.671
11. Positive	.456	.978	.394
12. Sufficient	2.084	.985	.060
13. Good	1.214	1.366	.686
14. Meaningful	1.339	2.081	1.200
15. Successful	.590	.827	.801
16. Important	.060	.424	.575
17. Semantic Differential Total	.471	1.458	.368

expected (i.e. dissonance). Table I indicates that the E group experienced the greater amount of dissonance. Consequently, Hypothesis XVIII was supported.

Significant differences were found on one of two criteria used to evaluate knowledge of test scores and one of two criteria used to evaluate application of test scores. The C groups more accurately recalled their specific occupational scale scores but did not more accurately recall their occupational groupings than the E groups. A significant difference was found between E and C on the application of SVIB results to occupational plans but not to educational plans. Surprisingly, the C groups were better able to apply their scores than were the E groups. As both of the significant differences pertaining to effects of client involvement were in the opposite direction from that expected, none of Hypotheses I-XVII was supported.

Only one counselor main effect was found: recall of SVIB occupational groupings. No involvement-counselor interactions proved to be significant.

A sign test of the variability of responses in Table I indicated that at the .02 level of significance the E group demonstrated greater variability in its responses than did the C group. This is especially noticeable on criteria 14 and 17 where the standard deviations of the E group are nearly twice as great as those of the C group.

Finally, Table III presents the means and standard deviations of group responses for each counselor in each condition.

Group Means and Standard Deviations  
of Responses to Criteria of Effectiveness for  
Each Counselor - Experimental Condition

<u>Criterion</u>	<u>Counselor</u>							
	<sup>1</sup>		<sup>2</sup>		<sup>3</sup>		<sup>4</sup>	
	<u>M</u>	<u>S.D.</u>	<u>M</u>	<u>S.D.</u>	<u>M</u>	<u>S.D.</u>	<u>M</u>	<u>S.D.</u>
1.	3.50	1.05	3.83	.41	3.80	.84	3.75	1.26
2.	3.67	1.50	2.67	1.03	2.20	1.10	3.00	.82
3.	3.83	1.47	4.00	.89	3.60	1.34	3.75	.50
4.	4.00	.63	3.83	.98	4.70	.84	4.00	1.15
5.	4.00	0.00	3.80	.45	3.00	0.00	3.50	.58
6.	3.00	1.00	3.40	.55	3.00	.71	3.00	1.00
7.	6.50	.55	5.00	2.10	5.00	1.58	5.75	.50
8.	3.33	.52	2.50	.84	2.60	.55	2.50	.58
9.	4.67	.82	5.00	.89	5.40	1.82	5.75	.96
10.	5.17	1.83	5.50	.55	5.80	1.30	4.75	2.06
11.	5.00	2.00	4.83	.98	5.80	1.10	5.75	1.26
12.	3.67	1.63	4.33	1.63	4.40	.89	4.50	1.30
13.	4.50	1.76	5.17	1.33	5.80	1.10	5.25	1.26
14.	4.67	1.86	5.33	1.63	5.80	1.30	5.50	2.38
15.	4.17	1.94	4.83	1.17	5.20	1.48	6.00	1.15
16.	5.33	1.37	5.67	1.21	5.20	2.05	5.00	1.41
17.	37.17	11.72	40.67	7.00	43.40	9.86	42.50	10.15



TABLE III  
(cont.)

Group Means and Standard Deviations of  
Responses to Criteria of Effectiveness For  
Each Counselor - Control Condition

