To the Graduate Council:

I am submitting herewith a dissertation written by Thomas F. Kohntopp entitled "The Effect of Assessor Training and Participation on Managers' Job Performance." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Industrial/Organizational Psychology.

Gerald H. Whitlock, Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:

Vice Chancellor
Graduate Studies and Research

THE EFFECT OF ASSESSOR TRAINING AND PARTICIPATION ON MANAGERS' JOB PERFORMANCE

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Thomas F. Kohntopp

December 1981

3055631

ACKNOWLEDGEMENTS

My doctoral committee has served a lengthy term, apparently with faith and perserverence, as we have achieved closure. Dr. Gerald H. Whitlock has given me guidance throughout my graduate study and especially while chairing my committee. I greatly appreciate his time, effort, and concern which were instrumental during my course work and dissertation. Dr. John M. Larsen, Jr., Dr. John W. Lounsbury, and Dr. H. Dudley Dewhirst each contributed a unique part to my graduate education, from beginning to end. I thank them wholeheartedly.

I am grateful to Arthur H. Allen and Robert L. Abernathy, my supervisors at the Tennessee Valley Authority, for their support and interest during my graduate work. They allowed me to incorporate one of my TVA work assignments into the research on which my dissertation is based.

Patricia T. Hardin, the "assessment center" administrator, was always flexible and encouraging while the evaluation research took place. At the center, she showed me what I needed to accomplish my task. Robert J. Betts, was involved in the formative stages of the "assessment center," providing guidance on how I could successfully implement my research in a practical manner. I thank both Ms. Hardin and Mr. Betts for their help.

Dr. Cabot L. Jaffee voiced an interest in my work and provided the material for assessor training and the "assessment center." I am grateful for his involvement.

Dr. Thomas J. Fahey, Jr., was truly invaluable to my completing the dissertation. He provided the needed technical assistance in both quantitative and qualitative areas from when the dissertation proposal was written to the final product. I also appreciate his poignant prodding which helped to facilitate my work. Dr. Fahey, thank you very much.

The primary editor of my dissertation was Dorothy C. Manning. I repeatedly asked for her assistance and received it. I am thankful for what she showed me and for all the help she provided.

I received continual support and encouragement from Dr. Martha E. Begalla. Her input was beneficial and timely.

Mary P. Hancock provided special help and always showed an honest concern even when things just weren't going right. It is difficult to express in words an appreciation for everything she has done; I am truly greatful.

I thank Leah Chason and Joyce St. Clair for typing a multitude of proposals and dissertation drafts. I am indebted to Teri Albanese for her typing and retyping of the "final product." She knew exactly the format that was required and accepted my recurrent visits without disdain. I greatly appreciate her work.

A special note of thanks goes to Dr. Patricia Cain Smith. As my first mentor she guided me toward the field of industrial/organizational psychology while I was an undergraduate. Without her effort I doubt that I would have entered into graduate work.

Finally, I owe unending gratitude and my love to Emil F. and Doris J. Kohntopp, my parents. They have always had faith in me and provided me with everything I needed. No one could have better parents.

ABSTRACT

The developmental aspects of an "assessment center" were investigated empirically. Specifically examined were the consequences of participating in assessor training and of serving as an assessor, on managerial job behavior.

A total of 220 employees participated in the investigation. This group included 22 managers engaged as assessors and 35 managers who served in a control group. Self, subordinate, peer, and supervisor ratings were obtained on each assessor and control group manager, both before and after the "assessment center." Data were collected using surveys which were mailed to the participants. The dependent variates examined were: Interpersonal Work Role; Work Scheduling; Assertiveness; Leadership; Sensitivity; Perception & Analytical; Decision Making; Decisiveness; Organizing & Planning; Adaptability; Oral Communication; and Written Communication.

Each assessor attended three days of training. Training activities primarily focused on three "assessment center" exercises (i.e., a Leaderless Group Discussion exercise, a Task Direction exercise, and an In-Basket exercise). The exercises were developed using information collected in a job analysis. Assessors were responsible for a total of five days' work at the "assessment center."

One-way analyses of covariance were used to analyze the data. Out of 45 computations, the null hypothesis was not rejected once. However, unlike the absence of statistically significant main effect differences, every covariate effect was highly significant.

The results failed to produce evidence supporting the contention that an "assessment center" provides management development for its assessors. From a practical standpoint, the decision to train other managers as assessors or to use those already trained, in the event another "assessment center" was conducted, also could not be answered.

Further indepth investigation is needed before a position can be taken on the issue of managerial development, as a positive derivitive benefit from assessor training and participation. Areas in which future studies should be senitive are also discussed.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
	Literature Review	2
	Evaluation Strategy	9
	Statement of the Problem	11
	Hypothesis	11
II.	METHOD	13
	Participants	13
	Dependent Variables and Instruments	16
	Procedure	22
III.	RESULTS	30
	Dependent Variate and Covariate Development	30
	Internal Consistency Reliability for Covariates	35
	Comparison of Interviewed and Noninterviewed Assessors	37
	Comparison of Assessors and Control Group Managers	42
IV.	DISCUSSION	53
	Direction for Future Research	59
V.	SUMMARY	66
REFERENCES		68
APPENDICES		73
Appendix A		74
Appendix B		79
Appendix C		82
Appendix D		87

CHAPTER PAGE

Appendix E 102

Appendix F 107

Appendix G 109

Appendix H 112

Appendix I 120

VITA 126

LIST OF TABLES

TABLE		PAGE
1.	Means and Standard Deviations of Biographical Variables for Asesssors and Control Group Managers	14
2.	Intercorrelations for the Pre-AC Survey Derived Measures (Items 1-10)	31
3.	"Preasessment Center" Internal Consistency Reliability (Coefficient-Alpha)	36
4.	Analyses of Covariance of the Derived Factors for Subordinate, Peer, and Supervisor Ratings of Interviewed and Noninterviewed Assessors	39
5.	Covariate and Variate Means and Standard Deviations of the Derived Factors for Interviewed and Noninterviewed Assessors	40
6.	"Preassessment Center" Covariate Means and Standard Deviations for Derived Factors and Managerial Skill Dimensions	43
7.	"Postassessment Center" Variate Means and Standard Deviations for Derived Factors and Managerial Skill Dimensions	44
8.	Analyses of Covariance for Self Ratings on the Managerial Skill Dimensions	45
9.	Analyses of Covariance for Subordinate Ratings on the Derived Factors and Managerial Skill Dimensions	47
10.	Analyses of Covariance for Peer Ratings on the Derived Factors and Managerial Skill Dimensions	48
11.	Analyses of Covariance for Supervisor Ratings on the Derived Factors and Managerial Skill Dimensions	50
12.	Univariate t Tests on All Covariates and Variates for Self, Subordinate, Peer, and Supervisor Ratings of Assessors and Control Group Managers	52
13.	Eigenvalues and Percentages of Variance for the Derived Measures (Items 1-10)	114
14.	Final Communalities for the Derived Measures (Items 1-10)	115

TABLE PAGE

15. Two-Factor Solutions for the Derived Measures (Items 1-10) 117

16. Three-Factor Solutions for the Derived Measures (Items 1-10) 118

17. Five-Factor Solution for the Derived Measures (Items 1-10) 119

18. Power Analyses of the Managerial Skill Measures for Self Ratings 122

19. Power Analyses of the Derived Measures (Items 1-10) and the Managerial Skill Measures (Items 11-33) for Subordinate Ratings 123

20. Power Analyses of the Derived Measures (Items 1-10) and the Managerial Skill Measures (Items 11-33) for Peer Ratings 124

21. Power Analyses of the Derived Measures (Items 1-10) and the Managerial Skill Measures (Items 11-33) for Supervisor Ratings 125

CHAPTER I

INTRODUCTION

The purpose in this study was to determine empirically the effects participation in assessor training and subsequent participation as an assessor in an "assessment center," hereafter often referred to as AC, had on managerial job behavior. Specifically, this research should help determine whether line managers who participate in assessor training do improve their on-the-job behaviors. Findings from this investigation will also influence future decisions to train other managers as assessors or to use those already trained.

Experts in the field of "assessment centers" have championed the positive derivative benefits obtained from developing and conducting an AC (e.g., Byham, 1971; Byham, 1977; Northrup, Cowin, Vanden Plas, & Fulmer, 1978). Invariably, support is voiced for training line managers to function as AC assessors. However, of all the AC benefits mentioned in the literature, there is no direct empirical support demonstrating positive derivative benefits from assessor training and participation.

The introduction is continued with a review of the literature that provides a rationale for conducting the present study. In addition, research used to formulate an evaluation strategy is presented. The statement of the problem and the hypothesis tested conclude the introduction.

Literature Review

The global objective of management development programs has been defined as the "broadening" of participants, a gross simplification made by the executives responsible for sending lower-level managers to developmental programs (Whitlock, 1976, p. 45-2). The development process usually involves managers' participation in training or educational activities specifically planned to improve on-the-job performance, a highly desirable consequence (Daly, 1976, p. 22-1). Management development activities can range widely, from classroom lecture to on-the-job coaching. In addition, the development process should expose the participants to activities on more than one occasion (i.e., not a one-shot approach). As with other training endeavors, the monetary costs of management development can be great (Jenness, 1976, p. 4-6). Thus, an organization that has a need for developing its managers would find it very attractive and economical to receive management development through another program which the organization happened to be conducting (e.g., an "assessment center").

Cascio (1978, p. 253), Northrup, Cowin, Vanden Plas, and Fulmer (1978, p. 116), Finkle (1976, p. 867), MacKinnon (1975, pp. 22-23), Kraut (1972, pp. 25-26), and Klinefelter and Shipe (1972, p.15) have each promoted assessor "development" as a positive derivitive gain obtainable from the AC process. Cohen, Moses, and Byham (1977) state that:

> Additional research also is necessary to evaluate the training value of the assessment center. The assessment center is strongly advocated as a means of increasing assessor skills in observing and recording behavior, performing selection and appraisal functions, and counseling individuals regarding performance. (p.24)

Byham (1971) has cited eight specific benefits that assessors may acquire from their participation in an AC, although no supporting data are given.

> An assessor in an assessment center benefits more than the participants in terms of direct training. Between assessor training and participation as an assessor in a center, the assessor benefits in the following ways:
>
> 1. Improvement in interviewing skills.
> 2. Broadening of observation skills.
> 3. Increased appreciation of group dynamics and leadership styles.
> 4. New insights into behavior.
> 5. Strengthening management skills through repeated working with in-basket case problems and other simulations.
> 6. Broadening of repertory of responses to problems.
> 7. Establishment of normative standards by which to evaluate performance.
> 8. Development of a more precise vocabulary with which to describe behavior. (p.12)

In a more recent article Byham (1977) stated:

> It is universally accepted that the combination of participating in assessor training and subsequently being an assessor is a powerful developmental experience for managers. Organizations using the assessment center process have continually observed greater behavioral changes resulting from assessment centers than are typically obtained from other management training programs. (p.91)

Again, however, no data are presented to support this viewpoint.

Intuitively, the specific content and process of assessor training provides developmental experiences which assessor-managers should assimilate and apply on the job, barring organizational policies, practices, and procedures that would extinguish or inhibit the application of what had been learned in training. Lending support to this idea is the concept of vicarious learning, defined as learning which occurs ". . . through observing the effects on the social

environment of other people's behavior" (Davis and Luthans, 1980, p. 283). Manz and Sims (1981, p. 110) cite four vicarious learning principles which can be identified in the assessor experience. The order in which the principles occur is important for successful vicarious learning.

The first principle is that trainees must be exposed to role models displaying the desired behaviors (i.e., the behaviors that should subsequently be practiced in training and eventually performed on-the-job). In the present study, video tapes were viewed during assessor training which showed assessor and assessee models performing (i.e., displaying desired behaviors) in contrived exercises. Trainees also observed situations in which the instructor role played as an assessor interacting with assessee role models.

The second principle is that trainees must rehearse or practice the behaviors exhibited by the role models. Assessor training and participation clearly adhered to this principle. Most significant was that each assessor evaluated assessees for at least five days, applying behaviors demonstrated during training.

Principle three is social reinforcement, receiving feedback on the practice of behaviors. This principle is designed to strengthen desired behaviors while extinguishing inappropriate behaviors. During the "assessment center" this occurred at the end of each day when assessors met in groups of three to report on the performance of three assessees whom they jointly evaluated that day. In the meeting they discussed problems encountered in observing and judging the assessees. Feedback was then exchanged on how to deal with the problems in the event they occurred during future sessions.

The last principle of vicarious learning concerns transfer back to the job. It includes four points which need to be incorporated into the program design in order to facilitate transfer. Though assessor training and participation do not address each point directly, they did occur in the present study. First, there needs to be followup and reinforcement. In the "assessment center" this point was achieved through the AC administrator who provided ongoing feedback and reinforcement to all assessors. Feedback and reinforcement at the AC deviated from the suggested practice of giving followup and reinforcement back on the job, however. Second, aspects of the program must be sequenced from simple to complex. Assessor training began with a presentation on the background and history of "assessment centers," representing the most simple aspect of the entire program. The last part of the program found assessors evaluating candidates in the AC, representing the most complex aspect of the entire process. Third, potential problems must be discussed before training commences. An indepth discussion of problems that might have arisen occurred during the first day of assessor training. Fourth, meetings must be held after the program to discuss behavior application problems and potential solutions. The actual practice of this point again did not occur in the AC since the purpose of training was not to affect on-the-job behaviors. Discussion of problems encountered while assessing candidates transpired, though, as previously mentioned under the third principle of vicarious learning.

Empirical support for vicarious learning has been demonstrated in behavior modeling studies, which essentially are applications of vicarious learning principles. One such investigation conducted by

Burnaska (1976) at the General Electric Company examined the effects of behavior modeling training. The objective of this training was to improve interpersonal skills. Mid-level manager participants and a control group were evaluated within one month after training and again four months later. Judges' ratings on four dependent variables produced significantly higher results ($p < .05$) for trained managers both immediately after training and four months later. However, a 51-item interpersonal skill questionnaire completed by subordinate employees and factored into eight dimensions resulted in only two significant differences ($p < .05$), both higher scores for trained managers. An explanation offered for the few significant results obtained from subordinates was the lack of opportunity managers had to apply their skills in just four months.

Another behavior modeling study utilizing vicarious learning principles was conducted by Moses and Ritchie (1976). The investigation took place at American Telephone and Telegraph Company and involved 183 first-level supervisors. Supervisory Relationships Training was attended by 90 of the supervisors; the remaining 93 formed a matched control group. Training was designed around behavior modeling as presented by Goldstein and Sorcher (1974). All supervisors were processed through an "assessment center" two months after training. Performance on three exercises in the AC served as three dependent variables. Results showed that the training group supervisors received significantly higher assessments ($p < .01$) on all three dependent variables than did the control group supervisors.

Latham and Saari (1979) also applied behavior modeling to supervisory skills training. Forty first-line male supervisors were

involved in their study, with one-half of them receiving training. The remaining supervisors formed a control group that went through training at a later date. Criterion measures of learning, behavior, and job performance were collected. With respect to learning, the training group scored significantly higher ($p < .05$) than the control group on a job analysis based situational test. Results also showed the training group to be rated significantly higher ($p < .05$) than the control group on a role play quality-of-performance scale. Finally, on-the-job performance ratings, specifically designed to evaluate the training, along with regular company performance appraisal data were used as the final evaluation criteria. Data on both performance instruments were obtained one month before training and again one year after training. The training and control groups were equivalent on both measures before the program. Results after the program revealed the training group to be rated significantly higher ($p < .05$) on the training-specific performance ratings and on the regular company performance appraisal, though the t test statistic was inappropriately used in the calculations. Specifically, the authors applied the t test to between group differences on the preprogram data, and then on postprogram data. They concluded that a lack of preprogram differences along with the presence of postprogram differences indicated a training effect. Regretfully, this application of the t test failed to account for all the possible changes that may have occurred over time. One such possible change could have been a decrease in control group performance after training with no change in training group preprogram to postprogram performance.

