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A DESCRIPTIVE ANALYSIS OF FACTORS INFLUENCING PARTICIPANT USAGE OF POST-ASSESSMENT CENTER DEVELOPMENTAL RECOMMENDATIONS

By

David Richard MacDonald

A DISSERTATION

Submitted to
Michigan State University
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ABSTRACT

A DESCRIPTIVE ANALYSIS OF FACTORS INFLUENCING PARTICIPANT USAGE OF POST-ASSESSMENT CENTER DEVELOPMENTAL RECOMMENDATIONS

By

David Richard MacDonald

The purpose of the study was to assist organizations using the assessment center method to increase the number of individuals having high levels of requisite skills and qualities to fill supervisory and managerial positions by identifying factors which influenced assessees' extents of follow-up on post-assessment developmental recommendations.

Study participants were 299 individuals who had participated in a supervisory assessment center in a large manufacturing organization.

Data were gathered from participants through a questionnaire and through audits of existing assessment center files. The dependent variable, extent of follow-up on post-assessment center developmental recommendations, was measured by calculating the mean of individual ratings of three trained assessors using a 1 to 5 scale of participants' descriptions of post-assessment follow-up on developmental recommendations and then compared to each of 22 selected factors using a log-linear model and chi-square test statistic to measure the degree of association between each factor and the dependent variable. Nine of the selected factors were significant.

A positive relationship significant at the .05 level of confidence was identified between the dependent variable and each of the following factors:

1. Formal education level.
2. Desire to attend the assessment center.
3. Logicalness of recommendations.
4. Perceived support from the organization for developmental efforts.
5. Perceived support from the supervisor/manager for developmental efforts.
6. Perceived support from family members for developmental efforts.
7. Perceived likelihood of achieving the target job for which the assessment center was designed.
8. Post-assessment desire for the target job.

An inverse relationship significant at the .05 level of confidence was identified between the dependent variable and age at assessment.

Those factors which were discovered to be significantly related to the dependent variable were facilitating in nature, i.e., post-assessment follow-up on developmental recommendations did not appear to occur only as a result of the presence of a factor, but the absence of a factor was associated with little or no follow-up on developmental recommendations.

The conclusions of the research are:

1. Individuals with higher levels of formal education (two or more years of college) demonstrate greater extents of follow-up on post-assessment center developmental recommendations than those with lesser levels of education.
2. Individuals reporting a greater desire to attend an assessment center demonstrate greater extents of follow-up on post-assessment center developmental recommendations than those reporting a lesser desire to attend.
3. Individuals who demonstrate greater extents of follow-up on post-assessment center developmental recommendations are more frequently those who report seeing a fairly logical connection between the recommendations made and the skills and qualities needing development.
4. Support from the organization facilitates follow-up on post-assessment center developmental recommendations.
5. Support from the supervisor/manager facilitates follow-up on post-assessment center developmental recommendations.
6. Support from family members facilitates follow-up on post-assessment center developmental recommendations.

7. Individuals reporting perceptions of a higher likelihood to achieve the target job demonstrate greater extents of follow-up on post-assessment center developmental recommendations than those reporting perceptions of a lower likelihood to achieve the target job.
8. Post-assessment desire for the target job has a facilitating effect on follow-up on post-assessment center developmental recommendations.
9. Individuals over 40 years of age demonstrate lesser extents of follow-up on post-assessment center developmental recommendations than those in younger age groups.

Based on the findings of the research, it is recommended that organizations:

1. Encourage individuals to pursue more development than that suggested by post-assessment center developmental recommendations.
2. Describe the assessment center to employees and stress the personal benefits of attending.
3. Describe to assessees how developmental recommendations logically relate to measured skills and qualities.
4. Offer support through educational assistance programs and appropriate policies which encourage self-development.

5. Ensure that supervisory personnel provide on-the-job opportunities for self-development.
6. Recognize the role that family support plays in follow-up on post-assessment center developmental recommendations. Encourage assessees to seek developmental support through family members.
7. Conduct a discussion with each assessee to determine each individual's perception of likelihood of achieving the target job. Put the assessment center information in context with each individual's performance information and a forecast of the number of individuals needed to fill target job openings.
8. Recognize the role that post-assessment center desire for the target job plays in follow-up on developmental recommendations.
9. Recognize that individuals over 40 years of age will likely demonstrate lesser extents of follow-up on post-assessment center developmental recommendations than those in younger age groups.

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TABLE OF CONTENTS

Page

LIST OF TABLES ix

LIST OF FIGURES xii

Chapter

I. INTRODUCTION 1

The Problem 5
Purpose of the Study 7
Need for the Study 8
The Research Questions 11
Scope and Limitations 15
Assumptions 16
Definitions 17
Overview of the Study 18
Summary 20

II. REVIEW OF THE LITERATURE 21

The Costs of Managerial Non-performance 21
Methods of Managerial Selection and Development 24
    The Interview 26
    Tests 29
    Performance Appraisal 30
    Self-assessment 32
    Individual Assessment 33
    The Assessment Center Method 35
Historical Development of the Assessment Center 38
Utility of Assessment Centers for Selection . . 41
Utility of Assessment Centers for Development . 45
Assessment Center Impact on Participants . . . 49
Expected Impact of Each Selected Factor 62
    Age 62
    Seniority 63
    Desire for the Target Job 64
    Formal Education Level 64
    Organizational Level 65
    Sex 65
    Desire to Attend the Assessment Center . . 67
    Rating of Overall Potential to Succeed in the Target Job 67

Perceived Realism of Assessment Situations or Exercises 68
Acceptability of the Time Delay Between the Assessment and the Feedback 69
Sensitivity Displayed by the Individual Delivering the Feedback 69
Appropriateness of the Amount of Time Spent During the Oral Feedback 70
Credibility of the Individual Delivering the Feedback 71
Relevance of the Feedback in Comparison to the Critical Job Dimensions 72
Relevance of the Developmental Recommendations to the Developmental Needs Identified 73
Perceived Level of Support Provided by Each of Several Sources for Individual Development Efforts 73
Desire for the Target Job (Post-assessment) 74
Perceived Likelihood of Achieving the Target Job 74
Summary 75

III. DESIGN OF THE STUDY 76

Research Method 83
Participant Selection 84
Instrumentation 86
The Research Questions 95
General Question 96
Specific Questions 96
Treatment of Data 96
Summary 101

IV. ANALYSIS OF DATA 103

Pre-assessment Factors 111
Age at Assessment 112
Seniority at Assessment 115
Formal Educational Level 118
Organizational Level (Job Grade) at Assessment 121
Sex 125
Desire to Attend the Assessment Center . . 128
Desire for the Target Job 131

Chapter IV - Continued Page

During-assessment Factors 134
    Rating of Overall Potential to Succeed in the Target Job 134
    Perceived Realism of Assessment Situations 138
    Acceptability of Time Delay between Assessment and Feedback 141
    Sensitivity of the Individual Delivering the Feedback 144
    Appropriateness of the Length of Feedback Session 147
    Credibility of the Individual Delivering the Feedback 150
    Relevance of Feedback to Critical Job Dimensions 153
    Relevance of Recommendations to Developmental Needs 156
Post-assessment Factors 159
    Support from the Organization 160
    Support from the Supervisor/Manager . . . 163
    Support from Co-workers 166
    Support from Family 169
    Support from Friends 172
    Likelihood of Achieving the Target Job . . 175
    Post-assessment Desire for the Target Job 178
Summary 181

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . . 183

Summary of the Study 183
Conclusions and Recommendations for Each Question 185
    Research Question 1 185
        Age at Assessment 188
        Formal Education Level 189
        Desire to Attend the Assessment Center 190
    Research Question 2 191
        Relevance of the Developmental Recommendations to the Developmental Needs Identified . . 192
    Research Question 3 194
        Perceived Support from the Organization 195
        Perceived Support from the Supervisor/Manager 196
        Perceived Support from the Family . . 198

Chapter V - Continued Page

Post-assessment Desire for the Target Job 199
Likelihood of Achieving the Target Job 200
General Conclusions and Recommendations 202
Summary 205

APPENDICES 207

A. ASSESSMENT CENTER GUIDELINES 207

B. VARIABLES OF FIRST-LINE SUPERVISOR OF STEELCASE, INC. IDENTIFICATION DEVELOPMENT PROGRAM 214

C. POST-ASSESSMENT QUESTIONNAIRE 216

D. INITIAL LETTER TO PARTICIPANTS 220

E. FOLLOW-UP LETTER TO NON-RESPONDENTS 221

F. IDENTIFICATION DEVELOPMENT PROGRAM ASSESSMENT SITUATIONS/VARIABLES MATRIX 222

BIBLIOGRAPHY 223

LIST OF TABLES

Table Page

2.1 How Management Development Needs are Specified 25

2.2 Sources of Development Needs for Individuals . 49

2.3 Overall Reactions to Assessment Center 56

2.4 Factors Influencing Assessment Center Performance 57

2.5 Benefits and Disadvantages of Assessment Center Participation 58

4.1 Rating of Participants' Follow-up on IDP Recommendations for Their Improvement 105

4.2 IDP Scores of Respondents vs. Non-respondents to the Questionnaire 107

4.3 Original/Collapsed Ratings: Post-IDP Follow-up on Recommendations 110

4.4 Pre-assessment Factors and Probabilities of No Relationship to the Dependent Variable 112

4.5 Post-IDP Follow-up on Recommendations by Age at IDP 113

4.6 Post-IDP Follow-up on Recommendations by Seniority at IDP 116

4.7 Post-IDP Follow-up on Recommendations by Formal Education Level at IDP 119

4.8 Post-IDP Follow-up on Recommendations by Organizational Level (Job Grade) at Assessment 123

4.9 Post-IDP Follow-up on Recommendations by Sex . 126

4.10 Post-IDP Follow-up on Recommendations by Desire to Attend the Assessment Center . . . 129

Table Page

4.11 Post-IDP Follow-up on Recommendations by Desire for the Target Job 132

4.12 During-assessment Factors and Probabilities of No Relationship to the Dependent Variable 134

4.13 Post-IDP Follow-up on Recommendations by Rating of Overall Potential to Succeed in the Target Job 136

4.14 Post-IDP Follow-up on Recommendations by Perceived Realism of Assessment Situations . 139

4.15 Post-IDP Follow-up on Recommendations by Acceptability of Time Delay Between Assessment and Feedback 142

4.16 Post-IDP Follow-up on Recommendations by Sensitivity of Individual Delivering the Feedback 145

4.17 Post-IDP Follow-up on Recommendations by Appropriateness of Length of Feedback Session 148

4.18 Post-IDP Follow-up on Recommendations by Credibility of Individual Delivering the Feedback 151

4.19 Post-IDP Follow-up on Recommendations by Relevance of Feedback to Critical Job Dimensions 154

4.20 Post-IDP Follow-up on Recommendations by Relevance of Recommendations to Developmental Needs 157

4.21 Post-assessment Factors and Probabilities of No Relationship to the Dependent Variable . . 159

4.22 Post-IDP Follow-up on Recommendations by Support from the Organization 161

4.23 Post-IDP Follow-up on Recommendations by Support from the Supervisor/Manager 164

Table Page

4.24 Post-IDP Follow-up on Recommendations by Support from Co-workers 167

4.25 Post-IDP Follow-up on Recommendations by Support from Family 170

4.26 Post-IDP Follow-up on Recommendations by Support from Friends 173

4.27 Post-IDP Follow-up on Recommendations by Likelihood of Achieving the Target Job . . . 176

4.28 Post-IDP Follow-up on Recommendations by Post-assessment Desire for the Target Job . . 179

5.1 Summary of Factors and Probabilities of No Dependence Between Each and the Dependent Variable 187

LIST OF FIGURES

Figure Page

1. Assessing the Skills of a Pro Ball Player . . . 42

2. Assessing the Skills of a Manager 43

3. A Career Development System 46

4. Number of Individuals Assessed in the Steelcase Identification Development Program 1973-1985 79

5. Percentage by Which the Mean Salary Increase of IDP-Assessed Supervisors Exceeded the Mean Salary Increase of the Total Group of Salaried Supervisors 82

6. Rating Scale for Coding the Dependent Variable 97

7. Post-IDP Follow-up on Developmental Recommendations by Age at IDP 114

8. Post-IDP Follow-up on Developmental Recommendations by Seniority at Assessment at IDP 117

9. Post-IDP Follow-up on Developmental Recommendations by Formal Education Level at IDP 120

10. Post-IDP Follow-up on Developmental Recommendations by Organizational Level at Assessment 124

11. Post-IDP Follow-up on Developmental Recommendations by Sex 127

12. Post-IDP Follow-up on Developmental Recommendations by Desire to Attend the Assessment Center 130

13. Post-IDP Follow-up on Developmental Recommendations by Pre-assessment Desire for the Target Job 133

Figure Page

14. Post-IDP Follow-up on Developmental Recommendations by Rating of Overall Potential to Succeed in the Target Job . . . 137

15. Post-IDP Follow-up on Developmental Recommendations by Perceived Realism of IDP Exercises 140

16. Post-IDP Follow-up on Developmental Recommendations by Acceptability of Time Delay Between Assessment and Feedback . 143

17. Post-IDP Follow-up on Developmental Recommendations by Sensitivity of Individual Delivering the Feedback 146

18. Post-IDP Follow-up on Developmental Recommendations by Appropriateness of Length of Feedback Session 149

19. Post-IDP Follow-up on Developmental Recommendations by Credibility of Individual Delivering the Feedback 152

20. Post-IDP Follow-up on Developmental Recommendations by Relevance of Feedback to Critical Job Dimensions 155

21. Post-IDP Follow-up on Developmental Recommendations by Relevance of Recommendations to Developmental Needs . . . 158

22. Post-IDP Follow-up on Developmental Recommendations by Support from the Organization 162

23. Post-IDP Follow-up on Developmental Recommendations by Support from the Supervisor/Manager 165

24. Post-IDP Follow-up on Developmental Recommendations by Support from Co-workers . 168

25. Post-IDP Follow-up on Developmental Recommendations by Support from Family . . . 171

Figure Page

26. Post-IDP Follow-up on Developmental Recommendations by Support from Friends . . . 174

27. Post-IDP Follow-up on Developmental Recommendations by Likelihood of Achieving the Target Job 177

28. Post-IDP Follow-up on Developmental Recommendations by Post-assessment Desire for the Target Job 180

CHAPTER I

INTRODUCTION

When reduced to its essence, selection and development of skilled workers is, for nearly all organizations, a clear matter of economics. As labor costs spiral upward, companies are intensifying the search for methods of selecting and developing employees who have the highest probability of performing their jobs effectively.

Individuals in supervisory and management positions exert influence over the achievement of their organizations' goals; the effects of their successes and failures are made more significant through the corresponding multiplying effect their actions have on their subordinates and other individuals with whom they interact, both internally and externally. Because of the nature of managerial positions it is particularly important for organizations to select and develop individuals to fill these positions who will be most likely to perform to expected standards in leading their respective work groups to accomplish goals and fulfill the missions of their respective organizations.

In addition to the financial costs, there are also the very real human costs of non-performance. Expectancy theory

(Campbell and Pritchard, 1976) suggests that individuals who fail to perform to expectations are likely to experience feelings of frustration, anxiety, and inadequacy, particularly if they have put forth their best efforts to perform effectively. Some managers who are failing to perform effectively will be involuntarily terminated from their positions. Of these, some will be reassigned to other positions within the organization while others will not. Other poorly-performing managers, sensing the inevitable, will terminate voluntarily. In any case, a vacancy will remain which is likely to be costly and time-consuming to fill.

A new manager selected to fill a vacancy will nearly always require some minimal orientation time to become accustomed to those variables in the position with which he/she is unfamiliar. In addition, the newly-selected manager may still require training and development to maximize job performance. An approach to organizational staffing is needed which places special emphasis on managerial selection and development. For some organizations, one component of this approach is the assessment center.

Since its development some four decades ago, the assessment center method has become a well-established process by which critical skills and abilities of candidates for target jobs can be measured. As such, it is used in the making of selection decisions, as well as in the identification of relevant strengths and areas for development for job candidates. Because assessment centers are expensive to develop and operate, an understanding of the manner in which assessees use their feedback, and why, becomes an important issue.

According to Finkle (1976) and S. L. Cohen (1980 c) over 1,000 organizations were using the assessment center process at the time of their writings. As a general indicator of overall interest in assessment centers, Finkle also said (1976):

> Several consulting firms, such as Personnel Decisions, Inc. of Minneapolis, Minnesota, were known to offer assessment center services with others prepared to advise and assist companies in setting up centers. At least one organization specialized in offering psychological assessment center materials, and workshops on how to conduct assessment centers were being offered by several groups including the American Management Association.

Perhaps because of its success, the assessment center method has been dissected for analysis by a great many researchers representing several major fields of study. According to George C. Thornton III and William C. Byham (1982).

> There is...a lesson to be learned from the high professional standards evidenced by assessment center proponents. _The assessment center method has been subjected to more research and professional scrutiny than any other personnel practice_. Because of high quality research and generally positive results, the development of standards for assessment center operations, and widespread self-monitoring to ensure compliance with proven practices, there are good prospects for continued validity of the method. (p. 391 - emphasis added)

Though not all research on the assessment center process has been completely favorable, e.g., Sackett and Dreher (August, 1982), Clement and Rawlins (1982) and Ross (1979), the greater proportion of the research is very supportive, e.g., Stephen L. Cohen (1980 b,c), Byham (1979, 1980), Jaffee, Frank, et. al. (1976), Quick, Fisher, Schkade, and Ayers (1980), and Olivas (1980) to name just a few.

The assessment center is simply one method by which human performance can be measured. Osborne and Norton (1983) indicated that five popular techniques are used to evaluate managerial performance: (1) assessment centers, (2) psychological assessment, (3) rating forms, (4) performance standards, and (5) joint goal setting. They concluded that when applying these techniques to evaluate performance in five personnel management areas: (1) assessment centers are best for evaluating career development, (2) rating forms have the best foundation for coaching, (3) joint goal setting and performance standards are useful for assessing planning abilities, (4) performance standards are effective for negotiating salaries and benefits, and (5) assessment centers are valid predictors of managerial success. As already mentioned, assessment centers are also used to gather performance information which can be useful in making selection decisions. Douglas W. Bray (1977) identifies alternate uses for the assessment center method and provides strong support for it:

> As one looks back over the 35 or so years since the assessment center method first came to the attention of psychologists generally, the method has come a long way. It has moved from the status of a special technique applied to special problems to the status of a general methodology--a method ideally suited to a wide variety of selection, placement, development, and self-evaluation applications. The time has passed when we can be content with attempting to predict complex future behavior only from responses to paper-and-pencil test items or verbalizations during an interview. Although such methods may be part of a complete appraisal of the individual, they are no longer enough. Credentials, too, have become an insufficient standard. When we need to know whether people can and will perform effectively, what could be a more obvious solution than observing whether they can and do perform? (p. 302)

The Problem

Management selection and development is crucial to most organizations. Managerial and supervisory talent of an appropriate quality is generally unavailable to the same extent as the talent required to perform routine production jobs. A good deal of time and money, therefore, is spent to locate and develop capable supervisors and managers. According to C. Edward Kur and Mike Pedler (1982),

> Management development has been the focus of intense interest and activity during the last decade. Rapid changes in technology, such as the use of computers and teleconferencing, as well as changes in organization styles brought on by the Quality of Work Life movement and matrix techniques, have resulted in an enormous shortage of qualified managers. This shortage is evidenced by the difficulty organizations have in filling openings,

> by the high starting salaries for new MBAs and by the number of "help wanted" advertisements in management-oriented periodicals. (p. 88)

Peter Drucker (1974) in his text _Management: Tasks, Responsibilities, Practices_ also spoke on this issue:

> Basic business decisions require an increasingly long time span for their fruition. Since no one can foresee the future, management cannot make rational and responsible decisions unless it selects, develops, and tests the men [sic] who will have to follow them through and bail them out--the managers of tomorrow. (p. 420)
>
> The numerical demand for executives is steadily growing. A developed society increasingly replaces manual skill with theoretical knowledge and the ability to organize and lead--in short with managerial ability. (p. 420)
>
> And if we know one thing today, it is that managers are made and not born. There has to be systematic work on the supply, the development, and the skills of tomorrow's management. It cannot be left to luck or chance. (p. 421)

The literature is replete with studies relating to supervisory and management development, selection, succession planning, and related topics. Such publications as _Training and Development Journal_, _Personnel Journal_, _Academy of Management Review_, and _Personnel Administrator_ are common sources of articles on the relative shortage of competent management personnel, e.g., Oppenheimer, 1982; Scholl, 1981; Langdon, 1982 to name only a few.

The problem, simply put, is that a shortage of high-quality supervisory and managerial talent exists when compared to organizations' needs for this type of talent. The assessment center method is one method by which organizations locate and develop employees to fill supervisory and managerial positions. This study is aimed at contributing to a partial solution to this problem by analyzing the impact of various factors on assessment center participants' follow-up on post-assessment developmental recommendations.

Purpose of the Study

Thornton and Byham (1982) and Moses and Byham (1977) agree that, to date, no steps have been taken to measure the extent to which assessees follow up on their feedback and developmental recommendations. This type of information would be useful to those individuals designing, administering, and participating in assessment centers; furthermore, this information is apparently unavailable as evidenced by: (1) searches through relevant literature, (2) searches through INFORM, NERAC, ERIC, MANAGEMENT CONTENTS, AND DATRIX databases, and (3) conversations with assessment center experts. Providing information on how individuals follow up on post-assessment center developmental recommendations was the researcher's intent.

In summary: The purpose of this research is a determination of the impact of selected factors on whether or not assessment center participants use post-assessment developmental recommendations.

Need for the Study

Thornton and Byham (1982) identify numerous topical areas in which assessment center research has been conducted. In their text Applying the Assessment Center Method (1977), Joseph L. Moses and William C. Byham publish a chapter ("Current Trends and Future Possibilities") by Douglas W. Bray. Bray says:

> Although the predictive power of the assessment center method has been well researched, there are other areas in which considerable work remains to be done. These include the nature of and definition of the dimensions to be rated, the assessment techniques themselves, methods of observation used by the assessors, the characteristics and training of the assessors, methods of combining judgments from the multiple techniques, and methods and effects of feedback of assessment center findings. (p. 301 - emphasis added)

In addition to citing topical areas of completed research, Thornton and Byham (1982) and Moses and Byham (1977) cite literally dozens of areas in which questions about the assessment center method are still begging for answers. One general grouping of questions relates to the effects of assessment centers; within this grouping are questions which probe the issue of feedback and its effects upon assessees and other interested organizational members. Of the several questions Bray (1977) suggested could be the topics of needed research was, "What are the effects of the feedback of assessment center results to the assessee on job motivation, self-esteem, and self-development efforts?" (p. 301)

To explain the importance of the proposed study to educational technology, it will be useful to examine briefly how assessment centers are designed and administered.

Assessment centers are created with specific (target) jobs in mind. A job analysis is conducted by interviewing supervisory personnel one and two levels above the target job, by examining job outputs, and by interviewing and observing a wide range of incumbents. The job analysis will produce a determination of those skills and personal qualities known as "dimensions" or "variables" which are most critical to success in the target job. A detailed listing and description of the dimensions of one specific job are presented subsequently.

Next, simulation exercises are designed--exercises which will elicit behavior relevant to the job's critical dimensions. As candidates participate in the exercises, their behaviors are thoroughly observed and recorded by a staff of trained assessors. Based upon their observations, assessors rate each candidate on each dimension according to the amount of behavior exhibited. Often, the separate ratings for an individual candidate are integrated in order to provide an overall measure of the assessee's preparedness to enter the target job. In some organizations, the assessors' observations, analyses, and conclusions for a candidate are summarized and presented orally and/or in writing to that candidate, in some cases, with specific developmental recommendations.

The evaluative information available at the end of a candidate's participation can be used not only for the individual's personal and career development, but also can be considered with other information in making a selection decision when a target job opening occurs. To this end, what an assessee does based upon the feedback received become significant. Some assessees demonstrate a good level of the critical dimensions of the target job, are promoted, and generally perform well in the job. Other candidates display less competence in various critical job dimensions. For these candidates, further development would be indicated before their promotion to fill a target job opening.

Of those individuals requiring development, some will take active efforts to improve their skills, while others will not. As mentioned earlier, because assessment centers are quite costly to an organization, an understanding of the manner in which assessees use assessment center feedback, and why becomes quite important as it could be used to assist each candidate needing some development in progressing toward the target job. It is in this way that the results of this study would be beneficial when generalized. The results of this study will be generalized to those assessment centers which measure skills and/or qualities required for success in a specific target job.

Dugan Laird (1983) emphasized the need for organizations to follow up on any analysis of the developmental needs of its members:

> These are the days of assessment centers and career planning and appraisal programs. Such systems are meaningless unless accompanied by proper individual training and development plans. The T & D (training and development) officer wants to be a major factor in the design of those individual programs...and above all, a major factor in the follow-up which gives such programs their real impact. That follow-up is the education, training, or development which individual humans achieve as a result of the assessment, the career plan, or the appraisal. (p. 78)

Because an assessment center represents an analysis of individuals' needs to develop critical skills and qualities for target jobs, it is in this sense that this research is integrated into the broader field of educational systems development.

The Research Questions

This research should provide data which will assist the researcher in answering the following broad question:

> Q. What factors influence the extent to which an individual follows up on developmental recommendations made following his/her participation in an assessment center?

Part of this general question is rooted in the work of Thornton and Byham (1982). The authors have indicated that there are questions in this general area to be answered. Speaking of assessment centers, they ask:

> Does it help to enhance an individual's self-awareness of developmental needs? Attitude surveys (Dodd, 1977) confirm that a majority of participants believe the assessment center provides valuable

> *information, but whether these new insights lead to development is as yet unconfirmed*. As we have discussed, managerial development is hard to accomplish. Self-awareness does not necessarily lead to development for most areas, especially for cognitive skills such as problem analysis, judgment, or planning and organizing. Personal awareness may be enough to lead to improvement in some intrapersonal characteristics such as the willingness (not skill) to delegate, amount of participation in group meetings, risk taking, or initiative. (p. 340 - emphasis added)

Based upon this and the opinions of other authors, it is logical to conclude that an organization applying the assessment center method would be vitally interested in measuring the extent to which those assessed respond to the feedback they received, i.e., their performance evaluation and personalized developmental recommendations, if any, following their participation in an assessment center. An answer to this open question would help human resource personnel become more effective in their employee development and organization development efforts through the more effective training and placement of assessed employees.

At this point, it seems appropriate to define the concept of "feedback" as it is used in this research.

A particularly suitable definition of "feedback" is supplied by Edward E. Lawler III (1976):

> Feedback or knowledge of results seems to be crucial...because it performs two important functions. First, it gives the individual the information that is needed in order to correct his or her behavior when it deviates from the standard or desired behavior. Second, feedback provides the intrinsic motivation that will

> lead the person to perform at the standard or in an effective way. (p. 1279)

Lawler continues to expand his definition of feedback as he identifies two specific types of information feedback provides:

> Vroom (1964) refers to two kinds of information that people get from feedback. The first is information about how they are performing. He refers to this as the cue function of feedback and says it can contribute to good performance even on tasks that have been performed many times...
>
> The second kind of information which people get from feedback is information about performance success that comes after the task has been performed. A number of early psychological learning studies have shown that this kind of feedback is necessary if task performance is to improve. (p. 1279)

Vroom is referring to formative and summative evaluation, respectively.

Because an assessment center is used primarily to evaluate a person's current levels of skills and qualities in relationship to levels required for effective performance in a specific job, it is the summative type of evaluation data which is supplied by assessment center feedback.

The specific research questions to be answered by this study are as follows:

> Q1. To what degree are pre-assessment factors related to the extent to which an individual follows up on post-assessment center developmental recommendations?

The pre-assessment factors to be examined in this research include:

a. Age at assessment.

b. Company seniority at assessment.

c. Formal educational level.

d. Organizational level (job grade) at assessment.

e. Sex.

f. Desire to attend the assessment center.

g. Desire for the target job.

> Q2. To what degree are factors associated with the assessment center and feedback process related to the extent to which an individual follows up on post-assessment center developmental recommendations?

A second grouping of factors to be examined in this research are those factors associated with the assessment center itself and the feedback process.

a. Rating of overall potential to succeed in the target job.

b. Perceived realism of assessment situations or exercises.

c. Perception of the utility of the feedback process itself, including:

    i. Acceptability of the time delay between the assessment and the feedback.

    ii. Sensitivity displayed by the individual delivering the feedback.

    iii. Appropriateness of the amount of time spent during the oral feedback session.

    iv. Credibility of the individual delivering the feedback.

v. Relevance of the feedback in comparison to the critical job dimensions.

vi. Relevance of the developmental recommendations to the developmental needs identified.

Q3. To what degree are post-assessment factors related to the extent to which an individual follows up on developmental recommendations made during the post-assessment feedback process?

Post-feedback factors to be examined during this research include:

a. Perceived level of support provided by each of the following for individual development efforts:
    i. Organization.
    ii. Immediate supervisor/manager.
    iii. Co-workers.
    iv. Family members.
    v. Friends.

b. Desire for the target job.

c. Perceived likelihood of achieving the target job.

The intuitive basis for selecting the factors of the research was the expectation that each would contribute to an answer for its respective research question.

Scope and Limitations

The following research is limited to factors influencing individual usage of developmental recommendations made following managerial assessment center participation. It does not extend to a measurement of the factors influencing the other sources of performance feedback and developmental recommendations, e.g., training program evaluations, informal progress discussions, and periodic performance appraisals, although a cursory discussion of these is included as a means of more clearly identifying the position of an assessment center within a corporate human resources management system.

The research is limited to data collected from one private sector assessment center. The center serving as the data source is one which measure those skills and qualities required for a specific supervisory job and which has two organizational purposes: (1) identification of candidates to fill current and short-range supervisory vacancies (selection), and (2) development of those individuals assessed as not yet prepared to fill those vacancies (diagnosis).

The type of data dealt with in the research are primarily perceptual, although some hard data are also included, such as age, seniority, and organizational level.

Assumptions

In dealing with the problem and attempting to answer the research questions, this research is predicated on the following assumptions:

1. A group of individuals exists whose perceptions regarding assessment center feedback and corresponding developmental recommendations are likely to be quite reliable.

2. Through the application of appropriate techniques, the perceptions of the above group of individuals can be collected.
3. Through the application of appropriate techniques, the perceptions of the above group can be analyzed to provide significant data from which conclusions can be drawn regarding the basic problem of the study.
4. Knowledge of factors relating to assessment center participants' usage of post-assessment developmental recommendations would be helpful to human resource personnel and, in particular, to developers of educational systems.

Definitions

Terms used in the study are based on definitions found in Webster's New World Dictionary of the American Language. Exceptions are as follows:

Assessee - an individual whose skills and qualities are measured by an assessment center.

Assessment Center - a process using multiple assessment techniques and multiple assessors which yields judgments regarding the extent to which a participant displays selected skills and qualities. Unless otherwise noted, this term will be used to refer specifically to the process as applied to measure those skills and qualities judged to be critical to the performance of a particular target job.

Assessor - an individual trained to observe, record, classify, and make reliable judgments about the behaviors of assessees.

Developmental Recommendations - suggestions given to an individual regarding actions which could be taken in an attempt to improve skills and qualities judged as needing improvement for successful performance.

Dimensions - also called "Variables." Those skills and qualities, i.e., behaviors judged to be critical to success in a particular job.

Feedback - information about performance success which comes after a task has been performed. (Vroom, 1964)

Job Analysis - in this study refers to a combination of techniques (interviews with, and observations of, incumbents in a given job; job check lists, training material analysis, diaries, etc.) used to determine which dimensions comprise a target job.

Target Job - the job for which an assessment center is created.

Variables - used interchangably with the previously defined term "Dimensions."

Overview of the Study

The background for the study was developed in Chapter I. The background included the purpose of the study, the need for the study, the broad and specific research questions to be answered by the study, definitions of special terms used, and an overview of the research.

A review of relevant literature is presented in Chapter II. This review includes a discussion of performance measurement methods and, in particular, the assessment center method, including historical development and some specific applications.

A description of the design of the research is presented in Chapter III. The information presented in Chapter III includes the research method, a description of the assessment center serving as the source of data for the research, the procedures used in the study, a statement of the broad and specific research questions, a description of how the collected data are treated, and a summary of the chapter.

Chapter IV contains the analyses of data. A determination of the factors influencing participant usage of post-assessment center developmental recommendations is presented which is followed by a summary of the methods used in arriving at these conclusions.

In Chapter V the summary, conclusions, and recommendations are presented. This chapter includes suggestions for future research.

Following Chapter V are the Appendices and the Bibliography.

Summary

A shortage of supervisory and managerial talent exists. Because of this, most organizations spend significant amounts of money to locate and develop individuals for managerial positions. The assessment center method is one process which many organizations have used to select individuals for managerial and supervisory jobs from among their personnel and to make developmental recommendations to those who do not perform to expectations in an assessment center. Research does exist which outlines a number of the ways in which assessment center participation impacts assessees. It is currently unknown, however, what factors influence an assessee's follow-up on developmental recommendations made following feedback on assessment center performance. The purpose of this study is to identify the factors which appear to facilitiate/hinder an assessment center participant's follow-up on post-assessment developmental recommendations.

CHAPTER II

REVIEW OF THE LITERATURE

To contribute to that which has been done, it is necessary to know what has been done. This chapter reviews existing literature in a number of specific topical areas relating to assessment center technology, adult development, motivation, and feedback. Examination of these areas of the literature, and others, was carried out as a means of developing a foundation for the design of the study and the conclusions and recommendations to follow.

In this chapter of the study, the origins and historical development of the assessment center method are presented. Also included is a description of precisely what an assessment center is and is not, along with a description of the general process which must be followed to develop a useful assessment center.

The Costs of Managerial Non-performance

As mentioned in Chapter I, it is vital to an organization as a whole and to each of its members individually that every employee perform at or above expected standards. It was also mentioned in Chapter I that the failure of a manager or supervisor has even more significant negative consequences for the organization than the failure of a member of the general work force.

Some studies have been conducted in an attempt to determine the costs of managerial failure. S. L. Cohen (1980 b), for example, has listed some of the costs likely to be incurred in any organization when one of its managers or supervisors fails to perform to expectations:

1. Lost revenues from the incumbent doing a poor job.
2. Lost revenues from the right incumbent not being on the job.
3. Training for an individual who fails.
4. Training for a new incumbent.
5. Downtime between incumbent changeover. [sic]
6. Start-up or orientation time for a new incumbent.
7. Relocation expense.
8. Psychological costs: individual and organizational.
9. Legal implications of justifying removal decisions.

Miller, in S. L. Cohen (1980 b), also cites some specific dollar amounts which are significant:

> A few attempts have already been made to calculate failure costs. One estimate, based on similar factors to those noted above, was $50,000 for a first-line supervisor's position; another was over $250,000 for the cumulative impact of a managerial failure at the upper middle management level. While these figures are at best isolated cases and can't necessarily be generalized to other organizations, it is reasonably safe to assume that the costs associated with a

> single ineffective managerial performance for most organizations probably lies somewhere between these two values. (p. 51)

As mentioned earlier, there is also the issue of the human cost of non-performance. Psychologists have studied the concept of self-esteem and the way in which individuals react to events which influence their self-esteem.

According to Abraham H. Maslow (1970, p. 45) all individuals in our society who are psychologically healthy have "...a need or desire for a stable, firmly based, usually high evaluation of themselves, for self-respect, or self-esteem, and for the esteem of others." He categorized the concept of self-esteem into two subsets: (1) the need to exert power, display competence, to achieve, be independent, and to feel confident, and (2) the need to be respected by others through praise, recognition, attention, and status. It seems quite clear that these two subsets of self-esteem are interrelated.

It seems natural, then, that a manager's failure will result in a decreased level of self-esteem due to a reduction in self-esteem from both of the aforementioned subsets; the poorly-performing manager will not be able to achieve, display competence, or feel confident. Additionally, poor performance is less likely to result in praise and positive recognition from others. Particularly unfortunate is the prognosis for the individual who failed in a managerial position. Research conducted by A. K. Korman (1966) has concluded that individuals who perceive themselves as successful behave in a manner which increases the likelihood of further success. Those individuals who have a strong negative self-perception tend to behave in ways which increase the likelihood of failure. As a result, the financial costs of a managerial failure in which the ex-manager is kept in the employment of the organization may be prolonged in the new job role. Assuming one's level of self-esteem is much reduced due to a managerial failure, the probability of performing successfully in a different position may be correspondingly reduced. Avoiding managerial failure, therefore, seems very worthwhile when all of the implications are considered.

Methods of Managerial Selection and Development

It is the task of most human resources personnel to provide support to their organizations in recruiting, selecting, orienting, training, developing, and maintaining employees (Szilagyi, 1984). Toward this end, a number of differing techniques have been developed to identify/select and develop employees. Within the context of this research, supervisors and managers are simply one definable group of employees and, as a result, many of the selection and development techniques to be briefly examined can be, and often are, used with other employee groups as well.

Digman (1980) conducted research to more fully understand how major corporations project development needs of the organization, identify individual development needs, and how the corporations' actual methods of needs identification compare to methods they would ideally employ. Digman (1980) sent questionnaires to 289 U.S. companies considered to be among the top 500 in terms of assets, sales, market values, and net profits and received 47 usable responses. His research resulted, in part, in the list in Table 2.1. The list is useful in defining the multiplicity of ways in which management development needs are identified and their relative frequencies of use.