<u>Criterion</u>	<u>Counselor</u>							
	<sup>1</sup>		<sup>2</sup>		<sup>3</sup>		<sup>4</sup>	
	<u>M</u>	<u>S.D.</u>	<u>M</u>	<u>S.D.</u>	<u>M</u>	<u>S.D.</u>	<u>M</u>	<u>S.D.</u>
1.	3.80	.84	4.20	.45	3.83	.41	3.80	.45
2.	4.20	.84	3.80	.45	4.00	.63	4.40	.55
3.	3.80	1.30	3.60	.89	4.17	.75	3.20	1.48
4.	4.20	.84	4.00	.71	4.33	.52	4.00	1.00
5.	3.33	.58	3.60	.55	3.60	.55	3.60	.89
6.	4.00	0.00	4.00	.00	3.67	.52	3.25	.96
7.	6.60	1.14	7.00	1.00	7.33	1.37	6.20	2.39
8.	3.40	.55	3.00	.71	2.67	.82	2.40	.55
9.	4.80	.45	6.00	.71	5.33	1.03	5.40	1.67
10.	5.00	1.00	6.80	.45	5.67	1.21	6.60	.89
11.	5.00	1.22	5.80	1.30	5.67	1.03	6.00	1.00
12.	4.20	.84	5.20	.84	4.83	1.47	5.00	1.22
13.	5.00	1.22	6.00	.71	5.33	.82	6.00	.71
14.	4.80	1.48	6.00	.70	5.33	.82	5.00	1.00
15.	4.40	.55	5.00	1.73	5.00	1.55	4.40	1.52
16.	4.60	1.52	5.40	.89	5.00	.89	5.80	.84
17.	37.80	6.76	46.20	3.90	42.17	3.82	44.20	5.07

## Discussion

In Table II the item which indicates the most significant difference between E and C groups is not one of the outcome criteria for effectiveness of counseling but that which measures the degree to which the student's occupational interest scores were what he expected them to be (i.e. a measure of dissonance). Here, a lower score indicates a greater disparity between expected and actual scores (i.e. the existence of greater dissonance). On this measure the involved students exhibited a significantly greater amount of dissonance than did those in the control group. Due to the random sampling of students and their random placement in groups, one would not expect a significant difference to exist. One must conclude, then, that dissonance is produced or at least emphasized by the procedure of having the students rate themselves beforehand on the various scales.

From Festinger's dissonance theory (Festinger, 1957) one would expect the involved student to choose one of two alternatives when experiencing dissonance. (1) He may feel a pressure to change his own existing attitudes to be more in line with those of the test measure. Or, (2) he may selectively deny the importance or validity of the test measure. If dissonance were to exist to such a degree that either of these pressures was strongly felt one would indeed predict that there would be a difference (either in response variability or magnitude) between the E and C groups on the outcome measures of effectiveness of counseling. One might well predict this since interest, motivation and acceptance of test results would quite differentially be effected by the varying degrees of dissonance.

However, although there exists a significant difference between the E and C groups, one cannot necessarily conclude that the E groups were highly dissonant. Table I provides data on the level of dissonance which was felt by the E and C groups. The mean scores on Item 2 indicate that the dissonance experienced by the E groups was approximately moderate. While the C groups indicate that they "agree" that their scores were what they expected them to be, the average E group member indicates that he is "uncertain" in reply to this response. The data do not indicate, then, that extreme degrees of dissonance were aroused in the E group members.

The result for the semantic differential item related to the "comfortableness" of the counseling session elaborates on this point. Although there is not a significant difference between the E and C groups it is one of the few criteria which approaches the .05 level of significance. The sessions were reported as more comfortable for the C than for the E groups. This may well be a result of lower dissonance and less ego-involvement for the C than for the E groups.

In examining the items of the effectiveness criteria of Table II there is found a significant difference between the E and C groups on portions of two criteria. First, at the .05 level is the item which deals with the students' recall of his specific occupational scales. On this item it is found that the C students actually recall their test scores more accurately than do the E students. It must be noted, however, that on the second item of the two which constituted the criterion for knowledge of the student's test scores (i.e. recall of the occupational groupings; item 12) a similar significant difference did not appear.

Likewise, on the criterion of the student's ability to apply his test results to his own educational and career plans, a significant difference (at the .01 level) was found on only one of the two items which constituted this criterion. Again, the difference was in the same direction. The students in the C groups were better able to apply knowledge of their test results to their own future, occupational goals.