Behavior modeling studies have demonstrated that vicarious learning principles applied in training result in measurable on-the-job behavior changes. Assessor training and participation also utilize these principles. The only difference between behavior modeling and assessor training-participation is the final purpose, assessor training is not expressly intended to influence on-the-job behaviors. Thus, results from behavior modeling training lend support for conducting the present study.

Further support for the contention that assessor training and participation should produce on-the-job behavior changes also emerge from the concept of incidental learning, where an individual learns something during some activity which he or she was not trying to learn (Deese & Hulse, 1967, p. 300). Two premises are important for linking incidental learning into the present study. First, assessor training is specifically designed to teach skills which are needed for evaluating an individual's performance solely in an "assessment center." The purpose of assessor training was not to change on-the-job behaviors. Second, an assessor's participation in an AC is not intended to specifically teach anything. From these points it could be concluded that new behaviors exhibited by a manager-assessor on-the-job after the AC could be due to incidental learning.

Incidental learning occurring in a parallel situation provides additional rationale for conducting the present study. One such investigation cited by Campbell and Bray (1967, p. 9) was conducted by Michigan Bell Telephone. Eighty men were involved in the study with one-half of them going through an "assessment center" and the remaining 40 used as a control group. All 80 were subsequently

promoted. Job performance ratings taken sometime later revealed that ". . . approximately two-thirds of the assessed group were rated 'better than satisfactory' in job performance as compared to only one-third of the group not assessed." Ratings on potential for moving into higher levels of management were equally positive. The Campbell and Bray (1967) study would tend to support the contention that an "assessment center" has some developmental effect upon assessees. In addition, the results demonstrate the concept of incidental learning and how it could also occur in the present study with assessors.

Evaluation Strategy

The concepts of vicarious and incidental learning provide a model or rationale for how assessor training and participation could affect on-the-job performance. Research in both areas has yielded results supporting both concepts. Additional theoretical grounding for the present study comes from Osgood's transfer model (1949) which provides a rationale for the role transfer from assessor to manager. This model proposes that there is a greater degree of positive transfer when training and real life stimuli and response sets are similar. "Assessment center" exercises are designed to simulate the actual work situation. Consequently, the similarity between stimuli in the AC and those on-the-job would facilitate positive transfer. In addition, the similarity between appropriate assessor "assessment center" responses (e.g., evaluating assessees' performance or meeting with other assessors) and on-the-job responses (e.g., evaluating subordinates' job performance or meeting with managerial peers) would also aid transfer. Unfortunately, problems with operationally defining and

measuring stimuli and response variables are cited as two barriers to the wide application of Osgood's model (Gagné & Bolles, 1959, pp. 35-36; Ellis, 1965, pp. 30-31).

Postman's (1972, p. 1020) model, which conforms to a basic learning transfer paradigm, helps remedy problems which Osgood's model creates for the testing of transfer effects. The Postman model consists of two stages: Stage One represents the training phase; and Stage Two represents the test or evaluation phase. This two-stage model is more elementary than Osgood's, yet it is testable.

The total experience to which the assessors in this investigation were exposed can be classified under the first stage, or training phase, of the transfer paradigm. This included the learning and application of specific duties such as:

1. Observation (e.g., including watching participants' activities and behaviors; taking notes on what is seen and/or heard; classifying notes according to predefined skill dimensions).
2. Evaluation (e.g., including assigning numerical performance ratings using predefined scales to skill dimensions; reading and/or listening to other assessors' rating reports; discussing rating reports with other assessors and reaching consensus on final assessee scores; discussing overall strengths and weaknesses of candidates).
3. Compilation/Final Report (e.g., including collecting all data on the candidate's performance in the managerial skill dimension areas; synthesizing data in each skill dimension area; completing a final narrative report highlighting the candidate's strengths and weaknesses).

4. Feedback (e.g., including telling each candidate how effective/ correct his/her performance was).

The second stage, or test phase, of the model entailed determining if transfer had occurred. By broadly defining assessor learning transfer as on-the-job application of knowledge gained, the test phase actually examined behavioral changes. As an analogy, Kirkpatrick's (1976, p. 18-19) criteria for training evaluation is applied to the Postman model. For this comparison, a distinction must be made between Kirkpatrick's learning criteria (i.e., the principles, facts, techniques that were learned) and his behavior criteria (i.e., the changes in job performance resulting from the program). Using Kirkpatrick's terminology in the present study, a test of behavior change takes place, while at the same time the study can only make an inference that learning had occurred.

Statement of the Problem

As previously discussed, the positive derivative benefits of assessor training and participation are expressed widely in "assessment center" literature (see p. 2). However, no direct empirical research has been published to support or refute this position. Emphasis on the unintended results from assessor training and participation formulate the problem addressed by the present study, which is the first known direct empirical investigation of an "assessment center's" influence on assessors.

Hypothesis

The general hypothesis under investigation was:

There would be no difference in on-the-job behavior ratings between assessor-managers and control group managers, after the training and "assessment center" participation. This hypothesis was tested separately by four different participant groups. They were: (1) assessor-managers' self-report performance ratings versus control group managers' self-report performance ratings; (2) subordinate ratings of assessors' behavior versus subordinate ratings of control group managers' behavior; (3) peer ratings of assessors' behavior versus peer ratings of control group managers' behavior; and (4) supervisor ratings of assessors' behavior versus supervisor ratings of control group managers' behavior.

Though the literature suggests positive results from "assessment center" training and participation (e.g., Cascio, 1978, p. 253; MacKinnon, 1975, pp. 22-23; Kraut, 1972, pp. 25-26; and Byham, 1977, p. 91), this study postulated a nondirectional alternative hypothesis. Two conditions support the selection of a nondirectional alternative hypothesis. First, no previous direct empirical research has been presented which would support or refute the beneficial aspects of AC's. Second, supervisory training/management development studies have been conducted which resulted in negative findings (e.g., Boyd & Ellis, 1962; Underwood, 1965; Zand, Steele, & Zalkind, 1969). The possibility of this occurring with assessor training and participation is also plausible. Therefore, the alternative hypothesis was, there would be a difference between assessor-managers' and control group managers' on-the-job behavior ratings after the "assessment center."

CHAPTER II

METHOD

Participants

Two major groups were compared, the experimental group and the control group. Both groups were comprised of four subject categories: (1) assessors and control group managers; (2) subordinates of assessors and subordinates of control group managers; (3) peers of assessors and peers of control group managers; and (4) supervisors of assessors and supervisors of control group managers. Four subject categories were used in the present study so that the treatment effect could be examined from different perceptual levels in the organization.

Assessors and control group managers. Involved in the study were 22 trained assessors and 37 control managers. All were employed on TVA's Management (M) Schedule with the majority classified as line managers. The assessor group consisted of 15 white males, 4 black males, 2 white females, and one black female. The control group was comprised of 27 white males, 5 black males, 5 white females, and no black females. Biographical data for assessors and control group managers are presented in Table 1.

Assessors were not selected directly on the basis of job performance, intelligence level, past experience (e.g., special management training), or any other ability that intuitively would have made them better suited for the task, but may have confounded the results. The major criterion for selection was the availability of each potential assessor. A list of managers was generated by the AC

TABLE 1

MEANS AND STANDARD DEVIATIONS OF BIOGRAPHICAL VARIABLES
FOR ASSESSORS AND CONTROL GROUP MANAGERS

Variable	Assessors[a]		Controls[b]	
	M	SD	M	SD
Age[c]	42.96	8.13	45.70	7.37
Organization Tenure[c]	14.67	8.78	16.66	7.65
Job Tenure[c]	3.41	3.03	4.92	3.15
Pay Grade Level	6.23	1.31	6.14	.79
Years of Schooling	16.86	1.25	16.92	1.16

a. N = 21 to 22.

b. N = 35 to 37.

c. Measured in years.

administrator (a TVA manager), a top-level manager very familiar with TVA managerial personnel, and a mid-level manager also familiar with TVA personnel. Managers at the mid to upper levels, who were not new to TVA, who had supervisory responsibility, and who worked in a variety of established and stable parts of the organization were placed on the list. Approximately 70 managers were identified. Each manager was then asked to participate in three days of assessor training and spend five days as an assessor at the AC. Of those managers contacted, 25 initially agreed to participate with 3 eventually dropping out. The majority of those who declined to participate gave time/scheduling problems as their reason for doing so. The control group consisted of these managers that declined to participate.

Subordinates. The assessor and control groups were initially comprised of 22 and 37 employees, respectively. Subordinates were randomly selected from a list containing the names of employees which the assessor or control group manager supervised. Each subordinate who was asked to rate his/her supervisor received direct supervision and substantial work assignments from the individual being rated (i.e., either an assessor or a control group manager). The majority of these employees were classified on the M-Schedule; the remainder were employed in engineering/scientific, administrative, or support services/clerical occupations.

Peers. The assessor group was comprised of 22 M-Schedule employees and the control group was initially comprised of 37 M-Schedule employees. Each of these managers were randomly selected from the same work group (i.e., staff, branch, or division) as the assessor or

control group manager being evaluated. The peers had the same levels of responsibility, the same immediate supervisor, and similar spans of control as the assessor or control group manager he or she was evaluating.

Supervisors. The immediate supervisor of each assessor and control group manager was classified in this group. These managers were all from the middle or upper levels of the M-Schedule and had direct responsibility for assigning work to an assessor or control group manager. The number comprising the supervisor group was 22 for the assessors and there initially were 37 for the control managers.

Summary. A total of 239 employees were initially asked to participate in the study. Due to attrition and missing data, the number of participants providing usable data was reduced. For the assessor/experimental group, 22 raters participated from each of the rater categories (i.e., self, subordinate, peer, and supervisor). For the control group, the final usable observations that were obtained resulted in participants from each rater category as follow: self ratings, N = 35; subordinate ratings, N = 32; peer ratings, N = 32; and supervisor ratings, N = 33.

Dependent Variables and Instruments

The dependent variables used to determine the effects of assessor training and participation on job behavior were developed from two sources and are discussed in the following two sections.

Derived measures. Derived measures refer to dependent variables (i.e., rating items) that were developed through information obtained

from assessors at the conclusion of assessor training. The information was collected by means of a survey administered to all assessors and from interviews conducted with ten assessors. The survey (Appendix A) was designed to evaluate general participant reactions to training (Part I) and perceptions of how training (specifically the simulated AC on the last day) might help them improve their job behaviors (Part II). In Part II of the survey assessors were requested to give specific support statements (i.e., concrete examples and incidents) describing the improvements they believed would occur.

The interviews were conducted on an individual basis. Interviewees were asked what effect, if any, assessor training and participation would have on how they conducted themselves on-the-job. They were required to cite specific situations where changes were anticipated and behaviors they would display in these situations.

Information obtained from the interviews was combined with post-training reaction survey results and edited to eliminate redundancy. Based on these data, rating items were written. They comprised the first ten items of the rating survey completed by subordinates, peers, and supervisors (Appendix B, items 1-10). They were:

1. From my <u>experiences</u>, this manager helps subordinates set and prioritize specific work objectives in order that they may improve their work performance.
2. From my <u>experiences</u>, this manager uses consistent criteria or standards when evaluating subordinates' job performance.
3. From my <u>experiences</u>, this manager changes his/her leadership style to <u>effectively</u> deal with different subordinates in a variety of situations.

4. From my experiences, this manager plans and organizes tasks and work assignments.
5. From my experiences, this manager is assertive when participating in group discussions by leading the conversation.
6. From my experiences, this manager documents specific incidents and situations to use for future reference when giving subordinates, coworkers, or supervisors information and feedback on work problems and assignments.
7. From my experiences, this manager uses time efficiently by setting correct priorities for tasks and work assignments.
8. From my experiences, this manager avoids assigning work and proceeding with tasks without knowing the full details of a situation.
9. From my experiences, this manager can successfully work with groups and in project teams in order to arrive at solutions to problems.
10. From my experiences, this manager clearly and concisely conveys information on tasks and work assignments to subordinates, peers, and supervisors.

These items were not included in the assessor-control group manager self rating survey since it was administered before assessor training.

Managerial skill measures. Managerial skill measures refer to dependent variables (i.e., rating items) derived from Jaffee's (1979) nine managerial skill dimensions: Leadership; Sensitivity; Perception & Analytical; Decision Making; Decisiveness; Organizing & Planning; Adaptability; Oral Communication; and Written Communication.

Managerial jobs require skills on the nine dimensions in some capacity, and the AC process was designed to determine an assessee's skill level on each of the dimensions. Similarly, each assessor should have possessed the skills since all were managers. By participating as an assessor, the manager observed demonstrations of appropriate and inappropriate behaviors on these dimensions. In addition, the assessor's role required the application of these skills when assessing candidates. This observation and practice should have led to improved on-the-job behavior on the nine managerial skill dimensions.

Two major survey instruments were used in the study. One instrument was for the assessors and control group managers while the second was for their subordinates, peers, and supervisors. The survey administered to subordinates, peers, and supervisors contained the derived measures (Appendix B, items 1-10) which were discussed previously along with items defining Jaffee's nine managerial skill dimensions (Appendix B, items 11-33). The survey administered to the assessors and control group managers (Appendix C) contained four parts. Parts A, B, and D of Appendix C contained items not pertaining to the present study but used in another TVA evaluation. Part C contained the items (30-52) designed to evaluate performance on Jaffee's nine managerial skill dimensions. The assessor-control group survey was administered before assessor training occurred; therefore, the derived measures discussed previously could not be included. All survey items from both instruments utilized a seven-point Likert-type response scale as follow: (1) strongly disagree; (2) disagree; (3) slightly disagree; (4) undecided; (5) slightly agree; (6) agree; and (7) strongly agree.

The items evaluating Jaffee's nine managerial skill dimensions were developed from the behavioral definitions of the dimensions (1979, p. III-B). The definitions along with the item numbers as they appeared on the subordinate, peer, and supervisor survey, and on the assessor-control group survey respectively, are as follow:

1. Leadership--Ability to: (13,32) take charge - to direct and coordinate the activities of others; (29,48) maintain control of situations and others; (20,39) achieve results through delegation and follow-up.

2. Sensitivity--Ability to: (27,46) be sensitive to the needs and feelings of others; (24,43) develop rapport and trust; (18,37) accept interpersonal differences; (17,36) deal effectively with others regardless of level or status.

3. Perception & Analytical--Ability to: (22,41) identify, assimilate and comprehend the critical elements of a situation; (26,45) extract and interpret implications of courses of action; (33,52) attend to details of a problem (includes both data and people related issues).

4. Decision Making--Ability to: (21,40) use logical and sound judgment in choosing a particular course of action; (15,34) generate and evaluate alternative courses of action (this refers to the quality as opposed to the quantity of decisions).

5. Decisiveness--Ability to: (32,51) take action when called upon to do so (willingness to make decisions); (16,35) defend decisions when challenged.

6. Organizing & Planning--Ability to: (25,44) systematically structure tasks, plans, and objectives; (19,38) establish priorities and set goals; (12,31) classify and categorize information.

7. Adaptability--Ability to: (31,50) alter normal practices when presented with additional information; (14,33) appropriately change courses of action dictated by changes in the situation; (23,42) behave in more than one way in a given situation; (28,47) adapt to stressful situations.

8. Oral Communication--Ability to: (1,30) effectively and clearly present and express information orally, in both formal and informal situations.

9. Written Communication--Ability to: (30,49) present and express information effectively and clearly through written means.