TABLE 2.1--HOW MANAGEMENT DEVELOPMENT NEEDS ARE SPECIFIED

	Percent Using By Level of Management		
Method	Executive	Middle	Supervisory
Performance Appraisal	69%	89%	89%
Judgment of Superiors	78%	87%	87%
Analysis of Future Position	56%	69%	53%
Self-assessment by Individual	58%	64%	58%
Individual Development/Training Plan	44%	56%	62%
Analysis of Current Position	51%	60%	60%
Geared to Typical Needs	38%	44%	51%
Formal Assessment Center	2%	11%	20%
Input from Subordinates	7%	18%	18%
Objective Testing	4%	4%	11%
Other	4%	4%	2%

Following are descriptions of a few of the commonly used methods of managerial and supervisory selection and development which should help place the assessment center method into an appropriate perspective.

The Interview

Single and multiple interviews have long been used as a means of collecting information which can be used to evaluate an individual's readiness and suitability for a particular job. According to Porter, Lawler, and Hackman (1975):

> The interview is the most widely used selection device, and there is clear evidence that job applicants can influence their attractiveness by how they manage the interview. It has been demonstrated that the more interviewers talk, the more favorably they are inclined toward the job applicant (Mayfield, 1964). There are also data that show that interviewers are much more influenced by unfavorable information than by favorable information (Webster, 1964). Additionally, of course, such factors as dress and appearance can influence the favorableness of the interviewer's judgments. What all this suggests is that the thoughtful job applicant can often significantly influence his attractiveness to an organization by behaving in certain specific ways. (p. 137)

The authors also probe the extent to which the interview outcome can be skewed by particular behaviors of the applicants being interviewed:

> Experienced interviewers are, of course, very much aware of the motivation and opportunity for interviewees to present a misleading image of themselves in the hope of appearing more acceptable... Many interviewers, furthermore, claim they can tell when an interviewee is in

> fact trying to do this. However, the evidence on the validity of interview judgments (Mayfield, 1964) would suggest that perhaps they are not as good at this as they believe themselves to be. (1975, p. 138)

Development Dimensions International, headquartered in Pittsburgh, Pennsylvania, is devoted to supplying programs and consulting assistance to organizations, particularly in human resource areas. DDI was founded, and is currently headed, by Dr. William C. Byham, a well-known author in the field of managerial assessment.

According to DDI through their training program Targeted Selection (1980), recent past behavior can be used to make judgments about applicants which have good predictive validity. According to Targeted Selection, to make reasonably accurate predictions about future behavior, interviewers must start asking questions only when an extensive job analysis has been performed to identify and describe those behaviors which are considered important to success in the job. Once this has been accomplished, the next step is to design interview questions which are job-relevant, non-leading, and non-hypothetical, i.e., questions which focus on events of the recent past rather than upon the interviewee's description of a proposed reaction to a given situation in the future.

Interviews are used to select external applicants for positions, as well as to select current employees for other positions within an organization. The interview is rarely used as a developmental tool as well. Development can occur provided feedback is supplied to job applicants which identifies areas in which the candidate is seen as needing improvement.

It must be mentioned, however, that the evidence is currently not in favor of the interview. According to Reilley and Chao (1984), "The interview is recognized as the most widely used method in personnel selection...and encompasses a wide variety of techniques which can range from an unstructured, non-directive approach to a defined set of questions in an oral exam." (p. 266) In reviewing research pertaining to interview validities, they concluded the average estimated validity coefficient (based on 12 studies, roughly half of which were predictive, the others concurrent) to be nineteen one-hundredths. In sum, Reilley and Chao (1984) indicate:

> The evidence does not support the validity of interviews as alternatives substantially equal with tests, nor is there any evidence that interviews will have less adverse impact than tests (though few studies are available). Based on this evidence the interview cannot be recommended as a promising alternative. (p. 271)

It seems evident that the interview used as a developmental tool would not be sufficiently accurate in pinpointing managerial developmental needs. While job applicants may be given feedback regarding those areas in which they were deemed by interviewers to be less than satisfactory, the research to date would suggest the applicants should question the validity of those recommendations.

Tests

Prior to the implementation of Title VII of the Civil Rights Act of 1964 as subsequently amended by Executive Orders 11236 and 11375, tests of various sorts were commonly used to select and place individuals in organizational positions. With the new legislation covering requirements for tests--requirements to be enforced by the Equal Employment Opportunity Commission (EEOC)--employers began to abandon objective tests formerly thought to identify strengths and weakness of job candidates. For most employers, the effort, expense, and potential liability incurred in developing and/or using a test does not justify its contribution to a selection or placement decision.

Tests are often classified as "aptitude" or "achievement" and measure potential in a given area or a current level of skill, respectively. Although test validities vary greatly, Blum and Naylor (1968) have concluded:

> Since the same test can often be considered both an achievement test and an aptitude test depending upon use, this classification system is often a fuzzy one. Thus, with many tests one can (1) measure the amount of present skill, and (2) use the present score to predict future performance. (p. 90)

This information suggests that achievement tests may be of some assistance in identifying the extent to which an individual displays the skills needed to perform effectively and may be of some use in identifying developmental needs.

Performance Appraisal

According to Szilagyi (1984, p. 540) employee performance appraisal is "...the process of identifying, measuring, and developing human performance in organizations." Porter, Lawler, and Hackman (1975) acknowledge the informal component of evaluating work effectiveness:

> Much of the evaluation that takes place in organizations is informal, but some of it becomes part of the formal performance evaluation systems that are present in many organizations. Ideally, formal evaluation systems utilize valid data in order to determine how well an individual is performing his job. Information of this type then forms an important input to organizational reward...and planning systems. (pp. 315-316)

Szilagyi (1984) highlights three functions of performance appraisal: (1) observation and identification--observing selected job behaviors and/or outputs and deciding how frequently sample observations will be conducted, (2) measurement--comparing the actual behaviors and/or outputs to the levels expected to determine the acceptability of performance, and (3) development--improving performance over time. Szilagyi (1984, p. 540) emphasized:

> A performance evaluation system must be able to point out deficiencies and strengths in people's behavior so they can be motivated to improve future performance.
>
> These broad-based functions of a performance evaluation system can be translated into specific purposes. The most important are:

> > Feedback for employees about how the manager and organization view their overall performance.
> >
> > Promotion, separation, and transfer decisions.
> >
> > Criteria for allocating organizational rewards.
> >
> > Criteria for evaluating the effectiveness of selection and placement decisions.
> >
> > Ascertaining training and development needs, along with criteria for evaluating the success of training and development decisions.
>
> Managers need to keep in mind that the performance evaluation process is at the focal point of the entire behavioral control system. That is, it not only evaluates the employee's behavior, but also initiates and corrects action.

It is the last specific purpose listed by Szilagyi, that of ascertaining training and development needs, which is of the greatest interest to the researcher. No research, however, could be located to identify why assessees follow up in varying extents to developmental recommendations discussed in a performance appraisal interview.

It should also be mentioned that performance appraisal systems are used as a tool for an individual's development in the present job by comparing present skills and behaviors to the demands of the job currently held as well as for a more advanced position by comparing the present skills and behaviors to the demands of the advanced position.

Kirkpatrick (1978) has indicated that while analysis of performance appraisal forms in "...one of the best sources of supervisory training needs...this approach is rarely used." (p. 17) This was not entirely in congruence with the research conducted by Digman (1980) who agreed that performance appraisal systems yield information which can be used in determining management development needs, but who discovered that, in the 47 major corporations surveyed, a performance appraisal system was the most frequently cited source of management development needs information for middle-management and supervisory positions. Performance appraisal is used for this purpose by 89 percent of the responding organizations. When executive development needs were identified, incidentally, judgment of superior(s) was the most frequently cited technique (78 percent) while performance appraisal systems held second position (out of a possible 11 sources of information), cited by 69 percent of the responding organizations.

Self-assessment

As the name implies, self-assessment is the process by which an individual examines his/her own strengths and areas for development with respect to one or more skills or traits.

Self-assessment is uncommon in employment settings (Reilley and Chao, 1984), primarily because the technique is based upon the apparently faulty assumption that individuals can make valid judgments about their own skills and abilities. In their review of self-assessment validation studies, Reilley and Chao (1984) discovered that:

> Although several studies reported positive results, only three studies included validity coefficients with overall criteria. Based on these limited data (three independent coefficients, total N=545) an average weighted validity of .15 was calculated. (p. 282)

Although Reilley and Chao did find self-assessment to have widespread use in psychological research, they concluded:

> Based on the research available, self-assessments cannot be recommended as a promising alternative. However, since self-assessments can be obtained quickly and inexpensively from applicants, researchers might consider including self-assessment variables based on job analysis information in a validation study. Results of such studies, if conducted in a realistic employment setting, could help determine whether self-assessments can be a useful source of... information. (1984, p. 283)

Individual Assessment

Though individual assessment may include a number of techniques like the interview and various tests, e.g., self-report inventories, and projective tests, it is a process in which a psychologist gathers information about an individual and compares it to job requirements to make a recommendation regarding the individual's suitability for the target job.

Of the methods of managerial selection and development, individual assessment has the greatest similarity to the assessment center method. Many of the assessment center exercises may be found in individual assessment, e.g., an in-basket exercise, an interview, and a scheduling exercise, but a key difference is that individual assessment employs a single assessor whereas the assessment center method employs multiple assessors who reach consensus judgments.

Individual assessment requires a thorough job analysis to provide the psychologist/assessor with a clear description of the skills and qualities required in the target job against which actual data collected can be compared. There is also an ethical responsibility of the psychologist to provide feedback to each individual assessed, whether placed in the target job or not. According to Lowman (1985),

> Psychologists should inform client companies that, if they are hired to perform individual assessments, they are bound by the ethics of their profession to provide feedback to the assessees unless an exception to this is agreed on in advance, and to explain to the candidates the bases of their findings in terms they can understand.
>
> Generally psychologists should not examine candidates or make "suitability" recommendations if the job in question has not been sufficiently analyzed to establish qualification requirements and personal characteristics necessary for successful job performance. All practicing psychologists should be aware of the legal, social, and personal consequences of making decisions on the basis of assessment techniques that do not comply with professional validation standards. (pp. 13-14)

The feedback supplied to each assessed individual can be used as a basis for formulating developmental recommendations to assist a rejected applicant or non-promoted employee in improving skills and abilities to have a greater chance to achieve the target job should there be a future opening.

The Assessment Center Method

As described in Chapter I, the assessment center method is a process by which individuals' levels of skills, abilities, and qualities are measured and compared to the levels required in a selected job. Because the assessment center method is at the core of the present study, it will be examined in much greater detail than any of the other techniques used for managerial selection and development.

In May, 1975, the Third International Congress on the Assessment Center Method met in Quebec, Canada to approve a set of guidelines for the assessment center method. These guidelines appear in Appendix A.

One of the main features of assessment centers is their reliance on multiple sources of data. A number of errors of measurement can be eliminated by observing an individual in several different assessment exercises designed to measure the same skills, abilities, or qualities. Random errors leading to unreliability can be minimized with multiple observations of the same general type of assessment exercise.

Assessment centers, according to Jaffee and Sefcik (1980), always employ multiple-trained assessors to process behavioral information in a fair and impartial manner. The multiplicity of information sources and multiplicity of raters reaching consensus is at the root of the predictive and concurrent validities of the assessment process (Moses and Byham, 1977).

A special type of assessment center method is one which is designed for early identification of managerial or supervisory potential. Thornton and Byham (1982) state,

> Early identification of supervisory or management potential provides an organization with a much greater period of time for development prior to putting a person in a position--as much as 6 to 8 years. The best trainer in the world can do little if information on the individuals to be trained is received just before they are to be promoted. If information is received well in advance, an organized and, it is hoped, effective training and development effort can be initiated. (p. 323)

Thornton and Byham later continue to discuss similarities and differences between early identification assessments targeted at first or second level supervisors and those assessment centers designed more for the purpose of selection. An important observation they make is that,

> There are also some structural differences between early identification programs and selection programs. The AT&T early identification program (Moses, 1973 b) is shorter than the selection program. This reflects the state of assessment technology during the development of the programs more than a planned difference. [sic] However, there is good rationale for early identification centers to be

> shorter and, therefore, slightly less reliable. The way most programs work, candidates who do poorly in the early identification assessment center program have a second chance later in a selection assessment center program. Thus, the negative effect of mis-classification error is lessened. A person falsely thought not to have potential is only slowed, not stopped, in his or her development. (Thornton and Byham, 1982, p. 325)

It can be clearly seen that an early identification assessment center focuses exclusively on developmental needs for a target job whereas an assessment center designed for the dual purpose of selection and development does not. But what about the issue of training once developmental needs have been identified?

Most companies must spend significant amounts of money to recruit, test, interview, and develop individuals for vacated positions. According to Business Week (1979),

> A less obvious but equally important reason for the closer attention large companies are giving to human resources is the skyrocketing cost of employee benefits, which has risen from just above 20% of an average employee's salary five years ago to 35% today. With so much invested in an employee, reducing turnover rates is crucial. At Tenneco's J. I. Case subsidiary, the Human Resources Department is credited with helping the company reduce its monthly turnover to 1.1%, compared with an industry average of 1.5% a month, by developing clearer job performance criteria and better training programs... (p. 121)

Because the major focus of this research is on one process by which needs for additional training and development might be unearthed, it would be appropriate to examine the concepts of training and learning. Hinrichs (1975) said:

> Training may be defined as any organizationally initiated procedures which are intended to foster learning among organizational members. Needless to say, the desired learning is in a direction which is intended to contribute to overall organizational objectives. Learning may be thought of as a process by which an individual's pattern of behavior is changed by experience--for our purposes, the catalytic experience of the training activity. So, training is a systematic intentional process of altering behavior of organizational members in a direction which contributes to organizational effectiveness (King, 1964, p. 125; McGehee & Thayer, 1961, p. 3; Warren, 1969, p. 3). (p. 832)

Bergevin (1967) considers training programs as just one facet of adult education when he remarks that,

> People concerned only with training programs as distinquished from the long-term development of the learner through education, carry on the training programs as if the process of training a person to sell merchandise, do a particular job in a factory, or think and act a certain way has little to do with behavior change. But this is a fallacy. Every adult educational or training exposure, whether it is mechanistic training or the longer developmental process, involves some change in the learner. (p. 66)

Historical Development of the Assessment Center

The assessment center method has its foundation in the United States government's selection of international secret service agents during World War II. According to Moses (1977),

> While assessment centers have been successfully used by many organizations for the past 15 years, the origin of this approach goes back well before this. Some early references to an assessment center concept can be seen in the work of German psychologists in the early 1900s. The most commonly accepted date for the development of a historical frame of reference for this process goes back to the 1940s and the work of the Office of Strategic Services (OSS). (p. 8)

Full details of the first assessment centers, used by the Office of Strategic Services, can be read in Assessment of Men authored in 1948 by the Office of Strategic Services (OSS) Assessment Staff.

The OSS assessment centers were not wildly successful, but did yield positive results. Donald W. MacKinnon has worked with assessment centers since his days as Director of the original Office of Strategic Services Assessment Center at Station S, one of the OSS centers. MacKinnon (1977) has reported that, in terms of selecting international secret service agents,

> ...if we had used only random selection, our percent of correct decisions would have been 63%, but actually 77% were correct. Corresponding estimates for Station W are that by random selection, 66% would have been correct, but actually 84% were correct. This means that at Station S, assessment effected a 14% increase in correct decisions over random selection and and at Station W, an 18% increment. Considering the crucial nature of the assignments, increments of 14% and 18% of correct decisions are not unimportant. (p. 27)

The first private sector use of the assessment center method was the Management Progress Study (MPS) conducted by the

American Telephone and Telegraph Company (AT&T). The MPS was a longitudinal study of 422 male managers, two-thirds of whom were recent college graduates who participated in the MPS shortly after employment with one of six Bell System companies. The other one-third of the subjects were high school graduates who had been hired into non-management positions. The assessments took place in groups of twelve between 1956 and 1960 (Thornton and Byham, 1982). The assessors of the MPS, originally industrial or clinical psychologists, Bell System staff members, university faculty members, and consultants made,

> Two final ratings... Ratings of "Yes" or "No" indicated whether the staff predicted the candidate would make middle management and whether he should make middle management in 10 years or less. If the staff came to an even split of yes/no votes, the candidate was placed in a "?" category.
>
> Later, the qualitative and quantitative information was summarized in a narrative report of each participant's performance at the assessment center. Feedback of results was not given to the participants, their superiors, or any other company managers in order to minimize the effect of assessment on the individual's progress in the company. (Thornton and Byham, 1982, p. 59)

Thornton and Byham (1982) applaud Dr. Douglas W. Bray who formulated the Management Progress Study for his sound basic research in the social sciences--research of the type which they say is generally only seen in physics, engineering, chemistry, and other hard sciences. They conclude of the MPS,

> In summary, it was found that the overall assessment rating accurately predicted the actual progress individuals made in the company over the following several years... The unique contribution if using separate assessment exercises (e.g., projectives, interviews, leaderless group discussions) was established. For now, it can be said that the fruits of diligent labor seem to have been productive for this organization and others. (p. 59)

Utility of Assessment Centers for Selection

Again it may be emphasized that the recent growth in the use of the assessment center method is astounding. Stephen L. Cohen, Vice President of Assessment Designs, Inc., estimated (1980 c) that of the 1,000+ organizations using assessment centers in 1980 probably over 75 percent had adopted the method in the five or ten year period prior to that.

S. L. Cohen illustrated the two components underscoring the rationale of the assessment center method: (1) a "behavioral philosophy" and (2) "job simulation." Cohen indicated that the "behavioral philosophy," i.e., the judging of behaviors which are observable, relevant, and quantifiable rather than making inferences or speculations about what the behaviors mean, reduces the errors of measurement of subjectivity, inconsistency, and instability. Said S. L. Cohen (1980 c):

> This behavioral philosophy feeds quite naturally into the use of job simulation to extract the required job behaviors. The methods available to select a basketball player makes the point. Which

> method in Figure 1 gives you the single best estimate of who's most likely to make it as a pro player?
>
> FIGURE 1
>
> ASSESSING THE SKILLS OF A PRO BALL PLAYER
>
> - Game Play.
> - Try-out Scrimmage.
> - College Play.
> - Physical Characteristics.
> - Intelligence Tests/I.Q.
> - Personality Tests.
>
> Game play is unquestionably the best method. Just put everyone who's trying out into a real game. Of course, the team may not win many games, but we surely will learn who can play the best. While game play is ideally the best method, a try-out/scrimmage is only a little less pragmatic and offers an opportunity to see how well candidates can do in a simulation closely approximating the real world. (p. 3)

S. L. Cohen then drew an analogy to the assessment center as used to measure managerial skills:

> Likewise, when it comes to selecting employees, say a manager, we want to use only those methods that tap readily observable, job relevant, and quantifiable behaviors. As you can see from Figure 2, the points along the continuum are basically the same as those for the basketball player, and the same case can be made for using a job simulation to assess the individual's potential to succeed as a manager.

FIGURE 2

ASSESSING THE SKILLS OF A MANAGER

- Acting Assignment.
- Simulation.
- Past Job Performance.
- Biographical Information.
- Interests and Motivation Inventories.
- Intelligence Tests/I.Q.
- Personality Tests.
- Physical Characteristics.

> Without detailing the existent validity of the methods noted, some of which have proven to be highly suspect, it is safe to say that the closer the testing situation is to the job situation the more likely that job success will be efficiently predicted. Once again, this does not suggest for a moment that such things as intelligence, personality, and motivation are irrelevant to effective job performance, but rather that the ways they have been traditionally measured are. (pp. 3-4)

In the openings of Chapters I and II, some of the financial and human costs of managerial non-performance were illustrated. Knowing these, however, provides only a piece of the equation needed to calculate a cost/benefit ratio. What costs are associated with the development and/or use of an assessment center and how do these costs compare to the projected savings? Again relying on S. L. Cohen (1980 b, c), we can see that the costs of a managerial failure lie somewhere between $50,000 and $300,000 but that,

> Given this information, how then could an organization begin to evaluate the utility of an assessment center program? A simple way to begin would be to estimate the assessment center costs (all things considered) and compare them with the calculated amount it would cost the organization for just one person to fail in the target position for which the assessment center was or would be developed. If an assessment center program, then, can prevent just one candidate from being selected through alternative methods, it will likely prove its worth. This does not even consider the potential for improved productivity (and revenues) with the selection of just one person who succeeds.
>
> A recent survey conducted by the Journal of Assessment Center Technology bore this speculation out. A sample of 64 organizations responded to the survey which guided each in calculating both costs and benefits from their respective assessment center program. Total yearly costs including staff personnel, facilities, and initial setup consultant fees averaged about $88,000, while yearly assessment center savings were estimated to be $364,000--an average return on investment of 313 percent. (1980 c, p. 9)

The reader should now have a clear understanding of the utility of assessment centers when used for managerial selection. If this were the only purpose for which assessment centers were used, they would still be considered valuable tools. Assessment centers, however, can also be used for supervisory/managerial development. For early identification centers, development is the primary purpose for which they are used.

Utility of Assessment Centers for Development

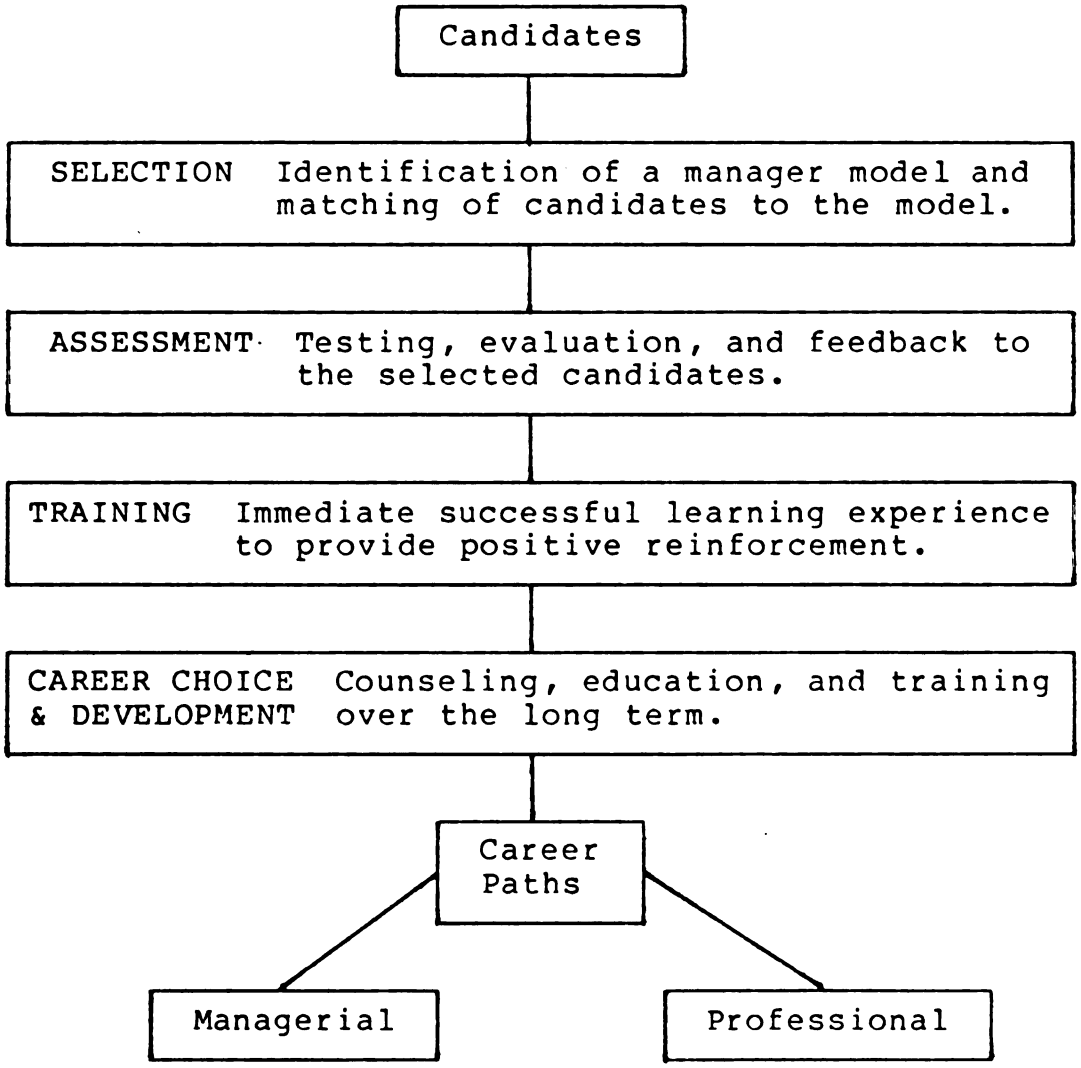
It is obvious that not all participants perform equally in assessment centers. For those who perform at high levels, promotional opportunities are more likely and the amount of further development needed to succeed in the target job may be little to none. For those demonstrating a lower potential to succeed in the target job, further development in certain skill areas would be indicated. Once a candidate's strengths and areas for improvement are identified, however, what would be the next step for that candidate? Fitz-enz, Hards, and Savage (1980) have written on this question:

> A great deal has been written about assessment techniques and centers over the past decade. The methodology has become somewhat standardized, the problems have been explored and the results reviewed. The only remaining question seems to be, "What's left to talk about." The answer to that is, "Assessment must be integrated with other employee growth activities to create an efficient, effective, and holistic development program."
>
> Assessment is generally treated in isolation. In our view assessment is, or should be, part of a development system. (p. 58)

They graphically described a career development system (1980, p. 59) which can be seen as Figure 3 on the following page. Their career development system results in two possible career paths--managerial and professional; along with this they say they can safely predict that some candidates will choose not to pursue management careers as a result of their assessment experience and that this is perfectly acceptable. For those who do select managerial careers, Fitz-enz, Hards, and Savage (1980) believe that managerial development is not effective when it focuses on teaching skills rather than concepts, and when the skills taught relate directly to those skills measured in the assessment center.

FIGURE 3

A CAREER DEVELOPMENT SYSTEM



SELECTION Identification of a manager model and matching of candidates to the model.

ASSESSMENT Testing, evaluation, and feedback to the selected candidates.

TRAINING Immediate successful learning experience to provide positive reinforcement.

CAREER CHOICE & DEVELOPMENT Counseling, education, and training over the long term.

Dugan Laird has, through his writings, provided his support for the assessment center method. Like Fitz-enz, Hards, and Savage (1980), however, Laird has also voiced his thoughts regarding how an assessment is to be appropriately used:

> Performance appraisals, assessment centers, career planning--all provide data about individual training needs. And they are all hollow exercises unless there is a relevant and implemented educational program as a result of the data gathering! (1978, p. 62)

Thornton and Byham (1982) have also spoken to the issue of the utility of a diagnostic assessment center and seem to agree that the utility may be a function of the extent to which an organization can provide follow-up assistance to those assessees needing it:

> The decision about whether to design an assessment center to provide diagnostic insights really boils down to two questions: Can people change? and Is it worth the cost? In spite of the lack of research and in spite of the many problems in changing behavior noted at the beginning of this chapter, we would answer the first with a "Yes" followed by the clause "if subjected to a major developmental effort targeted to the individual's particular and specific needs."
>
> The answer to the second question depends on who is being assessed and for what purpose. At each level of management, an organization must make a decision about whether its limited resources can best be expended on changing and developing new skills or on getting people with the necessary skills into the jobs in the first place. Ideally, it would be nice if everyone could be developed, but few organizations have the resources, the will, or even the opportunity because of

> the nature of their operation (e.g., an assembly line or a restrictive union contract). (pp. 335-336)

While it is clear that assessment centers are only one method by which the need for individual development is identified, other methods are also used and used more frequently. In the research conducted by Digman (1980) described earlier in Chapter II, it was discovered that,

> Performance plays the No. 1 role as an indicator that individual development needs exist while unit performance ranks ...sixth concerning individual needs. This may not be surprising when one considers that the performance of an organizational unit is subject to many more variables than is the performance of an individual. More companies appear to address the individual's needs prior to promotion or reassignment (80 percent) than afterward (59 percent). Four responses predominated under the "other" grouping--performance appraisals, assessment centers, individual development plans, and succession planning. To some degree, perhaps these overlap with the more frequently mentioned sources. (p. 14)

The methods of identifying management development needs as ranked by Digman (1980) are seen in Table 2.2.

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TABLE 2.2--SOURCES OF DEVELOPMENT NEEDS FOR INDIVIDUALS

Individual Performance	93%
Planned Promotion or Reassignment	80%
Existence of Problem Situation	76%
Prescribed or Periodic Development	63%
Accomplished Promotion or Reassignment	59%
Unit Performance	33%
Other	15%

Digman also identified trends in his research which pointed to a desire for companies to address specific needs rather than general needs, as well as a desire to formalize the process for determining management development needs.

A good deal of other research refers to the use of assessment centers as tools for supervisory/managerial development. No research was found, however, that identified the actual impact assessment center participation has upon the assessees' developmental behavior.

Assessment Center Impact on Participants

In reviewing the literature, some research was located which describes the perceptions of assessees of assessment center participation. Dulewicz (1982) reported the results of a follow-up study of 120 managers in the Telecommunications and Electronics Division of Standard Telephones & Cables in the United Kingdom. The managers surveyed had all participated in a two day assessment center designed to identify their potential for senior management and to establish individual training and career development needs to help in developing identified potential. Feedback on performance was provided to each candidate three to six weeks following participation in the assessment center. One survey was administered before participants had received their performance information.

The impact of participation upon the assessees was positive in nearly all ways measured. A large majority (unspecified) appeared willing to attend the assessment center, although 45 percent felt pressure to attend as well. Ninety-three percent of the subjects felt the exercises of the program (named "IMPACT") were relevant to the position identified as the target job. Said Dulewicz (1982):

> Turning to the behavior of participants during IMPACT, a majority (54 percent) felt that it was not very different from 'real life' (although 30 percent) felt it was different) and most of them (71 percent) considered that their performance "was not impaired by feelings of stress or tension." Only 15 percent did feel under stress. In order to get an indication of the participants' overall reactions, they were asked if they would attend IMPACT again and if they would recommend a good friend to attend. A large majority (80 percent) stated that they would like to come again and almost everyone (93 percent) would recommend it to friends at the same level in STC. (p. 34)

The above data represent participant attitudes toward the assessment before receiving their performance feedback.

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After participants were informed how they did, Dulewicz said:

> Data from another questionnaire provide information on attitudes after the formal feedback session. Nearly all (96 percent) understood the information which was fed back to them and 85 percent felt that the observations of their performance were accurate. Just over three-quarters of the sample (77 percent) considered that the information would also be valuable for their personal development and just under two-thirds (62 percent) thought their careers would probably benefit from their attendance. Only eight percent felt they would not benefit. (p. 34)

Quick et. al. (1980) reported the results of their application of an assessment center to administrative personnel in the Texas State Government. The center which was designed for this application was two days in length and aimed at the development of participants, rather than selection. Said the authors, "The case in which assessment centers are used for development purposes is somewhat unique." (p. 45) Based on the review of the literature, this statement appears to be true. Most assessment centers appear to be used for selection as well as development.

The feedback reports resulting from the Texas State Government assessment center, say Quick et. al. (1980):

> ... contain two sections. The first section provides the participant feedback regarding the strengths and limitations which were noted by the assessors during the course of the center. This section of specific behaviors exhibited by the participant for both their strengths and limitations. [sic]

> The second section of these reports contain [sic] a set of specific recommendations for the individual to follow in strengthening those areas in which limitations were identified. The recommendations contain suggestions regarding books or articles to read, activities to become engaged in, continuing education courses to take, or for the full time student--courses to include in the degree plan. (p. 46)

It appears that the developmental recommendations made to the participants were highly specific and relevant to the skills or qualities needing improvement. This would be in accordance with much research (e.g., Gilbert, 1978; Blum and Naylor, 1968) which illustrates that feedback which is relevant and specific is more meaningful to the recipient than feedback which is less relevant and specific. Quick et. al. (1980) gave their rationale:

> The recommendations contained in the developmental reports should be sufficiently clear and specific so that the individual knows how to proceed. If he or she is not able to see clearly what activities and steps to follow, the usefulness of the recommendations will be severely limited. However, clear and specific recommendations will enable the individual to grow and develop. (p. 46)

The authors also made some predictions about the usage of developmental assessment centers:

> The use of assessment centers for promotional and selection purposes has been demonstrated for a number of years. What has not been as seriously considered is the use of assessment centers for management and/or trainee development. The nature of the center process and the form of participant feedback will clearly differ depending upon the purpose for which the center is used. We are proposing that the use of assessment centers

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> for developmental purposes will become increasingly important as increased effectiveness is required of individuals in a variety of organizational settings. (p. 62)

Kraut (1976) had emphasized the notion that, at the time of his writing, some assessment centers had a strong developmental component:

> In some organizations, however, assessment center results are not used simply for "go" or "no go" decisions but for the placement of individuals in positions that will use their talents and provide development essential for a meaningful, long-term career. In fact, some organizations use assessment programs exclusively for personal development in order to help people diagnose their competencies and to help improve them. (p. 32)

Kristin Anundsen (1975) reported on an assessment center administered by Gino's, Inc., a fast-food chain. Anundsen interviewed Mike McKeon, Project Manager of Gino's Management Development Department and Co-administrator of the CDC (Career Development Center) and Curt Russell, Vice President, Management Development. Anundsen asked:

> But suppose someone gets a low rating in the CDC? "Then he gets a longer feedback session," McKeon says. "This is not a pass/fail sort of thing. The feedback session will probably focus first on where his strengths are and then on the most important areas for development." (p. 35)

Anundsen concluded with:

> ...the frequency of CDCs in Gino's future seems likely to increase. Since each CDC costs in the neighborhood of $5,000-$6,000, not including the time of those involved, it represents a considerable commitment of corporate resources. In

> order to maximize this investment, the CDCs, Russell believes, have to be more than assessment devices--they must pay off to the individuals as well as to the organization. Hence, the emphasis on management development. (p. 36)

Teel and DuBois (1983) conducted research and reported on participants' reactions to assessment centers. Based on their review of prior research, they praised the assessment center method for having great value in the selection and development of managers. They did, however, report a potential negative side of the assessment story:

> Yet many organizations have chosen not to use assessment centers. Some have maintained that such centers are too expensive, and that equally good results can be obtained at significantly lower cost. Others have rejected them because they fear that candidates who perform poorly will react negatively to their experiences and, perhaps, abandon their attempts to improve their performance. (p. 85)

Their study consisted of a two-part interview administered to 37 assessees who had participated in a single day assessment center during the preceding 18 months. Nineteen of the subjects were high-scorers and 18 were low-scorers. None of the individuals scoring moderately were included, though no reasons were given for this exclusion. Twenty-five were female. Five were under 30 years of age; 21 were between the ages of 30 and 40; the remaining 11 were over 40 years of age. Eighteen of the 37 were college graduates and the remaining 19 were not, although the educational backgrounds the non-college graduates were not described. Six of the 37 were minority group members.

The first part of the interview consisted of 16 positively worded statements read by the interviewer to which subjects were asked to respond with one of five choices: strongly agree, agree, neutral, disagree, and strongly disagree. The second part of the interview asked participants to respond to 16 questions, ten of which requested specific information, the other six asking for responses to open-ended questions.

They reported positive reactions in general from all subjects:

> Our most significant finding is that both high- and low-scorers reacted positively to their assessment center experiences. As expected, high-scorers responded more favorably. However, a majority of low-scorers responded favorably to all questions dealing with their general feelings toward the center. (p. 87)

Table 2.3 is a summary of responses to four of the general questions.

The authors drew the conclusion that all participants believed the assessment center in which they participated was,

TABLE 2.3--OVERALL REACTIONS TO ASSESSMENT CENTER

Overall Reactions

Statement	Percent Agreeing	
	High-Scorers	Low-Scorers
Had a positive overall experience	89	56
Believe center measures traits required of manager	100	67
Would attend another center if given the opportunity	89	72
Would recommend that a friend attend	89	78

"...a valid means of evaluating managerial capabilities and/or potential, and endorsed its continued use."

Table 2.4 is a summary of the subjects' perceived influence of factors affecting their assessment center performance.

TABLE 2.4-

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TABLE 2.4--FACTORS INFLUENCING ASSESSMENT CENTER PERFORMANCE

Factors Influencing Assessment Center Performance

Statement	Percent Agreeing	
	High-Scorers	Low-Scorers
Understood what center was about before agreeing to attend	74	67
Came to center with as much knowledge as others about objectives & content	58	61
Performance was not impaired by feelings of stress and tension	53	50
Performance at center was same as in "real life" situations	84	50
Evaluations of assessors were accurate	79	28

One can see a good deal of consistency in responses between high-scorers and low-scorers, except with regard to the perceptions of the accuracy of the assessor evaluations. On this item, far fewer low-scorers agreed that the assessor judgments were valid (28 percent) that than high-scorers (79 percent). Said Teel and DuBois (p. 89):

> Low-scorers apparently rationalized their poor performance to some extent by maintaining that they would have performed differently "in the real world" and/or by stating that the assessors graded them unfairly.
>
> The extent to which either of these feelings was true obviously could not be determined in this study.