None of the other criteria for effectiveness indicated any significant difference between the E and C groups. In summary, then, it appears that none of hypotheses I-XVII was supported. The few significant differences which were found, in fact, were in the opposite direction of that predicted in the hypotheses.

Earlier writers and research would not have led one to expect this outcome. Holmes (1964), as noted above, in a study of degree of student participation in individual counseling found that of three groups the type of counseling which produced the greatest results was that in which the student was dominant and involved. In these groups the student took a great degree of responsibility including rating himself upon the tests beforehand, choosing the order of interpretation of tests and drawing his own conclusions from the results. This type of method was compared by Holmes with two other groups: 1) in which the counselor was dominant and evaluative (low student involvement) and 2) in which the counselor was dominant and reflective (moderate student involvement). Consequently, the student dominant group (high student involvement) was markedly more involved than either of the other two groups, in which the counselor was dominant. This was also done, however, in the context of an individual, one-to-one counseling relationship.



In contrast, although this study has also been concerned with varying degrees of student participation and involvement, (1) its focus has been group counseling and (2) has manipulated not many of the participation indices, but only one distinct portion of the counseling procedure. The only difference from the comparison control group was that self-ratings were done before the session by the involved group. It may well be the case, then, that Holmes has altered the degree of student participation considerably (versus the comparison groups) whereas this study has explored the effect of a single, less extensive alteration in the degree of student participation. If this is the case, then one can conclude that such a limited variation in group procedures such as having the students rate themselves before the session produces a very slight difference in the level of student participation and in turn does not produce great variations in the effectiveness of test interpretation in sessions of this type. It does not imply that increased involvement never leads to greater efficacy. Rather it implies that this minimal increase in student involvement in group situations of the present type does not significantly increase and, in fact, may partially impair the efficacy of the counseling session.

Another possibility is the fact that where Holmes was concerned with individual counseling any increase in the degree of involvement of the student may have had a much greater consequence than it might have had in a group. In a group context any shift in responsibility from counselor to student is shared by all members of the group. Consequently, in the present study the impact upon each individual student may have been only ,

a fraction of that which might have been produced in individual counseling.

In Table I the mean response scores for both E and C groups indicate that the sessions were considered by the majority of all students to have been of value and to have produced a good knowledge of the test and its results. All the scores and responses in Table I are beyond the neutral or average point on the criteria of effectiveness. For example, both E and C groups had an average response of 3.7 and 3.9 (of a possible 5) respectively to the question of whether the session was beneficial to the students. The items pertaining to knowledge of the SVIB were also quite high, 4.0 and 4.1 of 5 respectively. Again, the eight semantic differential items measure the students' evaluation of the counseling session and are well beyond the neutral zone of the 7 point scale into the more positive areas of value. Consequently the sessions were moderately to highly valued by both E and C students.

To show greater efficacy for (E) when (C) is itself highly effective is difficult. This may be similar to "diminishing returns" or some sort of "ceiling effect". Thus, the impact which a seemingly minor increase in student involvement produces (self-ratings) has even slighter impact than it might have had had a comparison group been less effective.

The unexpected and seemingly antithetical results of this study may upon examination be clarified by: (1) the factor of dissonance and (2) the structure of the counseling session itself. Students in the E groups very clearly seem to have experienced greater cognitive dissonance

by the act of rating themselves than do those in the C groups. Item 2 in Tables I and II indicates this. Thus, from dissonance theory the at least minimally increased pressure to either accept or reject the test information may be assumed to have existed for the E group. The hypothesis of this study, based upon past research, was that this increased pressure and motivation would in a group setting be used to more effectively explore and understand the difference that the students felt existed between their expectations and the test scores that were actually returned to them. Thus, it was predicted that a more effective session would be produced from this increased involvement situation.