All surveys were attached to formal memoranda and mailed to participants. Reminder memoranda were also mailed to participants to facilitate the return of delinquent surveys. Appendix D contains copies of all memoranda as follow:

D - 1 ASSESSOR TRAINING PRELIMINARY SURVEY - memorandum attached to the survey sent to assessors one week prior to assessor training.

D - 2 INITIAL MANAGERIAL ASSESSMENT - memorandum attached to the survey sent to subordinates, peers, and supervisors of assessors one week prior to the time of the "assessment center."

D - 3 MANAGERIAL COMPARISON SURVEY - memorandum attached to the survey sent to control group managers one week prior to the "assessment center."

D - 4 INITIAL MANAGER/ASSESSOR COMPARISON GROUP SURVEY - memorandum attached to the survey sent to subordinates, peers, and supervisors of control group managers one week prior to the "assessment center."

D - 5 INITIAL MANAGERIAL ASSESSMENT SURVEYS - reminder memorandum sent to subordinates, peers, and supervisors of assessors relative to the "preassessment center" survey attached to memorandum D - 2 above. (A similar reminder

memorandum was sent to supervisors, peers, and subordinates of control group managers.)

D - 6 MANAGERIAL APPRAISAL FOLLOWUP SURVEY - memorandum attached to the survey sent to subordinates, peers, and supervisors of assessors and control group managers approximately five months after the "assessment center."

D - 7 MANAGERIAL APPRAISAL FOLLOWUP SURVEY REMINDER - reminder memorandum sent to supervisors, peers, and subordinates of assessors and control group managers for the "postassessment center" survey attached to memorandum D - 6 above.

D - 8 MANAGERIAL DESCRIPTION SURVEY - memorandum attached to the survey completed by assessors and control group managers approximately five months after the "assessment center."

D - 9 MANAGERIAL APPRAISAL FOLLOWUP SURVEY REMINDER - second reminder memorandum sent to supervisors, peers, and subordinates of assessors and control group managers for the "postassessment center" survey attached to memorandum D - 6 above.

Procedure

Experimental design. The design used in this investigation can be construed as a nonequivalent control group experimental design (Campbell & Stanley, 1963, pp. 47-50). This design is considered to be quasi-experimental, yet it is "generally" interpretable. The components of the design included two intact groups (i.e., nonrandom assignment of participants), a pretest and a posttest administered to both groups, and a treatment given to only one group.

One slight variation from this design in the present study was the occurrence of a time differential between administration of the pre-AC surveys and assessor participation in the "assessment center" (i.e., the treatment), and again between the treatment and post-AC data collection. After assessor training, premeasures were completed by all subordinates, peers, and supervisors. This occurred during the first week of the AC. The "assessment center" involved six member assessor groups over a five-week period, with a different assessor group each week. Since all assessors completed surveys at one time prior to assessor training, but participated in the AC at varying intervals, this resulted in a time differential between initial data collection and exposure to the treatment. Post-AC measures were completed by all participants approximately five months after the conclusion of the "assessment center," also creating a time differential between treatment and final data collection.

All surveys were attached to covering memoranda and mailed to participants. The covering memoranda included instructions on how to complete the survey, identification of the individual to be rated, a deadline for returning the survey, and an address to which it should be returned. An envelope with the appropriate return address was also attached to each survey to facilitate its return. Each survey was stamped with a unique five-digit code number which served as an indicator to the researcher as to what group the rater was from (i.e., self, subordinate, peer, or supervisor). In addition, the number signified if an assessor or a control group manager was being rated and whether the survey was administered prior to or after the "assessment center." All raters were assured that individual responses

would not be singled out and that only aggregated data would be examined. The confidentiality of all responses was guaranteed by the researcher.

Campbell and Stanley (1963, p. 40) indicate that there are two major threats to the nonequivalent control group experimental design. First, the interaction of selection (i.e., group assignment) and maturation is a possible source of internal invalidity. Second, the interaction between testing (e.g., pre-AC data collection) and the treatment is listed as a possible source of external invalidity. Of questionable concern as a possible source of internal invalidity is regression to the mean, due to the absence of randomization. In addition, the interaction between group selection and receiving the treatment, and the reactive effects of the experimental arrangements (e.g., by merely being involved in the study) may possibly be two sources of external invalidity. The sources of internal invalidity which are under control in the nonequivalent control group experimental design are history, maturation, testing, instrumentation, selection, and mortality. No sources of external invalidity are definitely under control with this experimental design.

Cook and Campbell (1976, p. 250) cite selection-maturation interaction as the major threat to internal validity which this design fails to control. In essence this means there was a danger that the selection process created one group that internally evolved over time differently from the other group. The condition for this threat was present since assessor assignment was on a nonrandom basis and approximately six months occurred between pre- and post-data collection.

To determine the effect of nonrandom selection/assignment on group composition, comparisons between assessors and control group managers on several biographic variables were made. The results from two chi-square tests were nonsignificant for race ($\chi^2 < 1$) and gender ($\chi^2 < 1$), indicating that the race/gender composition of the groups was comparable. Comparisons between assessors and control group managers on age ($t = 1.32$, df = 58), organization tenure ($t = .89$, df = 54), job tenure ($t = 1.91$, df = 57), pay grade level ($t = .28$, df = 33), and years of formal schooling ($t = .12$, df = 58) did not result in statistically significant differences. The degrees of freedom for the pay grade level t test was much smaller than the degrees of freedom for the other t tests conducted. For the pay grade level t test, a separate variance estimate was required in the denominator, thus requiring a more conservative computation of the degrees of freedom. Differences in degrees of freedom for the other t tests were due to missing data. These results imply that the assessors and control group managers were biographically comparable suggesting that nonrandom selection/assignment did not have a significant influence on group composition. The presence of disparate group maturation is still plausible, but untestable.

Local history (Cook and Campbell, 1976, p. 251) posed another possible threat to internal validity. Local history refers to external events that occurred between initial and final data collection, other than the treatment, that may have affected only one of the groups. The problem of local history could have had the greatest effect if the participants from one group came from a distinctly different part of the organization than those from the other group. The possible

effects of local history were reduced by obtaining participants from a variety of locations within the organization.

Assessor training. Managers chosen as assessors attended three days of training at a remote site where the "assessment center" was subsequently conducted, away from work and office interruptions. The training was conducted by Dr. Cabot L. Jaffee, founder and president of Assessment Designs, Inc. Each day's activities began at 8:45 a.m. and lasted until 4:45 p.m., including a 15-minute break in the morning and afternoon, and an hour break for lunch. Homework assignments were given for the first and second nights of training with assessors receiving lodging accommodations at the training site.

Several topics were discussed and activities were conducted during the first day of assessor training. The training introduction included a presentation on the history and background of "assessment centers." A discussion and practice of distinguishing between conclusion statements (i.e., a narrative judgment or inference about some behavior) and support statements (i.e., a narrative description about some behavior without any inferences) followed. The instructor stressed that assessors must use support statements and avoid making conclusion statements when evaluating assessees. A skill categorization exercise was conducted next. Here, behavioral support statements were classified into the nine managerial skill dimensions (see pp. 20-21). The managerial skill dimension Exercise Report Form (Appendix E) and the corresponding Skill Matrix Weighting Form (Appendix F) were then presented. Assessors were instructed in how they should use the two forms. Review and completion of the AC

Leaderless Group Discussion (LGD) exercise and the AC Task Direction (TD) exercise, along with discussion of In-Baskets and In-Basket Interviews (Appendix G) concluded the first day of assessor training. For homework, assessors reviewed the exercises taken during that day.

The second day of assessor training began with the assessors completing one of the AC In-Basket (IB) exercises, followed by a discussion of the exercise and the In-Basket's evaluation guide. Two additional In-Baskets along with their evaluation guides were then discussed. The last part of the day included the practicing of post In-Basket interviews and the writing of evaluation reports. The reviewing of day two's activities was assigned as homework.

During the final day of training, the participants assessed mock candidates in a staged "assessment center." For the LGD and TD exercises, assessors went through formal exercise preparation, observed the practice candidates as they performed the exercises, and then wrote exercise reports. Assessors also conducted In-Basket interviews with the practice candidates, held assessor team meetings, and discussed final assessee reports. Training concluded with a summary and wrap-up.

The content of the "assessment center" exercises was based on a job analysis conducted approximately six weeks before assessor training. The analysis focused on middle management supervisory target positions of either a professional, craft-related, or administrative nature. These three different job categories necessitated having the three unique content specific In-Baskets.

Assessor Participation. The "assessment center" was conducted at a remote cite where assessor training was previously held, away from work and office interruptions. Each day's session began promptly at 9 a.m. with a brief orientation meeting. At the meeting, assessees were told the purpose of the AC, the exercises they would be participating in, and the dimensions they would be evaluated on. In addition, the participants were introduced to the "assessment center" staff, and any questions the assessees had were answered.

The AC process started immediately after the orientation meeting. Assessees received different schedules indicating where and when they would be completing each exercise. Thus, the order of the AC exercises, and the rooms in which they were completed varied among assessees. After completing the exercises, assessees attended a debriefing session. Here, the candidates had an opportunity to ask the AC administrator about the center, the use and confidentiality of the data, and the effect the AC experience might have on their careers. Each assessee was at the center for approximately six hours.

Assessors were responsible for working at the AC five days, usually consecutively. Scheduling required that six assessors evaluate twelve assessees during each day of the "assessment center," excluding days when assessees were absent. The six assessors were divided into two teams of three. Each team was responsible for assessing six of the candidates, with each assessor evaluating each candidate's performance on only one of the AC exercises. For example, assessor A evaluated candidates one and two on the LGD exercise, candidates three and four on the TD exercise, and candidates five and six on the In-Basket exercise. Each assessor spent approximately 12 to 14 hours per day working at the AC.

During the LGD and TD exercises assessors wrote support statements describing all relevant behaviors exhibited by the assessees. For an In-Basket, the assessor first took twenty minutes to examine its legibility and clarity. The assessor then interviewed the assessee regarding illegible or unclear content, the assessee's approach to the task, the rationale for action taken, and opinions formed about the individuals and organization covered in the exercise.

After all twelve candidates were processed through the AC, each assessor evaluated the performance of the assessees he/she had observed that day. An evaluation was conducted separately for each assessee. The evaluation required the assessor to first categorize the assessee behaviors, which were recorded during the exercise observation, into the nine managerial skill dimensions (i.e., Leadership, Sensitivity, Perception & Analytical, Decision Making, Decisiveness, Organizing & Planning, Adaptability, Oral Communication, and Written Communication). The assessor then assigned a rating of one (poor) to seven (outstanding) to each dimension using an Exercise Report Form. The final step brought each three-member assessor team together to determine an overall assessment score for each assessee. The assessors combined their evaluations on a Skill Matrix Weighting Form after discussing and comparing notes on the assessee's performance in all three AC exercises. Further discussion led to a single overall "assessment center" score.

CHAPTER III

RESULTS

The results from computing covariates and dependent variates from the dependent derived measures using factor analyses are discussed first. Internal consistency reliabilities for all covariates from each rating group are presented second. The results from comparing interviewed and noninterviewed assessors are discussed third. The test of the null hypothesis using analyses of covariance (ANCOVA) is presented last.

Dependent Variate and Covariate Development

Derived factors. Factor analyses were performed to determine dependent variates from the dependent derived measures (items 1-10) of the pretest completed by subordinates, peers, and supervisors. The purpose of this was to reduce the number of linear constraints, thereby increasing the efficiency of the analyses. Responses from assessor and control group subordinates, peers, and supervisors were combined, resulting in a sample of 164. The intercorrelations for items 1-10 are presented in Table 2. The rank of the correlation matrix was tested for significance according to Barlett (1950). The result was highly significant ($\chi^2 = 751.47$, d.f. = 45, $p < .001$) and therefore the matrix could be legitimately factored.

The factor analyses were exploratory rather than confirmatory. Therefore, initial solutions were obtained using several factor analytic methods (Kim, 1975, pp. 468-514). In addition, multiple

TABLE 2

INTERCORRELATIONS FOR THE PRE-AC SURVEY DERIVED MEASURES
(ITEMS 1-10)

	Item									
Item	1	2	3	4	5	6	7	8	9	10
1	-									
2	56	-								
3	44	44	-							
4	72	47	38	-						
5	30	24	18	22	-					
6	41	43	42	41	22	-				
7	58	41	38	71	19	36	-			
8	48	47	35	45	33	45	54	-		
9	40	41	50	45	11	48	37	49	-	
10	69	42	48	60	31	56	54	50	53	-

Note: Decimal points have been omitted. N = 164.

factors were extracted to identify the "best," most stable factor structure (Harris, 1967). Two and three factors were extracted using each of the following procedures: truncated components (TC), having ones on the main diagonal without iteration; minimum residuals (minres), replacing the main diagonal with communality estimates and iterating; and alpha factoring, replacing the main diagonal with communality estimates and iterating. Image factoring (without iteration), with squared multiple correlations on the main diagonal and adjusted correlations as off-diagonal elements, produced five factors. The factors from all solutions were then rotated using varimax rotation.

Information from several sources or aspects of the factor analyses was used to determine which items would be grouped together as covariates-dependent variates. A scree plot (Cattell, 1966; Gorsuch, 1974, p. 152) of eigenvalues (Figure 1, Appendix H) along with the percent of total variance and cumulative percent of variance extracted for each factor (Table 13, Appendix H) were two sources which were used. The final communalities (Table 14, Appendix H) for all factors generated by the different factoring methods also provided information which was needed. The Harris (1967) method of visually examining the factor loading patterns was used on the two- (Table 15, Appendix H) and three-factor (Table 16, Appendix H) solutions. This method provided the most plausible information considered when grouping the dependent derived measures (i.e., items) into dependent variates. The final information which was used came from the image factor solution (Table 17, Appendix H) following suggestions from Kaiser (1963, pp. 164-165).

The combined information from the scree plot, the magnitude of eigenvalues, the percent of variance accounted for, and the factor loading patterns suggested that two factors were most representative of the data, excluding item five. Item five, "From my experiences, this manager is assertive when participating in group discussions by leading the conversation," was omitted from the two-factor solutions because it produced an unacceptably low final communality. Thus, in all subsequent analyses item five was treated as a single item covariate (pre-AC ratings) and dependent variate (post-AC ratings).

The purpose of the factor analyses was to identify which dependent derived measures would be combined into covariates-dependent variates. Therefore, the results from only one of the factor solutions was not chosen to represent the data, in terms of a single "best" solution.

Factor one was labeled Interpersonal Work Role, comprised of the following items:

2. From my experiences, this manager uses consistent criteria or standards when evaluating subordinates' job performance.
3. From my experiences, this manager changes his/her leadership style to effectively deal with different subordinates in a variety of situations.
6. From my experiences, this manager documents specific incidents and situations to use for future reference when giving subordinates, coworkers, or supervisors information and feedback on work problems and assignments.
8. From my experiences, this manager avoids assigning work and proceeding with tasks without knowing the full details of a situation.

9. From my experiences, this manager can successfully work with groups and in project teams in order to arrive at solutions to problems.

10. From my experiences, this manager clearly and concisely conveys information on tasks and work assignments to subordinates, peers, and supervisors.

Factor two was labeled Work Scheduling and is comprised of the following items:

1. From my experiences, this manager helps subordinates set and prioritize specific work objectives in order that they may improve their work performance.

4. From my experiences, this manager plans and organizes tasks and work assignments.

7. From my experiences, this manager uses time efficiently by setting correct priorities for tasks and work assignments.

Participant ratings on items from each factor were averaged together after unit weighting to form covariates and dependent variates. This was done independently for pre-AC ratings (covariates) and post-AC ratings (dependent variates). For item five, pre-AC ratings served as covariate scores while post-AC ratings served as the dependent variate scores.