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Table 2.5 is a summary of subjects' perceptions of the advantages and disadvantages of their participation in the assessment center. (p. 89)

TABLE 2.5--BENEFITS AND DISADVANTAGES OF ASSESSMENT CENTER PARTICIPATION

Advantages and Disadvantages

Statement	Percent Agreeing	
	High-Scorers	Low-Scorers
I understood clearly the information given me on my performance in the center	89	78
Information given me will be valuable in my personal development	95	61
Developmental recommendations I received were worthwhile	95	44
My career has probably benefited from attendance	79	22
My superior has shown increased interest in helping me develop since I attended	58	17

The conclusions reached by the authors that the majority of participants felt their feedback was worthwhile seems to be a reasonable one. One difference identified between the high-scorers, and low-scorers, however, was:

> High-scorers obviously responded more favorably, probably because they were praised for their performance. Low-scorers, while recognizing the value of

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> the feedback, apparently consider themselves better qualified than the interviewers to decide what actions would contribute most to further their personal development. (p. 89)

Another large split between the perceptions of the high-scorers related to the perceived impact of the assessment center results on individual advancement potential. Seventy-nine percent of the high-scorers felt that their career had probably benefited from attendance, while only 22 percent of the low-scorers agreed. Interestingly enough, the authors also pointed out that:

> Actually, in the interval between attendance at the center and our survey, 42 percent of the high-scorers and 11 percent of the low-scorers had been promoted. (p. 89)

One of the concerns of Howard (1974) was that assessment center results could become a self-fulfilling prophecy, i.e., those scoring well would be seen as having a "ticket to success" while the results for those scoring poorly would be the "kiss of death." The research conducted by Teel and DuBois lends some support to Howard's concern, particularly when one examines the last item of Table 2.5.

When responding to the open-ended questions at the end of the interviews, subjects made a number of suggestions, two of which were reported by Teel and DuBois. One suggestion was that assessors should be used who have had no prior contact with or knowledge of the assessees. The other suggestion was that feedback on center performance be delivered

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delivered within two weeks following participation. According to the authors:

> Delay of more than two weeks apparently cause some forgetting and make the feedback interview less useful than when the details of assessment center performance are still fresh in mind. (p. 90)

Teel and DuBois concluded:

> ...that assessment center participants, regardless of their scores, react favorably to their assessment experiences. As expected, high-scorers react more favorably, but a majority of low-scorers look upon participation as a positive experience. (p. 90)

They also recommended that assessment centers be used for selection and development, rather than for either purpose alone. They also recommended that developmental recommendations be made by a participant's own supervisor rather than by an assessment center staff member alone. The ideal strategy for delivering feedback they say, would be to have performance information communicated by an assessment center staff member to be followed as soon as possible by a second interview between the assessee and his or her immediate supervisor.

Regarding their recommendation that assessment centers have the dual purpose of selection and development, they said:

> ...much of the organization's investment in diagnosing strengths and weaknesses would be wasted in the information were not used for developmental purposes. Since the primary focus of development should be on improving the employee's performance in the employee's present job, significant benefits could accrue to

> the organization long before he is again considered for promotion. (p. 91)

Similar results to those of Teel and DuBois were reported by Dodd (1977) who reviewed follow-up results of assessment centers conducted by the Michigan Bell Telephone Company, the Public Service Commission of Canada, and the IBM Corporation. Dodd concluded:

> ...in the area of attitudes toward the face validity of the program, it is clear that performance, feedback on performance, and use of the data all can have substantial effects on attitudes toward the validity of the program. Negative attitudes, however, under any conditions, tend to run very low, even after intervening years and use of data. (p. 167)

Dodd also discovered that participants of all three assessment centers he reviewed generally looked quite favorably at the assessment center feedback, believing that they would be able to profit personally from knowledge of their strengths and weaknesses.

Regarding developmental recommendations made and their impact of the participants receiving them, Dodd said,

> Many assessment programs now provide developmental recommendations to participants as part of the feedback. In the Career Assignment Program assessment center of the Canadian Public Service Commission, 29 percent of the former participants felt that the training and development recommendations of the assessors were very helpful or extremely helpful. Seventeen percent considered them to be not helpful at all. (p. 170)

Expected Impact of Each Selected Factor

Age

Numerous individuals (e.g., Burach, Erickson, Gould, Holland, Levinson, Sheehey, Super) have advanced theories of human development. Most, like Daniel Levinson, base their theories on the proposition that as individuals travel from birth through subsequent decades they move through predictable developmental stages, each with its own characteristics.

In examining developmental stages as they relate to individuals and their work, many of the theorists (Burach, Levinson, Super, Erickson, e.g.) have postulated that individuals between roughly 45 and 65 years of age place a greater emphasis on continuing along established lines than on breaking new ground. For example, Elmer Burach (1984) has listed the following characteristics of the individuals in their mid-40s:

1. Crystallizing of individuality.
2. Greater sense of reality about what one possesses and less emphasis on competition or occupational hill climbing.
3. Greater desire to enjoy one's own life and work.
4. Further manifestations of self-acceptance and internal rather than external values.
5. Assumption of mentoring job. (p. 60)

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Based upon these theories of adult development, it seems likely to expect that individuals beyond the age of 40 will be less likely to demonstrate an interest in working toward a promotion than those who are under age 40. In fact, many developmental theorists also postulate that those individuals between their early 20s and approximately 40 years of age are in a developmental stage which features intimacy with a work organization and is characterized by commitment involving personal sacrifices and/or compromises. Much energy is devoted to the furtherance of one's career between the early 20s and age 40. Because of this, it is expected that those individuals over age 40 will be less likely to actively pursue developmental recommendations made following assessment center participation.

Seniority

For the same reasons that were given to support the expectations for the factor "age," it is expected that individuals with roughly 25 years or more of seniority will be less likely to follow up on developmental recommendations made following assessment center participation.

It does seem reasonable to assume that individuals with greater levels of seniority will have gained more technical knowledge of a particular department; however, assessment centers almost exclusively concentrate upon the measurement of non-technical skills such as administrative, supervisory, and interpersonal skills.

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Desire for the Target Job

Campbell and Pritchard (1976) reviewed many theories of motivation (Vroom, Maslow, Herzberg, and Locke, to name but a few) and concluded that the concept of motivation is complex and, to date, has not been fully described with a single stand-alone theory. As a heuristic, however, Campbell and Pritchard (1976, p. 119) agree that one's performance of a task is a function of one's ability and motivation. This is to state the apparently obvious: the greater one desires something, all else being equal, the harder he/she will work for it. Motivational theories support the notion that one's follow-up on post-assessment center developmental recommendations will be related to his/her desire for the target job for which the assessment center was designed.

Formal Education Level

Campbell and Hansen (1981), in their manual on the Strong Vocational Interest Inventory (a test often used by those offering career counseling services), described the test's scale Academic Comfort as, "...a rough index of the degree of comfort that a person feels, or might feel, in an academic environment..." Higher levels of academic comfort are associated with higher levels of academic achievement. Because of this, Campbell and Hansen suggest that the greater one's level of formal education, the more interest he/she will have in pursuing additional education. Based upon these findings, it is expected that individuals with higher levels of formal education will be more likely to follow up on post-assessment center developmental recommendations than those with less education.

Organizational Level

It is expected that those individuals of higher organizational levels/job grades will demonstrate more follow-up on post-assessment center developmental recommendations. There seems to be a tendency on the part of most organizations to promote individuals in "smaller" rather than "larger" steps. This is true in the case of the organization in which this study is to be conducted and is a belief shared by its employees.

Expectancy theory (Campbell and Pritchard, 1976) suggests that individuals are more likely to expend effort working toward outcomes (rewards) which are more likely than those which are less likely. Because employees who are closely below the organizational level of the target job of the assessment center will probably feel their chances are higher of being promoted to the target job than those who are distantly below, they are expected to be more likely to follow up on assessment center recommendations.

Sex

Title VII of the Civil Rights Act of 1964 and subsequent legislation eliminated sex as a basis for selection or promotiona

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promotional decisions, except in those cases in which sex could be demonstrated to be an important job-related factor. Since the passage of the equal employment legislation many companies have put forth extra effort to promote minorities and women.

The target job (Manufacturing Foreman) of the assessment center to serve as the focus for the study is currently one filled primarily by men. There are two ways of looking at male vs. female views of the target job: (1) women may feel they are more likely to achieve the target job because the legislation is "in their favor" and females are somewhat under-represented when compared to the labor force and labor market, or (2) women may feel they are less likely to achieve the target job because theirs may be a perception that manufacturing supervision is still "a man's world."

Pearson (1984) summarized from research by Steinberg and Greenberger:

> Steinberg reports that early work experiences result in substantially greater gain in autonomy for girls than boys. Employment enhances work orientation for both sexes but only girls show gains in self-reliance. Working diminishes family closeness for girls and increases it for boys. Girls who work become more interested in a future job in which one can make a decision but boys who work become less interested in their opportunity for autonomy. Finally, working raises the educational expectations for girls and lowers it for boys. Steinberg explains those results in terms of: "For girls, entering the labor force at an early age represents a departure from the expectations of significant others. In contrast, for boys, taking a job is more consistent with social expectations and

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> with socialization for adulthood. Thus, working may be viewed as an act of independence for girls but an act of conformity for boys." (pp. 30-31)

In sum, sex is expected to be a factor in a person's follow-up on post-assessment center recommendations, though the nature of the effect is hard to predict.

Desire to Attend the Assessment Center

This factor may be the result of a number of other factors, e.g., perceived instrumentality of the assessment center, a curiosity of what the assessment center is like, or a true desire to identify one's strengths and areas for development, but it seems to be one which is similar to "Desire for the Target Job." The same explanation for the expected results of "Desire for the Target Job" applies to "Desire to Attend the Assessment Center."

Rating of Overall Potential to Succeed in the Target Job

Fitz-enz, Hards, and Savage (1980) described a private company's assessment center and reported its results. Their observations were consistent with the current research:

> Self-esteem and learning theories support the notion that success prompts further effort on a given subject. (p. 60)

They continue to describe their hypothesis that participants who leave an assessment center with positive feelings are more likely to pursue developmental efforts later. It is important to note, however, that they had not constructed research to test their hypothesis.

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They also stated (p. 61) that:

> We can safely predict that some candidates will choose not to pursue management careers as a result of their assessment experience. That is perfectly acceptable.

Implied in their writing is the notion that those individuals who perform better in an assessment center will be those who continue their pursuit of management careers while those who perform poorly are more likely to be those who select alternate career paths.

Based upon this, it seems reasonable to expect that the factor "Rating of Overall Potential to Succeed in the Target Job" will show a significant relationship to the dependent variable, the extent of follow-up on assessment center recommendations.

Perceived Realism of Assessment Situations or Exercises

An assessment center is designed to simulate real-world conditions in order to elicit the kinds of behaviors which are critical to successful performance in a target job. This factor is closely linked with the concept of face validity. According to Blum and Naylor (1968):

> Another kind of validity often used to describe a test is the degree to which a user is interested in having his test "look right" to the test taker. Job applicants often become upset if the prediction instruments they are required to take appear to have little or no relationship to the job for which they are applying.
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> The authors would hazard a guess that some of the bad publicity received by

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> users of selection devices in industry can be due to the user overlooking the need for his tests to have face validity. (pp. 36-37)

Because of this, it is expected that an assessee's extent of follow-up on post-assessment center developmental recommendations will be dependent to some degree on the assessee's belief that the assessment situations or exercises seemed realistic.

Acceptability of the Time Delay Between the Assessment and the Feedback

The need to provide timely feedback to assist individual performance has been well established. If feedback is delayed, it may be difficult for a performer to recall the specific elements of his/her performance thus decreasing the usefulness of the feedback in improving future performance. Because of this it is expected that the time delay between assessment center participation and the receipt of feedback will be a significant factor in an individual's follow-up on developmental recommendations.

Sensitivity Displayed by the Individual Delivering the Feedback

Intuitively it seems that this factor will be related to post-assessment follow-up on developmental recommendations. Often, the individual administrator of an assessment center must deliver the information to a participant that he/she did not perform effectively. This information can be delivered bluntly, with little opportunity for the candidate to ask questions, and with little empathy expressed by the administrator. Conversely, negative information can be presented in a way that stresses a demonstrated lack of skill is really just an opportunity to perform better. The utility of the information (whether positive or negative) can be stressed to help the participant understand how to focus future developmental activity.

It seems reasonable that a participant who feels performance feedback is presented in a positive, forward-looking manner may have a higher level of self-esteem and a greater likelihood of taking the feedback and the developmental recommendations to heart. Because of this, it is expected that this factor will be significantly related to the dependent variable.

Appropriateness of the Amount of Time Spent During the Oral Feedback

If the assumption may be made that the length of time spent discussing an assessment center participant's performance is positively related to the amount of detail of performance feedback presented, then it seems reasonable to expect that this factor will demonstrate a significant relationship to the dependent variable.

Blum and Naylor (1968) state that the relationship between specificity of feedback ("KR" or "Knowledge of Results") and degree of learning is not a linear one. They state:

1. There is little evidence to support the position that learning can occur without KR, although under certain conditions simple exposure and familiarization with the learning situation and materials can facilitate learning.
2. "Positive" KR information seems to be a more effective procedure than "negative" KR.
3. The degree of specificity of KR and its relationship to the learning process does not appear to be linear. (p. 242)

The authors elaborate by stating, "...learning is facilitated by increased precision in feedback up to a point, but beyond this point learning is hindered with continued increases in precision." (p. 243)

Credibility of the Individual Delivering the Feedback

It seems logical that the degree of believability of the individual communicating assessment center performance information would have an impact on the stock one places in recommendations made. Edward E. Lawler III (1976) discussed objectivity of performance measures:

> The point has often been made that objective performance measures have many advantages and should be used where possible. There are, however, many situations where objective measures do not exist for individual or even group performance. One way of dealing with such situations is to measure performance on the basis of larger and larger groups until some objective measures can be found. Another approach is to measure performance on the individual or small

> group level and to use admittedly subjective measures. This is possible in some situations but not in others. The key factor in determining whether this approach is feasible is the degree of super-subordinate trust. The more subjective the measure, the higher degree of trust needed... (p. 1275)

Lawler continues,

> ...even with the most objective system, some trust is still required if the individual is to believe in the system. (p. 1275)

If the assumption can be made that trust and credibility are interrelated, then it seems appropriate to expect that the credibility of the individual delivering assessment center performance information will have a significant impact upon an individual's follow-up on developmental recommendations.

Relevance of the Feedback in Comparison to the Critical Job Dimensions

Praxis Corporation (Morristown, New Jersey) offered a model of human performance in its *Performance Analysis Workshop*. One of the components which is a part of the "Performance Model" is that of feedback. The authors state that performance feedback must be in relationship to relevant variables. This is to say that performance feedback must flow directly from those items being measured if the feedback is to have the confirming or correcting effects on the performer's responses.

From this it is expected that the degree to which an assessee perceives the assessment center feedback to be directl

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directly related to those skills and qualities being measured will have an impact on the person's follow-up on developmental recommendations made during the feedback session.

Relevance of the Developmental Recommendations to the Developmental Needs Identified

The same reasoning applied to the factor "Relevance of the Feedback in Comparison to the Critical Job Dimensions" applies to this factor. If a candidate does not see a logical link between developmental recommendations and those skills or qualities to be improved, it seems logical to expect that he/she will be less likely to pursue the recommendations.

Perceived Level of Support Provided by Each of Several Sources for Individual Development Efforts

Support may be defined as removing obstacles which would otherwise hinder the accomplishment of something. Though support may come in a variety of forms like the provision of appropriate resources or experiences, it seems that support will play an important role in a person's follow-up on post-assessment center developmental recommendations. The "Performance Model" of the Performance Analysis Workshop (Praxis Corporation, 1975) adds strength to reasoning behind the expected results with the support-related factors.

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Desire for the Target Job (Post-assessment)

The same rationale applies to this factor as for the factor "Desire for the Target Job (pre-assessment)." Several theories of motivation support the notion that the more a person desires something, the more time and energy he/she may devote to achieving it.

Perceived Likelihood of Achieving the Target Job

Campbell and Pritchard (1976) summarized the motivational theory of Vroom:

> The Vroom model attempts to predict (a) choices among tasks or (b) choices among effort levels within tasks. In brief, he sees the force on a person to choose a particular task of effort level as a function of two variables: the valence, or perceived value of outcomes stemming from the action, and the expectancy, or belief, that the behavior will result in attaining these outcomes. Thus, the Vroom formulation in its simplest terms is Force = (Expectancy that effort results in attaining outcomes) X (the valence of outcomes).
>
> Valence refers to the perceived positive or negative value ascribed by the individual to the possible outcomes of action on the job. (p. 74)

Based on the model by Vroom and upon other supporting research, it is hypothesized that one's perception of the likelihood (expectancy) of achieving the target job for which the assessment center was designed will be significantly related to the extent to which an individual follows up on post-assessment developmental recommendations.

Summary

Of the various processes used to judge managerial skills and qualities, the assessment center method is that process by which multiple exercises and multiple assessors are used to make judgments about participants' skills, qualities, etc., as are required for successful performance in a target job, generally supervisory or managerial in nature. Assessment centers are used to select supervisory personnel, as well as to convey information relating to individual needs for development. Assessment centers are frequently used for selection or selection and development; they are less commonly used for development only. When used as a selection device, assessment center have generally yielded a favorable benefit-to-cost ratio--approximately three-to-one. Assessment centers which have a developmental component are best integrated into a total human resource development system which focuses specifically upon the skills of the participants which need improvement. It seems true that assessment center participants, regardless of their performance ratings in the center, generally believe their participation to be worthwhile in a number of ways. Assessees also look favorably upon developmental recommendations made, although it is not yet known the extent to which individuals follow-up on those developmental recommendations or why.

CHAPTER III

DESIGN OF THE STUDY

The purpose of the study was to determine the impact of selected factors on assessment center participants' usage of post-assessment developmental recommendations. Prior to presenting an outline of data collection, analysis, and reporting methods, some background information would be appropriate.

The setting for the study was Steelcase, Inc. of Grand Rapids, Michigan. Since its founding in 1912, the company has grown from a minor producer of office furniture to the largest office environment company in the world with gross revenues of over $1.2 billion annually. At present, Steelcase, Inc. has, in North America, manufacturing facilities totaling approximately 10 million square feet with a total employment of approximately 10 thousand people. A network of 625 independent dealers provides a full range of products and services to every end user. Steelcase also has numerous manufacturing and sales facilities in other locations throughout the world.

Steelcase's rapid growth pattern has placed particularly difficult challenges before the Human Resource group (that

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portion of the organization responsible for recruiting, selecting, orienting, training, developing, and maintaining employees). As plant operations have expanded, the pressure to identify and/or develop competent first-line supervisors in manufacturing has become acute. In response to these demands, Steelcase, Inc. created an assessment center in 1973 based upon a 1972 job analysis for the position of Manufacturing Foreman; this assessment center was called the Identification Development Program (IDP). The ten variables measured by the IDP are listed in Appendix B.

As to the "ideal" number of variables to be measured by an assessment center, Jaffee and Sefcik (1980) suggested:

> The more skills you have, the greater chance of overlap between them and the greater chance that one piece of behavior will contribute significantly to many skills. The more this may happen, the more unreliable the assessment center. It is my experience that approximately 10 skills, depending upon the complexity of the job, may be realistic--20 or more are not. (p. 41)

During each step of the development, installation, and validation of the IDP, Steelcase, Inc. relied heavily upon the consulting services of James R. Huck, Ph.D., a recognized expert in the field of assessment. Dr. Huck served as one of 14 members of the Task Force on Development of Assessment Center Standards chaired by Joseph L. Moses, Ph.D., and has published his research in a number of books and scholarly journals (see Bibliography). The Assessment Center Standards were endorsed by the Third International

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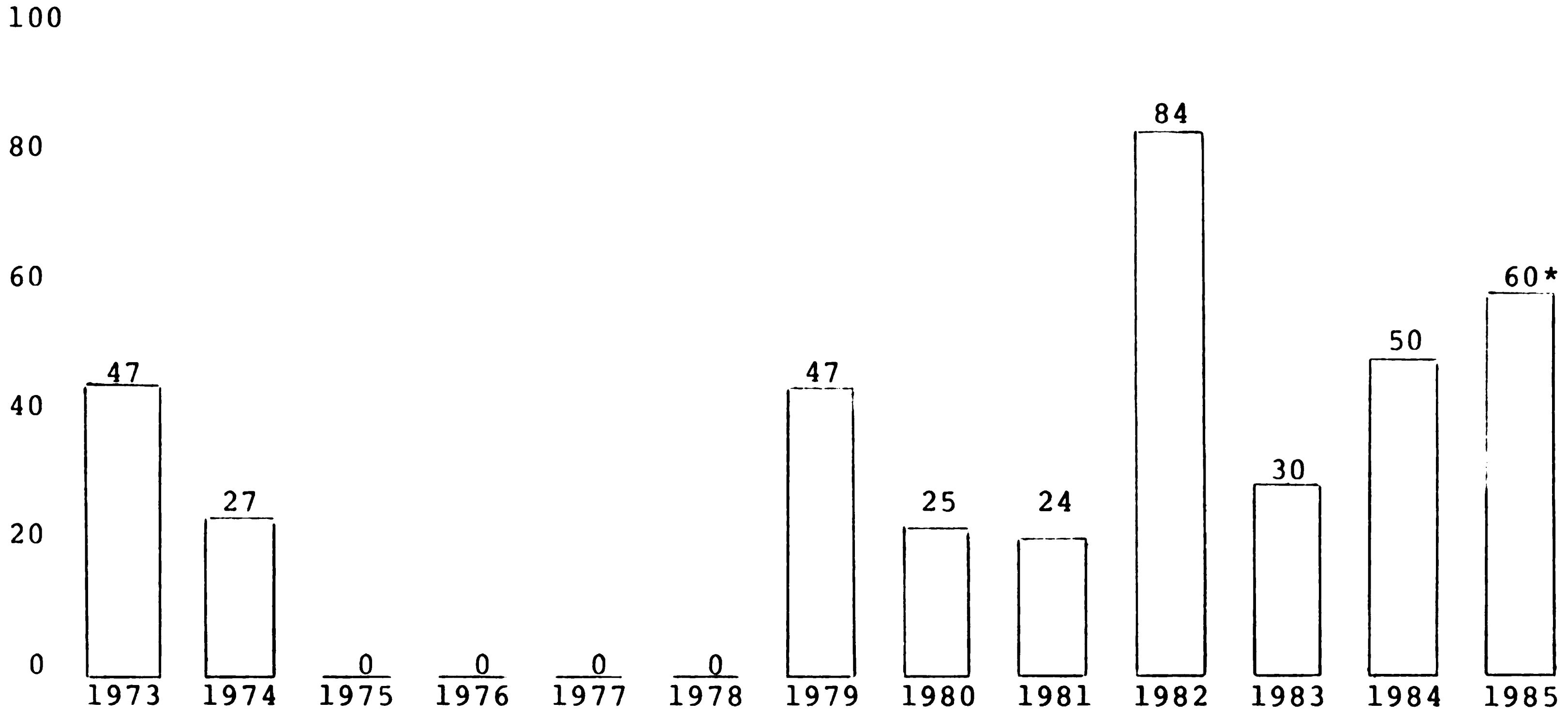
Congress on the Assessment Center Method held in Quebec, Canada in May, 1975.

From 1973 to April, 1985, 352 individuals were assessed and given detailed feedback, both orally and through written summaries, based on their respective performances in the IDP (See Figure 4). During the years 1975-1978, the demand for new Manufacturing Foremen was low; therefore, no individuals were assessed during this period. Of the individuals assessed, only those still in the employment of the company were asked to participate in the research. Of the 17 no longer employed, 10 have resigned, 3 were involuntarily terminated, 1 was retired, and 3 are deceased. Organizational protocol suggests it is inappropriate to contact former employees for such research.

FIGURE 4

FIGURE 4

NUMBER OF INDIVIDUALS ASSESSED IN THE STEELCASE IDENTIFICATION DEVELOPMENT PROGRAM 1973-1985



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A study of the effectiveness of the IDP was conducted by the Steelcase Employee Development Department in September, 1981. The purpose of the study was to determine the extent to which overall IDP ratings related to future success as a supervisor.

Historical data were collected for each IDP participant between 1973 and 1975 who had subsequently been promoted to a supervisory position. The early (1973-1975) sessions were used because the promotions had occurred several years before the study and data would be available about the job performance and salary increases. While job performance was initially considered to be a good success measure, a number of problems were encountered in trying to determine what performance dimensions to measure. When reviewing the historical data it was discovered that: (1) some IDP participants in the study went on to become supervisors other than Manufacturing Foreman (the target job of the IDP), (2) the statistical records available for Manufacturing Foremen, i.e., measures of schedule completion, efficiency, quality, safety, etc., were assigned to departments rather than individuals, and (3) with many department number changes, plant expansions, and supervisor reassignments, historical data were difficult to obtain. Therefore, Steelcase decided to focus on the underlying notion that those supervisors who performed better would receive higher salary increases over time.

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To determine a supervisor's average annual salary increase, the individual's beginning base salary upon becoming a supervisor was subtracted from his/her "current" base salary (as of September, 1981) and divided by the number of years the individual had been in the supervisory position.

Salary increases were computed for each of the 30 supervisors in the study. The supervisors were grouped according to their overall IDP rating which was expressed on a 1 to 5 scale (1=Low potential to succeed, 5=High potential to succeed). Average salary increases for each group were determined for each year since IDP participation and for each year since becoming a supervisor. Additionally, the salary increases per year since becoming a supervisor were compared to the average salary increases given to the total group of exempt salaried supervisors.

Upon examining the groups of individuals promoted to the target job who had received overall IDP ratings ranging from 2 to 5, it became apparent that a strong positive relationship existed between overall IDP ratings and subsequent supervisory success as measured by their salary increases (See Figure 5). No individual who had received an overall IDP of 1 had been promoted to the target job.

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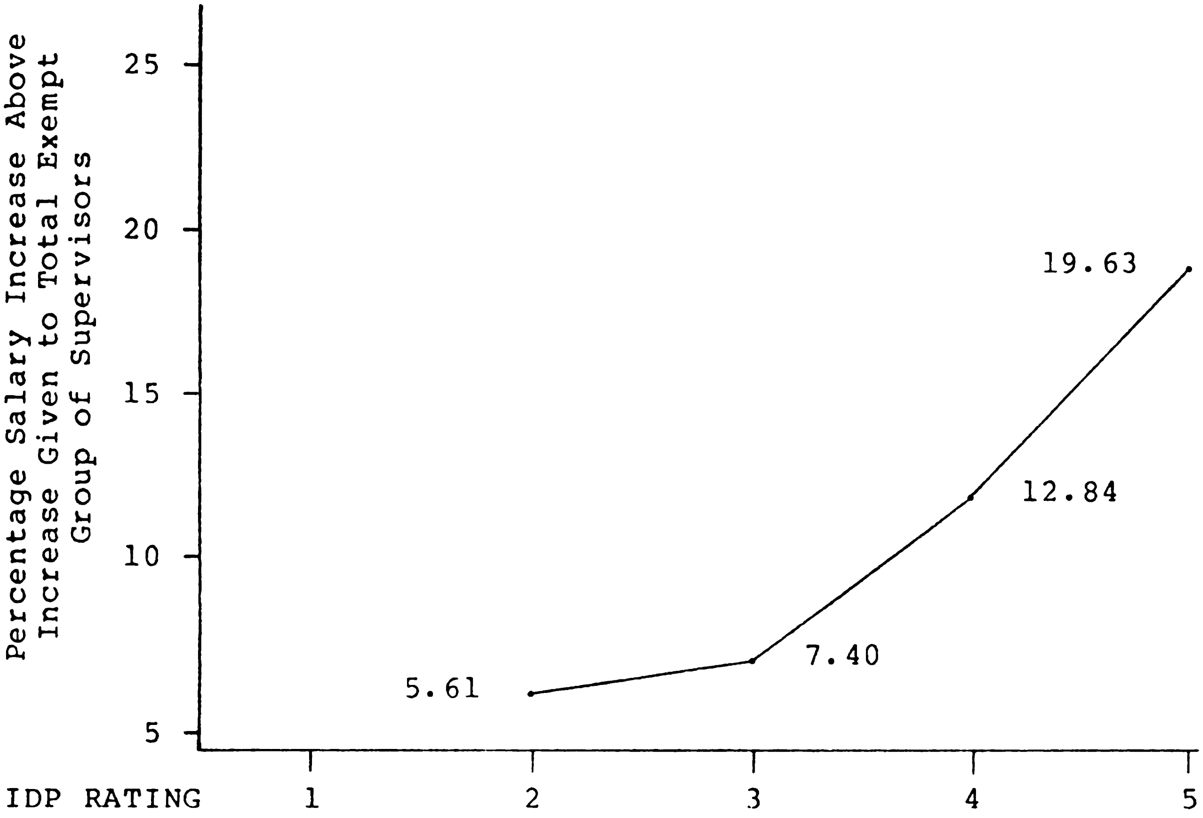
FIGURE 5

PERCENTAGE BY WHICH THE MEAN SALARY INCREASE OF IDP-ASSESSED SUPERVISORS EXCEEDED THE MEAN SALARY INCREASE OF THE TOTAL GROUP OF SALARIED SUPERVISORS



The general question to be answered by this study was:

> "What factors influence the extent to which an individual follows up on developmental recommendations made following his/her participation in an assessment center?"

The three specific questions to be answered by this study were:

1. To what degree are pre-assessment factors related to the extent to which an individual follows up on post-assessment center developmental recommendations?

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2. To what degree are factors associated with the assessment center and feedback process related to the extent to which an individual follows up on post-assessment center developmental recommendations?
3. To what degree are post-assessment factors related to the extent to which an individual follows up on developmental recommendations made during the post-assessment feedback process?

Research Method

Individuals who had participated in an assessment center designed to measure the skills and qualities necessary for a first-line supervisor (Manufacturing Foreman) at Steelcase were used as subjects for the research. One pool of data was gathered through a questionnaire (See Appendix C) designed to collect the assessees' perceptions of various elements of the assessment center, the feedback process, conditions following the receipt of assessment center feedback, and their descriptions of the developmental efforts made since receiving the feedback. Information contained in existing individual assessment files included written exercises produced by each candidate during the assessment center and assessor judgments regarding performance and formed another pool of data for the research. Data collected from the questionnaires and the subjects' assessment files were analyzed to determine the degree to which relationships

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exist between selected factors and the dependent variable, i.e., the degree of follow-up on post-assessment developmental recommendations. The literature relating to assessment and assessment centers, managerial selection and development, early identification, testing, adult development, job analyses, and feedback was carefully researched to identify any previous studies which could be used as a basis for the present work.

The interview method of data collecting was originally considered by the researcher for this study. An interview method would have, of course, allowed for further clarification of questions and responses, would that have been necessary. To interview over 300 individuals during their working hours, however, would have been an extremely difficult task in terms of scheduling, length of time, and expense.

Participant Selection

In this study, all individuals who had participated in the Steelcase, Inc. IDP who were also currently employed at the time of the study (N=335) were used as the population from which the subjects were drawn. As mentioned earlier, 17 other individuals also had participated in the IDP who, for various reasons, were no longer in the employment of Steelcase and could not be contacted. The entire group satisfying both conditions, i.e., assessed and currently employed, was chosen to eliminate any initial sampling bias.

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Each of the individuals was asked through a letter from the Steelcase, Inc. Vice President of Manufacturing (See Appendix D) to respond to a questionnaire. Of the questionnaires distributed, 300 (89.6 percent) were returned; of these, 299 were usable for the study.

Those individuals who had been assessed in the IDP between 1973 and April, 1985 exhibited the following characteristics at the time of assessment:

1. None were in the target job (Manufacturing Foreman).
2. All but one had a position at a pay grade lower than that of a Manufacturing Foreman.
3. Nearly all were working in highly product-related departments; only seven were from non-manufacturing departments, i.e., marketing, personnel, purchasing, and data processing.
4. Nearly all were male; only 22 were female. Eighteen (82 percent) of the females had been assessed since April, 1982.
5. They ranged in age from 22 to 60 years. The mean age at the time of assessment was 34.3 years.
6. They ranged in seniority from 9 months to 39 years, 1 month. The mean seniority was 9.48 years.

Instrumentation

One pool of data used in this study was provided by the individual IDP files maintained for each participant. Each file contains:

1. A biographical background questionnaire completed by the candidate before IDP participation.
2. Assessors' notes on behavioral observations as the candidate worked through the IDP exercises.
3. Individual assessor ratings of candidate performance on each of the critical dimensions of the target job, as well as each assessor's rating of overall potential to succeed in the target job.
4. Integrated ratings of candidate performance on each of the ten critical job dimensions as well as a single, integrated rating of the candidate's overall potential to succeed in the target job.
5. An original copy of the written report read to the candidate during the feedback session.
6. A photocopy of a "Summary Profile" given to the candidate to keep. This document contains highly condensed feedback regarding IDP performance.
7. All written material (original exercises, notes) produced by the candidate during the IDP.
8. A description of suggested developmental paths to be taken to improve upon skills and personal qualities identified as needing improvement, i.e., below

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the level required by the target job of Manufacturing Foreman. This information appeared on the "Summary Profile" given to the candidate.

At this point, it is appropriate to describe the content of the IDP and the way in which the exercises are used.

Four exercises comprise the Identification Development Program and are presented to the candidates in the following order (six candidates always are invited to a given session):

1. Leaderless Group Discussion. In this exercise, each assessee is asked to play the role of a Manufacturing Superintendent at the Sellmore Company. Each is given a description of a candidate (presumably given to him/her by a subordinate Foreman) to be considered for a vacancy of Foreman. Each of the background descriptions was previously tested for equal desirability of candidates--all are essentially reasonably qualified, each with one fault of some sort. The assessees are told they have one hour in which to discuss and decide which of the candidates will be recommended first to fill the new vacancy, which will be second, etc. The assessees are told each should do the best job possible to get his/her candidate promoted but to make the best decision for the company as a whole.
2. Foreman's In-Basket. In this exercise, each assessee is given a simulated in-basket containing 14

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different letters, notes, and memos and is told to assume the role of a first-line foreman in the packing section of a warehouse. The objective is to identify how each item will be handled in the upcoming week; the candidate is told he/she will be going on a week long vacation and will have to write out all instructions. Separate memo paper is provided to the candidate to be used, if desired, to respond to the items. The time limit for the exercise is 90 minutes. Following the written portion of the exercise, each assessee is interviewed by one of the assessors to identify how and why the items were handled as they were, and to present alternative ways of handling the items to measure the assessee's ability to make decisions on the spot. A standard interview guide provided to each assessor to insure consistency across interviews.

3. Interview Simulation. In this exercise, the administrator of the IDP plays the role of Pat Jones, an electronic equipment assembler. Pat Jones is identified through written material provided to the assessee as a highly competent and likeable worker who has also been absent the last three Fridays with no excuse and whose work area has been untidy. The assessee is told the objective is to spend up to 15 minutes in a one-on-one discussion with Pat

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Jones and, through assuming the role of Pat's supervisor, gain Pat's commitment to improve. One additional assessor is present during this simulation to take notes of the assessee's handling of the exercise.

4. Scheduling Exercise. In this exercise, the assessees are told to assume the role of Foreman in a six-person plumbing shop. Each is given a brief description of the six employees and a description of a number of jobs to be scheduled during the day. A number of other factors are described (general scheduling policy, key elements of a labor agreement, etc.) which the assessee must take into consideration when working out a work schedule for the six plumbers for the day. The time limit on this exercise is 45 minutes. At the end of the time limit, each candidate is given a description of three new jobs to be considered which may cause the candidate to revise the initial schedule. The time limit on the second portion of the Scheduling Exercise is 20 minutes.

A matrix describing how the assessors obtain information on the IDP variables is seen in Appendix F.

The assessment staff meets during the two days following the actual one day assessment program. For each candidate, the assessment staff spends approximately 2 1/2 hours in a post

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For each of the critical job dimensions of the position of Manufacturing Foreman each assessor applies one of the following numerical ratings to express the amount of behavior exhibited by the candidate:

"5" - Outstanding--more skill than the position requires.

"4" - Good--the normal skill level needed for acceptable performance.

"3" - Moderate--a bit less skill than would be needed for acceptable performance; some development required.

"2" - Limited--quite a bit less skill than needed for acceptable performance; quite a bit of development required.

"1" - Low--essentially no skill seen; development critical.

After all dimensions are independently rated, the assessment staff members compare and discuss their ratings until general consensus has been achieved.

For the rating of a candidate's overall potential to succeed as a Manufacturing Foreman, each assessor applies a rating of "H" (High), "M" (Moderate), or "L" (Low). Again, after the assessors have independently rated a candidate's overall potential, the assessors compare and discuss their overall ratings to reach consensus. The overall rating of supervisory potential as supplied by the integrated assessor ratings is expressed on a seven-point scale ranging from High to Low, with increments in between:

H	(High)
H-	(High Minus)
M+	(Moderate Plus)
M	(Moderate)
M-	(Moderate Minus)
L+	(Low Plus)
L	(Low)

All of the above information was used as one pool of data for this research.