In retrospect, however, it appears that some of the procedures employed in the counseling sessions actually dampened the incentive for student involvement and exploration for both E and C groups. For example, in order to standardize the presentation of the SVIB to all groups a tape recorder was used. The taped explanation was approximately seven minutes long and appears to have established a rather receptive, passive, non-involved set in the groups. This lengthy inactivity may well have reduced some of the involvement and increased desire for personal exploration which may have initially been elicited in the E groups.

Thus, in the E groups where dissonance was greatest, because of this procedure, the dissonance may have not been resolved and may actually have produced a greater motivation to ignore or reject the test information than it did for the C groups. The two criteria which at least partially indicate that this occurred (less accurate recall of specific occupational scales and lesser ability to apply the test information to occupational



plans, as compared with the C groups) certainly supports this contention. It appears, then, that the procedures used in the test communication sessions did not adequately provide for the resolution of this dissonance and the tendency to reject the new information was subsequently increased.

The importance of dissonance is also supported by the standard deviations found in Table I. A sign test shows that at the .02 level the variability of the responses of the E groups is significantly greater than that of the C groups. This is most noticeable on the dissonance criterion (Item 2) where the standard deviation for the E groups is nearly twice as great as that of the C groups. It also exists, however, very strongly on the semantic differential criteria of the students' attitudes toward the session.

The increased variability in the E groups may be accounted for by the increased dissonance and resulting pressure to more strongly accept or reject the test information and the counseling session felt by students in the E group. That is, the same absolute difference between an expected and an actual score may be and appears to have been received quite differently by a student who had rated himself (E) and a student who had not (C). The existing dissonance of the E group produces an increased reactivity in either direction to information and in turn a greater variability of responses. In other words, an E student whose SVIB scores are consistent with his self-rating is more likely to more highly value the test information and counseling session than is a C student whose expectations were similarly confirmed. The reverse would also hold true. An E student whose SVIB results are inconsistent with his expectations will less highly



value the test information and session than a corresponding C student. This appears to have occurred in this study both in the student's recall and acceptance of the test information and in their assessment of the counseling situation itself.

The only counselor main effect that was found was concerned with the students' recall of their SVIB occupational groupings. A corresponding effect was not found however for the recall of SVIB specific occupational scales. This may well have been a result of the degree of emphasis that the various counselors placed upon consideration of occupational groupings. The student's responses may thus have reflected the counselor's bias in emphasizing specific scales or occupational groupings.

Finally, one must consider the criteria which have been used in this study. As indicated above this is the first time that this particular questionnaire has been used. Consequently its reliability and validity are unestablished and may temper whatever conclusions are drawn. Some of the types of criteria have been used before and have some of the limitations noted. In addition, some of the new criteria must be examined. For example, the items which measure the student's knowledge of the test itself do not appear difficult enough to appreciably differentiate between groups. This criterion could quite easily be restructured to produce a more sensitive measurement. Further, the items related to the application of the SVIB to the students' educational and occupational plans are often difficult to score because of the inexact terms used by the students in their responses and the frequently difficult or impossible-to-classify occupations or major academic fields which are given. In essence, the

basic criteria appear to be good indices of effectiveness of a test interpretation session but they must be adequately sensitive and proven valid and reliable to clearly merit confident conclusions.

Further research is clearly called for by the findings of the importance and possibly negative effects of dissonance in a test interpretation setting. A highly illuminating study to this point would be a critical comparison of high dissonant versus low dissonant subjects in both involved and non-involved situations. It also appears from the findings of this study that the procedures used to deal with increased involvement (and the possibly resultant increased dissonance) must also be examined to determine how to effectively use this additional factor as a constructive influence in the counseling situation.

### Summary and Conclusions

This study appears to have brought two major findings to light.

(1) A certain amount of dissonance may be produced by having students rate themselves before receiving their actual test results. (2) An increase in student participation or involvement per se does not always produce a more effective counseling situation. Rather, it may at times actually impair the session by creating increased dissonance which is not adequately allowed expression or resolution and may lead to rejection of the test results and devaluation of the counseling session. Thus, the results of this study have indicated that the means and effect of arousing greater student involvement must be further studied. It has also demonstrated that the procedures for dealing with this increased involvement must be examined to determine how to most effectively employ this factor as a facilitator and not an inhibitor in effective test-communication.