Managerial skill dimensions. The operational definitions of Jaffee's nine managerial skill dimensions (see Managerial skill measures, pp. 20-21) were translated into 23 behavioral items. Ratings on these 23 items were obtained from assessors and control group managers (Appendix A, Part C), and from subordinates, peers, and

supervisors (Appendix B, items 11-33). Each managerial skill dimension served as a covariate (pre-AC ratings) and a dependent variate (post-AC ratings). A composite score for each dimension was derived by averaging together those items comprising each managerial skill dimension. This averaging was done independently for pre-AC and post-AC ratings.

Internal Consistency Reliability for Covariates

To test the internal consistency reliability of the covariates, alpha coefficients were computed. Coefficients were obtained for each major rating group (i.e., self, subordinate, peer, and supervisor) on each covariate, irrespective of assessor or control group assignment.

Alpha coefficients were not computed for self rating derived factor covariates, because items forming these measures were not administered to this group. One derived factor covariate (i.e., Assertiveness) and two managerial skill dimension covariates (i.e., Oral Communication and Written Communication) were comprised of single items, precluding alpha computations. Coefficients were computed for all remaining covariates and are presented in Table 3.

Coefficients ranged from .60 to .93 for all covariates but Decisiveness. Self ratings produced an alpha of .55 for this covariate. Peer ratings and supervisor ratings produced alphas of .19 and .11, respectively. Subordinate ratings produced a large alpha coefficient of .84 for Decisiveness. The low alpha coefficients for peers and supervisors indicate that Decisiveness, as defined by the items in this investigation, was not a homogeneous construct. Because Decisiveness was based on predetermined managerial skill measures, no changes were made with respect to the items which comprised this dimension.

TABLE 3

"PREASSESSMENT CENTER" INTERNAL CONSISTENCY RELIABILITY
(COEFFICIENT - ALPHA)

Covariate	Rating Group			
	Self[b]	Subordinates	Peer	Supervisor
Derived Factors				
Interpersonal Work Role	--	87	79	79
Work Scheduling	--	91	84	72
Assertiveness[a]	--	--	--	--
Managerial Skill Dimensions				
Leadership	61	84	83	68
Sensitivity	60	89	93	89
Perception & Analytical	64	81	76	72
Decision Making	74	75	82	79
Decisiveness	55	84	19	11
Organizing & Planning	64	86	81	81
Adaptability	60	80	81	84
Oral Communication[a]	--	--	--	--
Written Communication[a]	--	--	--	--

Note: Decimal points have been omitted. N = 58 (Self), 55 (Subordinate and Supervisor), 54 (Peer).

a. Single item dependent measures.

b. Self ratings were not obtained for the dependent derived measures, which formed the derived factors.

Comparison of Interviewed and Noninterviewed Assessors

As discussed previously (see pp. 16-17), interviews were conducted with 10 assessors after assessor training, to collect information for developing dependent measures. The interviews could have had a sensitizing effect on the 10 assessors, thus affecting their behavior while assessing candidates and while performing on-the-job later. Subsequently, if sensitization occurred, the interviewed assessors would have received different performance ratings from those given to noninterviewed assessors. Therefore, to detect the presence of any possible interview effects, a comparison was made between interviewed assessors and noninterviewed assessors using ratings from post-AC derived factor variates (i.e., Interpersonal Work Role, Work Scheduling, and Assertiveness).

The analysis of covariance procedure has been suggested for evaluating training (Bass & Vaughan, 1966, p. 147) and was used in the present study. Three one-way analyses of covariance (ANCOVA) were performed for each of the subordinate, peer, and supervisor rating groups, nine analyses in all. Interviewed versus noninterviewed assessors served as the two levels of the independent variable. The derived factors of Interpersonal Work Role, Work Scheduling, and Assertiveness were the covariates (pre-AC ratings) and dependent variates (post-AC ratings). The classic experimental approach from SPSS (Kim & Kohout, 1975, pp. 408-409, p. 414) was used for ANCOVA computations. This approach first partialed out variance in the dependent variate which could be explained by the covariate; and then examined the variance explained by the main effect of the independent variable in the adjusted post-AC means.

The three analyses conducted for each rating group were considered independent from one another, as if three independent experiments were performed (i.e., an experiment using subordinate ratings, one using peer ratings, and one conducted on supervisor ratings). A familywise $\alpha_{FW} = .05$ significance level was set for each rating group. From Kirk (1969, pp. 77-78), $\alpha_{FW} = 1-(1-\alpha_T)^n$, where α_T is the level that must be reached by an individual test before it is deemed statistically significant, and n is the number of individual tests conducted for each group. Therefore, the familywise $\alpha_{FW} = .05$ required an individual $\alpha_T = .02$ to be reached before the null hypothesis could be rejected for any one dependent variate. The ANCOVA assumption of homogeneity of within-groups regression (Keppel, 1973, pp. 493-498) was tested using a procedure outlined in SAS (Goodnight, 1979, p. 255). The assumption held for all analyses conducted. The test of the covariate effect, to determine if it accounted for a significant portion of the variance in the main effect prior to adjustment, occurs first in each ANCOVA calculation. This is followed by a test of the main effect on the adjusted post-AC means. The results for the analyses are presented in Table 4. The means and standard deviations of the derived factor covariates and variates for interviewed and noninterviewed assessors are given in Table 5.

Results from subordinate ratings. Results from the analyses of the main effects indicate an absence of statistically significant differences between ratings given to interviewed assessors and those given to noninterviewed assessors, after adjusting for each covariate (pre-AC ratings). The covariate for Interpersonal Work Role was

TABLE 4

ANALYSES OF COVARIANCE OF THE DERIVED FACTORS FOR SUBORDINATE, PEER, AND SUPERVISOR RATINGS OF INTERVIEWED AND NONINTERVIEWED ASSESSORS

	Rating Group											
	Subordinate				Peer				Supervisor			
Source	SS	df	MS	F	SS	df	MS	F	SS	df	MS	F
Interpersonal Work Role												
Covariate (Pre-AC)	6.807	1	6.807	73.55[b]	15.254	1	15.254	64.12[b]	11.063	1	11.063	37.72[b]
Between Groups (Post-AC)	.064	1	.064	.13	.988	1	.988	4.16	.070	1	.070	.24
Error	9.544	19	.502		4.520	19	.238		5.573	19	.293	
Work Scheduling												
Covariate (Pre-AC)	24.512	1	24.512	32.04[b]	8.539	1	8.539	13.01[a]	7.079	1	7.079	25.66[b]
Between Groups (Post-AC)	.004	1	.004	.01	3.166	1	3.166	4.82	.273	1	.273	.99
Error	14.535	19	.765		12.472	19	.656		5.243	19	.276	
Assertiveness												
Covariate (Pre-AC)	39.854	1	39.854	69.39[b]	9.990	1	9.990	18.03[b]	23.431	1	23.431	62.39[b]
Between Groups (Post-AC)	.039	1	.039	.07	1.167	1	1.167	2.11	1.116	1	1.116	2.97
Error	10.912	19	.574		10.526	19	.554		7.135	19	.376	

a. $p < .01$.
b. $p < .001$.

TABLE 5

COVARIATE AND VARIATE MEANS AND STANDARD DEVIATIONS OF THE DERIVED FACTORS FOR INTERVIEWED AND NONINTERVIEWED ASSESSORS

Derived Factor	Subordinate				Peer				Supervisor			
	Interviewed[a]		Noninterviewed[b]		Interviewed[a]		Noninterviewed[b]		Interviewed[a]		Noninterviewed[b]	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Covariates (Pre-Ac)												
Interpersonal Work Role	4.88	1.19	5.21	.71	5.00	.90	4.85	.73	5.90	.50	5.25	1.08
Work Scheduling	4.40	1.87	5.14	1.41	4.97	1.46	4.64	1.15	6.13	.77	5.58	.87
Assertiveness	5.70	1.57	5.58	1.24	5.80	.79	5.58	1.17	6.40	.70	5.92	1.68
Variates (Post-AC)												
Interpersonal Work Role	4.90	1.06	5.21	.76	5.47	.84	4.88	1.11	6.00	.68	5.32	1.07
Work Scheduling	4.50	1.44	5.03	1.36	5.77	.61	4.83	1.27	6.30	.68	5.67	.87
Assertiveness	5.70	1.77	5.67	1.44	6.20	.79	5.58	1.17	6.10	.88	6.17	1.47

a. N = 10.
b. N = 12.

statistically significant ($p < .01$) as were those for Work Scheduling ($p < .001$) and Assertiveness ($p < .001$).

Results from peer ratings. There were no statistically significant main effect differences found for the peer rating group after adjusting for each covariate. All covariates were statistically significant (Interpersonal Work Role and Assertiveness, $p < .001$; Work Scheduling $p < .01$).

Results from supervisor ratings. No statistically significant differences were found for any of the main effects after adjusting for each covariate. The result for each covariate (i.e., Interpersonal Work Role, Work Scheduling, and Assertiveness) was highly significant ($p < .001$).

Conclusions. First, all covariate effects were statistically significant, with the mean pre-AC derived factor covariates greater for interviewed assessors than assessors not interviewed in all but two cases. The two exceptions occurred for subordinate ratings on Interpersonal Work Role and Work Scheduling. These findings indicate that each covariate accounted for a significant proportion of the variance in post-AC ratings for every rater group. Second, no statistically significant main effect differences were found for any of the nine analyses conducted. This second aspect of the results, coupled with all covariates being statistically significant, means that all differences present after the "assessment center" were accounted for by differences that existed prior to the "assessment center." Thus, the interviews did not affect on-the-job behavior for those interviewed assessors when compared with noninterviewed assessors.

Comparison of Assessors and Control Group Managers

The null hypothesis was: there would be no differences in on-the-job behavior ratings between assessor managers and control group managers, after completion of the "assessment center." The hypothesis was tested independently by the self, subordinate, peer, and supervisor rating groups, using analyses of covariance (ANCOVA). The classic experimental approach from SPSS (Kim & Kohout, 1975, pp. 408-409, p. 414) was again used for ANCOVA computations. The mean of the "preassessment center" ratings served as a covariate for each derived factor or managerial skill dimension. Covariate means and standard deviations are found in Table 6. The mean of the "postassessment center" ratings for each derived factor or managerial skill dimension served as a dependent variate. The means and standard deviations for dependent variates are presented in Table 7. A familywise $\alpha_{FW} = .05$ significance level criterion was used in all analyses. This familywise level produced an individual $\alpha_T = .006$ significance level for the self rating group, and an individual $\alpha_T = .004$ significance level for the subordinate, peer, and supervisor rating groups. The assumption of homogeneity of within-groups regression was tested and upheld for all subsequent analyses of covariance.

Results for self ratings. Self ratings were obtained only on the managerial skill dimensions, thus requiring nine analyses. Results from these ANCOVA computations are presented in Table 8. Each covariate effect was statistically significant ($p < .001$), with pre-AC covariate means greatest for the assessor group for all covariates but Perception & Analytical. These findings indicate that "preassessment center"

TABLE 6

"PREASSESSMENT CENTER" COVARIATE MEANS AND STANDARD DEVIATIONS
FOR DERIVED FACTORS AND MANAGERIAL SKILL DIMENSIONS

	Rating Group															
	Self				Subordinate				Peer				Supervisor			
	Assessor[a]		Control[b]		Assessor[a]		Control[c]		Assessor[a]		Control[d]		Assessor[a]		Control[c]	
Covariate	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Derived Factors																
Interpersonal Work Role	--	--	--	--	5.06	.95	4.92	1.34	4.92	.80	4.92	1.05	5.55	.91	5.38	.90
Work Scheduling	--	--	--	--	4.80	1.64	5.21	1.48	4.79	1.28	5.25	1.08	5.83	.85	5.69	.97
Assertiveness	--	--	--	--	5.64	1.36	5.58	1.35	5.68	1.00	5.63	1.30	6.14	1.32	5.85	1.09
Managerial Skill Dimensions																
Leadership	5.59	.59	5.51	.59	5.20	1.17	5.41	1.37	5.14	.95	5.25	1.16	5.71	.92	5.65	.93
Sensitivity	5.83	.66	5.66	.54	5.24	1.06	4.98	1.75	5.14	1.21	4.55	1.78	5.57	1.04	5.49	1.10
Perception & Analytical	5.56	.66	5.66	.53	5.15	1.09	5.47	1.14	4.97	1.01	5.20	1.08	5.80	.82	5.54	.84
Decision Making	5.89	.60	5.73	.52	5.39	.96	5.30	1.22	5.32	.95	5.02	1.43	5.77	1.16	5.64	.90
Decisiveness	5.89	.60	5.87	.52	5.57	1.05	5.94	1.26	5.73	.77	6.06	.66	6.18	.73	6.03	.53
Organizing & Planning	5.70	.65	5.53	.71	5.29	1.21	5.33	1.30	5.14	1.20	5.43	.86	5.91	.75	5.80	1.03
Adaptability	5.58	.67	5.46	.64	5.24	.81	5.37	1.09	4.81	.93	5.06	1.24	5.42	.88	5.27	.99
Oral Communication	5.77	.69	5.54	.74	5.68	1.25	5.73	1.49	5.73	1.08	5.66	1.10	5.86	1.13	5.70	1.24
Written Communication	5.59	1.22	5.46	1.17	5.68	.84	5.88	1.14	5.27	1.12	5.78	1.13	5.68	.95	5.67	1.08

a. N = 22.
b. N = 35.
c. N = 33.
d. N = 32.

TABLE 7

"POSTASSESSMENT CENTER" VARIATE MEANS AND STANDARD DEVIATIONS
FOR DERIVED FACTORS AND MANAGERIAL SKILL DIMENSIONS

	Rating Group															
	Self				Subordinate				Peer				Supervisor			
	Assessor[a]		Control[b]		Assessor[a]		Control[c]		Assessor[a]		Control[c]		Assessor[a]		Control[d]	
Variate	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Derived Factors																
Interpersonal Work Role	--	--	--	--	5.07	.90	5.10	1.27	5.14	1.02	5.07	.93	5.63	.96	5.48	.95
Work Scheduling	--	--	--	--	4.79	1.39	5.16	1.38	5.26	1.11	5.35	.95	5.96	.84	5.72	.97
Assertiveness	--	--	--	--	5.68	1.56	5.88	1.24	5.86	1.04	5.75	1.14	6.14	1.21	6.18	1.07
Managerial Skill Dimensions																
Leadership	5.64	.62	5.64	.61	5.20	1.02	5.47	1.42	5.30	1.15	5.40	1.01	5.76	1.11	5.74	.91
Sensitivity	5.91	.54	5.77	.64	5.17	1.26	4.96	1.72	5.25	1.28	4.73	1.74	5.61	1.15	5.50	1.29
Perception & Analytical	5.62	.81	5.64	.44	5.15	1.18	5.48	1.28	5.36	.90	5.31	1.00	5.80	.80	5.63	.90
Decision Making	5.89	.65	5.80	.55	5.36	.92	5.38	1.31	5.27	1.11	4.89	1.41	5.86	1.07	5.64	.95
Decisiveness	5.96	.46	5.86	.60	5.52	.88	5.98	1.22	6.02	.66	6.08	.61	6.21	.72	6.15	.78
Organizing & Planning	5.61	.79	5.70	.74	5.27	1.07	5.56	1.20	5.26	.87	5.42	1.00	6.09	.79	5.80	.87
Adaptability	5.65	.51	5.49	.67	5.11	1.01	5.41	1.07	5.07	1.04	5.15	1.31	5.56	.81	5.33	1.07
Oral Communication	5.82	.80	5.66	.68	5.64	1.22	5.69	1.33	5.46	1.30	5.53	1.22	5.82	1.06	5.76	1.17
Written Communication	5.50	1.23	5.69	.90	5.64	.85	5.97	1.33	5.55	1.18	5.88	.84	5.91	1.02	5.73	1.13

a. N = 22.
b. N = 35.
c. N = 32.
d. N = 33.