To establish the reliability of the data collected by the IDP it will be necessary to describe the process by which IDP assessors are selected and trained. Assessors generally are selected from the ranks of Manufacturing Superintendents--the organizational level to which Manufacturing Foremen report directly. Because of this, and because most had been in the position of Manufacturing Foreman at one time, Manufacturing Superintendents have a broad understanding of the skills required of a successful Manufacturing Foreman. Additional assessors may also be selected from the large pool of Manufacturing Foremen while others are chosen from the Human Resources Division of Steelcase--more specifically from the Employee Development Department which is responsible for management training and for the administration of the IDP.

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The individuals selected to conduct the training sessions for new IDP assessors are Human Resource Development Consultants with training and experience in the measurement and improvement of human performance as well as experience in the administration of the IDP.

Over the four days of training, assessor candidates participate in each of the four exercises of the IDP as well as learn how to observe, record, classify, and specifically describe behavior. They are instructed and given practice in the use of the various forms, check lists, and reports of the IDP, the consensus-seeking integration process of the variable ratings and the overall rating of supervisory potential. Performance criteria for a newly-trained group are measured by comparing the new group's judgments of videotaped (standardized) assessment situations to the judgments of an experienced IDP staff using the same situations. If the newly-trained group's ratings, i.e., the means of the individual ratings for each of the variables, are within ±0.5 of the ratings of the experienced staff and the mean of the overall rating of supervisory potential does not deviate by more than one point on the seven-point rating scale when compared to the mean overall rating of supervisory potential determined by the experienced staff, the assessor training is considered to be successful.

Reliability of IDP ratings is also improved during the evaluation discussions as assessors are required to reach a degree of consensus in rating variables and overall rating of supervisory potential. Regarding the individual variables, the four assessors on any given staff are required to produce ratings using the 1-to-5 scale (described earlier) which deviate from each other by no more than one rating point. This means, for example, that initial assessor ratings on a selected variable of "3", "3", "4", and "2" would not be permitted. Though deviations of more than one point are quite uncommon, when they do occur the assessors must reopen their discussion on that variable and cite evidence and answer questions of the others to support their positions. When one or more assessors are comfortable in changing the rating(s), the "split" can be resolved. The mean of the new ratings is then calculated. This consensus-seeking rating process ensures a high degree of interrater reliability.

The second pool of data for this study was collected through the questionnaire seen in Appendix C. The following is a description of the rationale for questionnaire items and the procedure by which the questionnaire was validated.

In designing the questionnaire, the design principles of Babbie (1973) and Sudman and Bradburn (1983) were followed. The questionnaire was made as brief as possible, given the type and amount of data needed to answer the questions of the study. Most of the questionnaire items were structured with only one free-response item requiring a potentially long answer. The free-response item was designed to gather information about the dependent variable, i.e., the actual extent to which IDP assessees had followed up on post-assessment developmental recommendations. No masking items were included on the questionnaire.

Each question was worded to deal with a single concept and was worded to minimize any misunderstanding on the part of respondents. Additionally, the final draft of the questionnaire was typeset to reduce the number of pages required. Typesetting gave the questionnaire a neat and professional appearance and made it appear relatively small and easy to complete.

To further increase the response rate, a cover letter signed by the Steelcase, Inc. Vice President of Manufacturing (See Appendix D) accompanied each questionnaire to motivate each respondent to fulfill the request for information. The letter was neatly typed and emphasized the need for the study as well as the confidentiality of the responses as a potential means of improving truthfulness and the percentage of returns. A pre-addressed envelope was given to each respondent as a means of helping to make the questionnaire return as easy as possible.

An initial draft of the questionnaire was given, along with a description of the intent of the study and research questions, to four industrial psychologists for their review. They included: (1) Joseph Allen Cook, Ph.D., Consultant, at Roher, Hibler, & Replogle of Grand Rapids, MI; (2) Lecter L. Hyder, Jr., Ph.D., Consultant, at Roher, Hibler, & Replogle of Grand Rapids, MI; (3) John E. Nangle, Ph.D., Associate Director of Institutional Research at Western Michigan University of Kalamazoo, MI; (4) James C. Soule, Ph.D., Vice President of Human Resources at Steelcase, Inc. of Grand Rapids, MI. Their comments and suggestions were used to make the draft of the questionnaire which was pilot-tested with a sample of respondents.

The questionnaire was mailed to six individuals with the cover letter from the Steelcase Vice President of Manufacturing. The respondents were given ten days to complete and return the questionnaire. The returned questionnaires were inspected after which the six respondents were contacted by telephone to comment and make specific suggestions on the directions, recording procedures, and specific items. This feedback was used to confirm the design of the questionnaire which was then typeset for distribution to the remaining members of the population (See Appendix C). The data from the six initial respondents were included in the study.

After the ten day time limit for responding had passed, a reminder letter was mailed by the Vice President of Manufacturing (See Appendix E) to those individuals whose questionnaires had not been returned.

The Research Questions

This research was designed to provide data which will be appropriate to enable the researcher to answer the following general and specific questions:

General Question

What factors influence the extent to which an individual follows up on developmental recommendations made following his/her participation in an assessment center?

Specific Questions

1. To what degree are pre-assessment factors related to the extent to which an individual follows up on post-assessment center developmental recommendations?

2. To what degree are factors associated with the assessment center and feedback process related to the extent to which an individual follows up on post-assessment center developmental recommendations?

3. To what degree are post-assessment factors related to the extent to which an individual follows up on post-assessment center developmental recommendations?

Treatment of Data

Information on assessment center participants' perceptions of various pre-, during-, and post-assessment factors was collected, along with their descriptions of post-assessment developmental activities. In addition, certain demographic data were collected (age, sex, seniority, etc.).

Each participant's description of post-assessment developmental activity was used as the dependent variable. The descriptions were coded by the researcher and two additional IDP assessors using a rating scale (See Figure 6) essentially identical to that which other IDP assessors use to rate assessees' skill levels in each of the ten critical job dimensions.

FIGURE 6

RATING SCALE FOR CODING THE DEPENDENT VARIABLE

"To what extent has this individual pursued
post-IDP developmental recommendations?"

5 = To an OUTSTANDING extent.

4 = To a GOOD extent.

3 = To a MODERATE extent.

2 = To a LIMITED extent.

1 = To a VERY LIMITED extent.

Each assessor coding post-assessment developmental activity was first asked to rate the level of activity, then to compare the rating to the ratings of the other two assessors. If the ratings deviated from one another by one point or less, it was agreed that consensus was achieved. If any two ratings deviated by two or more points, the assessors were then asked to discuss their ratings until one or more of the ratings could be changed to achieve consensus. After this consensus was achieved on the rating of a given IDP participant's post-assessment developmental activity, the mean of the three individual ratings was calculated.

Using the mean rating of post-assessment developmental activity as the dependent variable, a log-linear model with a chi-square test statistic was used to measure the dependence between variables. This method of analysis was selected over other options like regression analysis, factor analysis, and principal components analysis, because the data of the study are primarily in ordered categories whereas the optional methods of analysis assume multivariate normality.

The following is a description of how data used to determine the answer to Research Question #1 were treated.

The pre-assessment factors are identified as:

a. Age.
b. Company Seniority.
c. Desire for the Target Job.
d. Formal Educational Level.
e. Organizational Level.
f. Sex.
g. Desire to Attend the Assessment Center.

Data on factors "c" and "g" were collected through the questionnaire designed for this study. Data for the other factors were collected and placed in personnel and IDP files before the individuals attended the assessment center. For each pre-assessment factor except "f" a log-linear model with a chi-square test statistic (Agresti, 1984) was used to determine the degree of relationship to the dependent variable.

Factors "a" (Age) and "b" (Company Seniority) were expressed in number of years.

Factors "c" (Desire for the Target Job) and "g" (Desire to Attend the Assessment Center) were coded by simply using the numbers associated with the items selected by respondents to the questionnaire.

Factor "d" (Formal Educational Level) was coded by using the following five-point scale:

"5" - Approximately a four-year degree (or more).

"4" - Approximately a two-year degree.

"3" - High school diploma/G.E.D. supplemented by a few additional courses.

"2" - High school diploma or G.E.D.

"1" - Less than high school diploma or G.E.D.

Factor "e" (Organizational Level at Assessment) was coded using the system by which Steelcase places relative values on positions within the company. Each job's value is described by totaling points from a number of different categories. The point totals (calculated by the Steelcase Compensation Department) for all jobs range from a minimum of 200 to a maximum of 2,000. This system was used as it accurately reflects subtle changes in organizational level.

Factor "f" (Sex) was simply coded "M" (Male) or "F" (Female).

The following is a description of how data used to determine the answer to Research Question #2 were treated.

The during-assessment factors are identified as:

a. Overall rating of potential to succeed in the target job.

b. Perceived realism of assessment situations/exercises.

c. Perception of the utility of the feedback process itself, including:

    i. Appropriateness of the amount of time spent during the oral feedback.

    ii. Credibility of the individual delivering the feedback.

    iii. Sensitivity displayed by the individual delivering the feedback.

    iv. Relevance of the feedback in comparison to the critical job dimensions.

    v. Acceptability of the time delay between the assessment and feedback.

    vi. Relevance of the developmental recommendations to the developmental needs identified.

Factor "a" (Overall Rating of Supervisory Potential) was coded by the respective assessment staff and placed in the individual's assessment file following the evaluation discussion.

All other factors were coded by simply using the numbers associated with the items selected by respondents to the questionnaire.

For all during-assessment factors the log-linear model and chi-square test statistic described by Agresti (1984) were used in an attempt to identify relationships to the dependent variable.

The following is a description of how data used to determine the answer to Research Question #3 were treated.

The post-assessment factors were identified as:

a. Perceived level of support provided by each of the following for individual development efforts:
   - i. Organization.
   - ii. Immediate supervisor/manager.
   - iii. Co-workers.
   - iv. Family members.
   - v. Friends.

b. Desire for the target job (post-assessment).

c. Perceived likelihood of achieving the target job.

All post-assessment factors were coded by simply using the numbers associated with the items selected by respondents to the questionnaire. The data were analyzed using a log-linear model and chi-square test statistic in an attempt to identify relationships to the dependent variable.

Summary

Using a questionnaire, 299 participants provided the study with their perception of pre-, during-, and post-assessment center factors. The participants were all current Steelcase, Inc. employees who had participated in the Steelcase IDP since its development in 1973. Additional data for the study were primarily demographic and were collected from assessment files and personnel records.

One questionnaire item requested participants to describe their post-assessment developmental activities as they related to the target job. These descriptions were rated by three trained IDP assessors using a consensus-seeking process identical to the process used to rate an assessee's performance in the dimensions of the target job. Once the three assessors achieved general consensus on the rating of a candidate's post-assessment developmental activity, the mean of the individual ratings was computed and used as the dependent variable.

The data were subjected to a statistical analysis to determine the degree of relationship of each selected factor to the dependent variable.

CHAPTER IV

ANALYSIS OF DATA

The techniques for analyzing the relationships between selected pre-, during-, and post-assessment factors and participants' extent of follow-up on post-assessment center developmental recommendations are presented in this chapter.

The main research question to be answered is:

> Q. What factors influence the extent to which an individual follows up on developmental recommendations made following his/her participation in an assessment center?

As mentioned in Chapter III, a total of 352 individuals were assessed in the Steelcase Identification Development Program (IDP) between 1973 and mid-1985. Of this total, 335 (95.2 percent) were still employed and were considered the population for the study. Of those 335 individuals who received the questionnaire designed for the study, 300 (89.6 percent) returned questionnaires; 299 (89.3 percent) of the questionnaires mailed were returned completed in a manner considered satisfactory for further analysis.

A frequency distribution of the study participants' ratings of post-IDP follow-up on developmental recommendations (the dependent variable) is seen in Table 4.1. It is clear that the distribution is highly skewed toward the low end of the scale, i.e., nearly 52 percent of the respondents' post-assessment follow-up on recommendations was rated 1.0 to 2.0 on a five-point scale, with "1.0" being low. This translates into the fact that slightly over half of the individuals participating in the research did little or nothing to improve those skills and qualities identified as needing improvement.

TABLE 4.1--RATING OF PARTICIPANTS' FOLLOW-UP ON IDP RECOMMENDATIONS FOR THEIR IMPROVEMENT

```
                                                                          Freq  Cum      %      Cum
           Low                                                                  Freq            %

           1.0   ***********************************************            93    93   31.10   31.10
           1.3   **********                                                 20   113    6.69   37.79
           1.7   ******                                                     12   125    4.01   41.81
           2.0   ***************                                            29   154    9.70   51.51
                                                                                                      52%
           ------------------------------------------------------------------------------------------------
           2.3   ***********                                                21   175    7.02   58.53
 Level     2.7   ****************                                           32   207   10.70   69.23
 of        3.0   **********                                                 20   227    6.69   75.92
 Follow-up 3.3   *********                                                  18   245    6.02   81.94
           3.7   **********                                                 19   264    6.35   88.29
           4.0   ******                                                     11   275    3.68   91.97
           4.3   *****                                                      10   285    3.34   95.32
           4.7   **                                                          3   288    1.00   96.32
           5.0   ******                                                     11   299    3.68  100.00
           High  ----+----+----+----+----+----+----+----+----+--
                    10   20   30   40   50   60   70   80   90

                                 Frequency
```

Though a relatively small number of individuals (35) did not return questionnaires, it appears they differed from the respondents. It can be seen from Table 4.2 that the percentages of non-respondents scoring poorly in the IDP assessment exceeded the percentage of poor scorers in the responding group. In particular, the percentage of non-respondents whose overall rating of supervisory potential was "1" (Low) exceeded the corresponding percentage figure for respondents by a factor of approximately 2 1/2 (34.29 percent vs. 14.00 percent).

TABLE 4.2--IDENTIFICATION DEVELOPMENT PROGRAM SCORES OF RESPONDENTS VS. NON-RESPONDENTS TO THE QUESTIONNAIRE

```
Respond IDP    Overall IDP Rating                                                Freq  Cum       %     Cum
        Score                                                                          Freq            %

  No    1      ************                                                        12    12   34.29   34.29

        2      ****                                                                 4    16   11.43   45.71

        3      ****                                                                 4    20   11.43   57.14

        4      ********                                                             8    28   22.86   80.00

        5      ***                                                                  3    31    8.57   88.57

        6      **                                                                   2    33    5.71   94.29

        7      **                                                                   2    35    5.71  100.00

  Yes   1      ******************************************                          42    42   14.00   14.00

        2      ***************************************                             39    81   13.00   27.00

        3      **********************************                                  34   115   11.33   38.33

        4      *****************************************************************   80   195   26.67   65.00

        5      ******************************                                      30   225   10.00   75.00

        6      **************************************************                  50   275   16.67   91.67

        7      *************************                                           25   300    8.33  100.00

               ----+----+----+----+----+----+----+----+----+----+--------------+
                   5   10   15   20   25   30   35   40   45   50             80
                                           Frequency
```

It is possible that a number of non-respondents did not receive or return their questionnaires due to illnesses, medical leaves of absence, vacations, or interplant transfers.

As a means of improving the validity of the study, 50 of the questionnaires returned were randomly selected and their descriptions of developmental recommendations were compared to data kept in files in the Employee Development Department at Steelcase. Because the Employee Development Department administers the Steelcase Educational Assistance Program (a program by which employees are reimbursed for their tuition for various outside courses for which a passing grade is received) and conducts numerous management and supervisory development programs internally, it was considered to have the most accurate records on employee's developmental efforts. Some of the developmental activities listed by participants in the study such as various readings or job assignments could not be validated by this method. In all but one case, the descriptions were corroborated. In the case of the exception, the individual had listed completing an internal development program after participating in the IDP whereas the program had been completed slightly before the time of assessment. This error did not significantly alter the individual's score of post-assessment follow-up on developmental recommendations.

In designing the study, a log-linear model with a chi-square test statistic was selected for analysis as it was

pre-determined that the data would be in ordered categories rather than continuous. Not only was the assumption of multivariate normality violated by the categorical nature of the data, but also by the skewed distributions of the dependent variable and many of the factors selected for analysis. Because of this, many common methods of data analysis, e.g., factor analysis, regression analysis, and principal components analysis were of doubtful use due to their requirement of approximate multivariate normality. In fact, a factor analysis and a principal component analysis were attempted, but failed to yield useful results due to the skewed and categorical nature of the data. An attempt was made to apply a regression analysis after transforming the data with the formulas $1/y$ and $1/\sqrt{y}$; this attempt also failed to yield useful results.

In initially analyzing the data, chi-square tables were developed using the 13-point rating scale for the dependent variable (See Table 4.3). This method of analysis was abandoned; spreading 299 bits of data over the 65 cells of a 5 X 13 table, for example, yielded an expected value per cell of less than five (4.60). The tables were so sparse that chi-square was not considered to be a valid test under these conditions.

TABLE 4.3--ORIGINAL/COLLAPSED RATINGS: POST-IDP FOLLOW-UP ON RECOMMENDATIONS

Scale	Original Rating	Revised Scale		Collapsed Rating
1	1.0	1	-	LOW
2	1.3			
3	1.7			
4	2.0			
5	2.3	2	-	MODERATE
6	2.7			
7	3.0			
8	3.3			
9	3.7			
10	4.0	3	-	HIGH
11	4.3			
12	4.7			
13	5.0			

To overcome this difficulty, the data on the dependent variable were aggregated in such a manner that the 13-point scale was collapsed into a three-point scale (Again see Table 4.3). Such collapsing of the dependent variable into a smaller number of categories significantly increased the expected number of cases per cell in each two-way table and made the chi-square test appropriate. With respect to the factors to be examined, those which were continuous (age at ass

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assessment, seniority at assessment, and job grade at assessment) were also collapsed into categories to allow the use of the chi-square test.

Each of the 22 factors to be examined were treated as independent variables, although certain factors (age, seniority, educational level, and job grade) were technically demographic factors. The statistics employed tested the null hypothesis of no association between the row variable and column variable.

The type of chi-square table and statistics constructed for each factor included the probability that the null hypothesis is true. This more clearly expresses the degree of dependence between the dependent variable and each of the factors examined.

Pre-assessment Factors

The research question to be answered by these factors is:

> "To what degree are pre-assessment factors related to the extent to which an individual follows up on post-assessment center developmental recommendations?"

The pre-assessment factors examined in this research are seen in Table 4.4.

TABLE 4.4--PRE-ASSESSMENT FACTORS AND PROBABILITIES OF NO RELATIONSHIP TO THE DEPENDENT VARIABLE

Pre-assessment Factor	Probability
a. Age at assessment	.0418*
b. Seniority at assessment	.4239
c. Formal education level	.0160*
d. Job grade (organizational level) at assessment	.6383
e. Sex	.9906
f. Desire to attend assessment center	.0186*
g. Desire for target job	.1453

*Significant

Age at Assessment

It was anticipated that post-assessment developmental activity would be dependent upon age and specifically that older individuals nearer the ends of their careers would be less inclined to work toward the target job. Conversely, it seemed reasonable to expect younger workers who had additional time to devote to their careers to sense the future value of their own development toward a more responsible position.

There is a fairly clear dependence between age at assessment and post-assessment follow-up on developmental recommendations. One can see from the chi-square chart and statistics (See Table 4.5) that those rated "high" in terms of following up on post-IDP developmental recommendations con

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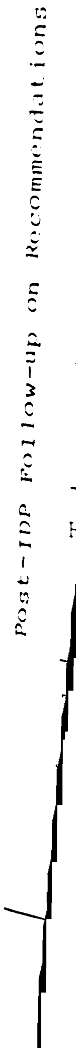


consist more of "younger" workers (32 individuals are under age 40) than of "older" workers (only three are age 40 or older). Also see the three-dimensional representation (See Figure 7).

TABLE 4.5--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY AGE AT IDP

	*Frequency Expected Row Pct Col Pct	Age				
		Under 30	30 - 39	40 - 49	50 or Older	Total
Post-IDP Follow-up on Recommendations	No Reply	5 . . .	22 . . .	9 . . .	0 . . .	.
	Low	43 45.3 27.92 48.86	78 80.3 50.65 50.00	22 21.6 14.29 52.38	11 6.7 7.14 84.62	154
	Moderate	28 32.4 25.45 31.82	63 57.4 57.27 40.38	17 15.5 15.45 40.48	2 4.8 1.82 15.38	110
	High	17 10.3 48.57 19.32	15 18.3 42.86 9.62	3 4.9 8.57 7.14	0 1.5 0.00 0.00	35
	Total	88	156	42	13	299

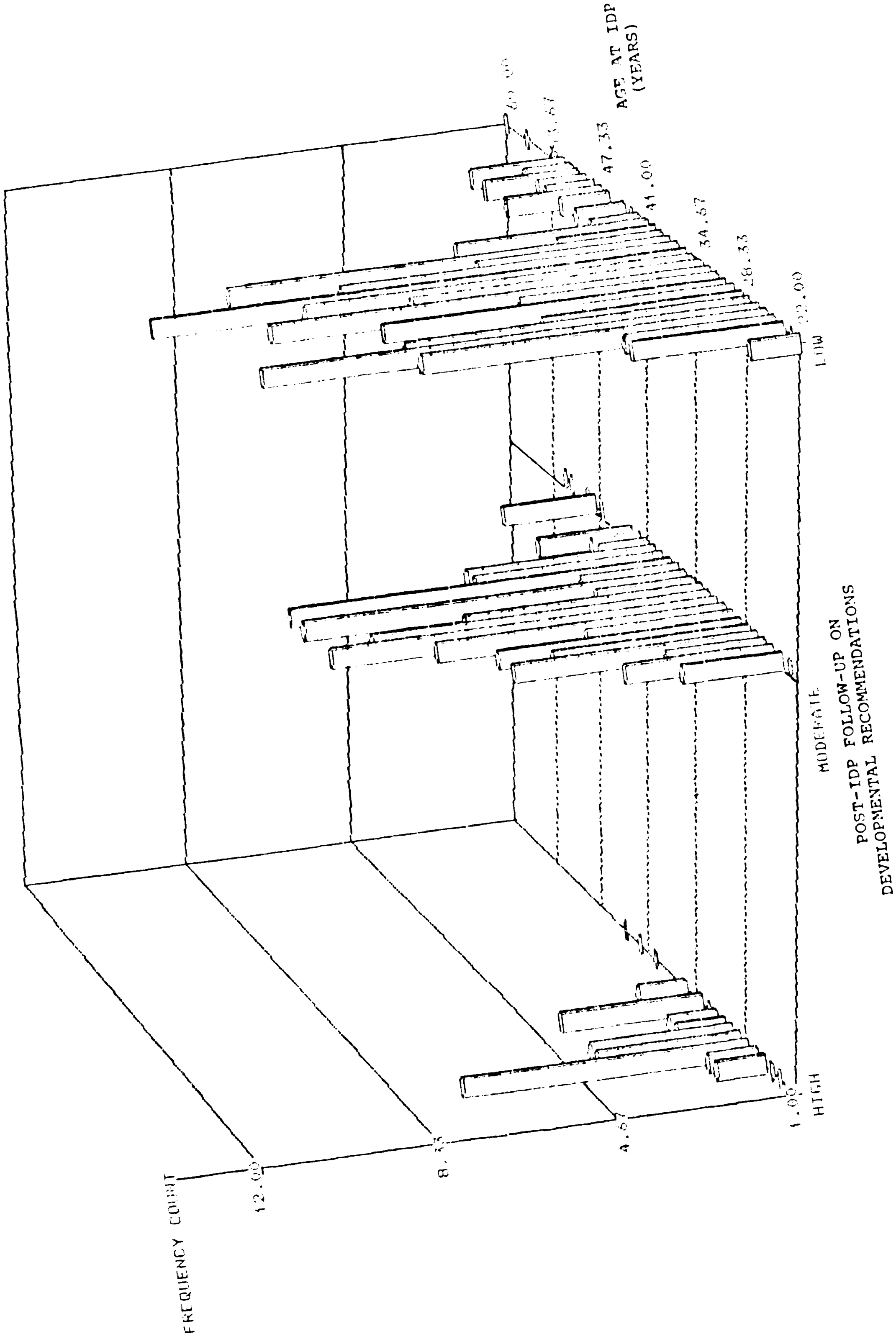
Statistics For 2-Way Tables

Chi-Square 13.082 DF = 6 PROB = 0.0418

*Elements in Each Cell of the Table.

Figure 7.

Post-IDP Follow-up on Developmental Recommendations by Age at IDP



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Seniority at Assessment

To begin with, it was expected that this factor would necessarily be highly intercorrelated with the factor "age at assessment." The rationale for this is clear; as an individual's seniority increases, his age increases by an equal amount. It would, of course, be impossible to find a worker with 25 years of seniority who was only 25 years old.

There was an expectation that a dependency might exist between seniority at assessment and the dependent variable. It was anticipated that, while workers with more seniority might have more insight into the workings of a manufacturing department, increasing seniority (like increasing age) would reduce an assessee's desire to follow up on assessment center developmental recommendations.

The chi-square table and statistics (See Table 4.6) indicate with a high degree of probability that no dependence exists between this factor and the dependent variable. The reader will notice, however, that in the groups of workers with ten or more years seniority (total of 123 people), only eight were rated "high" for post-IDP development. Also see Figure 8.

TABLE 4.6--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SENIORITY AT IDP

*Frequency

TABLE 4.6--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SENIORITY AT IDP

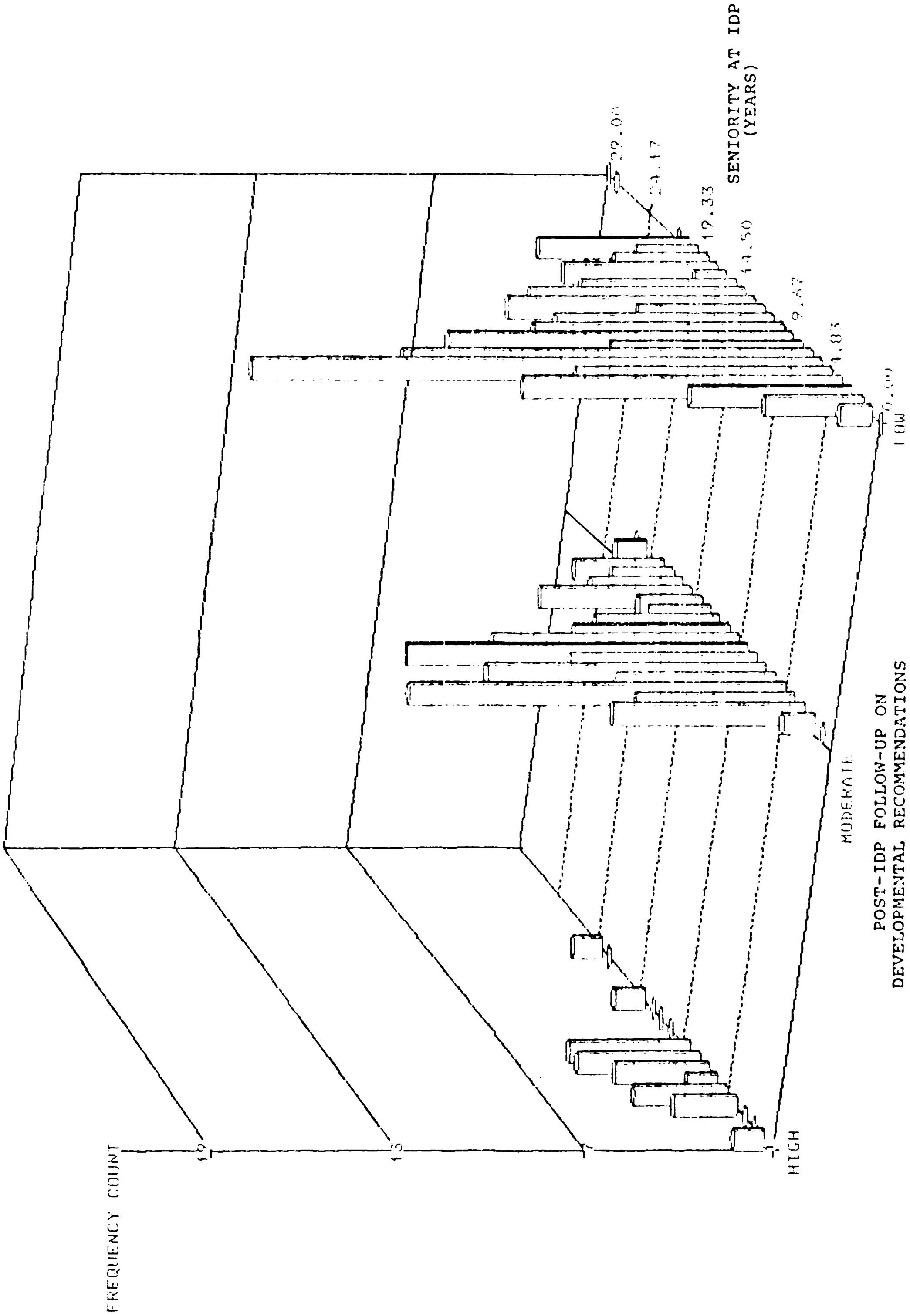
		Seniority					
	*Frequency Expected Row Pct Col Pct	<5 Yrs	5-9 Yrs	10-14 Yrs	15-19 Yrs	20+ Yrs	Total
Post-IDP Follow-up on Recommendations	No Reply	4 . . .	15 . . .	10 . . .	5 . . .	2 . . .	.
	Low	24 24.2 15.58 51.06	61 66.4 39.61 47.29	39 36.1 25.32 55.71	21 21.1 13.64 51.22	9 6.2 5.84 75.00	154
	Moderate	16 17.3 14.55 34.04	48 47.5 43.64 37.21	26 25.8 23.64 37.14	17 15.1 15.45 41.46	3 4.4 2.73 25.00	110
	High	7 5.5 20.00 14.89	20 15.1 57.14 15.50	5 8.2 14.29 7.14	3 4.8 8.57 7.32	0 1.4 0.00 0.00	35
	Total	47	129	70	41	12	299

Statistics For 2-Way Tables Chi-Square 8.099 DF = 8 PROB = 0.4239

* Elements in Each Cell of the Table.

Figure 8.

Post-IDP Follow-up on Developmental Recommendations
by Seniority at IDP



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Formal Educational Level

It was anticipated that formal educational level would be related to the dependent variable. Campbell and Hansen (1981) reported a positive relationship between an individual's level of formal education and his/her degree of comfort in an academic setting. Simply put, the more formal education one has, the more likely he/she might be to pursue additional educational experiences. This expectation appears to be confirmed by the study. The dependency between formal educational level and the degree of follow-up on post-IDP developmental recommendations was significant at the .016 level of confidence. See Table 4.7 and the three-dimensional representation (See Figure 9). One can see that none of those individuals whose post-IDP development was rated as "high" had an educational level of "1", that is, had not completed high school. The table also shows 62 percent of those individuals with two years of college or more (educational levels of "4" and "5") were rated "moderate" or "high" in terms of post-IDP development.

TABLE 4.7--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY FORMAL EDUCATION LEVEL AT IDP

TABLE 4.7--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY FORMAL EDUCATION LEVEL AT IDP

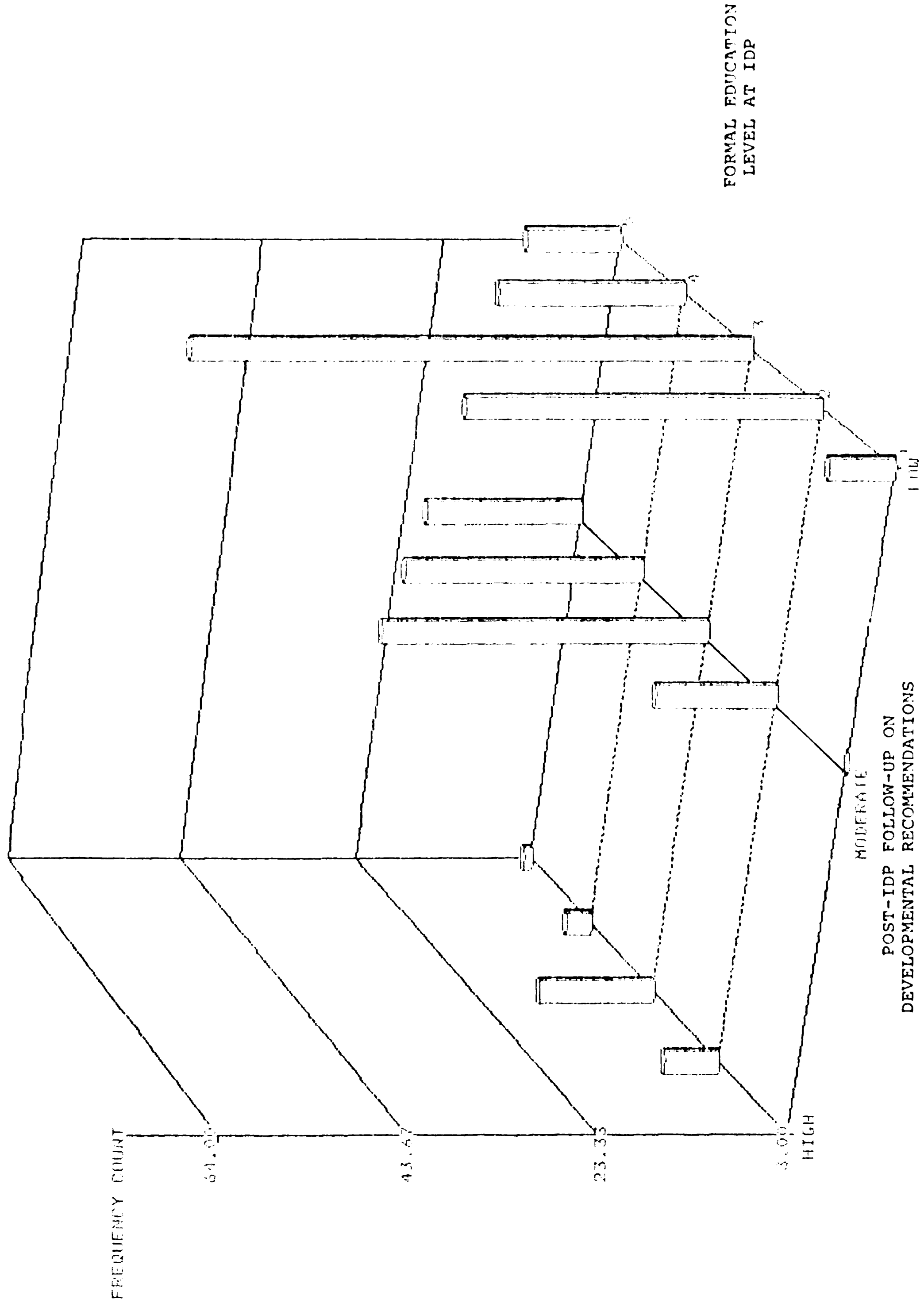
Post-IDP Follow-up on Recommendations	*Frequency Expected Row Pct Col Pct	Formal Education Level						
		No Data	1	2	3	4	5	Total
	No Reply	1 . . .	2 . . .	9 . . .	15 . . .	7 . . .	2 . . .	.
	Low	1 . . .	10 6.7 6.54 76.92	41 34.0 26.80 62.12	64 61.3 41.83 53.78	24 30.9 15.69 40.00	14 20.1 9.15 35.90	153
	Moderate	1 . . .	3 4.8 2.75 23.08	16 24.2 14.68 24.24	39 43.7 35.78 32.77	30 22.0 27.52 50.00	21 14.3 19.27 53.85	109
	High	0 . . .	0 1.5 0.00 0.00	9 7.8 25.71 13.64	16 14.0 45.71 13.45	6 7.1 17.14 10.00	4 4.6 11.43 10.26	35
	Total	.	13	66	119	60	39	297

Statistics For 2-Way Tables Chi-Square 18.786 DF = 8 PROB = 0.0160

*Elements in Each Cell of the Table.

Figure 9.

Post-IDP Follow-up on Developmental Recommendations by Formal Education Level at IDP



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Organizational Level (Job Grade) at Assessment

As described earlier, all jobs at Steelcase, Inc. are given a point value ranging from 200 through 2,000 to identify the relative contribution of each job to corporate success. This system of points was used as a representation of each study participant's organizational level or job grade. The number of points assigned to the target job of Manufacturing Foreman is 674. All IDP participants with the exception of one were in jobs graded lower than 674 at the time of their assessment center participation, i.e., their current jobs were less valued by the company than the target job.

It was anticipated that a dependency would exist between this factor and the dependent variable. In particular, it was expected that those of a higher organizational level might perceive less organizational "distance" between their actual levels and that of a Manufacturing Foreman and thus would believe that a promotion would be more likely, thereby justifying the effort of following developmental recommendations.

The chi-square table and statistics in Table 4.8 illustrate clearly with a probability of .6383 that this factor is not related to the dependent variable.

The reader will notice a total of only 272 cases contained in this analysis. This is due to the fact that the organizational levels at the time of assessment could not be located for 27 individuals.

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Though no patterns emerge upon examining the chi-square table, it may be interesting to note that 129 of the 272 (47.4 percent) for whom job grades at assessment were determined were in jobs graded 450-549. Also see the three-dimensional representation (See Figure 10).