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## Student Information Form

1. Name \_\_\_\_\_
2. Academic Major \_\_\_\_\_
3. What occupation do you plan to be engaged in 7-10 years from now? \_\_\_\_\_
4. How certain are you that you will enter the occupation of your first choice?  
\_\_\_\_\_ Very certain  
\_\_\_\_\_ Fairly certain  
\_\_\_\_\_ Uncertain
5. For how long a period of time have you planned to enter the occupation of your first choice?  
\_\_\_\_\_ 1 month or less  
\_\_\_\_\_ more than 1 month but less than 1 year  
\_\_\_\_\_ 1 year or more

## Aid to Interpretation of Strong Vocational

43

## Interest Blank Profiles

As you may recall, each of you completed the Strong Vocational Interest Blank, an inventory consisting of 399 interest items, during Freshman Orientation Week last summer. A copy of this test booklet has been distributed to each of you to help refresh your memory. You will recognize the booklet by its blue color.

Your responses to the 399 items in this booklet have been compared with the responses of men employed in various professional and business occupations. These 48 specific occupations are listed on the SVIB profile sheets. (Counselor will display SVIB profile sheet) You will note that each occupation on the profile sheet may be scored in terms of 5 broad categories; "very dissimilar," "dissimilar," "indeterminate," "similar," and "very similar." A high score on one of the Strong occupational scales indicates that the individual is similar in terms of his likes and dislikes to those of people engaged in that particular occupation. A low score indicates dissimilarity of interests with people employed in the occupation. A middle score would be judged as indeterminate- neither similar nor dissimilar to people employed in the particular occupation. For example, a high score on the Dentist key indicates similar likes and dislikes to those of dentists. A low score on this same key would suggest that the person would have few interests in common with dentists.

In general, 2 out of 3 people employed in an occupation receive "very similar" scores on the most appropriate interest scale; 14 out of 15 people employed in an occupation receive "similar" scores or



higher. On the other hand, only 1 person in 200 employed in an occupation would receive a "dissimilar" score or lower on his occupational scale. If you receive a high score, you would "fit" with the majority of the people employed in that occupation in terms of your likes and dislikes--if you receive a low score, you would be quite different from the typical person employed in that particular occupation.

You will also note that the occupations on the SVIB profile sheet are grouped into 11 broad interest areas as indicated by the Roman numerals on the extreme left hand side of the sheet. The names best describing each of these interest areas are given on the second mimeographed handout. For example, Group I occupations (Dentist, Osteopath, Veterinarian, etc.) share common biological science interests.

You will be given your SVIB profile sheet showing your interest scores in just a moment. Before distributing your profile sheets to each of you, your counselor will answer any questions you might have about the SVIB booklet itself, the format of the profile sheet, the meaning of high and low scores, or the use of occupational groups. When you receive your SVIB profiles you should study first your broad fields of interest as indicated by the SVIB groups, then your scores on the individual occupational scales.

First, study the areas of interest in which you received your high and low scores. Circle all the scores falling in each of the 9 areas in which more than one occupational scale is listed. Make the circles just large enough to include all the check marks. Your group counselor will illustrate this procedure.



The circles will help you focus both on the elevation and range of scores within each interest area. Comparison of the circles across areas should give you a rough idea of relatively high and low areas of interest. If your high areas contain a predominance of "very similar" and "similar" scores you may consider that your interests are, in fact, similar to those of people employed in those occupational fields. The occupations listed in each area are meant to be representative of that particular interest field. You may be able to think of occupations related to your major field or fields of interest which are not listed here.

If your low areas contain a majority of "very dissimilar" or "dissimilar" scores, you may safely conclude that you do not share common interests with the vast majority of people employed in those areas.