TABLE 8

ANALYSES OF COVARIANCE FOR SELF RATINGS ON THE MANAGERIAL SKILL DIMENSIONS

Source	SS	df	MS	F
Leadership				
Covariate (Pre-AC)	10.935	1	10.935	60.25[a]
Between Groups (Post-AC)	.034	1	.034	.19
Error	9.983	55	.182	
Sensitivity				
Covariate (Pre-AC)	4.989	1	4.989	17.74[a]
Between Groups (Post-AC)	.044	1	.044	.16
Error	15.468	55	.281	
Perception & Analytical				
Covariate (Pre-AC)	8.161	1	8.161	37.29[a]
Between Groups (Post-AC)	.042	1	.042	.19
Error	12.037	55	.219	
Decision Making				
Covariate (Pre-AC)	10.054	1	10.054	60.05[a]
Between Groups (Post-AC)	.014	1	.014	.08
Error	9.209	55	.167	
Decisiveness				
Covariate (Pre-AC)	6.894	1	6.894	37.95[a]
Between Groups (Post-AC)	.137	1	.137	.75
Error	9.991	55	.182	
Organizing & Planning				
Covariate (Pre-AC)	20.880	1	20.880	113.09[a]
Between Groups (Post-AC)	.743	1	.743	4.02
Error	10.155	55	.185	
Adaptability				
Covariate (Pre-AC)	7.586	1	7.586	31.59[a]
Between Groups (Post-AC)	1.40	1	.140	.58
Error	13.206	55	.240	
Oral Communication				
Covariate (Pre-AC)	6.866	1	6.866	16.63[a]
Between Groups (Post-AC)	.030	1	.030	.07
Error	22.690	55	.413	
Written Communication				
Covariate (Pre-AC)	28.602	1	28.602	52.29[a]
Between Groups (Post-AC)	.969	1	.969	1.77
Error	30.083	55	.547	

a. $p < .001$.

ratings accounted for a significant proportion of variance in each statistical model. No significant main effect differences were found for any of the managerial skill dimensions.

Results for subordinate ratings. Subordinate ratings were obtained on items comprising both the derived factors and the nine managerial skill dimensions. A total of 12 ANCOVA computations were performed and are presented in Table 9. The covariate effect for each source was statistically significant ($p < .001$), denoting that pre-AC ratings explained a significant proportion of variance found in post-AC ratings. Pre-AC covariate means were greater for the control group than the assessor group for all covariates but Interpersonal Work Role, Assertiveness, Sensitivity, and Decision Making. No significant main effects occurred for the subordinate rating groups.

Results for peer ratings. Results for the analyses of covariance of peer ratings are found in Table 10. Twelve computations were performed, three of these were for the derived factors while the remaining nine were for the managerial skill dimensions. The pre-AC covariate means for Assertiveness, Sensitivity, Decision Making, and Oral Communication were greater for the assessor group than the control group. All other covariate means were greatest for the control group, except for Interpersonal Work Role where the means were equal. The covariate effect for each source was shown to be statistically significant ($p < .001$), again indicating that pre-AC ratings explained a significant proportion of the variance in post-AC ratings. None of the post-AC differences between ratings given the assessors and those given the control group (i.e., the between groups main effects) were found to be significant.

TABLE 9

ANALYSES OF COVARIANCE FOR SUBORDINATE RATINGS ON THE DERIVED FACTORS AND THE MANAGERIAL SKILL DIMENSIONS

Source	SS	df	MS	F
Derived Factors				
Interpersonal Work Role				
Covariate (Pre-AC)	48.957	1	48.957	139.81[a]
Between Groups (Post-AC)	.114	1	.114	.33
Error	17.858	51	.350	
Work Scheduling				
Covariate (Pre-AC)	71.372	1	71.372	120.20[a]
Between Groups (Post-AC)	.009	1	.009	.02
Error	30.283	51	.594	
Assertiveness				
Covariate (Pre-AC)	72.713	1	72.713	142.81[a]
Between Groups (Post-AC)	.079	1	.079	.16
Error	25.967	51	.509	
Managerial Skill Dimensions				
Leadership				
Covariate (Pre-AC)	48.920	1	48.920	69.01[a]
Between Groups (Post-AC)	.003	1	.003	.01
Error	36.154	51	.709	
Sensitivity				
Covariate (Pre-AC)	96.496	1	96.496	169.69[a]
Between Groups (Post-AC)	.011	1	.011	.02
Error	29.002	51	.569	
Perception & Analytical				
Covariate (Pre-AC)	52.880	1	52.880	94.86[a]
Between Groups (Post-AC)	.014	1	.014	.03
Error	28.431	51	.557	
Decision Making				
Covariate (Pre-AC)	57.584	1	57.584	226.358[a]
Between Groups (Post-AC)	.034	1	.034	.14
Error	12.974	51	.254	
Decisiveness				
Covariate (Pre-AC)	42.181	1	42.181	95.32[a]
Between Groups (Post-AC)	.008	1	.008	.02
Error	22.570	51	.443	
Organizing & Planning				
Covariate (Pre-AC)	47.935	1	47.935	152.81[a]
Between Groups (Post-AC)	.512	1	.512	1.63
Error	15.998	51	.314	
Adaptability				
Covariate (Pre-AC)	34.582	1	34.582	76.03[a]
Between Groups (Post-AC)	.148	1	.148	.33
Error	23.196	51	.455	
Oral Communication				
Covariate (Pre-AC)	55.447	1	55.447	92.58[a]
Between Groups (Post-AC)	.008	1	.008	.01
Error	30.545	51	.599	
Written Communication				
Covariate (Pre-AC)	42.721	1	42.721	75.85[a]
Between Groups (Post-AC)	.055	1	.055	.10
Error	28.724	51	.563	

a. $p < .001$.

TABLE 10

ANALYSES OF COVARIANCE FOR PEER RATINGS ON THE DERIVED FACTORS AND THE MANAGERIAL SKILL DIMENSIONS

Source	SS	df	MS	F
Derived Factors				
Interpersonal Work Role				
Covariate (Pre-AC)	34.279	1	34.279	120.97[a]
Between Groups (Post-AC)	.076	1	.076	.27
Error	14.451	51	.283	
Work Scheduling				
Covariate (Pre-AC)	27.957	1	27.957	55.58[a]
Between Groups (Post-AC)	.483	1	.483	.96
Error	25.653	51	.503	
Assertiveness				
Covariate (Pre-AC)	38.406	1	38.406	80.63[a]
Between Groups (Post-AC)	.061	1	.061	.13
Error	24.292	51	.476	
Managerial Skill Dimensions				
Leadership				
Covariate (Pre-AC)	37.252	1	37.252	43.07[a]
Between Groups (Post-AC)	.004	1	.004	.01
Error	32.267	51	.633	
Sensitivity				
Covariate (Pre-AC)	105.520	1	105.520	201.39[a]
Between Groups (Post-AC)	.000	1	.000	.00
Error	26.722	51	.524	
Perception & Analytical				
Covariate (Pre-AC)	29.363	1	29.363	82.02[a]
Between Groups (Post-AC)	.600	1	.600	1.68
Error	18.259	51	.358	
Decision Making				
Covariate (Pre-AC)	41.800	1	41.800	45.40[a]
Between Groups (Post-AC)	.375	1	.375	.41
Error	46.959	51	.921	
Decisiveness				
Covariate (Pre-AC)	7.967	1	7.967	32.13[a]
Between Groups (Post-AC)	.219	1	.219	.88
Error	12.647	51	.248	
Organizing & Planning				
Covariate (Pre-AC)	20.126	1	20.126	38.23[a]
Between Groups (Post-AC)	.004	1	.004	.01
Error	26.851	51	.526	
Adaptability				
Covariate (Pre-AC)	42.856	1	42.856	66.68[a]
Between Groups (Post-AC)	.204	1	.204	.32
Error	32.778	51	.643	
Oral Communication				
Covariate (Pre-AC)	53.631	1	53.631	99.09[a]
Between Groups (Post-AC)	.267	1	.267	.49
Error	27.602	51	.541	
Written Communication				
Covariate (Pre-AC)	30.625	1	30.625	71.83[a]
Between Groups (Post-AC)	.001	1	.001	.00
Error	21.744	51	.426	

a. $p < .001$.

Results for supervisor ratings. The results for supervisor ratings were consistent with those found for subordinates and peers. A total of 12 ANCOVA computations were performed; the results are presented in Table 11. Each covariate explained a significant portion of the post-AC rating variance ($p < .001$) and all assessor group covariate means were greater than the control group covariate means. None of the main effect differences between groups were statistically significant.

Conclusions. A total of 45 one-way analyses of covariance were computed for the comparison of assessors and control group managers. These calculations were performed on three derived factors (i.e., Interpersonal Work Role, Work Scheduling, and Assertiveness) for the subordinate, peer, and supervisor rating groups. Computations were also performed on the nine managerial skill dimensions (i.e., Leadership, Sensitivity, Perception & Analytical, Decision Making, Decisiveness, Organizing & Planning, Adaptability, Oral Communication, and Written Communication) for the self, subordinate, peer, and supervisor rating groups. The independent variable consisted of two levels, assessor managers and control group managers. The "preassessment center" ratings functioned as covariates while the "postassessment center" ratings served as dependent variates. A familywise $\alpha_{FW} = .05$ significance level was used in all analyses of covariance. This resulted in an individual $\alpha_T = .006$ significance level for the nine analyses conducted on the self rating group. For the subordinate, peer, and supervisor rating groups, the adjusted familywise significance level required an individual $\alpha_T = .004$ significance level to be reached before the null hypothesis could be rejected.

TABLE 11

ANALYSES OF COVARIANCE FOR SUPERVISOR RATINGS ON THE DERIVED FACTORS AND THE MANAGERIAL SKILL DIMENSIONS

Source	SS	df	MS	F
Derived Factors				
Interpersonal Work Role				
Covariate (Pre-AC)	33.612	1	33.612	116.99[a]
Between Groups (Post-AC)	.000	1	.000	.00
Error	14.941	52	.287	
Work Scheduling				
Covariate (Pre-AC)	36.992	1	36.992	230.02[a]
Between Groups (Post-AC)	.148	1	.148	.92
Error	8.362	52	.161	
Assertiveness				
Covariate (Pre-AC)	41.786	1	41.786	87.47[a]
Between Groups (Post-AC)	.899	1	.899	1.88
Error	24.842	52	.478	
Managerial Skill Dimensions				
Leadership				
Covariate (Pre-AC)	37.566	1	37.566	131.55[a]
Between Groups (Post-AC)	.020	1	.020	.07
Error	14.849	52	.286	
Sensitivity				
Covariate (Pre-AC)	50.468	1	50.468	88.03[a]
Between Groups (Post-AC)	.000	1	.000	.00
Error	29.240	52	.573	
Perception & Analytical				
Covariate (Pre-AC)	24.766	1	24.766	88.18[a]
Between Groups (Post-AC)	.022	1	.022	.08
Error	14.605	52	.281	
Decision Making				
Covariate (Pre-AC)	37.104	1	37.104	116.02[a]
Between Groups (Post-AC)	.174	1	.174	.54
Error	16.631	52	.320	
Decisiveness				
Covariate (Pre-AC)	15.571	1	15.571	56.02[a]
Between Groups (Post-AC)	.083	1	.083	.30
Error	14.454	52	.278	
Organizing & Planning				
Covariate (Pre-AC)	26.464	1	26.464	122.50[a]
Between Groups (Post-AC)	.436	1	.436	2.02
Error	11.017	52	.216	
Adaptability				
Covariate (Pre-AC)	29.900	1	29.900	75.57[a]
Between Groups (Post-AC)	.135	1	.135	.34
Error	20.574	52	.396	
Oral Communication				
Covariate (Pre-AC)	40.078	1	40.078	76.46[a]
Between Groups (Post-AC)	.049	1	.049	.09
Error	27.255	52	.524	
Written Communication				
Covariate (Pre-AC)	38.371	1	38.371	82.96[a]
Between Groups (Post-AC)	.378	1	.378	.82
Error	24.051	52	.463	

a. $p < .001$.

Out of a total of 45 analyses of covariance performed in the present investigation, the null hypothesis was not rejected once. Each of the covariates were statistically significant ($p < .001$) for every rater group (i.e., pre-AC ratings predicted post-AC ratings with a statistically significant accuracy); while each between group main effect difference lacked statistical significance. As a supplemental analysis, univariate t tests were computed comparing assessor group means with control group means. The calculations were performed for each rater category (i.e., self, subordinate, peer, and supervisor raters) on all covariates and variates. All resulting t values were statistically nonsignificant, supporting the analyses of covariance. The results of the t tests are presented in Table 12.

The findings indicate that differences between groups on the post-AC ratings were accounted for by the differences, though not statistically significant, that already existed prior to the "assessment center," as measured by pre-AC ratings. From these results, the preliminary conclusion is that the "assessment center" had no effect upon on-the-job behavior of assessor managers.

TABLE 12

UNIVARIATE t TESTS ON ALL COVARIATES AND VARIATES FOR SELF, SUBORDINATE, PEER, AND SUPERVISOR RATINGS OF ASSESSORS AND CONTROL GROUP MANAGERS

	Rating Group							
	Self		Subordinate		Peer		Supervisor	
Source	Covariate	Variate	Covariate	Variate	Covariate	Variate	Covariate	Variate
Derived Factors								
Interpersonal Work Role	---	---	.44	-.10	.00	.28	.67	.57
Work Scheduling	---	---	-.96	-.96	-1.43	-.34	.57	.94
Assertiveness	---	---	-.57	-.51	.19	.37	.88	-.15
Managerial Skill Dimensions								
Leadership	.40	-.02	-.61	-.77	-.38	-.31	.26	.07
Sensitivity	1.03	.85	.69	.49	1.45	1.20	.26	.34
Perception & Analytical	-.62	-.05	-1.02	-.95	-.78	.19	1.17	.75
Decision Making	1.11	.60	.27	-.04	.93	1.07	.49	.82
Decisiveness	.08	.72	-1.14	-1.53	-1.72	-.32	.84	.26
Organizing & Planning	.82	-.48	-.13	-.95	-.98	-.61	.41	1.27
Adaptability	.61	.99	-.49	-1.01	-.82	-.24	.60	.84
Oral Communication	1.12	.77	-.12	-.14	.24	-.22	.51	.20
Written Communication	.37	-.65	-.69	-1.12	-1.63	-1.13	.05	.61

Note: All t values lack statistical significance. Average df = 52.2. A positive t value indicates the assessor/experimental group mean was greater, a negative t value indicates the control group mean was greater. Covariates represent pre-AC ratings and variates represent post-AC ratings.

CHAPTER IV

DISCUSSION

The purpose of this study was to determine if assessor training and the subsequent participation as an assessor in an "assessment center" affected on-the-job behavior of managers. Comparisons were made between an assessor group and a control group using self, subordinate, peer, and supervisor job performance ratings. Analyses of covariance were used to test the null hypothesis. The results show no significant main effect differences on any dependent variate for any rater group. The main effect findings indicate assessor training and participation had no effect on the assessor manager's on-the-job behavior, positively or adversely. Contrary to the main effect results, each covariate effect was highly significant ($p < .001$) in all instances. The covariate findings show that any differences present after the "assessment center" were in existence before assessor training took place, and these post-AC differences were accounted for with a statistically significant degree of accuracy. Specifically, the results failed to provide evidence for rejecting the null hypothesis that there would be no difference between experimental (i.e., assessor) and control group on-the-job performance ratings after the "assessment center." Though several authors have advocated assessor training and participation as developmental in nature (e.g., Byham, 1977; Cohen, Moses, & Byham, 1977; Klinefleter & Shipe, 1972; Kraut, 1972; and MacKinnon, 1975), the present study did not support this position.