TABLE 4.8--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY ORGANIZATIONAL LEVEL (JOB GRADE) AT ASSESSMENT

TABLE 4.8--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY ORGANIZATIONAL LEVEL (JOB GRADE) AT ASSESSMENT

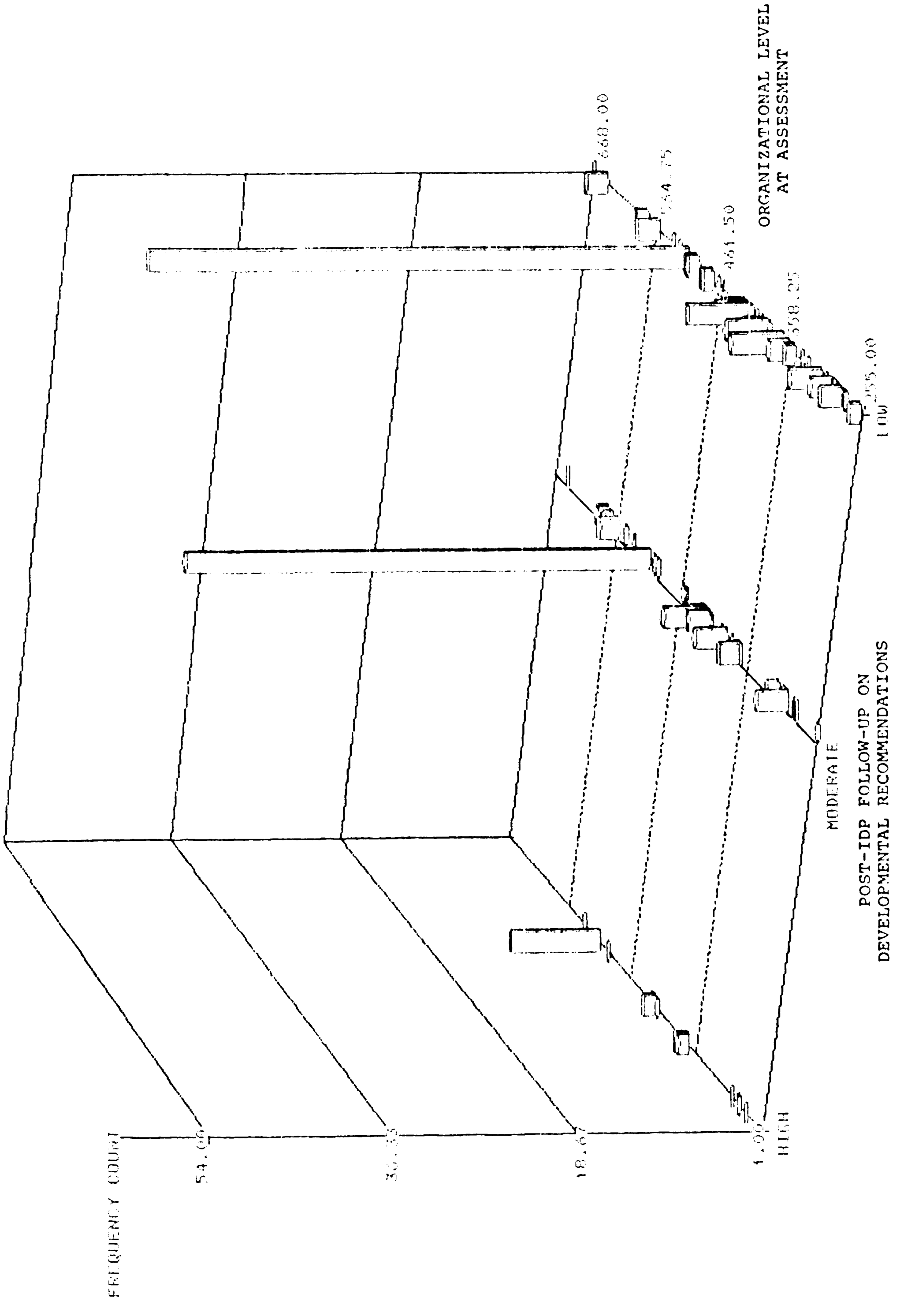
Post-IDP Follow-up on Recommendations	*Frequency Expected Row Pct Col Pct		Organizational Level at Assessment				
		No Data	< 350	350-449	450-549	550 +	Total
	No Reply	7 . . .	7 . . .	8 . . .	13 . . .	1 . . .	.
	Low	9 . . .	21 20.3 14.48 55.26	48 44.8 33.10 57.14	65 68.8 44.83 50.39	11 11.2 7.59 52.38	145
	Moderate	8 . . .	13 14.3 12.75 34.21	27 31.5 26.47 32.14	52 48.4 50.98 40.31	10 7.9 9.80 47.62	102
	High	10 . . .	4 3.5 16.00 10.53	9 7.7 36.00 10.71	12 11.9 48.00 9.30	0 1.9 0.00 0.00	25
	Total	.	38	84	129	21	272

Statistics For 2-Way Tables Chi-Square 4.284 DF = 6 PROB = 0.6383

*Elements in Each Cell of the Table.

Figure 10.

Post-IDP Follow-up on Developmental Recommendations by Organizational Level at Assessment



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It was anticipated that men would be more likely to pursue post-IDP development than women. The job of Manufacturing Foreman at Steelcase, Inc. and many other companies as well is primarily filled by men. Though legislation relating to employee selection procedures was changed in recent years to prohibit discrimination on the basis of sex where sex is not a job-related factor, it still seemed possible to the researcher that women might have perceived the target job as difficult to achieve and maintain and, therefore, have invested less in development toward the job.

Based upon the responses (See Table 4.9), it seems clear that the dependent variable is completely unrelated to sex as a factor. At each level of post-IDP development the percentages of females and males are essentially identical ("low": 50.00 percent vs. 51.59 percent; "moderate": 37.50 percent vs. 36.75 percent; "high": 12.50 percent vs. 11.66 percent).

It bears mentioning, however, that the rate of response for women (16/22 = 72.7 percent) was lower than the rate of response for men (284/313 = 90.7 percent).

The probability of no association between post-IDP development and sex was calculated to be .9906. Also see Figure 11.

TAB

Post-IDP Follow-up on Recommendations

TABLE 4.9--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SEX

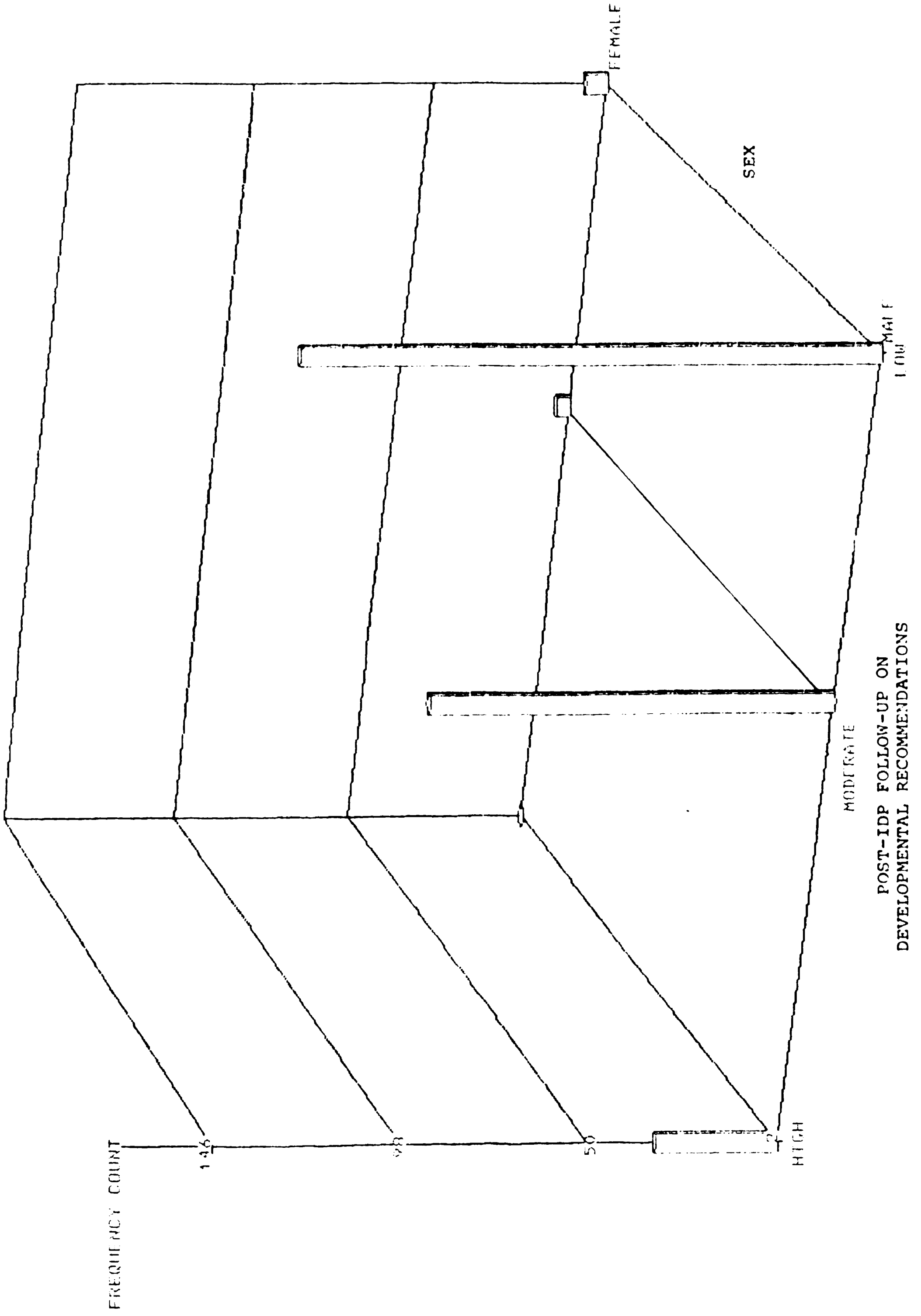
	*Frequency Expected Row Pct Col Pct	Sex		
		Female	Male	Total
Post-IDP Follow-up on Recommendations	No Reply	6 . . .	30 . . .	. . . .
	Low	8 8.2 5.19 50.00	146 145.8 94.81 51.59	154
	Moderate	6 5.9 5.45 37.50	104 104.1 94.55 36.75	110
	High	2 1.9 5.71 12.50	33 33.1 94.29 11.66	35
	Total	16	283	299

Statistics For 2-Way Tables

Chi-Square 0.019 DF = 6 PROB = 0.9906

*Elements in Each Cell of the Table.

Post-IDP Follow-up on Developmental Recommendations by Sex



Desire to Attend the Assessment Center

It was anticipated that a person's desire to participate in the assessment center would be related to the dependent variable. Those individuals who had a positive outlook on the instrumentality of the assessment center were expected to give more consideration to the developmental recommendations than those who had a lesser desire to attend.

Table 4.10 and the three-dimensional graph (See Figure 12) demonstrate a relationship between this factor and the dependent variable which is significant at the .0186 level of confidence.

Table 4.10 illustrates that half (150/299) of the respondents had a moderate ("3") desire to attend the IDP. It also illustrates that of those expressing little or no desire to attend the IDP ("2" and "1") only one person had a post-IDP rating of developmental activity of "high."

TABLE 4.10--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY DESIRE TO ATTEND THE ASSESSMENT CENTER

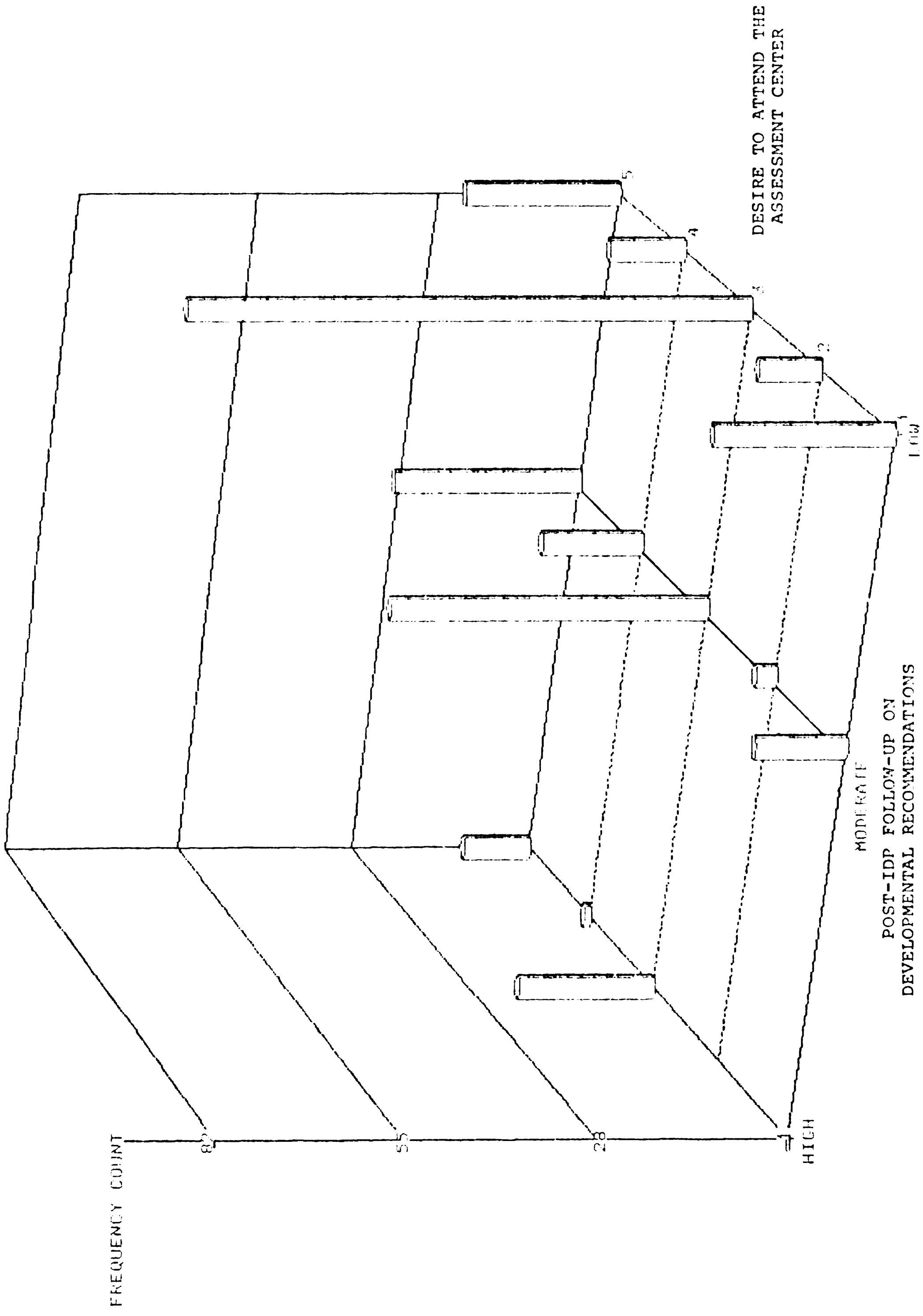
Post-IDP Follow-up on Recommendations	Desire to Attend the Assessment Center						
*Frequency Expected Row Pct Col Pct	No Data	1	2	3	4	5	Total
No Reply	34 . . .	1 . . .	0 . . .	1 . . .	0 . . .	0 . . .	.
Low	0 . . .	26 21.1 16.88 63.41	10 7.2 6.49 71.43	82 77.3 53.25 54.67	12 15.5 7.79 40.00	24 33.0 15.58 37.50	154
Moderate	0 . . .	14 15.1 12.73 34.15	4 5.2 3.64 28.57	47 55.2 42.73 31.33	16 11.0 14.55 53.33	29 23.5 26.36 45.31	110
High	0 . . .	1 4.8 2.86 2.44	0 1.6 0.00 0.00	21 17.6 60.00 14.00	2 3.5 5.71 6.67	11 7.5 31.43 17.19	35
Total	.	41	14	150	30	64	299

Statistics For 2-Way Tables Chi-Square 18.366 DF = 8 PROB = 0.0186

*Elements in Each Cell of the Table.

Figure 12.

Post-IDP Follow-up on Developmental Recommendations by Desire to Attend the Assessment Center



Desire for the Target Job

It was anticipated that this factor and the dependent variable would be strongly related--that an eagerness for the target job would motivate one to improve upon certain skills necessary for successful performance in that job. Table 4.11 illustrates a probability of true null hypothesis of .1453--in excess of a more commonly accepted level of .05.

The three-dimensional graph (See Figure 13) quite clearly shows that most of the respondents are located on the right-hand side of the diagonal.

TABLE 4.11--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY DESIRE FOR THE TARGET JOB

Post-IDP Follow-up on Recommendations

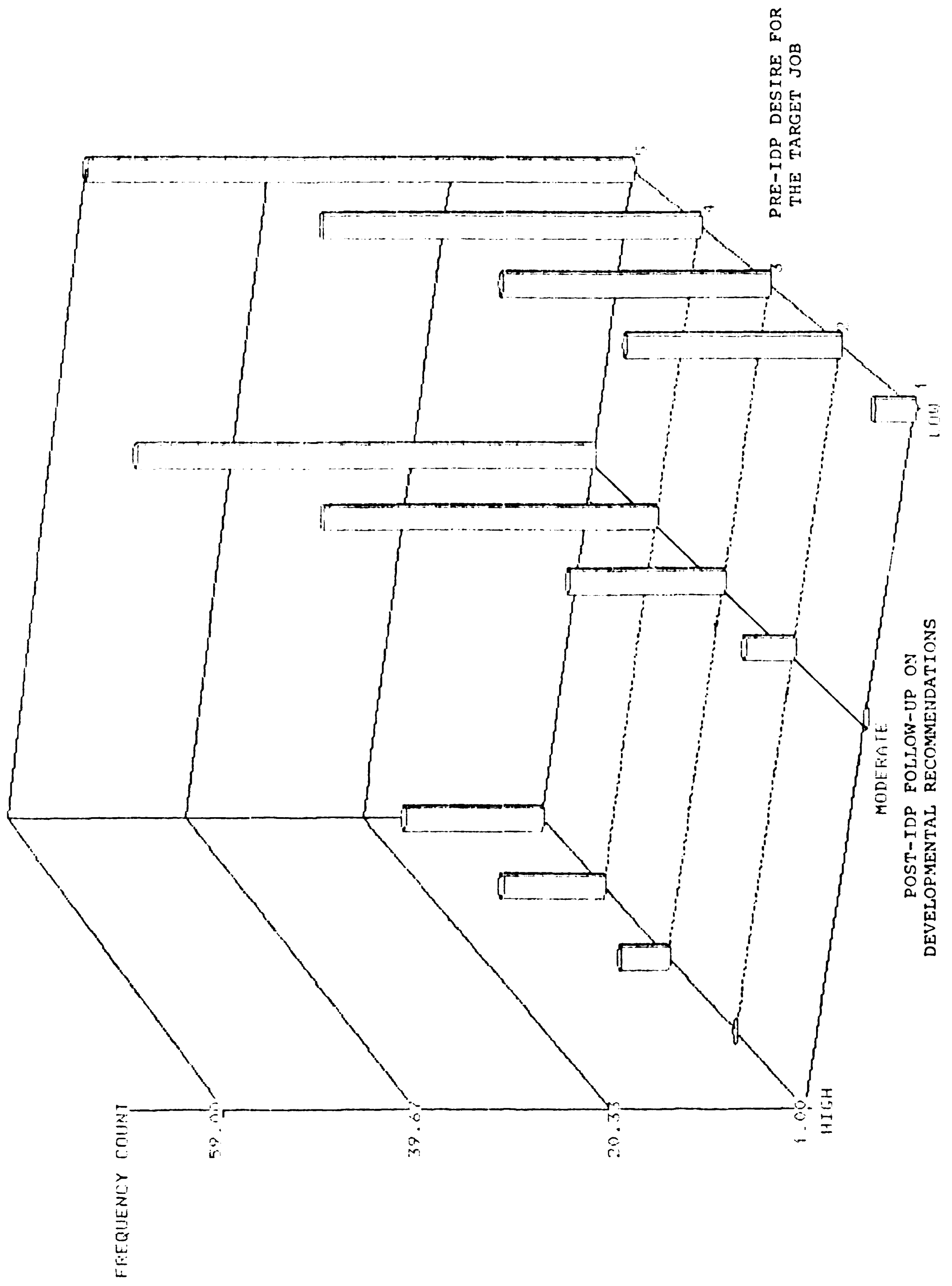
		Desire for the Target Job					
*Frequency Expected Row Pct Col Pct	No Data	1	2	3	4	5	Total
No Reply	34 . . .	0 . . .	0 . . .	0 . . .	2 . . .	0 . . .	.
Low	0 . . .	5 3.1 3.25 83.33	22 14.9 14.29 75.86	28 26.3 18.18 54.90	40 45.3 25.97 45.45	59 64.4 38.31 47.20	154
Moderate	0 . . .	1 2.2 0.91 16.67	6 10.7 5.45 20.69	17 18.8 15.45 33.33	36 32.4 32.73 40.91	50 46.0 45.45 40.00	110
High	0 . . .	0 0.7 0.00 0.00	1 3.4 2.86 3.45	6 6.0 17.14 11.76	12 10.3 34.29 13.64	16 14.6 45.71 12.80	35
Total	.	6	29	51	88	125	299

Statistics For 2-Way Tables Chi-Square 12.135 DF = 8 PROB = 0.1453

*Elements in Each Cell of the Table.

Figure 13.

Post-IDP Follow-up on Developmental Recommendations by Pre-assessment Desire for the Target Job



During Assessment Factors

The research question to be answered by these factors is:

> "To what degree are factors associated with the assessment center and feedback process related to the extent to which an individual follows up on post-assessment center developmental recommendations?"

The during-assessment factors examined in this research are seen in Table 4.12.

TABLE 4.12--DURING-ASSESSMENT FACTORS AND PROBABILITIES OF NO RELATIONSHIP TO THE DEPENDENT VARIABLE

During-assessment Factor	Probability
a. Rating of overall potential to succeed in target job	.0805
b. Realism of assessment exercises	.5887
c. Acceptability of time delay to feedback	.1186
d. Sensitivity of individual delivering feedback	.4853
e. Appropriateness of time spent discussing performance	.3157
f. Credibility of individual delivering feedback	.3706
g. Relevance of feedback to job dimensions	.4598
h. Logicalness of recommendations	.0087*

*Significant

Rating of Overall Potential to Succeed in the Target Job

Based on research findings by Fitz-enz, Hards, and Savage (1980, p. 60) it was anticipated that this factor would be related to the dependent variable. Specifically, it seemed likely that an individual who was seen as having potential to succeed in the target job would have the self-confidence, or an increased level of self-confidence, to follow up on developmental recommendations.

Table 4.13 illustrates a probability of a true null hypothesis of slightly higher than .05 (.0805). Further simple calculations show that 59.1 percent of those individuals rated as Low, Low+, and Moderate- ("1", "2", and "3" on Table 4.13) were also seen as having low degrees of follow-up on developmental recommendations.

The three-dimensional graph (See Figure 14) illustrates that, with some exceptions, nearly all of the cases lie on the right-hand side of the diagonal.

TABLE 4.13--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY RATING OF OVERALL POTENTIAL TO SUCCEED IN THE TARGET JOB

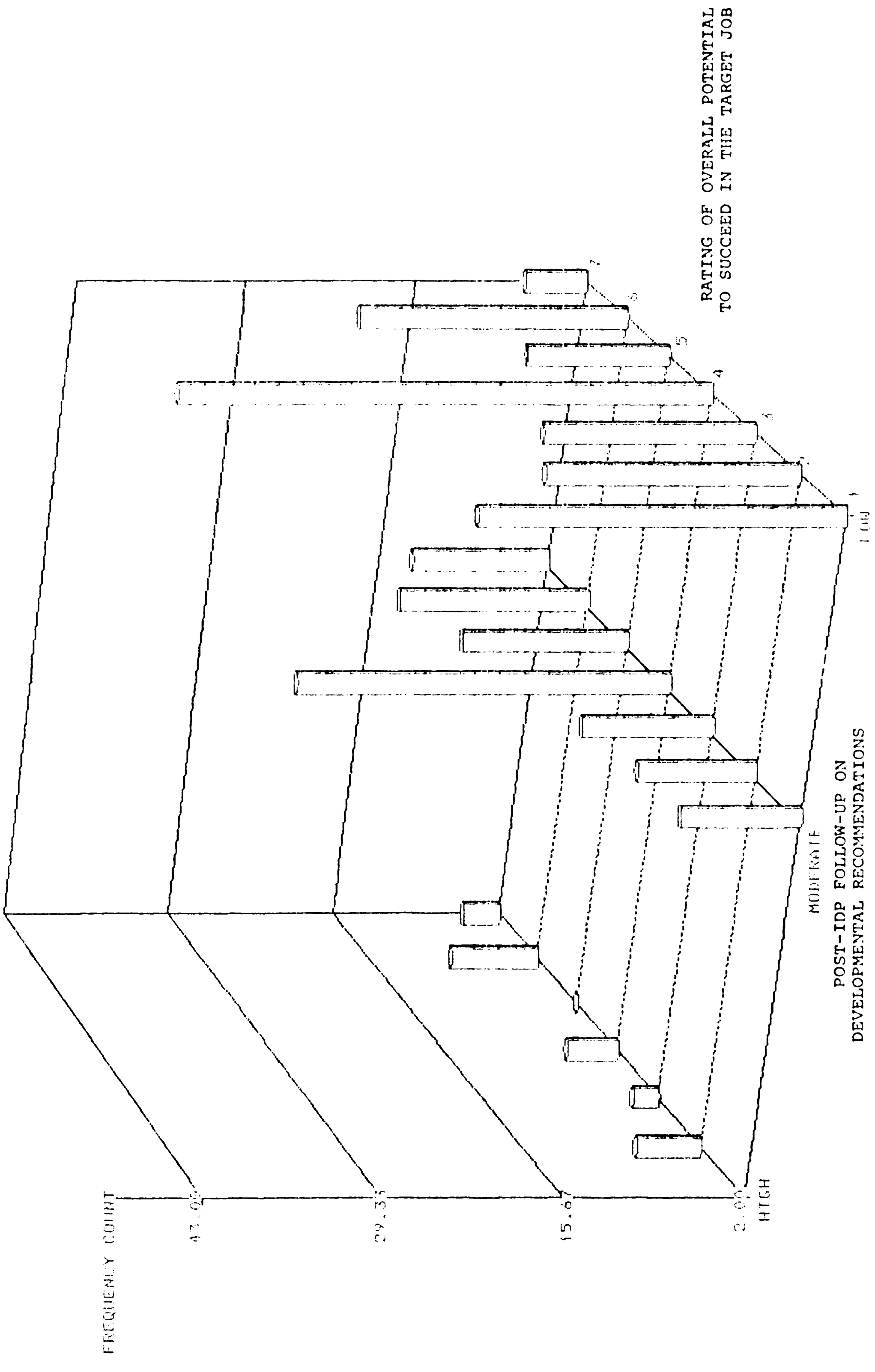
Post-IDP Follow-up on Recommendations

*Frequency Expected Row Pct Col Pct	Rating of Overall Potential							
	1	2	3	4	5	6	7	Total
No Reply	12 . . .	4 . . .	4 . . .	8 . . .	3 . . .	3 . . .	2 . . .	.
Low	29 21.6 18.83 69.05	21 20.1 13.64 53.85	18 17.5 11.69 52.94	43 41.2 27.92 53.75	13 15.5 8.44 43.33	23 25.2 14.94 46.94	7 12.9 4.55 28.00	154
Moderate	11 15.5 10.00 26.19	11 14.3 10.00 28.21	12 12.5 10.91 35.29	31 29.4 28.18 38.75	15 11.0 13.64 50.00	17 18.0 15.45 34.69	13 9.2 11.82 52.00	110
High	2 4.9 5.71 4.76	7 4.6 20.00 17.95	4 4.0 11.43 11.76	6 9.4 17.14 7.50	2 3.5 5.71 6.67	9 5.7 25.71 18.37	5 2.9 14.29 20.00	35
Total	42	39	34	80	30	49	25	299

Statistics For 2-Way Tables Chi-Square 19.349 DF = 12 PROB = 0.0805

*Elements in Each Cell of the Table.

Post-IDP Follow-up on Developmental Recommendations by Rating of Overall Potential to Succeed in the Target Job



Perceived Realism of Assessment Situations

It seemed reasonable to expect that an individual's pursuit of post-assessment development would have a good deal to do with the degree to which the individual thought the components of the assessment center approximated the target job. Table 4.14 indicates that the probability of no association between this factor and the dependent is high (.5887).

The three-dimensional graph (See Figure 15) clearly depicts the fact that most individuals perceived the assessment situations to be somewhat or quite realistic ("3" or "4") but that the rating of post-IDP development of these people varied greatly.

TABLE 4.14--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY PERCEIVED REALISM OF ASSESSMENT SITUATIONS

Post-IDP Follow-up on Recommendations

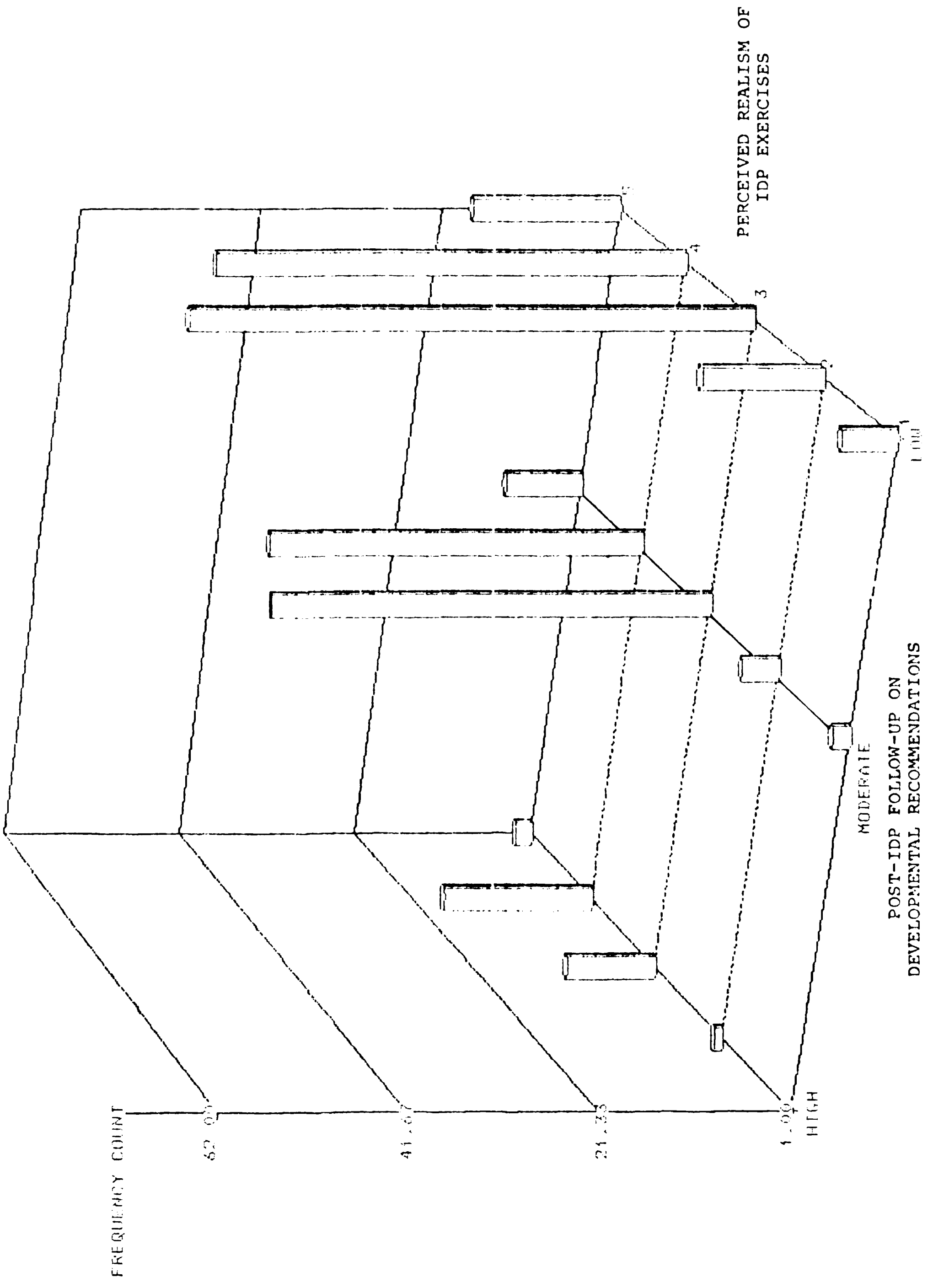
*Frequency Expected Row Pct Col Pct		Perceived Realism of Assessment Situations					
	No Data	1	2	3	4	5	Total
No Reply	34 . . .	0 . . .	0 . . .	2 . . .	0 . . .	0 . . .	.
Low	0 . . .	7 5.7 4.55 63.64	14 10.8 9.09 66.67	62 62.8 40.26 50.82	53 58.7 34.42 46.49	18 16.0 11.69 58.06	154
Moderate	0 . . .	3 4.0 2.73 27.27	5 7.7 4.55 23.81	49 44.9 44.55 40.16	43 41.9 39.09 37.72	10 11.4 9.09 32.26	110
High	0 . . .	1 1.3 2.86 9.09	2 2.5 5.71 9.52	11 14.3 31.43 9.02	18 13.3 51.43 15.79	3 3.6 8.57 9.68	35
Total	.	11	21	122	114	31	299

Statistics For 2-Way Tables Chi-Square 6.525 DF = 8 PROB = 0.5887

*Elements in Each Cell of the Table.

Figure 15.

Post-IDP Follow-up on Developmental Recommendations by Perceived Realism of IDP Exercises



Acceptability of Time Delay between Assessment and Feedback

It was anticipated that an assessment center participant's follow-up on developmental recommendations would clearly be related to the participant's perception of the acceptability of the time delay between assessment center participation and the delivery of the feedback. It seemed reasonable that delays which were unacceptably long might have given the participant the impression that the information is of lesser importance or urgency. It was also expected that the passage of time might interfere with a participant's ability to clearly recall the specifics of his/her performance in the assessment center, thus creating some difficulty in linking the feedback with the actual performance.

The chi-square table in Table 4.15 reports the probability of a true null hypothesis of .1185. It should be noted that on the questionnaire this item has a scaling inverted from the others, i.e., a score of "1" means the time delay was "not too long at all" and a score of "5" means the time delay was "very much too long." This is particularly important to bear in mind when examining the three-dimensional graph (See Figure 16). It is true that of the 39 people who felt the time delay was quite a bit too long or very much too long ("4" or "5"), only 2 (5.1 percent) were rated as having high levels of post-IDP developmental activity.

TABLE 4.15--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY ACCEPTABILITY OF TIME DELAY BETWEEN ASSESSMENT AND FEEDBACK

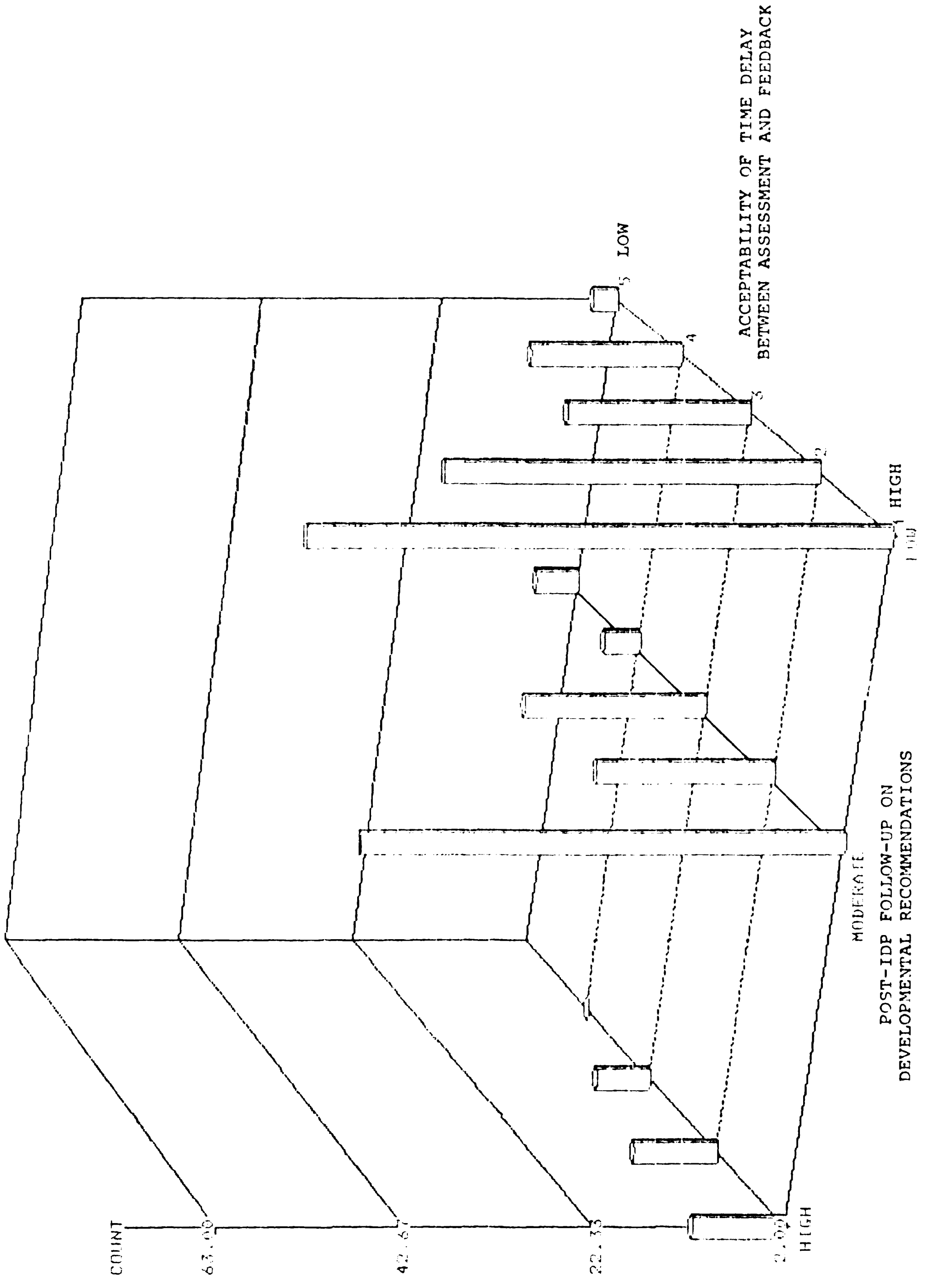
Post-IDP Follow-up on Recommendations		Acceptability of Time Delay					
*Frequency Expected Row Pct Col Pct	No Data	1	2	3	4	5	Total
No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
Low	3 . . .	63 66.0 41.72 49.22	42 38.1 27.81 56.76	22 26.8 14.57 42.31	19 13.9 12.58 70.37	5 6.2 3.31 41.67	151
Moderate	1 . . .	53 47.6 48.62 41.41	21 27.5 19.27 28.38	22 19.3 20.18 42.31	6 10.0 5.50 22.22	7 4.5 6.42 58.33	109
High	2 . . .	12 14.4 36.36 9.38	11 8.3 33.33 14.86	8 5.9 24.24 15.38	2 3.0 6.06 7.41	0 1.4 0.00 0.00	33
Total	.	128	74	52	27	12	293

Statistics For 2-Way Tables Chi-Square 12.809 DF = 8 PROB = 0.1186

*Elements in Each Cell of the Table.