If your scores tend to fall in the middle of the profile in the indeterminate zone, it is possible that your interests are still in the process of development or that they are very general in nature such as may be found in a business field. It is also possible, of course, that your occupational interests may not be represented by any of the occupational areas listed. If your profile does not show any very high scores, it may be particularly helpful to discuss vocational alternatives with a counselor.

While a study of the circled areas will help you understand broad fields of interest, similarity of interests to specific vocational fields can be best determined by reference to the separate occupational scales. As before, occupations suggested by scales for which the individual receives "very similar" or "similar" scores should receive



careful consideration as possible vocational choices. If high scores are obtained on several scales, it may be possible to think of an occupation (other than those listed) which helps bridge the various fields.

These questions may occur to you in studying your SVIB profile: First, will interest scores change? They may change somewhat for college freshmen, particularly if there is a discrepancy between your profile scores and your present vocational choice, if your interests are not well differentiated, or if you lack appropriate experiences in the vocational field. For most students, their profile scores will remain relatively unchanged throughout their college years and working life.

Second, do interest scores indicate abilities? All research evidence indicates that the relationship between measured interests and abilities is very slight. Generally speaking, abilities are not indicated. The interest scores are helpful in suggesting an occupational field. Level of employment within that field may be best determined on the basis of past achievement and special aptitudes required for success in that particular area. Your counselor will assist you in obtaining more information regarding your special aptitudes if you so desire.

Third, how much weight should you give your interest scores? In general, research evidence with the Strong suggests that a student should seriously consider the possibility of entering one of those occupations in which he shows very similar or similar interests before entering an unrelated occupation. Conversely, he should look carefully at any occupation in which he shows dissimilar interests before accepting

it as a final choice. Research has shown that people who do not initially choose an occupational field in which they score high, often tend to gravitate to that occupational field eventually.

Your discussion leader will now consider specific points you may wish to raise regarding your own profile or any other questions of a general nature you might have. In summary keep these 3 points in mind:

1. Your Strong scores indicate similarity of interests with those of people employed in representative business and professional occupations.

2. Abilities and past experiences need to be considered along with interests in selecting a particular occupation or academic major.

3. Each student's case presents different circumstances. You will be most helped in taking into consideration all of the various aspects associated with educational and vocational planning; by raising relevant questions now with your discussion leader and, then, later, at your convenience, meeting with one of the counselors at the Counseling Center on an individual basis.



11 7 3 5 4 4 4  
 11 6 4 5 6 5 5  
 11 7 3 4 4 5 3  
 21 9 3 6 7 7 6  
 21 6 3 7 7 6 6  
 21 7 4 5 7 7 5  
 21 6 3 5 7 5 5  
 21 8 2 6 6 4 4  
 31 7 2 6 6 6 6  
 31 7 3 6 5 6 6  
 31 6 2 6 7 7 5  
 31 9 2 6 5 4 5  
 31 6 4 4 4 5 5  
 31 9 3 4 7 6 2  
 41 9 3 5 5 5 4  
 41 6 2 5 7 5 4  
 41 2 3 3 7 6 5

Individual Scores on  
 Criteria 7-12  
 (Control Condition)

41 5 2 7 7 7 7  
 41 3 2 7 7 7 5  
 12 7 3 4 2 2 2  
 12 6 3 5 6 7 5  
 12 7 4 6 7 7 6  
 12 7 3 4 6 6 3  
 12 6 3 4 4 4 4  
 12 6 4 5 6 4 2  
 22 4 3 5 6 6 2  
 22 3 1 6 5 6 5  
 22 3 2 4 6 4 3  
 22 5 3 4 5 4 6  
 22 8 3 6 6 5 6  
 22 7 3 5 5 4 4  
 32 7 3 7 7 6 5  
 32 4 3 3 4 6 4  
 32 5 2 6 6 6 5  
 32 6 3 7 7 7 5  
 32 3 2 4 5 4 3  
 42 6 2 7 7 7 6  
 42 6 2 5 3 4 5  
 42 5 3 5 3 6 3  
 42 6 3 6 6 6 4