There are several tentative explanations for the lack of statistically significant main effect results. The first explanation for no post-AC assessor-control group differences could be the nonrandom selection of participants from the management target population, coupled with the absence of random assignment to the assessor group. Initially, a group of managers (i.e., potential assessors) was identified, without applying a strategy that would identify only exceptionally good managers. However, it is possible only very skilled managers were chosen for the initial pool of assessors. From this pool, approximately one-third received training and participated as assessors. If the nonrandomly assigned managers in the assessor group were already proficient in the skills covered during assessor training, and they regularly practiced them on the job, then a ceiling effect was present (Selltiz, Jahoda, Deutsch, & Cook, 1959, p. 113). That is, there would have been no potential for skill improvement, since the job performance of assessor managers prior to participating in the study would have already been the most effective possible. Upon examining the pre-AC covariate means obtained for the assessor rating group, this explanation for the lack of statistically significant findings does not seem likely. A total of 45 pre-AC covariate means were calculated using a 7 point Likert-type response scale, with 7 being the most favorable rating score one could receive. Only 2 (4.4%) of the 45 means were greater than 6.00, with 4 (8.9%) means being less than 5.00. These findings discount the presence of a ceiling effect since there was adequate room for mean rating increases after the "assessment center." Therefore, the nonrandom assignment to the assessor group and the nonrandom selection

from the management target population, as it effects "preassessment center" ratings, would not be explanations for the present findings.

The absence of post-AC differences could also be attributed to on-the-job interaction between assessor managers and control group managers prior to the final data collection. Approximately five months elapsed from the conclusion of the AC to the gathering of post-AC data. This would have been ample time for interpersonal contact between managers from the two different groups. The assessor managers could have discussed their AC experiences with the control group managers, thus enlightening the control managers regarding appropriate managerial skills which should be performed on-the-job. Even without intention, assessor managers could have become models for the control group managers. That is, by observing on-the-job behavior of assessor managers, the control managers could see exactly how they should act in certain work situations. Whether intentional or not, the opportunity for control group managers to gain knowledge needed to improve their managerial skills did occur prior to the final data collection. When it then came time for the post-AC performance ratings, control group managers received scores comparable to those given assessor managers. Therefore, another viable reason for the absence of statistically significant results is the possible interaction that took place between assessor and control group managers.

A third reason for the statistically nonsignificant assessor-control group differences could be the lack of statistical power of the $\underline{F}$ tests conducted in the present study. A lack of power indicates there would be a low probability or chance of rejecting the null

hypothesis when it was not true (Guilford & Fruchter, 1973, p. 181). If this were the case, then actual group differences could have been present, but not detected. The power of the F test is determined by the following factors (Cohen, 1969, p. 348):

1. The significance criterion (i.e., α);
2. The degrees of freedom of the numerator of the F ratio;
3. The effect size (i.e., standard deviation of standardized post-AC group means); and
4. The sample size.

Of special note is Cohen's definition of effect size, which can be interpreted as post-AC group mean differences.

For the F test to be most powerful, numbers 1, 3, and 4 from above should be large while number 2 should be small. Power analyses were conducted separately on each post-AC survey item for each rating group (i.e., self, subordinate, peer, and supervisor), to determine the probability of obtaining statistically significant experimental-control group differences. The power analyses results are presented in Tables 18, 19, 20, and 21 (Appendix I).

The only factor affecting power which could have been varied in the power analyses was the significance criterion (i.e., α); the other three factors were fixed, since power analyses were conducted post hoc. Analyses were computed with the significance criterion set at three different levels, .01, .05, and .10. The F ratio numerator degrees of freedom was one, since only the assessor group and one control group were being compared. The value of one contributed more to the power of the F test than would have any larger numerator degrees of freedom value. The effect size for each item, as well as the group sample sizes, were already determined.

For self ratings, three analyses (i.e., $\alpha = .01$, $\alpha = .05$, $\alpha = .10$) were conducted for each of the 23 survey items. No item ever received a power value greater than .50, a 50% probability of rejecting the null hypothesis when it was not true. In only seven instances did power exceed .25, a 25% probability of rejecting H_o when it was not true. None of these occurred when $\alpha = .01$. For 34 of the analyses the resulting power was less than .10, a 10% chance of rejecting H_o when it was not true.

Ninety-nine analyses (i.e., three analyses for each of the 33 items) were conducted for each of the subordinate, peer, and supervisor rating groups. A power greater than .50 occurred only once for each group. Power values between .25 and .50 occurred 16 times for the subordinate group, 10 times for peers, and 8 times for the supervisor rating group. Power analyses resulting in values of .10 or less occurred 53 times for the subordinate ratings, 59 times for peer ratings, and 55 times for supervisor ratings. The magnitude of item power values between rating groups did not appear to correspond.

The results of the power analyses strongly suggest a lack of statistical power of the F tests used to test the null hypothesis. Out of the four factors which affect power, the one that most realistically caused the failure to achieve statistical significance was the small sample sizes. The assessor group and the control group combined totalled only 59. Thus, the lack of statistical power may be another reason for the results of the present study.

A fourth explanation for the absence of statistically significant findings could be the influence the survey covering memoranda had on the subordinate, peer, and supervisor raters. The cover memorandum

attached to pre-AC surveys completed by the subordinates, peers, and supervisors of assessors (Appendix D-2) was different from that completed by the control group raters (Appendix D-3). The memorandum pertaining to the assessor group indicated that the managers to be rated were selected to participate as assessors, possibly creating a halo effect (Siegel & Lane, 1974, p. 81). That is, if the manager were selected to be an assessor, then he or she must have good managerial skills. The control group memorandum stated that the ratees were part of a comparison group. This statement would not be a cause for producing inflated ratings. In 28 out of 45 comparisons between assessor group pre-AC covariate means and the corresponding control group means, the assessor group's means were greater. To determine if this proportion (i.e., 28/45) was comparable to the proportion for the control group, indicating the difference in proportions was due to chance and not a halo effect, a variation of the binomial test was used (Siegel, 1956, p. 41). The result for this test was significant ($z = 1.49$, $p < .10$), indicating the possible presence of a halo effect due to the use of different covering memoranda. This finding would possibly suggest that artificially high assessor group pre-AC ratings and "normal" control group pre-AC ratings existed. Thus, any true post-AC differences where the assessor ratings were greatest would have been nullified by the analyses of covariance.

The post-AC survey covering memorandum also could have influenced the subordinate, peer, and supervisor ratings. Unlike the pre-AC surveys, where the covering memorandum given to the assessor group raters was different from that administered to the control group raters, the same covering memorandum was used on all subordinate,

peer, and supervisor post-AC surveys (Appendix D-6). The memorandum stated the ratee was involved in the evaluation process, without indicating if the manager was an assessor or not. Some raters of control group managers might have thought the individual they were rating had been an assessor. This belief could have created a halo effect, raising the post-AC ratings of the control group.

Finally, the lack of post-AC significant findings could merely be due to poor assessor training or low assessor involvement in the "assessment center" (e.g., not taking the task seriously). Both of these reasons would indicate a deficient treatment implementation.

In summary, the findings of the present investigation do not support the views of many authors regarding the developmental worth of assessor training and participation (e.g., Byham, 1977; Kraut, 1972; MacKinnon, 1975). Similarly, the findings do not disprove the position that "assessment centers" have developmental value. It appears that more stringent empirical investigations are needed before any conclusive statement is justified.

Direction for Future Research

The lack of statistically significant findings in the present study do not eliminate the need for further investigation of assessor training and participation. On the contrary, replication of the present study with several methodological corrections is needed before authors continue advocating the developmental benefits of "assessment centers."

Randomization. Future investigations should use assessor and control group participants randomly selected from the relevant target

population. Though none was found in the present study, random selection would help to prevent a ceiling effect from occurring, where only highly skilled managers might be selectively chosen to participate in the study. However, a ceiling effect would always be present in any situation where managers in the relevant target population were already performing at an optimum level. In addition to random selection from the target population, future research should use random assignment of participants to the assessor/experimental and control groups. Random assignment will help prevent extraneous variance from influencing the results (Kerlinger, 1979, p. 88).

In the present study, differences between the assessor group and the control group were tested on various biographical variables (see p. 23). The results produced no significant differences, indicating the two groups were equivalent. In future research, this same type of analysis should be conducted between the randomly selected participant groups and the target population from which they were chosen. Additional variables, such as past training exposure and the number of employees supervised, should also be incorporated into the analysis of group equivalence. Tests of this type would serve as a check against the random selection process, ensuring that representative samples were obtained.

Group interaction. On-the-job interaction occurring between assessor managers and control group managers should be controlled in future studies. Closer monitoring (i.e., more data collection periods) after the "assessment center" would also aid in determining if interpersonal contact was confounding the AC effect.

To control for the confounding effect caused by on-the-job interaction, managers should be selected from geographically separated parts of the organization. This strategy, however, would prevent the experimenter from making a true random selection of participants, as suggested previously. Instead, a stratified random sample would have to be drawn. Thus, the need for testing the equivalence of participant groups against the target population would greatly increase when selections were made from different parts of the organization.

Future studies should also incorporate more post-AC data collections into their experimental designs. Measures of performance should be taken within one week after participation in the AC, one and two months later, and again after approximately five months have passed (as in the present study). Multiple observations over time would help to determine if group interaction did confound the results or restrict the generalizability of any effects that occurred (Runkel & McGrath, 1972, p. 121).

Statistical power. Only two elements could be manipulated, in an *a priori* manner, to increase power over that obtained in the present study. One factor would be to increase the significance criterion level (i.e., increase α). The other would be to increase the number of participants (i.e., assessors and control group managers). Future investigations should involve more managers, both as assessors and as participants in the control group. These studies should also restrict the number of experimental or assessor groups compared against the control group to only one (as was done in the present study).

Survey covering memoranda. Future studies should use standardized, more generic covering memoranda if performance data are collected by surveys mailed to raters. Covering memoranda should briefly describe the study and the rating task, but not distinguish between assessors and control group managers. Specific reference to raters being either a subordinate, peer, or supervisor of the ratee should also be eliminated. In addition, the rating occasions (i.e., pre-AC and post-AC) should be masked, if possible. The confounding possibly caused by the memoranda could be eliminated if they were written following these suggestions. However, they should not appear threatening or commanding as this might inhibit the managers' willingness to participate (Argyris, 1968).

Criteria. The criteria used in the present study measured specific managerial skills purportedly central to assessor training and the "assessment center." Performance of these skills served as the standard against which the null hypothesis was tested. The degree to which the criteria failed to reflect what occurred in assessor training and the AC, indicates the extent to which the treatment effects could not be measured. Eliminating this potential criterion deficiency (Blum & Naylor, 1968, pp. 176-177; Smith, 1976, p. 765) and assuring the criteria are reliable and relevant in every respect should be a goal of future research. This could be accomplished by making certain the performance skills being evaluated pertain to the areas covered in assessor training.

Another problem with criteria concerns observability. Certain skills learned in assessor training may be extremely relevant and

readily transferable to the job, yet by their nature they may never be overtly demonstrated. Therefore, if ratings are used to measure on-the-job performance in future studies, then the rated behaviors must be observable. Similarly, rater training should be considered in the future to ensure that truly observable behaviors are accurately detected and recorded.

Future research should also utilize objective personnel data as evaluation criteria, as suggested by Guion (1965, pp. 94-96). The amount of merit pay received by participants would be one such variable. Length of service and advancement could also be used, if measured in a longitudinal study. Absenteeism of employees supervised by assessors and control group managers might also be appropriate for future research. Other less objective data, such as standard yearly performance reviews, would be appropriate for future studies, too.

Assessor training/participation. The present investigation may not have provided the optimum training/participation for the development of assessor managers, possibly due to certain limitations of the AC. Authors that advocate "assessment centers" as developmental may be referring to ACs that are more "typical" than the one developed by Jaffee (1979) in which the present study was conducted. Thus, a more "typical" AC may have been more conducive to assessor development. Bender (1973) has identified characteristics of a "typical assessment center." His survey of companies that have used "assessment centers" revealed the average number of assessors to be 6.15 (Mdn = 5.92), and the average number of assessees evaluated equal to 10.79 (Mdn = 9.00). These averages produce an assessee-to-assessor ratio of 1.75, smaller

than the ratio of 2 in the present study. Future studies should consider a more "typical" assessee-to-assessor ratio for testing the developmental nature of the AC. Allowing assessors to devote their attention to fewer assessees may allow their skills to become more refined.

Bender's (1973) study also revealed the average number of days devoted to assessor training as 4.55 (Mdn = 3.25), and the average number of days of AC operation as 3.42 (Mdn = 3.25). These findings would tend to further suggest that the AC conducted in the present study was not "typical," since length of training and operation were shorter in the present study. In addition, Hinrichs and Haanpera (1976) have shown that "assessment centers" which put an emphasis on longer assessor training produce more effective assessors than ACs not doing so. Consequently, future research should take place in "assessment centers" designed with more days of assessor training and longer operation.

Transfer of learning. As stated earlier, the content and process of assessor training and participation should have provided learning readily transferable back to the job, barring factors in the organization which inhibited the use of what was learned (see p. 3). However, the norms of the work environment do not always allow the application of skills acquired during training (Allen & Silverzweig, 1976, p. 17-30). This could have occurred in the present study. The push for production may have precluded the concern for people, or vice versa. The manager's span of control may have exceeded a controllable number. The manager's supervisor may have had a "style" that goes

against what was learned in the AC. Each of these problems point out that future studies must be designed so the total work setting can be monitored to determine if extraneous factors are intervening. Future research should also examine what effect systematic on-the-job reinforcement would have on the application of skills learned in training.

CHAPTER V

SUMMARY

This study was conducted so that the developmental aspects of an "assessment center" could be investigated empirically. Specifically examined were the consequences of participating in assessor training and of serving as an assessor, on managerial job behavior. The study lasted approximately six months.

Twenty-two managers participated as assessors while 37 managers initially served in a control group. In addition to self rating data, a subordinate, a peer, and the supervisor of each assessor and control group manager provided the data for testing the null hypothesis. The dependent variates examined were: Interpersonal Work Role; Work Scheduling; Assertiveness; Leadership; Sensitivity; Perception & Analytical; Decision Making; Decisiveness; Organizing & Planning; Adaptability; Oral Communication; and Written Communication.

Each assessor attended three days of training. Training activities primarily focused on three AC exercises (i.e., Leaderless Group Discussion, Task Direction, and In-Basket). The exercises were developed using information collected in a job analysis. Assessors were responsible for a total of five days' work at the "assessment center."

Analyses of covariance were used to analyze the data. Out of 45 computations, the null hypothesis was not rejected once.

The results failed to provide evidence supporting the contention that an "assessment center" provides management development for its

assessors. From a practical standpoint, the decision to train other managers as assessors or to use those already trained, in the event another AC was conducted, also could not be answered.

It was stressed that futher investigation is needed before a position could be taken on the issue of managerial development. Future research should be sensitive to several methodological problems that were potential sources of confounding in the present study. In addition, attention should be given to the critical parameters of assessor training/participation (e.g., the length of training, the length of the AC, and the number of assessors and assessees).

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APPENDICES

APPENDIX A

Assessor Training Program Evaluation Form

PROGRAM EVALUATION FORM

This evaluation form is divided into two sections, described below:

I. General questions about the program content.

II. Specific questions about individual content areas/modules.

PROGRAM CONTENT (I)

For items 1-4, simply check the appropriate space; items 5-7 require brief written responses.