Figure 16.

Post-IDP Follow-up on Developmental Recommendations by Acceptability of Time Delay Between Assessment and Feedback



Sensitivity of the Individual Delivering the Feedback

It was anticipated that greater levels of sensitivity displayed by the individual delivering the assessment center performance information might make negative information more palatable and, as a result, not reduce the participant's self-esteem.

Table 4.16 illustrates that this factor is unrelated to the dependent variable with a probability of .4853. One can see from Table 4.16 and the three-dimensional graph (See Figure 17), however, that the distribution of this particular factor is quite skewed to the upper end of the scale. Only 27 of the 297 respondents (9.1 percent) perceived the sensitivity of the individual delivering the feedback to be quite low or very low ("2" and "1" on the scale).

TABLE 4.16--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SENSITIVITY OF INDIVIDUAL DELIVERING THE FEEDBACK

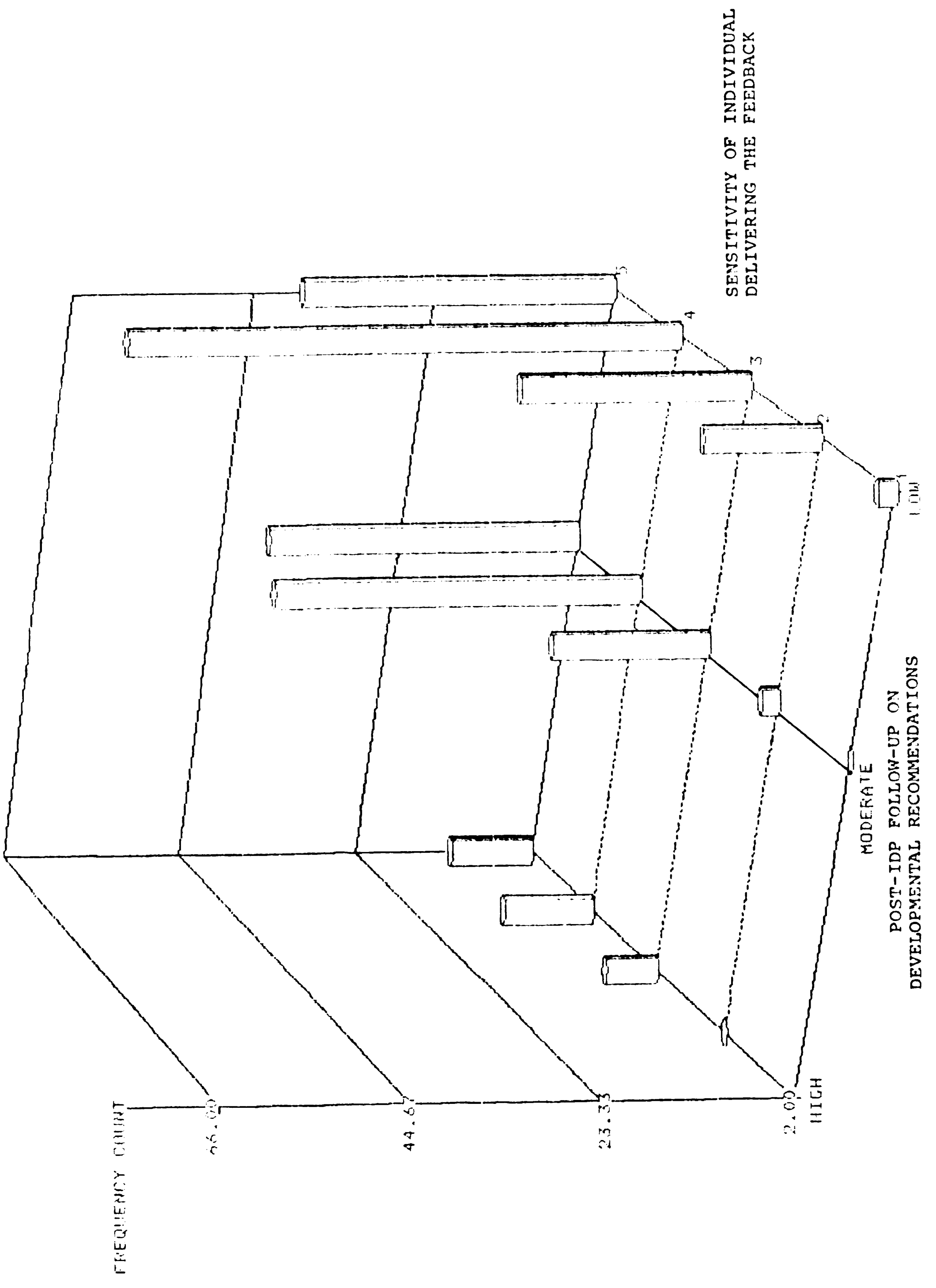
Post-IDP Follow-up on Recommendations	*Frequency Expected Row Pct Col Pct	Sensitivity of Individual Delivering Feedback						
		No Data	1	2	3	4	5	Total
	No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
	Low	2 . . .	4 3.1 2.63 66.67	15 10.7 9.87 71.43	28 28.7 18.42 50.00	66 63.5 43.42 53.23	39 46.1 25.66 43.33	152
	Moderate	0 . . .	2 2.2 1.82 33.33	4 7.8 3.64 19.05	20 20.7 18.18 35.71	45 45.9 40.91 36.29	39 33.3 35.45 43.33	110
	High	0 . . .	0 0.7 0.00 0.00	2 2.5 5.71 9.52	8 6.6 22.86 14.29	13 14.6 37.14 10.48	12 10.6 34.29 13.33	35
	Total	.	6	21	56	124	90	297

Statistics For 2-Way Tables Chi-Square 7.485 DF = 8 PROB = 0.4853

*Elements in Each Cell of the Table.

Figure 17.

Post-IDP Follow-up on Developmental Recommendations by Sensitivity of Individual Delivering the Feedback



Appropriateness of the Length of Feedback Session

It was anticipated that a positive relationship between this factor and the dependent variable would be seen. Research by Blum and Naylor (1968, p. 243) indicates:

> ...learning is facilitated by increased precision in feedback up to a point, but beyond this point learning is hindered with continued increase in precision. The explanation, of course, is that the trainee will reach a saturation point where the information given is just too much for him to handle, and he will have to spend time trying to simplify it in order to understand it. He becomes "overloaded," so to speak.

A true dependency between this factor and the dependent variable was unconfirmed in Table 4.17. The probability of no association between this factor and the dependent variable is .3157.

Both the chi-square table and the three-dimensional graph (See Figure 18) illustrate clearly that the majority of individuals (255/297 = 85.9 percent) believed the length of the feedback session itself was quite appropriate ("4") or very appropriate ("5"). Only one individual of the total perceived the length of the feedback session to be not appropriate at all ("1").

TABLE 4.17--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY APPROPRIATENESS OF LENGTH OF FEEDBACK SESSION

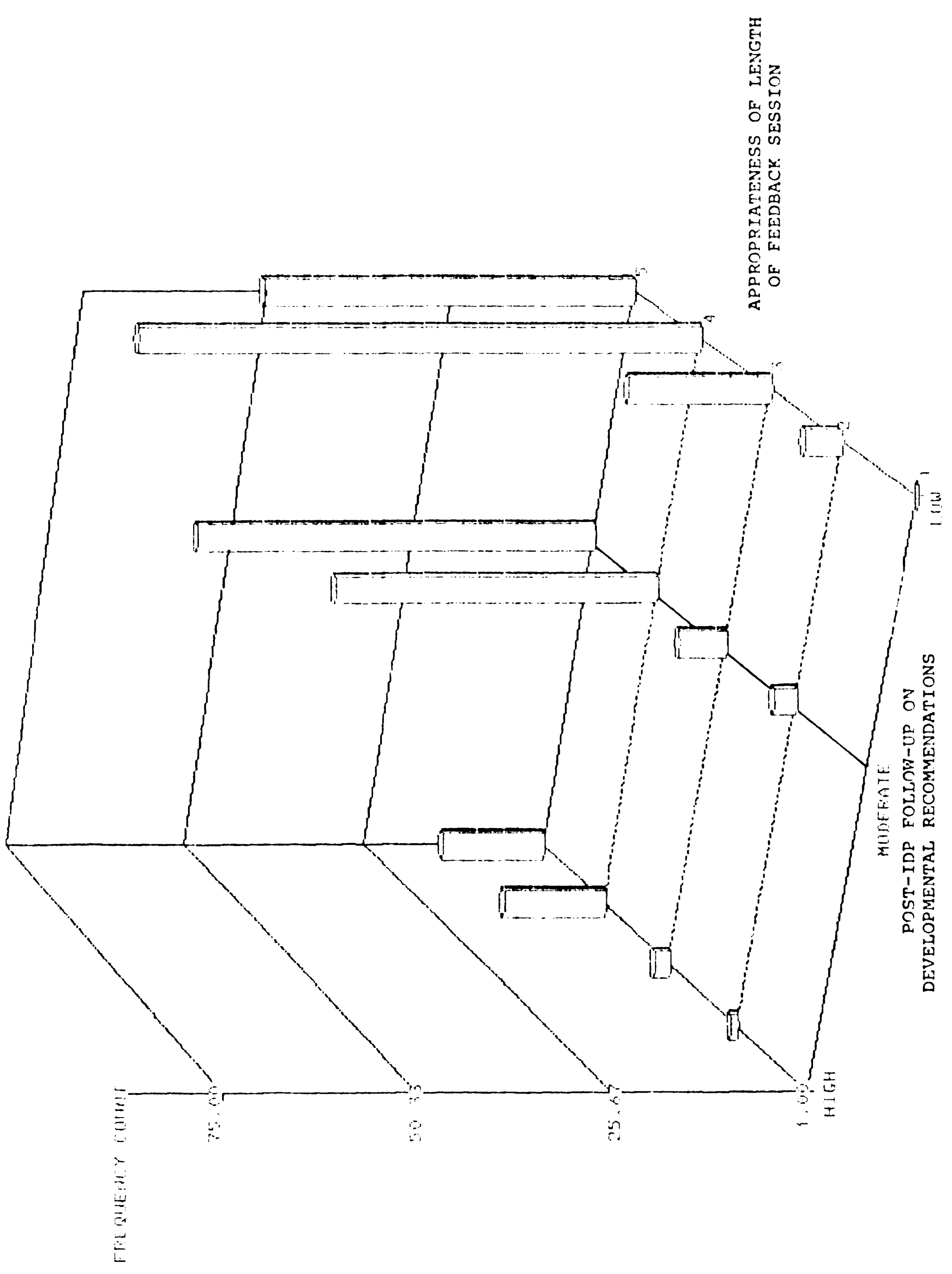
Post-IDP Follow-up on Recommendations	*Frequency Expected Row Pct Col Pct		Appropriateness of Length of Feedback					
		No Data	1	2	3	4	5	Total
	No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
	Low	2 . . .	1 0.5 0.66 100.00	6 6.1 3.95 50.00	19 14.8 12.50 65.52	75 68.6 49.34 55.97	51 61.9 33.55 42.15	152
	Moderate	0 . . .	0 0.4 0.00 0.00	4 4.4 3.64 33.33	7 10.7 6.36 24.14	44 49.6 40.00 32.84	55 44.8 50.00 45.45	110
	High	0 . . .	0 0.1 0.00 0.00	2 1.4 5.71 16.67	3 3.4 8.57 10.34	15 15.8 42.86 11.19	15 14.3 42.86 12.40	35
	Total	.	1	12	29	134	121	297

Statistics For 2-Way Tables Chi-Square 9.324 DF = 8 PROB = 0.3157

*Elements in Each Cell of the Table.

Figure 18.

Post-IDP Follow-up on Developmental Recommendations by Appropriateness of Length of Feedback Session



Credibility of the Individual Delivering the Feedback

It seemed reasonable that a participant's perception of the credibility of the individual delivering assessment center performance data would have an impact on that participant's likelihood of following up on the recommendations he/she made.

Table 4.18 and the three-dimensional representation of this factor (See Figure 19) illustrate two things: (1) a relatively high probability (.3706) of a true null hypothesis, and (2) the fact that most participants (284/297 = 95.6 percent) saw the individual delivering the feedback to be moderately to highly credible ("3" - "5" on the chi-square chart).

TABLE 4.18--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY CREDIBILITY OF INDIVIDUAL DELIVERING THE FEEDBACK

Post-IDP Follow-up on Recommendations

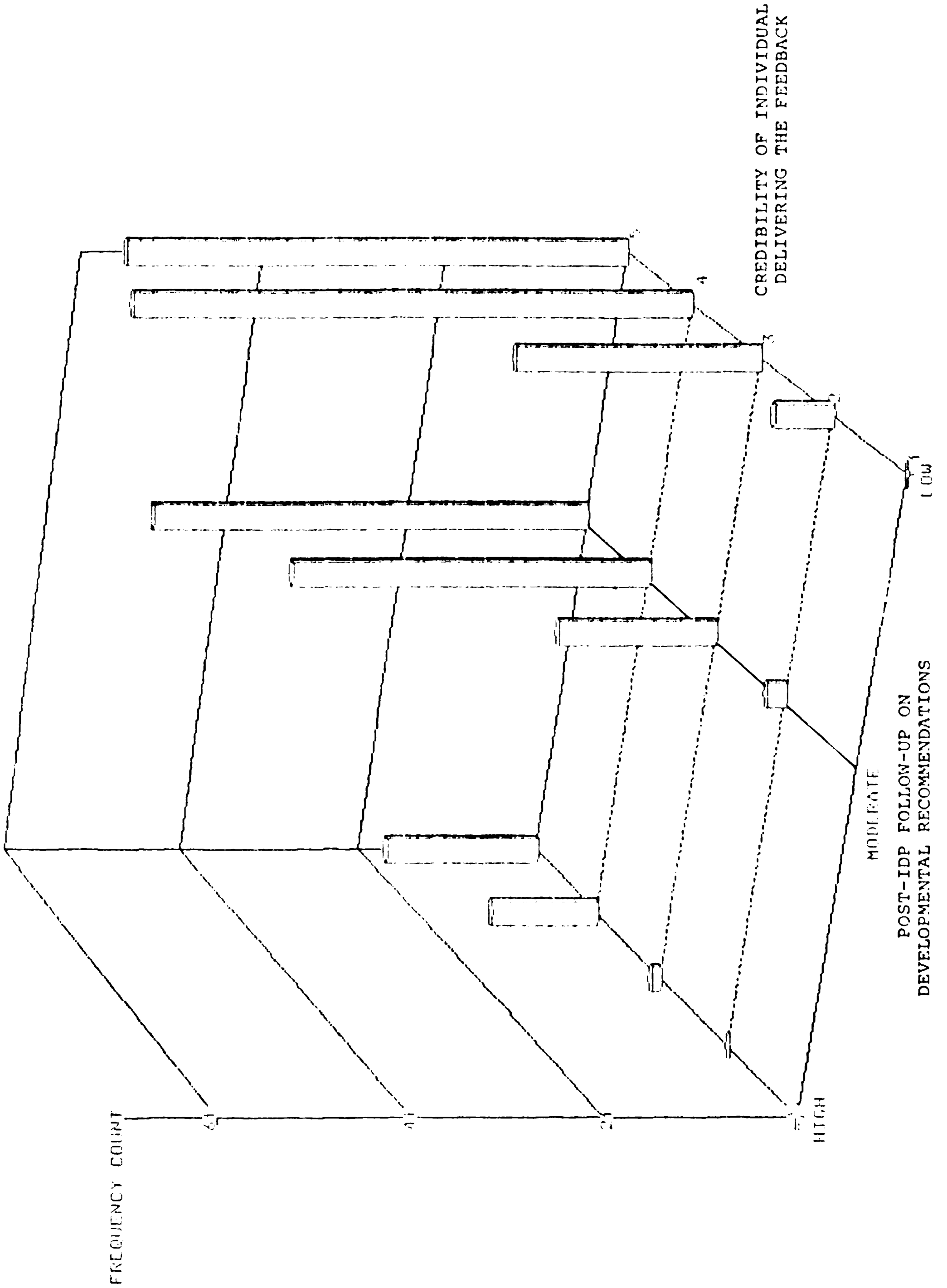
		Credibility of Individual Delivering Feedback					
*Frequency Expected Row Pct Col Pct	No Data	1	2	3	4	5	Total
No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
Low	2 . . .	1 1.0 0.66 50.00	7 5.6 4.61 63.64	27 24.1 17.76 57.45	61 58.3 40.13 53.51	56 62.9 36.84 45.53	152
Moderate	0 . . .	0 0.7 0.00 0.00	3 4.1 2.73 27.27	18 17.4 16.36 38.30	40 42.2 36.36 35.09	49 45.6 44.55 39.84	110
High	0 . . .	1 0.2 2.86 50.00	1 1.3 2.86 9.09	2 5.5 5.71 4.26	13 13.4 37.14 11.40	18 14.5 51.43 14.63	35
Total	.	2	11	47	114	123	297

Statistics For 2-Way Tables Chi-Square 8.673 DF = 8 PROB = 0.3706

*Elements in Each Cell of the Table.

Figure 19.

Post-IDP Follow-up on Developmental Recommendations by Credibility of Individual Delivering the Feedback



Relevance of Feedback to Critical Job Dimensions

It was expected that a relationship between this factor and the dependent variable would be seen, based upon the assumption that feedback which appears to match what is purportedly being measured may have the effect of increasing the impact of the developmental recommendations.

Table 4.19 illustrates a probability of no relationship of .4598 and, along with the three-dimensional representation of this factor (See Figure 20), illustrates that most participants (192/297 = 64.6 percent) saw the performance feedback as quite or very ("4" or "5") related to the skills and qualities being measured in the IDP. Of the 25 individuals who saw the feedback as having little or no relevance ("2" or "1"), only one had a high rating of post-IDP follow-up of developmental recommendations.

TABLE 4.19--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY RELEVANCE OF FEEDBACK TO CRITICAL JOB DIMENSIONS

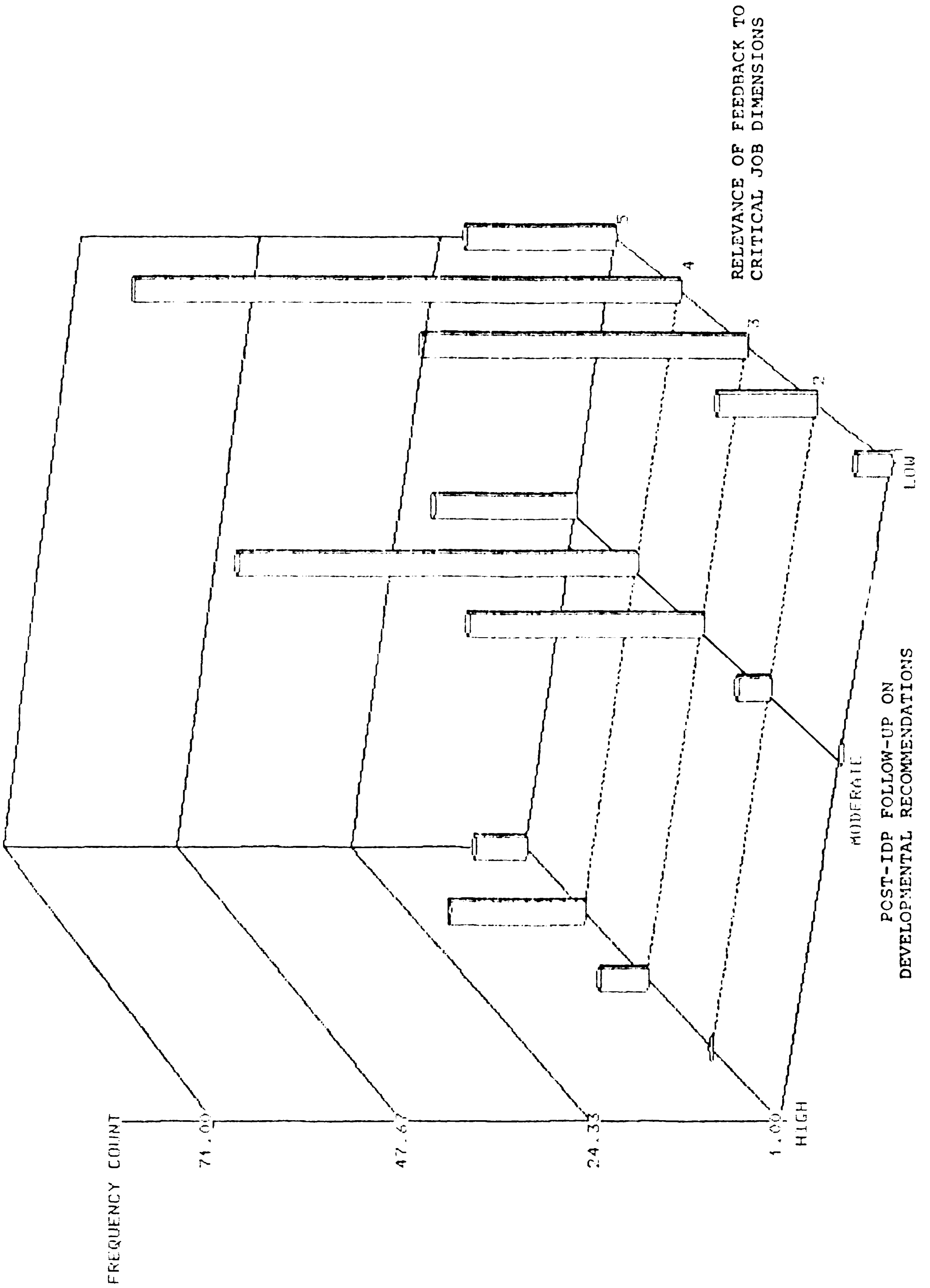
Post-IDP Follow-up on Recommendations	*Frequency Expected Row Pct Col Pct	Relevance of Feedback to Job Dimensions						
		No Data	1	2	3	4	5	Total
	No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
	Low	2 . . .	5 3.1 3.29 83.33	13 9.7 8.55 68.42	42 40.9 27.63 52.50	71 73.2 46.71 49.65	21 25.1 13.82 42.86	152
	Moderate	0 . . .	1 2.2 0.91 16.67	5 7.0 4.55 26.32	31 29.6 28.18 38.75	53 53.0 48.18 37.06	20 18.1 18.18 40.82	110
	High	0 . . .	0 0.7 0.00 0.00	1 2.2 2.86 5.26	7 9.4 20.00 8.75	19 16.9 54.29 13.29	8 5.8 22.86 16.33	35
	Total	.	6	19	80	143	49	297

Statistics For 2-Way Tables Chi-Square 7.735 DF = 8 PROB = 0.4598

*Elements in Each Cell of the Table.

Figure 20.

Post-IDP Follow-up on Developmental Recommendations by Relevance of Feedback to Critical Job Dimensions



Relevance of Recommendations to Developmental Needs

A relationship between this factor and the dependent variable was expected based on the assumption that an assessment center participant would be more likely to follow-up on developmental recommendations which seem to make more sense in comparison to identified needs than recommendations which are somehow illogical.

Table 4.20 confirms that this factor and the dependent variable are clearly related. The probability of a true null hypothesis in this instance is only .0087.

It can be seen from the chi-square chart and the three-dimensional graph (See Figure 21) that of the 20 participants who believed the recommendations made little or no sense ("2" and "1") only one individual was seen as having a high degree of follow-up on recommendations. Conversely, of the participants reporting that their recommendations made quite a bit or a great deal of sense to them ("4" and "5"), 108 (55.1 percent) of this grouping were seen as having a moderate or high level of follow-up on recommendations. The three-dimensional graph (See Figure 21) shows most individuals are on the right-hand side of the diagonal.

TABLE 4.20--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY RELEVANCE OF RECOMMENDATIONS TO DEVELOPMENTAL NEEDS

Post-IDP Follow-up on Recommendations

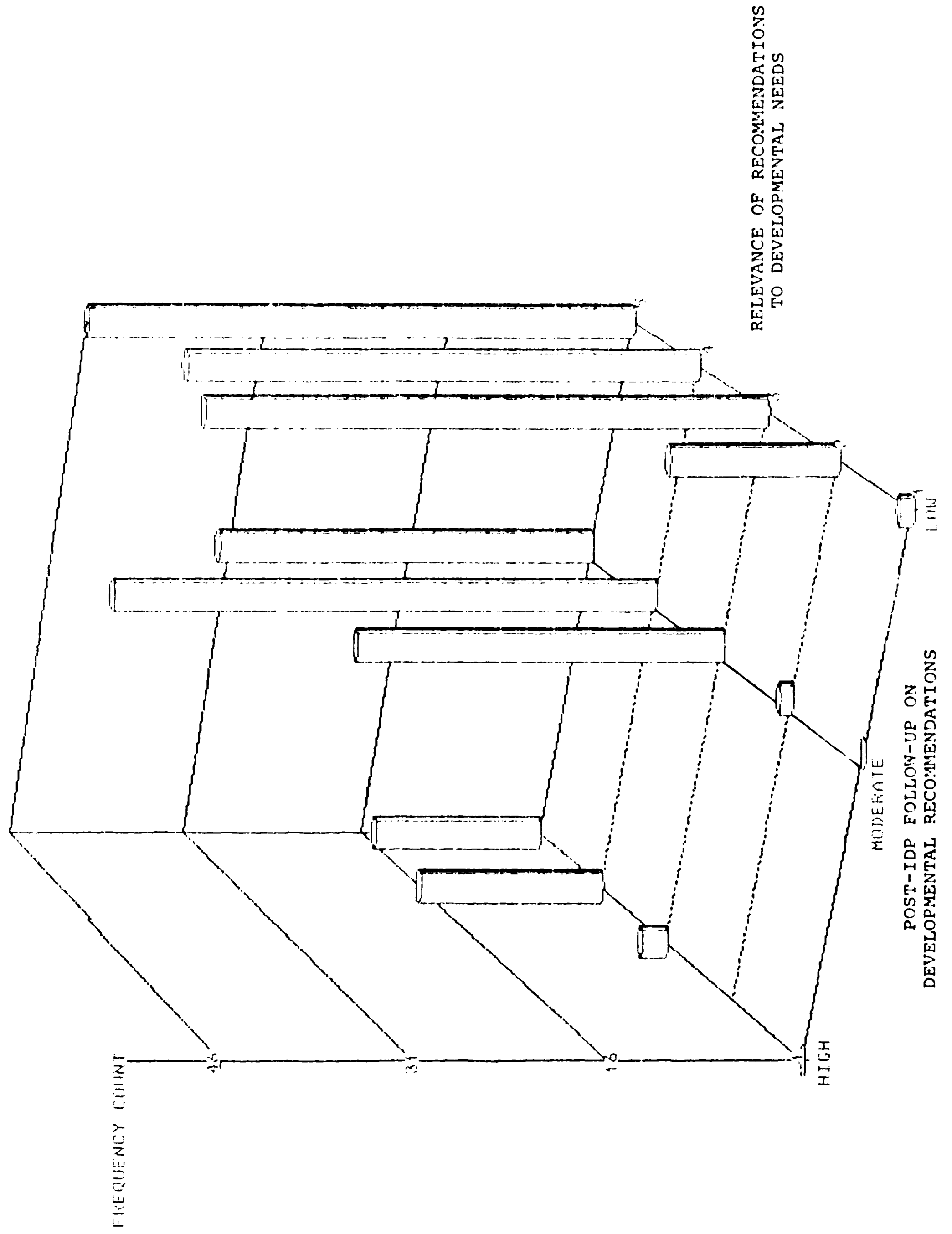
*Frequency Expected Row Pct Col Pct	Relevance of Recommendations No Data	1	2	3	4	5	Total
No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
Low	5 . . .	2 2.0 1.34 50.00	14 8.1 9.40 87.50	45 39.5 30.20 57.69	42 52.2 28.19 40.78	46 47.1 30.87 49.46	149
Moderate	0 . . .	1 1.5 0.91 25.00	2 6.0 1.82 12.50	30 29.2 27.27 38.46	45 38.5 40.91 43.69	32 34.8 29.09 34.41	110
High	0 . . .	1 0.5 2.86 25.00	0 1.9 0.00 0.00	3 9.3 8.57 3.85	16 12.3 45.71 15.53	15 11.1 42.86 16.13	35
Total	.	4	16	78	103	93	294

Statistics For 2-Way Tables Chi-Square 20.478 DF = 8 PROB = 0.0087

*Elements in Each Cell of the Table.

Figure 21.

Post-IDP Follow-up on Developmental Recommendations by Relevance of Recommendations to Developmental Needs



Post-assessment Factors

The research question to be answered by these factors is:

> "To what degree are post-assessment factors related to the extent to which an individual follows up on developmental recommendations made during the post-assessment feedback process?"

The post-assessment factors examined in this research are seen in Table 4.21.

TABLE 4.21--POST-ASSESSMENT FACTORS AND PROBABILITIES OF NO RELATIONSHIP TO THE DEPENDENT VARIABLE

	During-assessment Factor	Probability
a.	Perceived support from organization	.0001*
b.	Perceived support from supervisor/manager	.0011*
c.	Perceived support from co-workers	.3488
d.	Perceived support from family	.0105*
e.	Perceived support from friends	.2255
f.	Likelihood of achieving target job	.0001*
g.	Post-assessment desire for job	.0081*

*Significant

It is this grouping of factors which contains the greatest number of factors which are closely linked to the dependent variable. Of the seven post-assessment factors, five were seen as being significant.

Support from the Organization

It was expected that this factor would be a significant one. Steelcase provides considerable support for the development of its employees in the form of an educational assistance/tuition reimbursement program, and through several in-house supervisory and management development programs. Post-IDP feedback given to many candidates included recommendations to participate in various in-house programs.

The chi-square analysis (See Table 4.22) confirmed the expectation that this factor would be linked to the dependent variable. The probability that no real dependence exists is only .001. Also see the three-dimensional representation of this factor (See Figure 22).

Table 4.22 illustrates that 62 individuals reported receiving little or no support ("2" or "1") for their following of post-assessment developmental recommendations. Of these, only one (1.6 percent) was rated as demonstrating a high degree of follow-up on those recommendations. Conversely, 173 individuals reported receiving quite a bit or a great deal of support ("4" and "5") for their following of post-assessment recommendations. Of these, 104 (60.1 percent) were rated as demonstrating moderate or high degrees of follow-up on the recommendations.

TABLE 4.22--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SUPPORT FROM THE ORGANIZATION

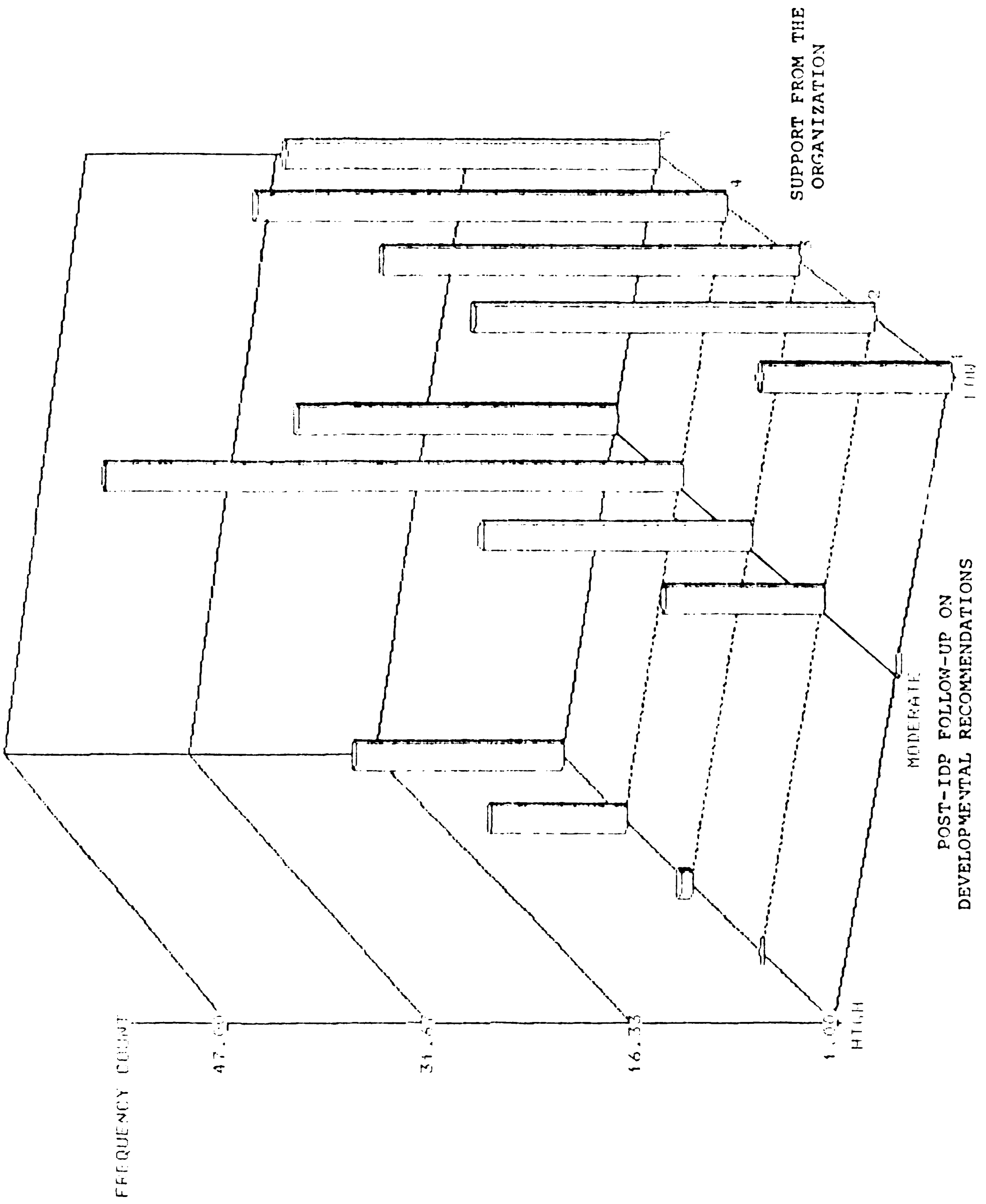
Post-IDP Follow-up on Recommendations	*Frequency Expected Row Pct Col Pct	Support from the Organization						
		No Data	1	2	3	4	5	Total
	No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
	Low	6 . . .	15 8.6 10.14 88.24	31 22.8 20.95 68.89	33 28.9 22.30 57.89	38 49.2 25.68 39.18	31 38.5 20.95 40.79	148
	Moderate	0 . . .	1 6.4 0.91 5.88	13 17.0 11.82 28.89	22 21.5 20.00 38.60	47 36.5 42.73 48.45	27 28.6 24.55 35.53	110
	High	1 . . .	1 2.0 2.94 5.88	1 5.2 2.94 2.22	2 6.6 5.88 3.51	12 11.3 35.29 12.37	18 8.8 52.94 23.68	34
	Total	.	17	45	57	97	76	292

Statistics For 2-Way Tables Chi-Square 37.502 DF = 8 PROB = 0.0001

*Elements in Each Cell of the Table.

Figure 22.

Post-IDP Follow-up on Developmental Recommendations by Support from the Organization



Support from the Supervisor/Manager

A number of developmental recommendations made to assessment center participants included items which required the permission or assistance from a current supervisor or manager. For this reason it was expected that this factor would be related to the dependent variable.