Individual Scores on  
 Criteria 7-12  
 (Experimental Condition)

11 7 7 4 749  
 11 4 4 4 434  
 11 4 3 4 331  
 11 5 5 5 541  
 11 5 5 5 435  
 21 6 6 6 650  
 21 6 6 2 646  
 21 7 7 6 550  
 21 5 5 6 644

Individual Scores on  
 Criteria 13-17  
 (Control Condition)

21 6 6 5 441  
 31 6 4 5 544  
 31 5 6 6 543  
 31 6 5 5 445  
 31 4 6 2 435  
 31 5 6 6 641  
 31 6 5 6 643  
 41 6 5 5 641  
 41 6 4 5 743  
 41 5 4 4 530  
 41 6 6 5 652  
 41 7 6 2 546



11 7 3 4 4 5 3  
 21 5 3 6 7 7 6  
 21 6 3 7 7 6 6  
 21 7 4 6 7 7 5  
 21 6 3 5 7 5 5  
 21 8 2 6 6 4 4  
 31 7 2 6 6 6 6  
 31 7 3 6 5 6 6  
 31 6 2 6 7 7 5  
 31 9 2 5 5 4 3  
 31 6 4 4 4 5 5  
 31 9 3 4 7 6 2  
 41 9 3 5 5 5 4  
 41 6 2 5 7 5 4  
 41 8 3 3 7 6 5

Individual Scores on  
 Criteria 7-12  
 (Control Condition)

41 5 2 7 7 7 7  
 41 3 2 7 7 7 5  
 12 7 3 4 2 2 2  
 12 6 3 5 6 7 5  
 12 7 4 6 7 7 6  
 12 7 3 4 6 6 3  
 12 6 3 4 4 4 4  
 12 6 4 5 6 4 2  
 22 4 3 5 6 6 2  
 22 3 1 6 5 6 5  
 22 3 2 4 6 4 3  
 22 5 3 4 5 4 6  
 22 8 3 6 6 5 6  
 22 7 3 5 5 4 4  
 22 7 3 7 7 6 5  
 22 4 3 3 4 6 4  
 22 5 2 6 6 6 5  
 22 6 3 7 7 7 5  
 32 3 2 4 5 4 3  
 42 6 2 7 7 7 6  
 42 6 2 5 3 4 5  
 42 5 3 5 3 6 3  
 42 6 3 6 6 6 4

Individual Scores on  
 Criteria 7-12  
 (Experimental Condition)

11 7 7 4 7 4 9  
 11 4 4 4 4 4 4  
 11 4 3 4 3 3 1  
 11 5 5 5 5 4 1  
 11 5 5 5 4 3 5  
 21 6 6 6 6 5 0  
 21 6 6 2 6 4 6  
 21 7 7 6 5 5 0  
 21 5 5 6 6 4 4  
 21 6 6 5 4 4 1  
 31 6 4 5 5 4 4  
 31 5 6 6 5 4 5  
 31 6 5 5 4 4 5  
 31 4 6 2 4 3 5  
 31 5 6 6 6 4 1  
 31 6 5 6 6 4 3  
 41 6 5 5 6 4 1  
 41 6 4 5 7 4 3  
 41 5 4 6 5 3 0

Individual Scores on  
 Criteria 13-17  
 (Control Condition)

12 2 2 2 622  
 12 6 6 6 647  
 12 7 7 7 754  
 12 4 5 4 527  
 12 4 3 2 322  
 12 4 5 3 524  
 22 4 4 4 526  
 22 6 6 5 746  
 22 4 3 3 532  
 22 6 7 5 644  
 22 7 7 6 755  
 22 4 5 5 435  
 32 6 6 5 643  
 32 6 4 5 325  
 32 6 7 6 740  
 32 7 7 7 754  
 32 4 5 3 331

Individual Scores on  
 Criteria 13-17  
 (Experimental Condition)

42 7 7 7 755  
 42 4 2 5 432  
 42 5 6 5 437  
 42 5 7 7 546