1. How relevant was the total content of the assessment center program to your needs and interests?

___Extremely Relevant ___Very Relevant ___Fairly Relevant ___Not Too Relevant ___Not at All Relevant

2. How useful do you expect the total content of the assessment center program to be for you back on the job?

___Extremely Useful ___Very Useful ___Fairly Useful ___Not Too Useful ___Not at All Useful

3. How useful do you expect the total content of the assessment center to be for you in developing your career?

___Extremely Useful ___Very Useful ___Fairly Useful ___Not Too Useful ___Not at All Useful

4. What is your overall impression of the assessment center program?

___Extremely Good ___Very Good ___Fairly Good ___Not Too Good ___Not at All Good

5. What was particularly exciting about the assessment center program? Why?

6. What were the two (2) most and two (2) least useful aspects of the assessment center program to you personally? Why?

Most

Least

7. What changes (additions, deletions, modifications), if any, would you recommend to make the assessment center program more effective?

PROGRAM CONTENT (II)

The following matrix will enable you to provide input relative to the specific content areas of the assessment center program. It consists of three columns:

A. The content area/module number.

B. Rate the extent to which you expect what you learned from the content area/module to be <u>useful</u> to you back on the job. Select from the following alternatives, and write the <u>number</u> of your choice in the space provided.

5.	4.	3.	2.	1.
Extremely Useful	Very Useful	Fairly Useful	Not Too Useful	Not at All Useful

C. Comment on the reason(s) for this rating.

Use specific <u>support</u> statements to backup your ratings; give behaviors which you belive you will improve when back on the job.

PROGRAM CONTENT II

A Content Area/Module	B Usefulness Rating (1-5)	C Reason(s) for Rating
In-Basket Exercise		
Group Discussion Exercise		
Task Direction		

APPENDIX B

Manager Description Opinion Survey

MANAGER DESCRIPTION OPINION SURVEY

For statements 1 through 33 there are seven possible response choices. Please indicate the extent to which you agree or disagree with each statement by circling the number corresponding to the response choice that best represents how you feel about the statement.

A. *The following statements refer to behaviors which the manager who was listed on the previous page may or may not exhibit on the job. Please consider experiences you have had with this manager when responding to each item.*

From my experiences, this manager . . .	STRONGLY DISAGREE	DISAGREE	SLIGHTLY DISAGREE	UNDECIDED	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
1. . . . helps subordinates set and prioritize specific work objectives in order that they may improve their work performance.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
2. . . . uses consistent criteria or standards when evaluating subordinates' job performance.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
3. . . . changes his/her leadership style to effectively deal with different subordinates in a variety of situations.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
4. . . . plans and organizes tasks and work assignments.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
5. . . . is assertive when participating in group discussions by leading the conversation.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
6. . . . documents specific incidents and situations to use for future reference when giving subordinates, coworkers, or supervisors information and feedback on work problems and assignments.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
7. . . . uses time efficiently by setting correct priorities for tasks and work assignments.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
8. . . . avoids assigning work and proceeding with tasks without knowing the full details of a situation.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
9. . . . can successfully work with groups and in project teams in order to arrive at solutions to problems.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
10. . . . clearly and concisely conveys information on tasks and work assignments to subordinates, peers, and supervisors.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
11. . . . effectively and clearly presents and expresses information orally, in both formal and informal situations.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
12. . . . is able to correctly classify and categorize information.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
13. . . . takes charge in a situation (i.e., is able to direct and coordinate the activities of others).....	[1]	[2]	[3]	[4]	[5]	[6]	[7]

TURN PAGE

From my experiences, this manager . . .	STRONGLY DISAGREE	DISAGREE	SLIGHTLY DISAGREE	UNDECIDED	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
14. . . . appropriately changes courses of action dictated by changes in the situation	[1]	[2]	[3]	[4]	[5]	[6]	[7]
15. . . . generates and evaluates alternative courses of action (i.e., the quality as opposed to the quantity of decisions) when the situation requires it	[1]	[2]	[3]	[4]	[5]	[6]	[7]
16. . . . defends decisions when challenged	[1]	[2]	[3]	[4]	[5]	[6]	[7]
17. . . . deals effectively with others regardless of level or status	[1]	[2]	[3]	[4]	[5]	[6]	[7]
18. . . . accepts interpersonal differences	[1]	[2]	[3]	[4]	[5]	[6]	[7]
19. . . . establishes priorities and sets goals	[1]	[2]	[3]	[4]	[5]	[6]	[7]
20. . . . achieves results through delegation and followup	[1]	[2]	[3]	[4]	[5]	[6]	[7]
21. . . . uses logic and sound judgment in choosing a particular course of action	[1]	[2]	[3]	[4]	[5]	[6]	[7]
22. . . . identifies, assimilates, and comprehends the critical elements of a situation	[1]	[2]	[3]	[4]	[5]	[6]	[7]
23. . . . behaves in more than one way in a given situation when the circumstances require it	[1]	[2]	[3]	[4]	[5]	[6]	[7]
24. . . . develops rapport and trust with superiors, peers, and subordinates	[1]	[2]	[3]	[4]	[5]	[6]	[7]
25. . . . systematically structures tasks, plans, and objectives	[1]	[2]	[3]	[4]	[5]	[6]	[7]
26. . . . extracts and interprets implications and consequences of courses of action	[1]	[2]	[3]	[4]	[5]	[6]	[7]
27. . . . is sensitive to the needs and feelings of others	[1]	[2]	[3]	[4]	[5]	[6]	[7]
28. . . . adapts to stressful situations	[1]	[2]	[3]	[4]	[5]	[6]	[7]
29. . . . maintains control of situations and others	[1]	[2]	[3]	[4]	[5]	[6]	[7]
30. . . . presents and expresses information effectively and clearly through written means	[1]	[2]	[3]	[4]	[5]	[6]	[7]
31. . . . alters normal practices when presented with additional information that would dictate changes	[1]	[2]	[3]	[4]	[5]	[6]	[7]
32. . . . takes action when called upon to do so (i.e., the willingness to make decisions)	[1]	[2]	[3]	[4]	[5]	[6]	[7]
33. . . . attends to details of a problem (i.e., both data and people related issues)	[1]	[2]	[3]	[4]	[5]	[6]	[7]

APPENDIX C

Managerial Personal Description Survey

MANAGERIAL PERSONAL DESCRIPTION SURVEY

For statements 1 through 52 there are seven possible response choices. Please indicate the extent to which you agree or disagree with each statement by circling the number corresponding to the response choice that best represents how you feel about that statement. Be realistic and honest when responding to each item.

A. The following statements apply to job-related issues between you and your subordinates. Please consider experiences you have had with them being realistic and honest when responding to each item.

	STRONGLY DISAGREE	DISAGREE	SLIGHTLY DISAGREE	UNDECIDED	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
1. I keep well informed of my subordinates' job performance	[1]	[2]	[3]	[4]	[5]	[6]	[7]
2. I make sure my subordinates understand what has to be done on their jobs	[1]	[2]	[3]	[4]	[5]	[6]	[7]
3. It is my subordinates' fault when things go wrong	[1]	[2]	[3]	[4]	[5]	[6]	[7]
4. I rarely tell my subordinates when they have done poorly	[1]	[2]	[3]	[4]	[5]	[6]	[7]
5. I watch over my subordinates closely	[1]	[2]	[3]	[4]	[5]	[6]	[7]
6. I help my subordinates solve work-related problems	[1]	[2]	[3]	[4]	[5]	[6]	[7]
7. I rarely tell my subordinates when they have done well	[1]	[2]	[3]	[4]	[5]	[6]	[7]
8. I demand high standards of job performance from my subordinates	[1]	[2]	[3]	[4]	[5]	[6]	[7]
9. I accurately evaluate my subordinates' job performance	[1]	[2]	[3]	[4]	[5]	[6]	[7]
10. I demand much from my subordinates	[1]	[2]	[3]	[4]	[5]	[6]	[7]
11. I encourage my subordinates to participate in important decisions	[1]	[2]	[3]	[4]	[5]	[6]	[7]
12. My subordinates trust me	[1]	[2]	[3]	[4]	[5]	[6]	[7]
13. I tell my subordinates when they should change their work habits	[1]	[2]	[3]	[4]	[5]	[6]	[7]
14. I listen to my subordinates when they have problems	[1]	[2]	[3]	[4]	[5]	[6]	[7]
15. I show concern when my subordinates are not doing as well as they should	[1]	[2]	[3]	[4]	[5]	[6]	[7]
16. I show confidence in my subordinates	[1]	[2]	[3]	[4]	[5]	[6]	[7]
17. I describe to my subordinates in detail any poor work habits they may have	[1]	[2]	[3]	[4]	[5]	[6]	[7]
18. I explain to my subordinates the importance of improving their job performance, for themselves and the work group	[1]	[2]	[3]	[4]	[5]	[6]	[7]
19. I show appreciation when my subordinates do a good job	[1]	[2]	[3]	[4]	[5]	[6]	[7]

TURN PAGE

	STRONGLY DISAGREE	DISAGREE	SLIGHTLY DISAGREE	UNDECIDED	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
20. I check back with my subordinates to review their progress on improving job performance.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
21. I treat my subordinates like people, not like machines.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
22. I generally treat my subordinates in a fair manner.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]

B. The following general statements apply to the work and job performance of your subordinates. Consider your work group situation and how it usually is when responding to each item.

23. In general, my subordinates do large quantities of work.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
24. If my subordinates perform well they will be rewarded.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
25. In general, my subordinates do high quality work.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
26. If my subordinates consistently perform poorly they will be demoted or fired.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
27. My subordinates' work depends on too many other things which prevent me from seeing how well they perform.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
28. My subordinates and I decide on specific ways to help them improve their performance...	[1]	[2]	[3]	[4]	[5]	[6]	[7]
29. There is open communication between my subordinates and myself.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]

C. The following statements refer to behaviors which you may or may not exhibit on the job. Some of these may be easy for you to perform while others may be quite difficult. Consider your work group situation and how it usually is, being realistic and honest when responding to each item.

30. I effectively and clearly present and express information orally, in both formal and informal situations.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
31. I am able to easily classify and categorize information.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
32. I easily take charge of a situation (i.e., direct and coordinate the activities of others).....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
33. I appropriately change courses of action dictated by changes in the situation.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
34. I easily generate and evaluate alternative courses of action (i.e., make quality decisions).....	[1]	[2]	[3]	[4]	[5]	[6]	[7]

TURN PAGE

		STRONGLY DISAGREE	DISAGREE	SLIGHTLY DISAGREE	UNDECIDED	SLIGHTLY AGREE	AGREE	STRONGLY AGREE
35.	I easily defend decisions when challenged.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
36.	I easily deal effectively with others regardless of level or status.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
37.	I easily accept interpersonal differences.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
38.	I easily establish priorities and set goals.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
39.	I easily achieve results through delegation and followup.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
40.	I easily use logic and sound judgment in choosing a particular course of action.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
41.	I easily identify, assimilate, and comprehend the critical elements of a situation.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
42.	I have the ability to easily behave in more than one way in a given situation.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
43.	I easily develop rapport and trust with superiors, peers, and subordinates.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
44.	I systematically structure tasks, plans, and objectives.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
45.	I easily extract and interpret implications and consequences of courses of action.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
46.	I am sensitive to the feelings and needs of others.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
47.	I easily adapt to stressful situations.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
48.	I easily maintain control of situations and others.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
49.	I easily present and express information effectively and clearly through written memorandums.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
50.	I easily alter my normal practices when presented with additional information that would dictate changes.....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
51.	I readily take action when called upon to do so (i.e., the willingness to make decisions).....	[1]	[2]	[3]	[4]	[5]	[6]	[7]
52.	I am able to easily attend to the details of a problem (i.e., both data and people related issues).....	[1]	[2]	[3]	[4]	[5]	[6]	[7]

TURN PAGE

The following nine skills are generally considered to be important to most managerial jobs. Read the definition given for each before completing the exercise and consider how it applies to your own job. Then, rank order the skills, varying in importance to your job success, by placing skill numbers in the nine spaces ranging from "MOST IMPORTANT" to "LEAST IMPORTANT" provided at the bottom of the page. Please consider all skills as being relevant to your job success in some way, even if it is very minimal.

1. PERCEPTION AND ANALYTICAL: Ability to identify, assimilate and comprehend the critical elements of a situation; to extract and interpret implications of courses of action; to attend to details of a problem (includes both data and people related issues).

2. ADAPTABILITY: Ability to alter normal practices when presented with additional information; to appropriately change courses of action dictated by changes in the situation; to have the ability to behave in more than one way in a given situation; to adapt to stressful situations.

3. DECISION MAKING: Ability to use logical and sound judgment in choosing a particular course of action; to generate and evaluate alternative courses of action (this refers to the quality as opposed to the quantity of decisions).

4. DECISIVENESS: Ability to take action when called upon to do so (willingness to make decisions); to defend decisions when callenged.

5. LEADERSHIP: Ability to take charge--to direct and coordinate the activities of others; to maintain control of situations and others; to achieve results through delegation and followup.

6. WRITTEN COMMUNICATION: Ability to present and express information effectively and clearly through written means.

7. ORAL COMMUNICATION: Ability to effectively and clearly present and express information orally, in both formal and informal situations.

8. ORGANIZING AND PLANNING: Ability to systematically structure tasks, plans and objectives; to establish priroties and set goals; to classify and categorize information.

9. SENSITIVITY: Ability to be sensitive to the needs and feelings of others; to develop rapport and trust; to accept interpersonal differences; to deal effectively with others regardless of level or status.

MOST IMPORTANT									LEAST IMPORTANT

APPENDIX D

Memoranda

TVA 64 (08-9-66)

UNITED STATES GOVERNMENT

Memorandum

APPENDIX D-1

TENNESSEE VALLEY AUTHORITY

TO : Those listed

FROM : Thomas F. Kohntopp, Training and Development Staff, 212 MIB-K

DATE : May 23, 1979

SUBJECT: ASSESSOR TRAINING PRELIMINARY SURVEY

Attached to this memorandum is a survey designed to measure your views on various supervisor-subordinate relationships. It is necessary that you complete this survey prior to attending the first day of assessment center assessor training on May 29, 1979, at which time I will collect it from you.

Your responses to these items will be compared with responses to another survey you will be asked to complete after the assessment center is finished, in approximately five weeks. The information gained from the surveys will be used to determine what impact assessor training and participating as an assessor may have on managers.

Each survey has been stamped with a number specifically assigned to each participant. I am the only one who has access to the number codes and no other individual will ever have access to them. I guarantee this confidentiality.

The purpose of the coded numbers is twofold. First, I need to match your responses on this survey with those to the post assessment center survey discussed earlier. Second, I need to compare your responses on both surveys with responses to two surveys I will be asking one of your subordinates to complete.

At this time I request that you allow the subordinate receiving the surveys 15 to 30 minutes to complete them. He or she will receive the first survey sometime while you are attending the assessor training and the second survey after the assessment center is completed.

Finally, I request that you be as honest and objective as possible when responding to the survey items. Remember, the program and training are being examined, not you!

For your convenience, an envelop has been attached to return the completed survey in when you arrive for the first day of training. If you have any questions, call me at extension 3761 in Knoxville. Your cooperation in this endeavor is greatly appreciated.

Thank you.

T.F.K.