The chi-square table in Table 4.23 confirms that a strong dependency exists; the probability of a true null hypothesis is only .0011. The chi-square table illustrates that of those individuals reporting little or no support from the supervisor ("2" and "1") only 3 (4.3 percent) demonstrated high levels of follow-up on developmental recommendations. For those reporting quite a bit or a lot of support from the supervisor ("4" and "5") 16 percent (27/169) demonstrated high levels of follow-up on developmental recommendations. Also see the three-dimensional graph (See Figure 23).

TABLE 4.23--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SUPPORT FROM THE SUPERVISOR/ MANAGER

Post-IDP Follow-up on Recommendations

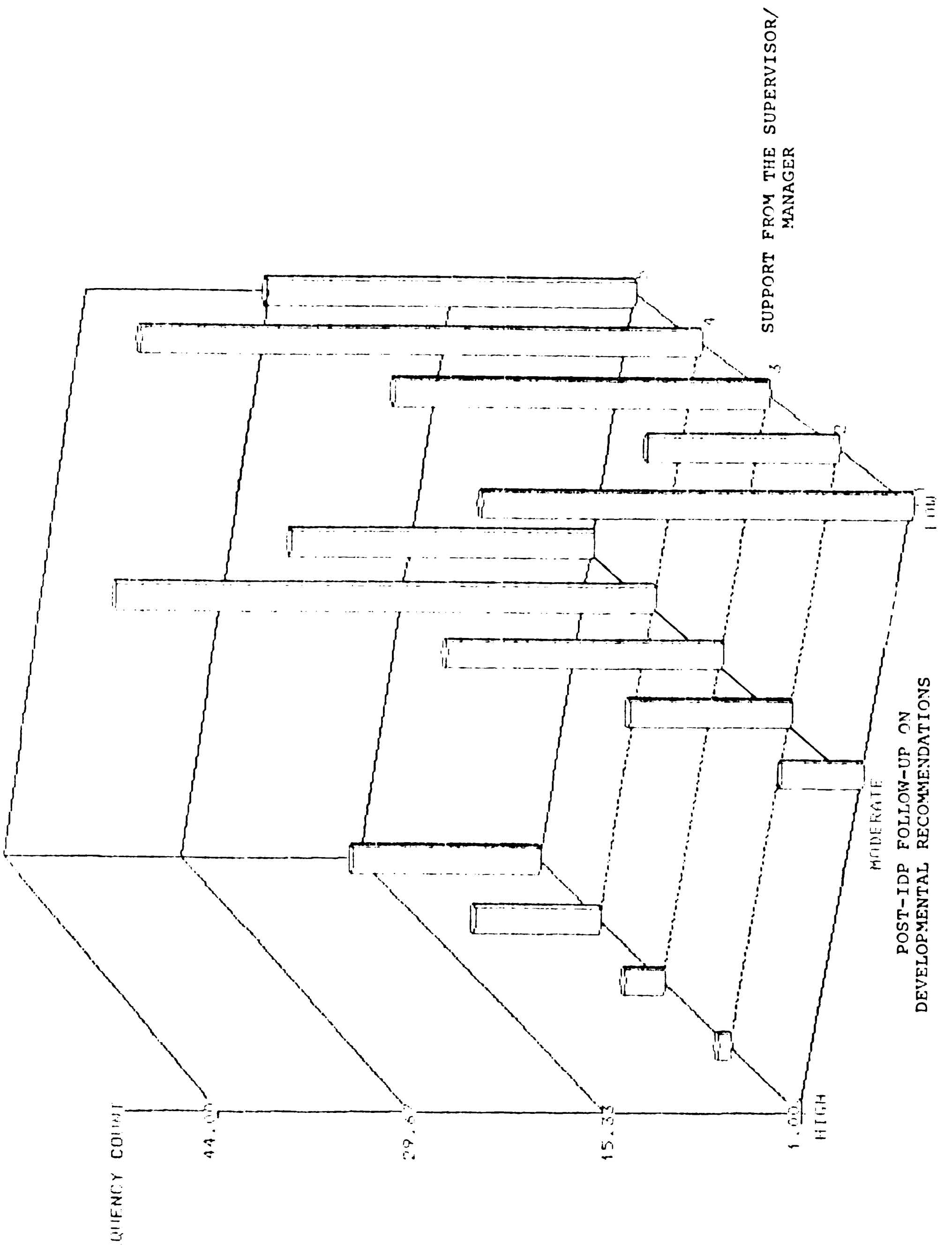
*Frequency Expected Row Pct Col Pct	Support from the Supervisor/Manager						
	No Data	1	2	3	4	5	Total
No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
Low	4 . . .	32 20.4 21.33 80.00	15 15.3 10.00 50.00	29 28.1 19.33 52.73	44 50.0 29.33 44.90	30 36.2 20.00 42.25	150
Moderate	0 . . .	7 15.0 6.36 17.50	13 11.2 11.82 43.33	22 20.6 20.00 40.00	43 36.7 39.09 43.88	25 26.6 22.73 35.21	110
High	1 . . .	1 4.6 2.94 2.50	2 3.5 5.88 6.67	4 6.4 11.76 7.27	11 11.3 32.35 11.22	16 8.2 47.06 22.54	34
Total	.	40	30	55	98	71	294

Statistics For 2-Way Tables Chi-Square 25.956 DF = 8 PROB = 0.0011

*Elements in Each Cell of the Table.

Figure 23.

Post-IDP Follow-up on Developmental Recommendations by Support from the Supervisor/Manager



Support from Co-workers

It seemed probable that encouragement and/or guidance from co-workers might be related to the dependent variable. The chi-square table in Table 4.24 confirms with a probability of .3488 that the two variables are unrelated. The three-dimensional graph (See Figure 24) visually illustrates that at each level of support from co-workers various levels of the dependent variable are also found.

TABLE 4.24--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SUPPORT FROM CO-WORKERS

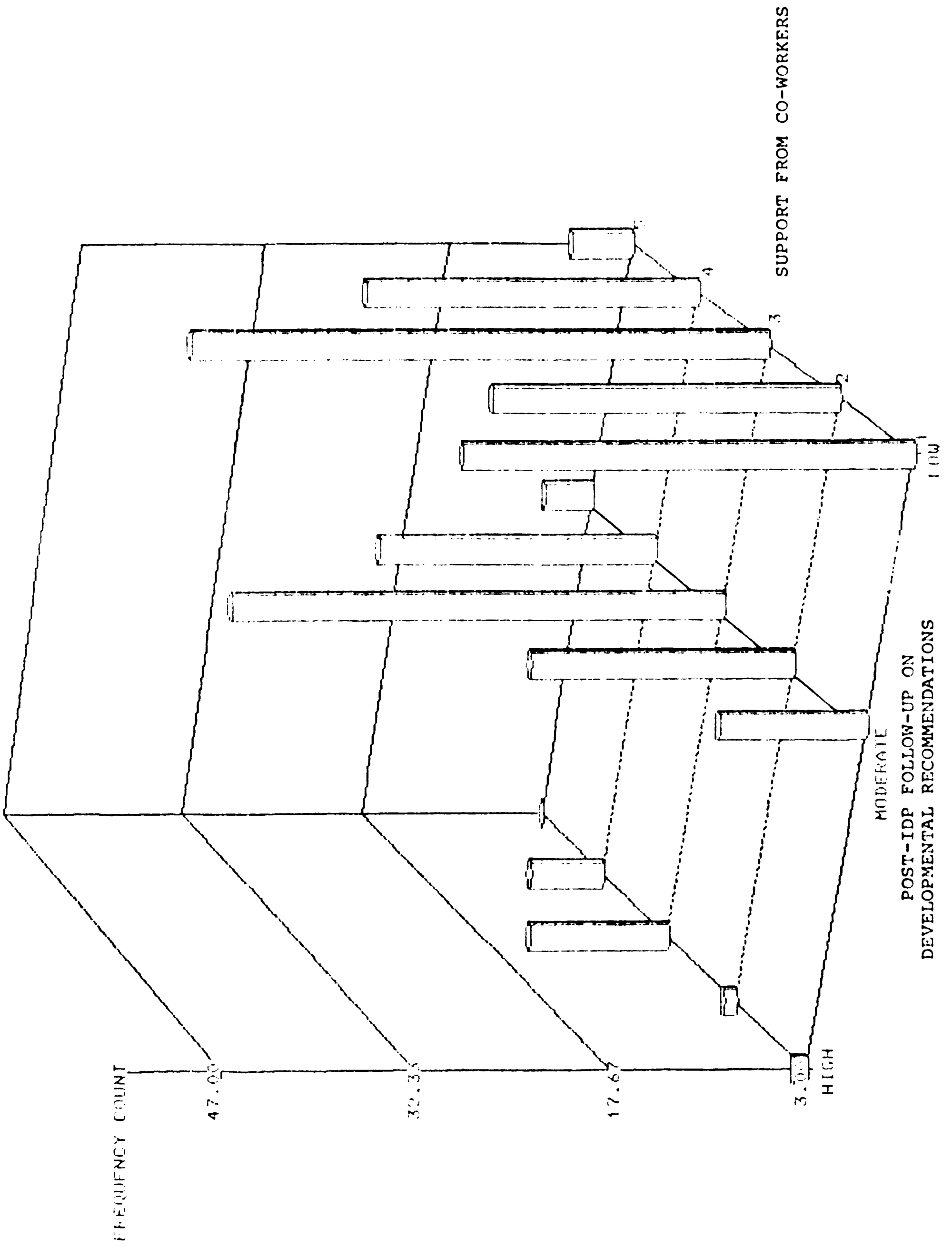
Post-IDP Follow-up on Recommendations		Support from Co-workers					
*Frequency Expected Row Pct Col Pct	No Data	1	2	3	4	5	Total
No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
Low	5 . . .	36 27.5 24.16 66.67	29 28.5 19.46 51.79	47 51.9 31.54 46.08	29 32.0 19.46 46.03	8 9.2 5.37 44.44	149
Moderate	0 . . .	14 20.3 12.73 25.93	23 21.0 20.91 41.07	41 38.3 37.27 40.20	25 23.7 22.73 39.68	7 6.8 6.36 38.89	110
High	1 . . .	4 6.3 11.76 7.41	4 6.5 11.76 7.14	14 11.8 41.18 13.73	9 7.3 26.47 14.29	3 2.1 8.82 16.67	34
Total	.	54	56	102	63	18	293

Statistics For 2-Way Tables Chi-Square 8.923 DF = 8 PROB = 0.3488

*Elements in Each Cell of the Table.

Figure 24.

Post-IDP Follow-up on Developmental Recommendations
by Support from Co-Workers



Support from Family

Numerous post-IDP recommendations require class attendance, outside readings, and studying. This fact, coupled with that likelihood that each assessment center participant would have a unique set of family-related variables with which to deal, suggested that support from family members would be a significant variable.

The chi-square analysis in Table 4.25 confirms that a relationship between this factor and the dependent variable exists with a high degree of confidence (probability of a true null hypothesis = .0105). The chi-square table illustrates that where family support was relatively low ("1" and "2"), 41 of the 57 individuals (71.9 percent) also registered low levels of follow-up on developmental recommendations. Conversely, where family support was relatively high ("4" and "5"), 101 of the 173 individuals (58.4 percent) registered moderate to high levels of follow-up on developmental recommendations.

The three-dimensional representation of this factor (See Figure 25) illustrates that, not unlike "support from the organization" and "support from the supervisor/manager," nearly all of the cases lie on the right-hand side of the diagonal.

TABLE 4.25--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SUPPORT FROM FAMILY

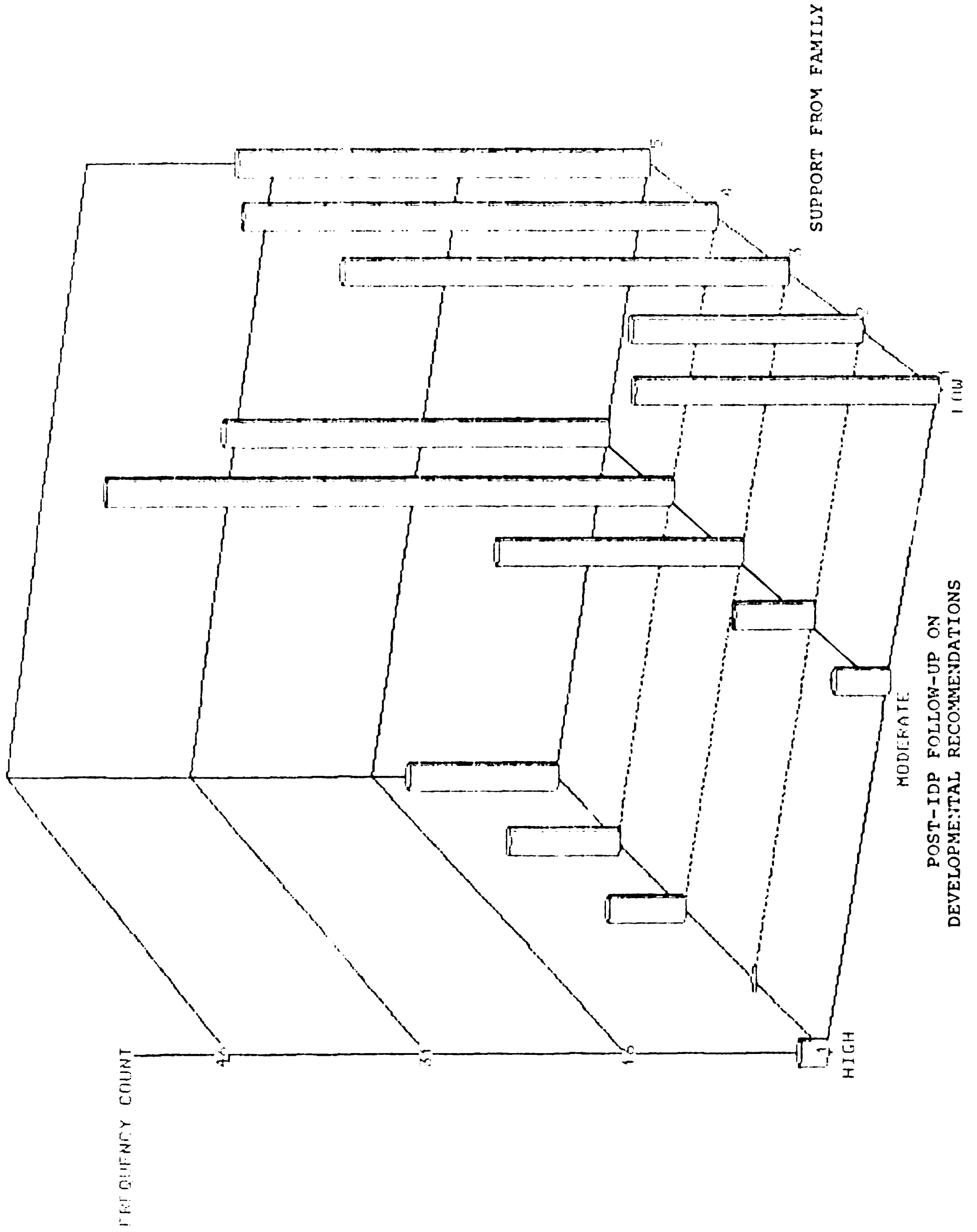
Post-IDP Follow-up on Recommendations

*Frequency Expected Row Pct Col Pct	Support from Family						
	No Data	1	2	3	4	5	Total
No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
Low	6 . . .	23 15.7 15.54 74.19	18 13.2 12.16 69.23	35 31.4 23.65 56.45	38 47.6 25.68 40.43	34 40.0 22.97 43.04	148
Moderate	0 . . .	5 11.7 4.55 16.13	7 9.8 6.36 26.92	20 23.4 18.18 32.26	46 35.4 41.82 48.94	32 29.8 29.09 40.51	110
High	1 . . .	3 3.6 8.82 9.68	1 3.0 2.94 3.85	7 7.2 20.59 11.29	10 10.9 29.41 10.64	13 9.2 38.24 16.46	34
Total	.	31	26	62	94	79	292

Statistics For 2-Way Tables Chi-Square 19.968 DF = 8 PROB = 0.0105

*Elements in Each Cell of the Table.

Post-IDP Follow-up on Developmental Recommendations by Support from Family



Support from Friends

This factor was considered worth investigation simply because a circle of friends would represent another group of people with whom an assessment center participant interacts.

The chi-square analysis in Table 4.26 indicates a relatively high probability (.2255) of no association between this factor and the dependent variable.

The three-dimensional representation of this factor (See Figure 26) illustrates that a number of individuals reporting little or no support from friends also were seen as having moderate to high levels of post-IDP development. Simple calculations from the chi-square table in Table 4.26 show this figure to be 39.3 percent.

TABLE 4.26--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY SUPPORT FROM FRIENDS

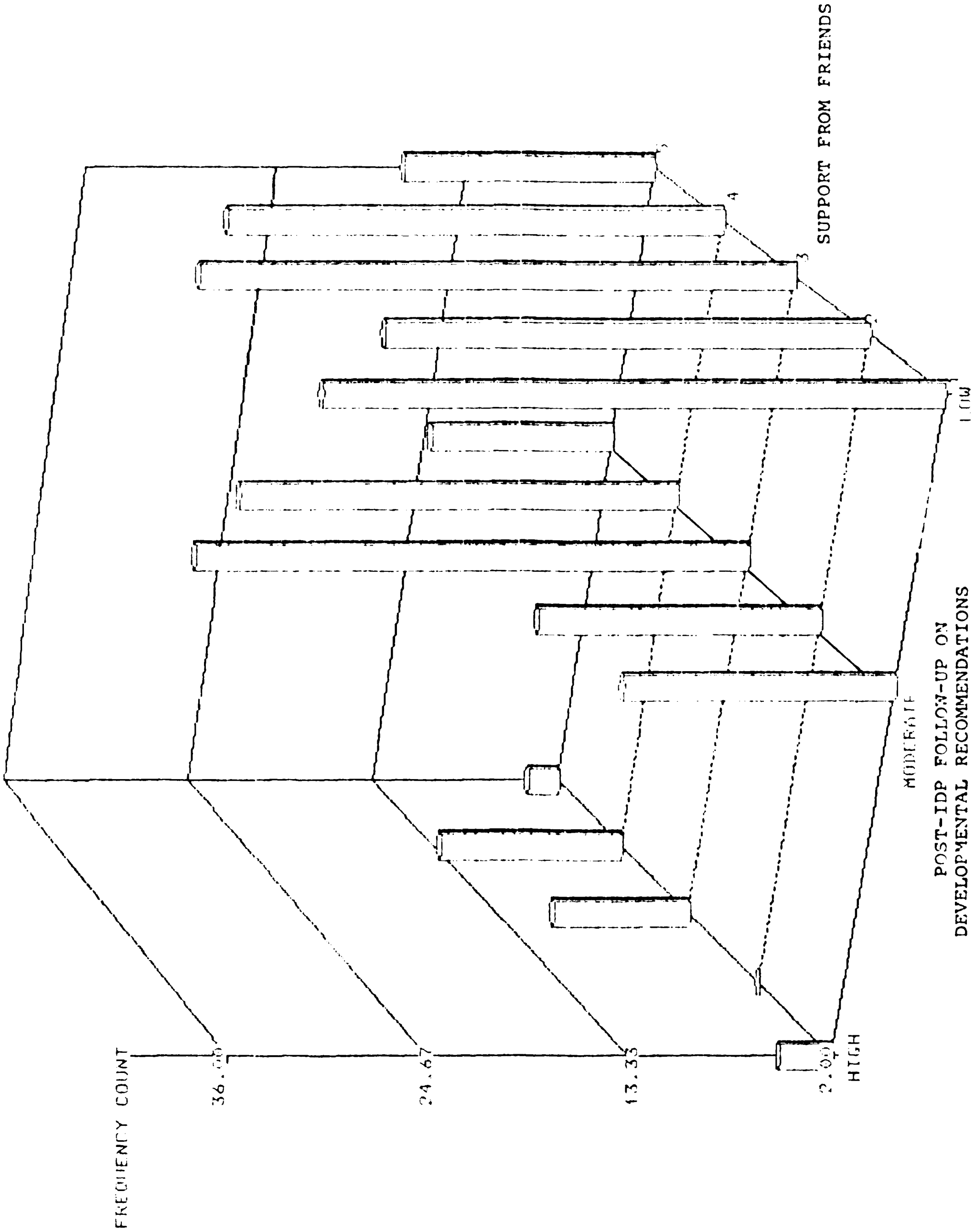
Post-IDP Follow-up on Recommendations	*Frequency Expected Row Pct Col Pct	Support from Friends						
		No Data	1	2	3	4	5	Total
	No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
	Low	5 . . .	36 29.5 24.16 62.07	29 24.9 19.46 59.18	36 40.7 24.16 45.00	31 36.6 20.81 43.06	17 17.3 11.41 50.00	149
	Moderate	0 . . .	17 21.8 15.45 29.31	18 18.4 16.36 36.73	34 30.0 30.91 42.50	28 27.0 25.45 38.89	13 12.8 11.82 38.24	110
	High	1 . . .	5 6.7 14.71 8.62	2 5.7 5.88 4.08	10 9.3 29.41 12.50	13 8.4 38.24 18.06	4 3.9 11.76 11.76	34
	Total	.	58	49	80	72	34	293

Statistics For 2-Way Tables Chi-Square 10.599 DF = 8 PROB = 0.2255

*Elements in Each Cell of the Table.

Figure 26.

Post-IDP Follow-up on Developmental Recommendations
by Support from Friends



Likelihood of Achieving the Target Job

It seemed reasonable to expect that those participants who, for whatever reason(s), felt likely to become a Manufacturing Foreman at Steelcase would be more inclined to pursue development than those who felt the likelihood was lower. Table 4.27 illustrates a strong dependency between this factor and the dependent variable (probability of true $H_0 = .0001$).

Simple calculations from the chi-square table indicate that of the 71 individuals who perceived little or no likelihood of achieving the target job ("2" and "1"), 53 (74.6 percent) were seen as having low levels of post-IDP development. Conversely, of the 147 individuals who perceived they were quite or very likely to achieve the target job ("4" and "5"), only 58 (39.4 percent) were seen as having low levels of post-IDP development.

The three-dimensional graph (See Figure 27) visually describes this relationship.

TABLE 4.27--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY LIKELIHOOD OF ACHIEVING THE TARGET JOB

Post-IDP Follow-up on Recommendations

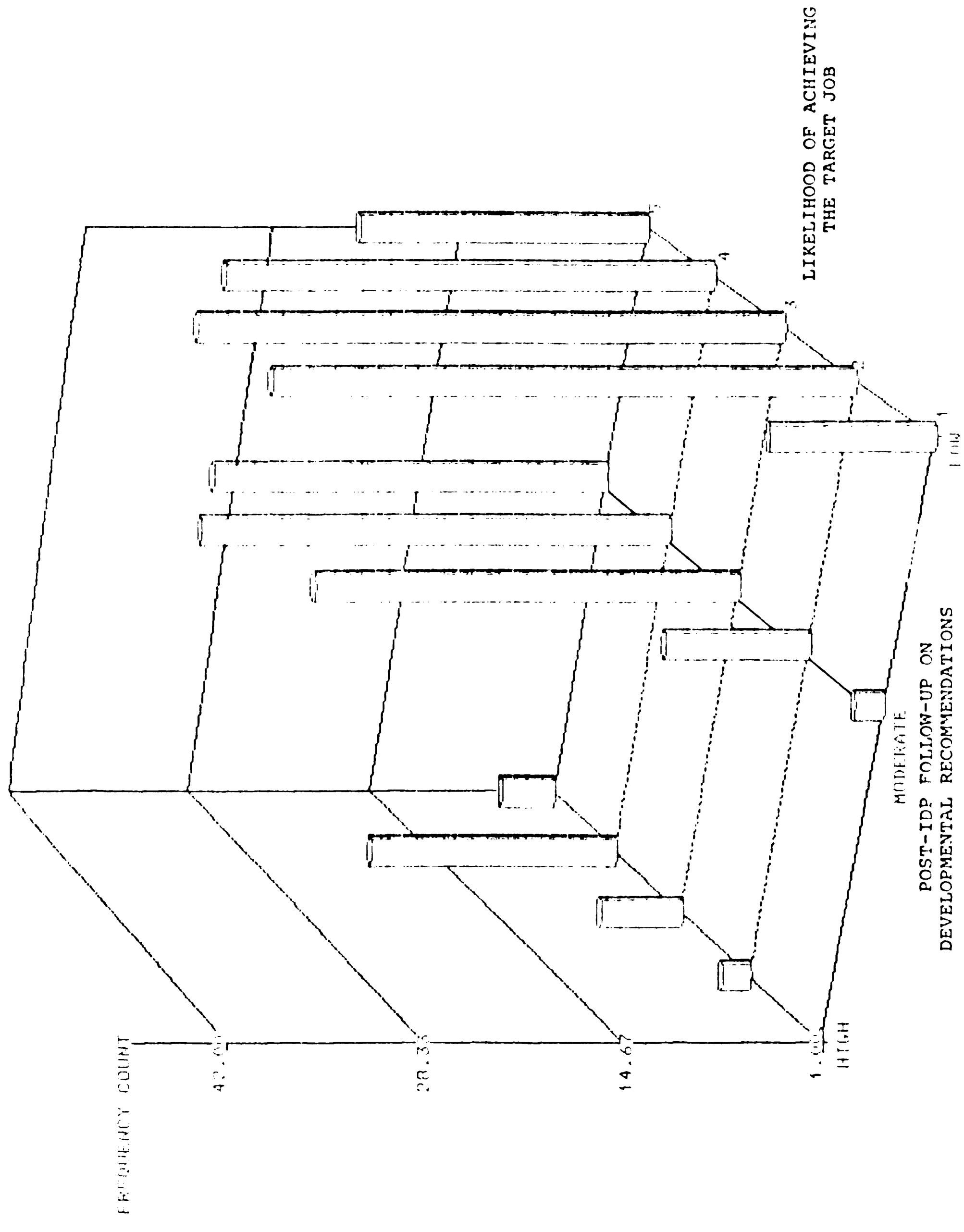
*Frequency Expected Row Pct Col Pct	Likelihood of Achieving Target Job						
	No Data	1	2	3	4	5	Total
No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
Low	1 . . .	12 8.2 7.84 75.00	41 28.2 26.80 74.55	42 41.1 27.45 52.50	36 46.2 23.53 40.00	22 29.3 14.38 38.60	153
Moderate	0 . . .	3 5.9 2.73 18.75	11 20.3 10.00 20.00	31 29.5 28.18 38.75	35 33.2 31.82 38.89	30 21.0 27.27 52.63	110
High	0 . . .	1 1.9 2.86 6.25	3 6.5 8.57 5.45	7 9.4 20.00 8.75	19 10.6 54.29 21.11	5 6.7 14.29 8.77	35
Total	.	16	55	80	90	57	298

Statistics For 2-Way Tables Chi-Square 31.293 DF = 8 PROB = 0.0001

*Elements in Each Cell of the Table.

Figure 27.

Post-IDP Follow-up on Developmental Recommendations
by Likelihood of Achieving the Target Job



Post-assessment Desire for the Target Job

It seemed reasonable to expect that those individuals who felt a strong desire for the job of Manufacturing Foreman at Steelcase, for whatever reason(s), would demonstrate a greater interest in pursuing development than those who lacked a strong desire. Table 4.28 illustrates that a dependency exists between this factor and the dependent variable (the probability of a true H_0 = .0081).

Simple calculations based on the chi-square analysis show that of those individuals who had little or no desire for the target job ("2" and "1") eight of these 38 (21.1 percent) showed moderate to high levels of post-IDP development. Conversely, of those 213 individuals who had a fairly strong or very strong desire for the target job ("4" and "5") 116 (54.5 percent) showed moderate to high levels of post-IDP development.

The three-dimensional graph (See Figure 28) shows that with this factor most of the cases lie on the right-hand side of the diagonal.

TABLE 4.28--POST-IDP FOLLOW-UP ON RECOMMENDATIONS BY POST-ASSESSMENT DESIRE FOR THE TARGET JOB

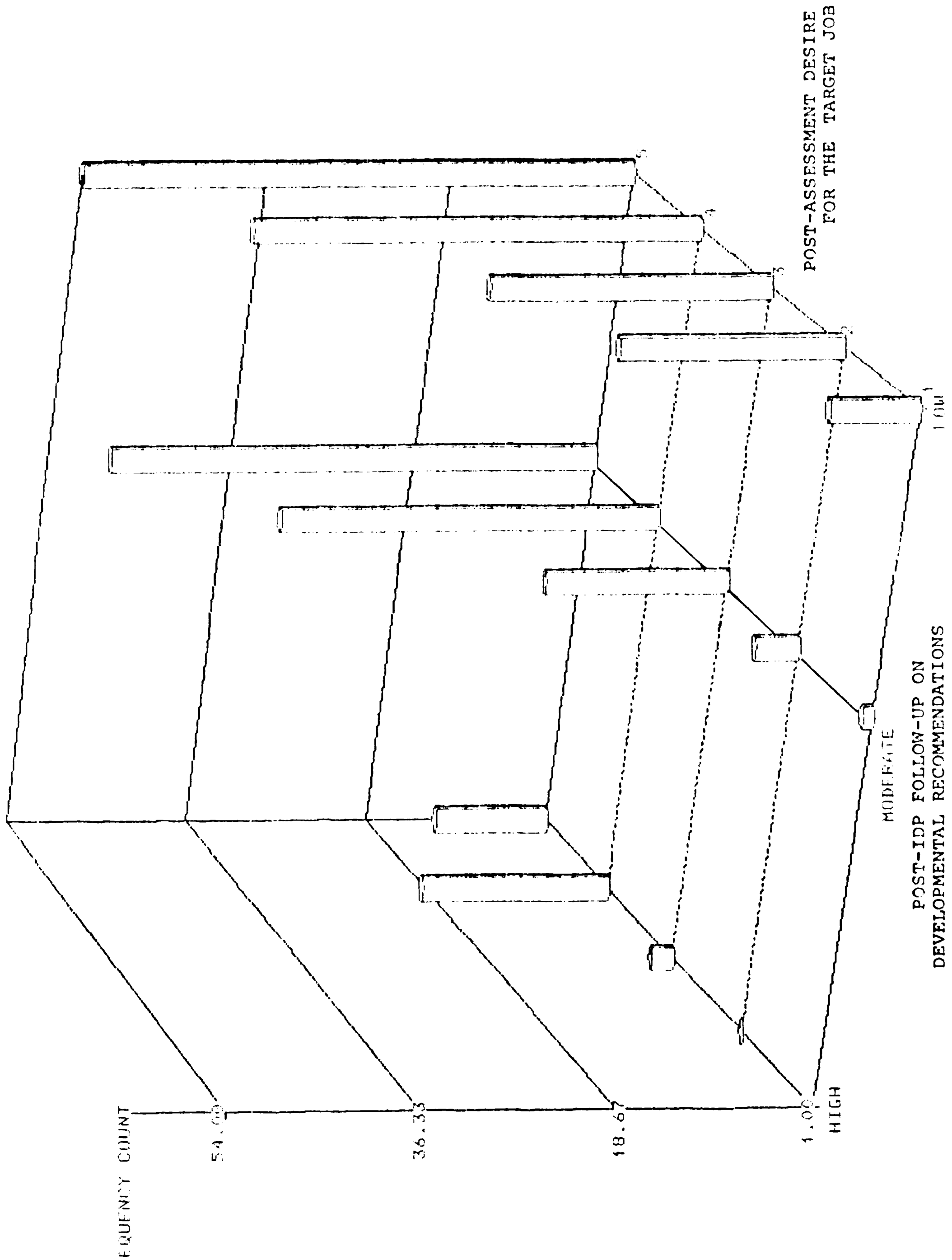
	*Frequency Expected Row Pct Col Pct	Post-assessment Desire for Target Job						
		No Data	1	2	3	4	5	Total
Post-IDP Follow-up on Recommendations	No Reply	36 . . .	0 . . .	0 . . .	0 . . .	0 . . .	0 . . .	.
	Low	0 . . .	9 5.7 5.84 81.82	21 13.9 13.64 77.78	27 24.7 17.53 56.25	43 51.0 27.92 43.43	54 58.7 35.06 47.37	154
	Moderate	0 . . .	2 4.0 1.82 18.18	5 9.9 4.55 18.52	18 17.7 16.36 37.50	37 36.4 33.64 37.37	48 41.9 43.64 42.11	110
	High	0 . . .	0 1.3 0.00 0.00	1 3.2 2.86 3.70	3 5.6 8.57 6.25	19 11.6 54.29 19.19	12 13.3 34.29 10.53	35
	Total	.	11	27	48	99	114	299

Statistics For 2-Way Tables Chi-Square 20.659 DF = 8 PROB = 0.0081

*Elements in Each Cell of the Table.

Figure 28.

Post-IDP Follow-up on Developmental Recommendations by Post-Assessment Desire for the Target Job



Summary

Twenty-two selected factors comprised of independent variables and demographic factors were compared to assessment center participants' extents of follow-up on post-assessment center developmental recommendations. The degree of relationship between each factor and the dependent variable was measured using a log-linear model and chi-square test.

The degree to which a participant follows up on developmental recommendations following participation in an assessment center was found to be dependent upon the following factors; they are listed in decreasing order of strength of dependency:

1. Perceived support from the organization.*
2. Likelihood of achieving the target job.*
3. Perceived support from supervisor/manager.
4. Post-assessment desire for the job.
5. Logicalness of developmental recommendations.
6. Perceived support from family.
7. Formal education level.
8. Desire to attend the assessment center.
9. Age at assessment.

The following factors were ones for which the dependency between each and the dependent variable was not considered significant. They are also listed in decreasing order of strength of dependency:

---

*Equal strengths of dependency for these two factors.

10. Rating of overall potential to succeed in target job.
11. Acceptability of time delay to feedback.
12. Desire for target job (pre-assessment).
13. Perceived support from friends.
14. Appropriateness of time spent discussing feedback.
15. Perceived support from co-workers.
16. Credibility of individual delivering feedback.
17. Seniority at assessment.
18. Relevance of feedback to job dimensions.
19. Sensitivity of individual delivering feedback.
20. Realism of assessment exercises.
21. Job grade (organizational level) at assessment.
22. Sex.

In the following chapter, the implications of these findings are presented and discussed. Recommendations are made to those individuals/organizations using the assessment center process to select and develop individuals for various jobs. Recommendations are also made for individuals contemplating research in this topical area.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

In this chapter a general summary of the research is presented. Included also are conclusions of the research, organized by the questions the research was designed to answer. Presented in this chapter are recommendations based upon the research findings and suggestions for further research.

Summary of the Study

The general problem toward which this research was directed dealt with the relative scarcity of individuals having high levels of requisite skills and abilities to fill managerial and supervisory positions within organizations. Over the last few decades, the assessment center process has emerged as one method by which requisite skills and abilities for these positions are measured for individuals participating in the assessment center. Because not all assessees demonstrate sufficient levels of skills and abilities to be judged ready to assume the jobs for which assessment centers are designed, many others must pursue further development to demonstrate job readiness. As many assessment centers yield developmental recommendations to lesser- performing assessees and because not all assessees pursue the specified development, the research question became "What factors influence the extent to which an individual follows up on developmental recommendations made following his/her participation in an assessment center?"

A review of the literature identified a number of studies conducted in the United States and the United Kingdom which helped to define the impact assessment center participation has on assessees, but confirmed that this study's major research question had not been previously answered.

To answer the general research question, data were gathered from 299 participants of an assessment center designed to select and develop Manufacturing Foremen at a large manufacturer of office furniture. The data were gathered on 22 selected factors and on the dependent variable--a rating of the extent of each person's follow-up on post-assessment center developmental recommendations. Two-way tables were constructed between each factor and the dependent variable and a log-linear model and chi-square test statistic were employed to measure the degree of association between the dependent variable and each selected factor.

The factors examined were seven which dealt with conditions established prior to assessment center participation, eight which related to assessment center participation, the performance feedback, and its manner of delivery, and seven which were conditions established following assessment center participation.

Conclusions and Recommendations for Each Question

In general, those factors which were discovered to be significantly related to the dependent variable were ones which seemed to be *facilitating* in nature. None of the factors alone clearly explained why some individuals did appear to take the recommendations seriously and many others did not. This is simply to say that development did not appear to occur as a result of the presence of a particular factor, but the absence of the factor was associated with little or no follow-up on developmental recommendations.

Following are the specific outcomes of this research, organized by the three specific research questions. All of the outcomes are presented in Table 5.1. The first question concerned itself with factors operating prior to a person's contact with the assessment center process; it asked:

> Q1. To what degree are pre-assessment factors related to the extent to which an individual follows up on post-assessment center developmental recommendations?

The pre-assessment factors examined in this research included:

a. Age at assessment.

b. Company seniority at assessment.

c. Formal education.

d. Organizational level (job grade) at assessment.

e. Sex.

f. Desire to attend the assessment center.

g. Desire for the target job.

Of the pre-assessment factors examined, three were found to be significant: Age at assessment, formal education level, and desire to attend the assessment center.

TABLE 5.1--SUMMARY OF FACTORS AND PROBABILITIES OF NO DEPENDENCE BETWEEN EACH AND THE DEPENDENT VARIABLE

Pre-assessment Factor	Probability
a. Age at assessment	.0418*
b. Seniority at assessment	.4239
c. Formal education level	.0160*
d. Job grade (organizational level) at assessment	.6383
e. Sex	.9906
f. Desire to attend assessment center	.0186*
g. Desire for target job	.1453
During-assessment Factors	
a. Rating of overall potential to succeed in target job	.0805
b. Realism of assessment exercises	.5887
c. Acceptability of time delay to feedback	.1186
d. Sensitivity of individual delivering feedback	.4853
e. Appropriateness of time spent discussing performance	.3157
f. Credibility of individual delivering feedback	.3706
g. Relevance of feedback to job dimensions	.4598
h. Logicalness of recommendations	.0087*
Post-assessment Factors	
a. Perceived support from organization	.0001*
b. Perceived support from supervisor/manager	.0011*
c. Perceived support from co-workers	.3488
d. Perceived support from family	.0105*
e. Perceived support from friends	.2255
f. Likelihood of achieving target job	.0001*
g. Post-assessment desire for job	.0081*

*Significant degree of dependence between these factors and the dependent variable (extent of follow-up on post-assessment center developmental recommendations).

Age at Assessment

Conclusion: Individuals over 40 years of age demonstrate a lesser extent of follow-up on post-assessment developmental recommendations than those in younger age groups.

If the assumption can be made that self-development would be pursued only if it is viewed as a useful means of achieving the target job of the assessment center then this finding can be fairly easily explained. The under-40 employees may more strongly believe that the developmental investment will result in the eventual payoff of a promotion. The older workers may feel that the developmental investment will not pay off or, if it does, it will be for too short a time period to be justified. As many of the study participants could voluntarily retire at age 55, this assumption makes even more sense. The findings associated with this factor are in agreement with the findings of numerous developmentalists (e.g., Burach, Erickson, Gould, Holland, Levinson, Sheehey, Super).

Recommendation: Be aware that, in general, individuals under 50 years of age will follow up on post-assessment developmental recommendations to a greater extent than older workers. Little can be done to directly deal with this factor. Current federal legislation on employee selection procedures prohibits the use of age as a factor in selecting individuals to attend an assessment center. A company cannot, therefore, select only those individuals who are under 40 to attend an assessment center.

Recommendation for further research: Explore individuals' views of their ages in comparison to their desires to follow up on post-assessment developmental recommendations. Study participants could be asked directly to identify the extent to which they felt their age was a factor in follow up on recommendations.

Formal Education Level

Conclusion: Individuals with higher levels of formal education (two or more years of college) demonstrate a greater extent of follow-up on post-assessment developmental recommendations than those with less formal education.

Though not all individuals who were judged as having higher levels of formal education pursued post-assessment development, those who did tended to be better educated. This seems consistent with findings presented by Campbell and Hansen (1981); additional levels of formal education appear to improve one's "academic comfort" which, in turn, increases his/her likelihood to approach similar experiences in the future. Because several of the post-assessment recommendations involved formal course-work, those already having had similar experiences may have felt more comfortable and more willing to follow up on these components of the recommendations.

Recommendation: Encourage individuals to pursue more development than that suggested by post-assessment recommendations alone. It appears that the pursuit of development may be a positive cycle; the more development one pursues, the more he/she may be likely to pursue.

Recommendation for further research: Measure "academic comfort" using an instrument like the Strong-Campbell Interest Inventory and identify the relationship between the scores and participants' extents of follow-up on post-assessment developmental recommendations. This may yield better evidence on the impact on the dependent variable of one's comfort level in pursuing development.

Desire to Attend the Assessment Center

Conclusion: Individuals reporting a greater desire to attend an assessment center demonstrate greater extents of follow-up on post-assessment developmental recommendations than those reporting a lesser desire.

This factor appeared to be significant with a high degree of probability, i.e., a low probability of a true null hypothesis. Few individuals having little desire to participate in the assessment center exhibited much follow-up on developmental recommendations. Where high levels of follow-up were observed, however, they were generally accompanied by a stronger desire to attend the assessment center. This may have to do in part with the perceived instrumentality of the assessment center. Those having little confidence in such a process will probably tend to view the results with skepticism.

Recommendation: For those administering an assessment center it would seem to be important to discuss the nature and potential value of the assessment center with individuals who may be considering attending. This might improve a person's desire to attend, as the process would become less mysterious to the potential attendee and he/she might more clearly understand how the information yielded by the center could be useful in achieving career goals.

Recommendation for further research: Compare the extent of follow-up on post-assessment center developmental recommendations of an experimental and a control group; the experimental group would receive information designed to reduce their fear and increase their desire to attend, the control group would not.

The second research question concerned itself with factors operating during a person's contact with the assessment center and feedback process; it asked:

> Q2. To what degree are factors associated with the assessment center and feedback process related to the extent to which an individual follows up on post-assessment center developmental recommendations?

The factors examined in this research which relate to research question two are:

a. Rating of overall potential to succeed in the target job.

b. Perceived realism of assessment situations or exercises.

c. Perception of the utility of the feedback process itself, including:

   i. Acceptability of the time delay between the assessment and the feedback.

   ii. Sensitivity displayed by the individual delivering the feedback.

   iii. Appropriateness of the amount of time spent during the oral feedback session.

   iv. Credibility of the individual delivering the feedback.

   v. Relevance of the feedback in comparison to the critical job dimensions.

   vi. Relevance of the developmental recommendations to the developmental needs identified.

Of the above factors, only one (c-vi) proved to have an effect.

Relevance of the Developmental Recommendations to the Developmental Needs Identified

This factor proved to be significant at the .0087 level of confidence.

Conclusion: Individuals who demonstrated greater extents of follow-up on post-assessment center developmental recommendations were more frequently those who reported seeing a logical connection between the recommendations made and the skills and qualities identified as needing development.

As with the significant factors in research question one, this factor appeared to have a facilitating effect on post-assessment follow-up on recommendations. This seems reasonable and is consistent with what is currently known about feedback and human performance.

Recommendation: It is recommended that assessment center users clearly describe to assessees how developmental recommendations made will help improve the skills and qualities seen as needing improvement. It may be that some assessees view certain recommendations as arbitrary; discussing the relevance of the recommendations would demonstrate that the recommendations were founded upon a careful plan. Such a discussion might also give assessees the opportunity to ask about alternate paths of development which might improve the same skills and qualities.

Recommendation for future research: Compare giving and withholding developmental recommendations on post-assessment development activity. Not all assessment centers yield recommendations to participants. It is to be expected that, even after participating in these centers, certain participants will continue to seek development. It would be useful to know what impact the actual provision of developmental recommendations has on an individual's desire to pursue further development.

In the assessment center which provided the focus for the current research, assessees always had the options of inviting the first- and second-level managers to the feedback session. A second recommendation, therefore, would be to explore the impact of the absence/presence of line management at the feedback. It may be that individuals who request their line managers to be present continue to discuss the performance feedback and developmental recommendations with them and this may have a positive impact on the pursuit of development.

The third research question concerned itself with factors operating after a participant had concluded assessment and had received developmental recommendations; it asked:

> Q3. To what degree are post-assessment factors related to the extent to which an individual follows up on developmental recommendations made during the post-assessment feedback process?

Post-assessment factors examined in this research included:

a. Perceived level of support provided by each of the following for individual development efforts:
   - i. Organization.
   - ii. Immediate supervisor/manager.
   - iii. Co-workers.
   - iv. Family members.
   - v. Friends.

b. Desire for the target job.

c. Perceived likelihood of achieving the target job.

Of the seven post-assessment factors which were examined in this research, five were found to be significant. Three of these five dealt with the perceived amount of support provided to each participant for his/her own developmental efforts.

Perceived Support from the Organization

Conclusion: Support from the organization facilitates follow-up on post-assessment center developmental recommendations.

This factor ranked at the top of the list of significance with an equal probability of no association with the dependent variable as the factor "Likelihood of achieving the target job." Both were calculated as having a .0001 probability of a true null hypothesis.

As described earlier in the study, the organization in which this study was conducted (Steelcase, Inc., Grand Rapids, Michigan) offers educational assistance to each of its 7,500+ employees through tuition reimbursement for job-related courses which are successfully completed. Several courses are offered on site through the company's own Employee Development Department, free of charge to employees, as well as through local colleges and community education systems.

It appears that those individuals who actively pursued post-assessment developmental recommendations were those who perceived that the company provided high levels of support for their developmental efforts. Little or no perceived support from the organization was clearly associated with little or no development.

Recommendation: Organizations should make extra efforts to provide support for individual development. The support provided might be in the form of monetary assistance, courses which are offered on site, courses which are offered at convenient times of the day, etc.

Recommendation for future research: Construct a study to determine the type(s) of support which appear to be most important. It may be that financial assistance is the factor having the greatest impact, or perhaps participants are more interested in taking classes at convenient times of the day.

Perceived Support from the Supervisor/Manager

It is not surprising that this factor was highly significant (.0011 level of confidence), particularly in view of the fact that support from the organization was ranked so highly.

Conclusion: Support from the supervisor/manager facilitates follow-up on post-assessment center developmental recommendations.

This finding is consistent with the expected findings. It seems reasonable that, in the eyes of an employee, the supervisor or manager is the organization. This individual is one of the few individuals who (in the setting for the study) must approve a request for tuition reimbursement and who may provide or withhold opportunities for on-the-job development. Many of the developmental recommendations made involved such things as: (1) serving on a quality circle team, (2) chairing weekly meetings such as safety meetings, (3) filling in for the current supervisor to provide coverage for illnesses, vacations, etc., (4) reviewing various elements of in-house supervisory training programs--all of which do require permission and assistance from the current supervisor or manager. Higher levels of development were accompanied by higher levels of support from the supervisor. Where supervisory support was reported to be low, little development took place.

Recommendation: Organizations should stress the importance to management personnel of working with assessment center participants. Supervisors and managers should be made aware of the types of support they can provide assessees and the impact their support will have on helping individuals reach their career goals and, as a result, on helping the organization to fill vacancies with skilled people.

Recommendation for future research: Construct a study to determine the type(s) of support from the supervisor which appear to be most important. It may be that a supervisor's encouragement and verbal support is more important than the simple provision of on-the-job developmental opportunities.

Perceived Support from the Family

This factor was significant at the .0105 level of confidence.

Conclusion: Support from family members facilitates follow-up on post-assessment center developmental recommendations.

As with other types of support found to be significant, family support does appear to be a logical pre-condition to follow-up on assessment center developmental recommendations. Presence of family support seemed to assist many assessees while absence of family support was generally accompanied by little or no follow-up.

Recommendation: Encourage assessees to describe their need for support for their self-development, in part, from their family members. Ask them to describe to the family the amount of time and energy which must be invested to improve skills and qualities. Ask them to stress the potential benefits of their own development to the rest of the family. Additionally, make appropriate organizational members aware of the impact of the family unit on an assessee's developmental follow-up.

Recommendation for future research: Construct a study to identify the type(s) of family support considered most important. It may very well be that individuals having greater degrees of family responsibility (greater number of dependents, e.g.) may receive less support for their own development due to the demands which are already placed upon their time and energy. It may be that certain families are more encouraging and emotionally supportive than others and this may have a positive effect.

Post-assessment Desire for the Target Job

This factor was significant at the .0081 level of confidence. Higher levels of follow-up on developmental recommendations were associated with higher levels of this factor; the absence of this factor quite clearly was associated with very little development.

Conclusion: Post-assessment desire for the target job has a facilitating effect on the extent of follow-up on assessment center developmental recommendations.

This finding is a reasonable one and does conform to expectency theory. It does seem likely that those who do not have the desire for something (promotion to the position of Manfucturing Supervisor, for example) will not be willing to spend much time and energy working toward it. The strengths of relationship to the dependent variable of this factor and the pre-assessment factor "Desire for the job" are a bit different. This seems to indicate that intervening variables (the assessment center experience itself, perhaps) had some effect on one's desire over time for the target job.

Recommendation: As this factor represents some very personal feelings, one could question the appropriateness of attempts to influence it. It is theoretically possible to make attempts to promote one's desire for the target job of the assessment center, but the consequences seem potentially risky. To do so is to place more value on the organization than the individual. The best recommendation may be to simply keep the impact of this factor in mind when working with assessees.

Recommendation for future research: Construct a study to determine the components of one's desire for the target job. Attempt to identify if certain characteristics of the target job make the position appear to be highly desirable. Perhaps individuals are interested in the target job because of its challenges or because of its greater income or its greater status.

Likelihood of Achieving the Target Job

This factor tied for first place in the list of significant factors (Again see Table 5.1) with the factor "Perceived support from the organization" with a probability of

Conclusion: Perceived likelihood of achieving the target job has a facilitating effect on the extent of follow-up post-assessment center developmental recommendations.

The findings related to this factor are those which were expected and do conform to expectency theory. It seems reasonable to expect that an individual will work harder to achieve something which is more likely than something which is less likely, all else being equal.

Part of one's perceived likelihood of achieving the target job would no doubt be his/her "Rating of overall potential to succeed in the target job" which was another factor of this study. It is worth mentioning that, of the factors considered to be non-significant at the .05 level of confidence, "Rating of overall potential to succeed in the target job" came the closest to being significant with a .0805 probability of a true null hypothesis.

It is true, however, that one's overall rating of current potential to succeed in the target job, while an important piece of data, is only one of several pieces of data combined in making a promotional decision. Other pieces of data such as performance appraisal ratings, experience in a particular type of manufacturing department, and judgments yielded by an industrial psychologist following an individual assessment are also used. As assessment center participant's perception of his/her own likelihood of being promoted to the target job probably is a function of the knowledge the individual has of his/her own total performance data and his/her knowledge of personal drive to succeed. Also important would be the person's strength of "Desire for the target job" which was also measured in this study. One's strength of desire may positively correlate with one's belief in a personal ability to overcome obstacles to reaching the target job.

The factor "Likelihood of achieving the target job" was also seen as a facilitating one. Presence of higher levels of this factor were associated with higher levels of follow-up on recommendations. Where individuals reported weaker likelihoods of achieving the target job, little follow-up on developmental recommendations was seen.

Recommendation: For organizations using the assessment center process, it is recommended that a discussion be conducted with each assessee to determine his/her current and future likelihood of being promoted to the target job. Information could be shared with each candidate which is in addition to the performance data provided by assessment. This discussion may be useful for those who have an otherwise low belief in their likelihood of achieving the target job. By putting the assessment data in context with other information, a more positive outlook may be generated. Of course, such a discussion may have a chilling effect on other assessees who had a prior good feeling about their promotional likelihood. In either case, a more realistic outlook may be formed.

Recommendation for future research: Explore an additional factor like "Belief that pursuit of developmental recommendations will lead to promotion to the target job." This would be an important measure of the perceived instrumentality of the recommendations.

General Conclusions and Recommendations

Recommendations have already been stated as they related to each of the factors and research questions. In the process of searching the literature and in completing this dissertation, however, additional recommendations and additional ideas for related research came to mind:

1. Consider the use of an interview approach to gather data. Using an interview approach would permit the gathering of additional data not specified on a questionnaire, and could allow for clarification of questions as necessary. An additional richness of information would be possible through interviewing, although it would certainly consume more time and effort than the questionnaire method alone.

2. Ask assessees more directly about factors influencing their follow-up on developmental recommendations. This study attempted to indirectly determine the impact of various selected factors. A researcher could conduct a force-field analysis by asking a participant to rank order factors facilitating and hindering developmental follow-up. This could more clearly establish the types of obstacles to personal growth.

3. Conduct a true "pre-/post-" study. Two of the pre-assessment factors of the study (Desire to attend the assessment center and Pre-assessment desire for the target job) were of a retrospective nature. The data gathered for the study were treated as though they were gathered in a temporal sequence, although they were gathered only after the treatment. To improve future research, pre-assessment data should only be gathered before participants enter the assessment center process.

4. It appears that the design common to most assessment centers does not lend itself to participant follow-up on developmental recommendations. In the case of the assessment center which served as one focus for the study, participants disengaged from the overall process once they had received their performance feedback and developmental recommendations. Because they are geographically dispersed, they probably have little or no information on how others with whom they participated in the assessment center are progressing on their developmental recommendations. An annual meeting of assessees would make a type of follow-up a part of the overall process and would allow participants to offer one another support and encouragement. The fact that the assessees would be coming together again might encourage them to more actively pursue their developmental recommendations.

5. Another recommendation for future research would be to conduct separate analyses on promoted versus non-promoted individuals. It seems reasonable to expect that those who exhibited greater degrees of follow-up on their developmental recommendations would also be those who were more likely to be promoted to the target job.

6. Gather and analyze data in such a way that regression analysis, principal components analysis, or factor analysis could be used. As described earlier in the research, the data gathered were categorical in nature and highly skewed. An attempt was made to use a regression

analysis after transforming the data, but this yielded results which were of no value. One suggestion to a future researcher would be to gather the data in more than five categories; a ten-point scale might be more helpful here. A factor analysis would be particularly valuable to help develop a "profile" of the individual who is most likely to pursue post-assessment center development.

7. An interesting conclusion of the research is that, of the nine factors which were seen as being significantly related to the dependent variable, the only one which is within the control of the assessment center administrator is logicalness of recommendations (Again see Table 5.1). This indicates that an assessment center administrator has relatively little influence over assessees' follow-up on developmental recommendations except through insuring that each assessee understands how the recommendations are specifically targeted to improve particular skills and qualities.

Summary

Presented in this chapter were a brief description of the study, its design, data analysis method, and the significant findings of the study organized by the specific research questions. Additionally, conclusions and recommendations were provided for each factor within a research question. To conclude the study, general conclusions and recommendations were made for individuals contemplating future research and for those who are responsible for the operation of assessment centers.

APPENDICES

APPENDIX A

ASSESSMENT CENTER GUIDELINES

ASSESSMENT CENTER GUIDELINES[1]

Assessment Center Defined

An assessment center consists of a standardized evaluation of behavior based on multiple inputs. Multiple trained observers and techniques are used. Judgments about behavior are made, in part, from specially developed assessment situations.

These judgments are pooled by the assessors at an evaluation meeting during which assessment data are reported and discussed and the assessors agree on the evaluation of the dimensions and any overall evaluation that is made.

The following are the essential elements which are necessary for a process to be considered an assessment center.

Multiple assessment techniques must be used. At least one of these techniques must be a simulation. A simulation is an exercise or technique designed to elicit behaviors related to dimensions of performance on the job requiring the participants to respond behaviorally to situational stimuli. The stimuli present in a simulation parallel or resemble stimuli in the work situation. Examples of simulations include group exercises, In-Basket exercises, interview simulations, Fact Finding exercises, etc.

Multiple assessors must be used. These assessors must receive thorough training prior to participating in a center.

Judgments resulting in an outcome (i.e., recommendation for promotion, specific training or development) must be based on pooling information from assessors and technique.

An overall evaluation of behavior must be made by the assessors at a separate time from observation of behavior during the exercises.

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[1] Task Force on Assessment Center Standards. Standards and ethical considerations for assessment center operations. The Personnel Administrator, February, 1980, 35-38.

Simulation exercises are used. These exercises are developed to tap a variety of pre-determined behaviors and have been pre-tested prior to use to ensure that the techniques provide reliable, objective, and relevant behavioral information for the organization in question. The simulations must be job-related.

The dimensions, attributes, characteristics, qualities, skills, abilities, or knowledge evaluated by the assessment center are determined by an analysis of relevant job behaviors.

The techniques used in the assessment center are designed to provide information which is used in evaluating the dimensions, attributes, or qualities previously determined.

The following kinds of activities do not constitute an assessment center.

1. Panel interviews or a series of sequential interviews as the sole technique.

2. Reliance on a specific technique (regardless of whether a simulation or not) as the sole basis for evaluation.

3. Using only a test battery composed of a number of pencil and paper measures, regardless of whether the judgments are made by a statistical or judgmental pooling of scores.

4. Single assessor assessment (often referred to as individual assessment)--measurement by one individual using a variety of techniques such as pencil and paper test, interviews, personality measures, or simulations.

5. The use of several simulations with more than one assessor where there is no pooling of data; i.e., each assessor prepares a report on performance in an exercise and the individual reports (unintegrated) are used as the final product of the center.

6. A physical location labeled as an "assessment center" which does not conform to the requirements noted above.

Organizational Policy Statement

Assessment centers need to operate as a part of human resource system. Prior to the introduction of a center into an organization, a policy statement should be prepared and approved by the organization. The policy statement should address the following areas.

Objective--This may be selection, development, early identification, affirmative action, evaluation of potential, evaluation of competency, or any combination of these.

Assessees--The population to be assessed, the method for selecting assessees from the population, procedures for notification, and policy related to re-assessing should be specified.

Assessors--The assessor population, limitations on use of assessors, number of times assigned, evaluation of assessor performance, and certification requirements where applicable should be specified.

Use of Data--The flow of assessment reports, who receives reports, restrictions on access to information, procedures and controls for research/program evaluation purposes, feedback procedures to management/employee, and the length of time data will be maintained in files should be specified.

Qualification of Consultant(s) or Assessment Center Developer(s)--The internal or external consultants responsible for the development of the center should be identified and their professional qualifications and related training listed.

Validation--There should be a statement specifying the validation model being used. There should be a time schedule indicating when a validation report will be available.

Assessor Training--Assessor training is an integral part of the assessment center program. The following are some issues related to training.

Training Content--Whatever the approach to assessor training, the objective is obtaining accurate assessor judgments. A variety of training approaches may be used, as long as it can be demonstrated that accurate assessor judgments are obtained. The following minimum training goals are suggested:

- Thorough knowledge and understanding of the assessment techniques used, including the kinds of behaviors elicited by each technique, relevant dimensions to be observed, expected or typical behaviors, examples or samples of actual behaviors, etc.

- Thorough knowledge and understanding of the assessment dimensions including definitions of dimensions, relationship to job performance, examples of effective and ineffective performance, etc.

- Skill in behavior observation and recording, including knowledge of the forms used by the center.

- Thorough knowledge and understanding of evaluation and rating procedures, including how data are integrated by the assessment center staff.

- Thorough knowledge and understanding of assessment policies and practice of the organization, including restrictions on how assessment data are to be used.

- Thorough knowledge and understanding of feedback procedures where appropriate.

Length of Training. The length of assessor training may vary due to a variety of considerations that can be categorized into three major areas:

1. Trainer and Instructional Design Considerations

- The instructional model(s) utilized.
- The qualification and expertise of the trainer.
- The training and instructional sequence.

2. Assessor Considerations

- Previous knowledge and experience with assessment.
- The use of professional psychologists (i.e., licensed or certified psychologists) as assessors.
- Experience and familiarity with the organization and the target position(s) or target level.
- The frequency of assessor participation.

3. Assessment Program Considerations

- The level of difficulty of the target position.
- The number of dimensions or skills to be rated.
- The anticipated use of the assessment information (immediate selection, broad placement considerations, development, etc.)
- The number and complexity of the exercises.
- The division of roles and responsibilities between assessors and others on the assessment staff.

It should be noted that length of training and quality of training are not synonymous. Assessor training, however, is an important aspect of an assessment program. The true test of training quality should be provided by performance standards and certification outlined below.

Performance Standards and Certification--Each assessment center should have clearly stated minimal performance standards for assessors. These performance standards should, as a minimum, include the following areas.

1. The ability to administer the exercises and techniques the assessor uses in the center.
2. The ability to recognize, observe, and report the behaviors measured in the center.
3. The ability to classify behaviors into the appropriate behavior or skill.

Some measurement is needed indicating that the individual being trained has the capability of functioning as an assessor. The actual measurement of assessor performance may vary and could include data in terms of (1) rating performance, (2) critiques of assessor reports, (3) observation as an evaluator, etc. It is important that assessor performance is evaluated to ensure that individuals are sufficiently trained to function as assessors, prior to their actual duties, and that such performance is periodically monitored to insure that skills learned in training are applied.

Each organization should prepare to demonstrate that its assessors can meet minimal performance standards. This may require the development of additional training or other action for assessors not meeting these performance standards.

Informed Participation

The organization is obligated to make some form of announcement prior to assessment so that participants will be informed as completely as possible about the program. While the actual information provided will vary from organization to organization, the following basic information should be given to all prospective participants before getting their agreement to participate in the program.

Ideally, this information should be made available in writing prior to the center. A second option is to use the material in the opening statement of the center.

1. Objective--The objectives of the program and the purpose of the assessment center.

2. Selection--How individuals are selected to participate in the center.
3. Choice--Any options the individual has regarding the choice of participating in the assessment center as a condition of employment, advancement, development, etc.
4. Staff--General information on the assessor staff to include composition and assessor training.
5. Materials--What assessment center materials are collected and maintained by the organization.
6. Results--How the assessment center results will be used. The length of time the assessment results will be maintained on file.
7. Feedback--When and what kind of feedback will be given to the participants.
8. Re-assessment--The procedure for re-assessment (if given).
9. Access--Who will have access to the assessment center reports and under what conditions.
10. Contact--Who will be the contact person responsible for records. Where will the results be stored.

Validation Issues

A major factor in the widespread acceptance and use of assessment centers is directly related to an emphasis on sound validation research. Numerous studies have been conducted and reported in the professional literature demonstrating the validity of the assessment center process in a variety of organizational settings.

The historical record of the validity of this process cannot be taken as a guarantee that a given assessment program will or will not be valid in a given setting.

Ascertaining the validity of an assessment center program is a complicated technical process and it is important that validation research meet both professional and legal standards. Research should be conducted by individuals knowledgeable in the technical and legal issues pertinent to validation procedures.

In evaluating the validity of assessment center programs, it is particularly important to document the selection of dimensions, attributes, or qualities assessed in the center. In addition, the relationship of assessment exercises to the dimensions, attributes, or qualities assessed should be documented as well.

The technical standards and principles for validation appear in "Principles for the Validation and Use of Personnel Selection Procedures" (Division 14, 1975) and "Standards for Educational and Psychological Tests and Manuals" (APA, 1974).

Rights of the Participant

The Federal Government enacted the Freedom of Information Act and Privacy Act of 1974 to ensure certain safeguards are provided for an individual against an invasion of personal privacy. Some broad interpretations of these acts are applicable to the general use of assessment center data.

Assessment center activities typically generate a volume of data on an individual who has gone through an assessment center. These assessment data come in many different forms ranging from observer notes, reports on performance in the exercises, assessor ratings, peer ratings, paper and pencil tests, and final assessment center reports. This list, while not exhaustive, does indicate the extent of collection of information about an individual.

The following guidelines for use of these data are suggested:

1. Assessees should receive a comprehensive feedback on their performance at the center and informed of any recommendations made.

2. For reasons of test security, assessment center exercises are exempted from disclosure, but the rationale and validity data concerning dimensions, ratings, and recommendations should be made available on request of the individual.

3. If the organization decides to use assessment results for purposes other than those originally announced, the assessees involved must be informed.

4. The organization should inform the assessee what records and data are being collected, maintained, used, and disseminated.

APPENDIX B

VARIABLES OF FIRST-LINE SUPERVISOR OF STEELCASE, INC. IDENTIFICATION DEVELOPMENT PROGRAM

VARIABLES OF FIRST-LINE SUPERVISOR
OF STEELCASE, INC.
IDENTIFICATION DEVELOPMENT PROGRAM

PERSONAL QUALITIES

- INITIATIVE

  To what extent does this individual take active efforts to influence events, and/or is self-starting, rather than passively accepting?

- INNER WORK STANDARDS

  To what extent will this individual want to do a good job, even if he/she could get by with doing a less acceptable job?

- STRESS TOLERANCE

  To what extent will this individual's work performance stand up in the face of unusual pressures?

INTERPERSONAL SKILLS

- SENSITIVITY

  To what extent is this individual able to perceive and react sensitively to the feelings and needs of others?

- FLEXIBILITY

  To what extent can this individual modify his/her behavioral style and approach to reach a goal?

- LEADERSHIP

  To what extent can this individual effectively lead a group or another individual to accomplish a task without arousing hostility?

- ORAL COMMUNICATION

  To what extent can this individual effectively express his/her ideas in individual or group situations?

ADMINISTRATIVE SKILLS

- ORGANIZING AND PLANNING

  To what extent can this individual establish an appropriate course of action for self and/or others to accomplish a specific goal, make proper assignments of personnel, and apropriate allocation of resources?

- DECISIVENESS

  To what extent is this individual willing to make a decision, render judgment, or commit to action when required?

- JUDGMENT

  To what extent is this individual able to make logical and rational decisions of high quality?

APPENDIX C

POST-ASSESSMENT QUESTIONNAIRE

IDENTIFICATION DEVELOPMENT PROGRAM (IDP)
LONG TERM FOLLOW-UP QUESTIONNAIRE

Your help is needed!

You are among a select group of employees who have attended the Identification Development Program (IDP) — a program designed to measure the skills and qualities needed to be a successful Manufacturing Foreman at Steelcase.

You are being asked to complete this questionnare as a critical step in a long-term follow-up study by the Employee Development Department. You may be assured that while your name and social security number must be listed, your responses will be kept confidential; the information you supply will be used for research purposes.

Please think carefully about your answers. Most of the items will be very easy to answer, while a few may take a bit more time or effort. Do your best to answer fully and openly. You may take the questionnare home if you'd like, but please do not discuss the items with anyone else.

When you are finished, place the questionnaire in the enclosed envelope and drop it in the internal mail system.

If you have questions, please call ext. 9188.

Please mail the completed questionnare no later than / / .

THANK YOU!

PLEASE PRINT OR WRITE CLEARLY

Name ______________________

Date ______________________

Social Security No. ______________________

A. Please circle the number below that most closely matches your desire to attend the IDP.

"I . . .

5. indicated I very much wanted to attend.
4. indicated I somewhat wanted to attend.
3. was asked if I'd like to attend and was given the option.
2. was given some pressure to attend.
1. was told I must attend.

B. Consider the point in time just before the decision that you would attend the IDP. Please circle the number below that most closely matches your desire at that time to become a Foreman at Steelcase.

"I had a . . .

5. very strong desire to become a Foreman.
4. fairly strong desire to become a Foreman.
3. moderate desire to become a Foreman.
2. limited desire to become a Foreman.
1. complete lack of desire to become a Foreman.

C. The IDP consists of several exercises designed to resemble the types of problems a Foreman at Steelcase is asked to handle. How realistic did these exercises seem to you; that is, to what extent did you feel the problems you were asked to solve were like those to be handled by a Foreman? Please circle the number below that most closely matches your feelings.

"The IDP exercises seemed . . .

5. very realistic.
4. quite realistic.
3. somewhat realistic.
2. not too realistic.
1. not at all realistic.

D. After the IDP, the administrator of the session met with you (and possibly with your management) to give you feedback on your IDP performance. How do you feel about the **amount of time** delay between your IDP attendance and your feedback session? Please circle the number below which most closely matches your feelings.

"The amount of time between the IDP and my feedback session was . . ."

5. very much too long.
4. quite a lot too long.
3. somewhat too long.
2. a bit too long.
1. not too long at all.

E. Consider the individual who delivered your IDP performance feedback. Please circle the number below which most closely matches feelings of how concerned this individual was **with your feelings during the feedback session.**

"The individual delivering my IDP performance feedback was . . ."

5. very concerned about my feelings.
4. quite concerned about my feelings.
3. somewhat concerned about my feelings.
2. not too concerned about my feelings.
1. not at all concerned about my feelings.

F. Consider the **amount of time** spent **delivering and discussing** your IDP performance feedback. Please circle the number which most closely matches your feelings of how appropriate the amount of time was.

"The amount of time devoted to delivering and discussing my IDP feedback was . . ."

5. very appropriate.
4. quite appropriate.
3. somewhat appropriate.
2. not too appropriate.
1. not at all appropriate.

G. Again consider the individual who delivered your IDP performance feedback. Please circle the number which most closely matches your feelings of how **believable this individual was in giving you information and answering your questions.**

"The individual delivering my IDP performance feedback and answering my questions was . . ."

5. very believable.
4. quite believable.
3. somewhat believable.
2. not too believable.
1. not at all believable.

H. A number of skills and qualities required to be a successful first-line Supervisor at Steelcase were measured by the IDP. Please circle the number below which most closely matches your feelings about the **relevance of your performance feedback** to these skills and qualities.

"The IDP performance feedback I received was . . ."

5. very relevant.
4. quite relevant.
3. somewhat relevant.
2. not too relevant.
1. not at all relevant.

I. During your feedback session, recommendations may have been made of things you could do to improve upon those skills and qualities required to be a successful first-line Supervisor at Steelcase. Please circle the number below which most closely matches your feelings about how logical those recommendations were.

"The recommendations for my development discussed during my IDP feedback session . . ."

5. made a lot of sense.
4. made quite a bit of sense.
3. made some sense.
2. made very little sense.
1. made no sense at all.

J. Consider the time period which has passed since you received your IDP performance feedback. Please list **everything** you have done **since your IDP feedback** to improve upon those skills and qualities measured by the IDP. (Consider: courses offered at company locations, outside courses, readings, on-the-job experiences, and anything else you feel is important. **(PLEASE PUT EXTRA EFFORT INTO ANSWERING THIS ITEM IN AS MUCH DETAIL AS YOU CAN.)**

____

____

____

____

(Please continue on the next page)

K. Consider the level of **support** you have been offered or actually given for **attempts to improve** those Supervisory skills and qualities measured by the IDP. For each of the following, circle the number to best describe the amount of support.

	A Great Deal of Support	Quite a Bit of Support	Some Support	Little Support	No Support
a. Steelcase	5	4	3	2	1
b. Supervisor(s)	5	4	3	2	1
c. Co-workers	5	4	3	2	1
d. Family	5	4	3	2	1
e. Friends	5	4	3	2	1

L. Consider the point in time just after you received your IDP feedback. Please circle the number below which most closely matches your feelings about the **likelihood** you **would someday achieve the job of Foreman.**

"Just after I received my IDP feedback, I thought I was . . .

5. very likely to achieve the job of Foreman.
4. quite likely to achieve the job of Foreman.
3. somewhat likely to achieve the job of Foreman.
2. not too likely to achieve the job of Foreman.
1. not at all likely to achieve the job of Foreman.

M. Consider the point in time just **after** you received your IDP performance feedback and developmental recommendations. Please circle the number below which best describes your **desire at that time** to become a Foreman at Steelcase.

"I had a . . .

5. very strong desire to become a Foreman.
4. fairly strong desire to become a Foreman.
3. moderate desire to become a Foreman.
2. limited desire to become a Foreman.
1. complete lack of desire to become a Foreman.

PLEASE RETURN TO:

EMPLOYEE DEVELOPMENT

RC

THANK YOU FOR YOUR ANSWERS!

YOUR HELP IS APPRECIATED!

APPENDIX D

INITIAL LETTER TO PARTICIPANTS

Steelcase
Departmental Correspondence

To All IDP Participants

Date September 13, 1985

From Jerry Hekker

Subject IDP Follow-up Study

Since its development in 1972, a total of 300 of our employees have participated in the Identification/Development Program (IDP). The purpose of the IDP is to measure and assist in the development of supervisory skills.

Because the IDP is one key part of Steelcase's employee development efforts, and because you have participated in the IDP, I'm asking you to supply some information for a long-term follow-up study. The simple purpose of this study is to identify steps which might be taken to improve the value of the IDP for each individual participant.

For some of you, a number of years will have passed since you attended the IDP; for others, it may only have been a few weeks or months. In either case it is important that you return the attached questionnaire completed as thoroughly and accurately as possible. Please feel free to express your honest opinion--the confidentiality of your answers will be carefully maintained and your responses will be used for research purposes only.

Your help will be sincerely appreciated. The date by which your questionnaire should be returned is specified on the top sheet. Should you have any questions, please call ext. 9188 in the Employee Development department.

Jerry

APPENDIX E

FOLLOW-UP LETTER TO NON-RESPONDENTS

Steelcase

221 **Departmental Correspondence**

To IDP Participants Date September 24, 1985

From Jerry Hekker

Subject IDP Follow-Up Questionnaire

On September 13 you were mailed a questionnaire to complete which asked for your perceptions of a number of aspects of the Identification Development Program (IDP). To date, your completed questionnaire has not been received by the Employee Development Department.

If you have lost your questionnaire or need help in answering the items, please call the Employee Development Department at 9188. Your completed questionnaire is valuable! In order for the current study to be helpful, each participant should supply a questionnaire completed as thoroughly and accurately as possible.

Please make an effort to mail your completed questionnaire no later than October 1. If you have already mailed your questionnaire, thanks for your cooperation!

Jerry

APPENDIX F

IDENTIFICATION DEVELOPMENT PROGRAM ASSESSMENT SITUATIONS/VARIABLES MATRIX

IDENTIFICATION DEVELOPMENT PROGRAM

Sources of Variable Information

	Assessment Situations			
	Leaderless Group Discussion	In-Basket & Interview	Interview Simulation	Scheduling Problem
PERSONAL QUALITIES				
Initiative	(X)	(X)	X	
Inner Work Standards	X	X		X
Stress Tolerance	(X)	X	(X)	(X)
INTERPERSONAL SKILLS				
Sensitivity	X	X	(X)	
Flexibility	(X)	X	(X)	X
Leadership	(X)		(X)	
Oral Communication	(X)	(X)	(X)	
ADMINISTRATIVE SKILLS				
Organizing and Planning		(X)	X	(X)
Decisiveness		(X)	X	
Judgment		(X)	(X)	(X)

(X) = Primary source of information for variable.

X = Secondary source of information for variable.

= No information provided by assessment situation.

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