TO: See page 2

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

Those listed
May 23, 1979

ASSESSOR TRAINING PRELIMINARY SURVEY

Ronald A. Barnum, 313 MIB-K
Malcolm Branner, 313 MIB-K
Richard C. Crawford, 323 CBB-C
Sandra P. Emond, WPB7 C-K
Earl F. Evans, SB-M
James E. Galyon, W5B87 C-K
Claude Harvey III, W2B87 C-K
Morris G. Herndon, E4D120 C-K
R. Joe Johnson, Daisy-C
Everett C. Kidder, Jr., 820 CUBB-C
James P. Manis, 600 CUBB-C
Charlesetta W. Moore, BAL MIB-K
Wayne P. Myers, 327 MIB-K
John D. Paulk, FOR B-N
Shelba J. Proffitt, W12C28 C-K
Michael D. Rogers, EPB11 C-K
John T. Shields, EH7A NFDC-M
Clem C. Schonhoff, 716 EB-C
Alphonso O. Smith, FOR B-N
William H. Stewart, 210 PRB-C
Gilbert F. Stone, 702 EB-C
James L. Thompson, 1200 CUBB-C
James M. Torrance, 721 PRB-C
Gene M. Wilhoite, 202 CBB-C

TFK:SAL
Attachment
cc: Arthur H. Allen, 212 MIB-K
Mark J. Friedman, 212 MIB-K
Patricia T. Hardin, 212 MIB-K
PCF, 210 MIB-K

TVA 64 (08-9-65)

UNITED STATES GOVERNMENT

Memorandum

APPENDIX D-2

TENNESSEE VALLEY AUTHORITY

TO :

FROM : Thomas F. Kohntopp, Training and Development Staff, 212 MIB-K

DATE : June 15, 1979

SUBJECT: INITIAL MANAGERIAL ASSESSMENT

At the present time an extensive organization-wide management training and development program for SA, SD, and lower grade (1 through 4) M-Schedule employees is being designed. A memorandum sent out by the General Manager on March 7, 1979, requested office and division heads to nominate candidates to go through a managerial assessment center that will function as a major part of the selection mechanism used to identify the employees that will participate in training and development.

Several middle-level managers have been chosen to participate as assessors in the assessment center process and have recently attended a special training program to prepare for this task. To help determine the success of assessor training and the impact that participation as an assessor may have on a manager's behavior back on the job, an evaluation is currently being conducted.

Since you have been identified as a supervisor, peer, or subordinate of one of the manager/assessors, I request that you participate in the evaluation process. What this will require on your part is the completion of the attached survey designed to measure various behaviors which you may or may not have observed the manager/assessor perform on the job. The survey items are <u>not</u> designed to measure the manager/assessor's job performance, and your responses will <u>not</u> be used for any other purpose but determining part of the impact of the assessment center. In addition to this survey, you will be asked to complete a similar survey in approximately five weeks, when the assessment center is completed.

Each survey has been stamped with a coded number, and the one on this survey is specifically assigned to you. I am the only one who has access to the number codes, and no other individual will ever have access to them. <u>I guarantee this confidentiality</u>.

The purpose of the coded numbers is twofold. First, I need to match your responses on this survey with those to the post-assessment center survey I will ask you to complete in five weeks. Second, I need to compare your responses on both surveys with responses to two surveys I will be requesting the assessor/managers to complete.

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

June 15, 1979

INITIAL MANAGERIAL ASSESSMENT

Finally, I request that you be as honest and objective as possible and respond to all of the survey items. Also, do not hesitate to give very low or very high responses to an item if you believe it is an accurate reflection of the manager/assessor's behavior. Remember, the program and training are being examined, not you or the manager/assessor!

Please return your completed survey by Friday, June 29, 1979. For your convenience, a preaddressed envelope has been attached to be used to return this survey. If you have any questions, call me at extension 3761 in Knoxville. Your cooperation in this endeavor is greatly appreciated.

Thank you.

Thomas F. Kohntopp

Please complete this survey with respect to the job behavior exhibited by the following manager/assessor:

_____

TVA 94 (08-0-65)

UNITED STATES GOVERNMENT

Memorandum

APPENDIX D-3

TENNESSEE VALLEY AUTHORITY

TO : Those listed

FROM : Thomas F. Kohntopp, Training and Development Staff, 212 MIB-K

DATE : June 14, 1979 T.F.K.

SUBJECT: MANAGERIAL COMPARISON SURVEY

At the present time an extensive organization-wide management training and development program for SA, SD, and lower grade (1 through 4) M-schedule employees is being designed. A memorandum sent out by the General Manager on March 7, 1979, requested office and division heads to nominate candidates to go through a managerial assessment center that will function as a major part of the selection mechanism used to identify the employees that will participate in training and development.

Several middle-level managers have been choosen to participate as assessors in the assessment center process and will shortly be attending a special training program to prepare for this task. To help determine the success of assessor training and the impact that participation as an assessor may have on a manager's behavior back on the job, an evaluation is currently being conducted.

You have been identified as one of the managers I would like to have participate in a comparison group similar to the manager assessor group in grade level and office affiliation. What this will require on your part is completion of the attached survey which is designed to measure your views on various supervisor-subordinate relationships and opinions about your skills as a manager. In addition to completing this survey, you will be asked to complete a similar survey in approximately five weeks when the assessment center is completed.

Each survey has been stamped with a coded number and the one on this survey is specifically assigned to you. I am the only one who has access to the number codes and no other individual will ever have access to them. I guarantee this confidentiality.

The purpose of the coded numbers is twofold. First, I need to match your responses on this survey with those to the post assessment center survey I will ask you to complete in five weeks. Second, I need to compare your responses on both surveys with responses to two surveys I will be requesting one of your subordinates to complete.

At this time I ask that you allow the subordinate receiving the surveys 15 to 30 minutes to complete them. He or she will receive the first survey in the near future and the second survey after the assessment center is finished.

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

Those listed
June 14, 1979

MANAGERIAL COMPARISON SURVEY

Finally, I request that you be as honest and objective as possible, and urge that you respond to all of the survey items. Remember, the program and training are being examined, not you!

Please return your completed survey by Friday, June 22, 1979. For your convenience, a preaddressed envelope has been attached to be used to return this survey. If you have any questions, call me at extension 3761 in Knoxville. Your cooperation in this endeavor is greatly appreciated.

Thank you.

Larry L. Bell, E12C28 C-K
James A. Bontadelli, 319 MIB-K
Theodore A. Bowles, E3A2 C-K
Alton W. Crevasse, 401 CUBB-C
Elizabeth M. Culbreath, E10A7 C-K
Mark E. Danby, 470 LB-C
Charles W. Fields, 311 EB-C
James H. Fields, 260 401B-C
Donovan C. Forbes, FOR B-N
Dawn S. Ford, E12A1 C-K
Truitt M. Fore, 123A WCB-K
Steve E. Gaines, 702 EB-C
Alan A. Griswold, 109 WCB-K
Jack H. Hendrix, 109 WCB-K
Kathryn K. Hicks, 207 OPO-C
Hubert Hinote, 270L LB-K
Ralph O. Lane, WME-K
Robert Marks, Sr., FOR B-N
Harry F. McClure, 210H LB-K
Gerald H. McGlamery, OSWHA-M
Joseph W. McReynolds, W9D225 C-K
John T. Munyan, 250 LB-C
Raymond W. Nall, LBL
William V. Pace, 1200 CUBB-C
Jane Parker, 230 LB-K
Lawrence Peterfruend, W5C127 C-K
Maxwell T. Ramsey, FOR B-N
Cynthia S. Simpson, 240G LB-K
Thomas S. Sloan, COO-M
A. Lynwood Smelser, LBL
Willie Smith, Jr., SB-M
Gary E. Stansell, 100 PT-C
Richard O. Swisher, 140 EB-K
Clyde W. Voightlander, 440 EB-K
William R. Waldrop, LAB-N
Gene M. Wilhoite, 202 CBB-C
Randolph B. Woolley, 126 126 E10-C

TFK:LC
Attachment
cc: PCF, 210 MIB-K

TVA 64 (08-0-001)

UNITED STATES GOVERNMENT

APPENDIX D-4

Memorandum

TENNESSEE VALLEY AUTHORITY

TO :

FROM : Thomas F. Kohntopp, Training and Development Staff, 212 MIB-K

DATE : June 15, 1979

SUBJECT: INITIAL MANAGER/ASSESSOR COMPARISON GROUP SURVEY

At the present time an extensive organization-wide management training and development program for SA, SD, and lower grade (1 through 4) M-Schedule employees is being designed. A memorandum sent out by the General Manager on March 7, 1979, requested office and division heads to nominate candidates to go through a managerial assessment center. The assessment center will function as a major part of the selection mechanism used to identify the employees that will participate in training and development.

Several middle-level managers have been chosen to participate as assessors in the assessment center and have recently attended a special training program to prepare for this task. Currently, an evaluation of this training and the effect that participation as an assessor may have on the manager is being conducted. Part of the evaluation entails asking the supervisor, a peer, and a subordinate of each assessor/manager about various behaviors which he or she may exhibit on the job. Some of these behaviors deal with supervisor-subordinate relations, leadership skills, decision-making ability, and the ability to communicate effectively.

One way to determine if the program has caused a change to occur in the manager's behavior is to obtain information about the manager before the program and then compare it with information obtained after the program. Unfortunately, something could occur in the organization (e.g., the recent organizational restructuring) which may also cause the manager/assessors to change their behavior on the job. To control for this problem, several managers comparable to the assessors in grade level and office affiliation were asked to serve in a comparison group. Managers in the comparison group do not participate in the assessment center in any capacity, yet their importance to the evaluation is just as great as if they did. In addition, your cooperation in completing the attached survey is also crucial to the success of the evaluation.

Since you have been identified as a supervisor, peer, or subordinate of one of the comparison managers, I request that you participate in the evaluation process. What this will require on your part is the completion of the attached survey designed to measure various behaviors which you may or may not have observed one of the comparison managers perform on the job. Your responses will <u>not</u> be used for any other purpose but determining <u>part</u> of the impact of the assessment center. In addition to this survey, you will be asked to complete a similar survey in approximately six week, when the assessment center is completed.

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

2

June 15, 1979

INITIAL MANAGER/ASSESSOR COMPARISON GROUP SURVEY

Each survey has been stamped with a coded number, and the one on this survey is specifically assigned to you. I am the only one who has access to the number codes, and no other individual will ever have access to them. I guarantee this confidentiality.

The purpose of the coded number is twofold. First, I need to match your responses on this survey with those on a post-assessment center survey which I will ask you to complete in approximately six weeks. Second, I need to compare your responses on both surveys to responses from two surveys I will be asking "your" comparison manager to complete.

It is important that you be as honest and objective as possible and respond to all of the survey items. Also, do not hesitate to give very low or very high responses to an item if you believe it is an accurate reflection of the manager's behavior. Remember, even though you are evaluating a single manager's job behavior, my evaluation is of the group's behavior, and it is the program which is being examined, not you or the manager.

Please return your completed survey by Friday, June 29, 1979. For your convenience a preaddressed envelope has been attached for easy return. If you have any questions or would like to discuss a problem you may have with completing the survey, call me at extension 3761 in Knoxville. Your cooperation in this endeavor is greatly appreciated.

Thank you.

Thomas F. Kohntopp

TFK:LC
Attachments

Please complete this survey with respect to the job behavior exhibited by the following manager:

_____

TVA 84 (08-0-08)

UNITED STATES GOVERNMENT

Memorandum

APPENDIX D-5

TENNESSEE VALLEY AUTHORITY

TO :

FROM : Thomas F. Kohntopp, Training and Development Staff, 212 MIB-K

DATE : July 10, 1979

SUBJECT: INITIAL MANAGERIAL ASSESSMENT SURVEYS

On June 15, 1979, I mailed you a survey that was part of the evaluation of the assessment center phase of the TVA Management Training and Development Program. The information which this instrument will provide is vital for determining the positive and negative aspects of the assessment center on the manager/assessors.

You were to complete the survey with respect to the job behavior exhibited by a manager with whom you work. Specifically, the survey was to have been completed with respect to behavior, one of the assessment center manager/assessors.

This individual per se is not being evaluated. However, information about him is crucial for evaluating the program. The responses you give will not be revealed to anyone. As an independent evaluator, I have a great responsibility to keep all responses in the strictest confidence. No one will have access to your responses. All data will be aggregated for evaluation; your specific responses will never be examined.

I would appreciate your cooperation very much. If you have any issues or problems I would be more than happy to discuss them with you. If you have misplaced the survey, please call me at extension 3761 so that I can replace it.

Thank you.

Thomas F. Kohntopp

TFK:LC

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

TVA 64 (06-0-68)

UNITED STATES GOVERNMENT

Memorandum

APPENDIX D-6

TENNESSEE VALLEY AUTHORITY

TO :

FROM : Thomas F. Kohntopp, Training and Development Staff, 413 MIB-K

DATE : November 9, 1979

SUBJECT: MANAGERIAL APPRAISAL FOLLOWUP SURVEY

The attached survey represents the last phase of the managerial assessment center assessor evaluation. Information generated by this instrument will be used in conjunction with responses obtained from a similar survey which you completed several months ago.

At the time of the previous survey you were identified as being a supervisor (i.e., responsible for assigning work), a peer (i.e., familiar with an individual's work while not receiving or giving work assignments), or a subordinate (i.e., receiving work assignments) of one or more of the managers participating in the evaluation. You were asked to complete the survey with respect to the job behavior exhibited by the participant. At this time, I request that you again do this for me.

On the next page you will find the name of the manager you are to evaluate along with a question about your relationship to him or her. It is important that you answer this question so that I may ascertain the current relationship you have with the participant manager. In addition, it is very important for you to complete the survey, even though you may no longer be the supervisor, peer, or subordinate of this manager. If at this time you do not have a work association with the participant manager, then complete the survey with respect to the job behavior which the manager was exhibiting the last time you worked together.

Each survey has been stamped with a coded number, and the one on this survey is specifically assigned to you. I am the only one who has access to the number codes, and no other individual will ever have access to them. I guarantee this confidentiality.

The purpose of the coded number is twofold. First, I need to match your responses on this survey with those from the preassessment center survey which you completed several months ago. Second, I need to compare your responses on both surveys to responses from two surveys I have asked your participant manager to complete. After matching the data collected from all surveys, the code numbers will be destroyed!

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

November 9, 1979

MANAGERIAL APPRAISAL FOLLOWUP SURVEY

It is important that you be as honest and objective as possible and respond to all of the survey items. Also, do not hesitate to give very low or very high responses to an item if you believe it is an accurate reflection of the manager's behavior. Remember, even though you are evaluating a single manager's job behavior, my evaluation is of the responses for the total group, and it is the program which is being examined, not you or the manager.

Please return your completed survey by Monday, November 19, 1979. For your convenience a preaddressed envelope has been attached for easy return. If you have any questions or would like to discuss a problem you may have with completing the survey, call me at extension 6120 in Knoxville. Your cooperation in this endeavor is greatly appreciated.

Thank you.

Thomas F. Rohntopp

TFK:LC
Attachment

Please complete this survey with respect to the job behavior exhibited by the following participant manager:

_____

Indicate your relationship to this manager by checking one of the following:

( ) Supervisor of the participant manager

( ) Peer of the participant manager

( ) Subordinate of the participant manager

( ) Have not had a work association with this manager since:

_____
(approximate date)

Note: If you have checked the last response choice, complete the survey with respect to the work relationship that existed at the last time you worked with the participant manager.

TVA 64 (08-9-68)

UNITED STATES GOVERNMENT

Memorandum

APPENDIX D-7

TENNESSEE VALLEY AUTHORITY

TO :

FROM : Thomas F. Kohntopp, Training and Development Staff, 413 MIB-K

DATE : November 23, 1979

SUBJECT: MANAGERIAL APPRAISAL FOLLOWUP SURVEY REMINDER

On November 9, 1979, you were mailed one or more surveys which are part of the managerial assessment center assessor evaluation, and as of today I have not received your responses. You were to have completed the survey(s) with respect to the job behavior exhibited by one of the managers participating in the program. The information which you can provide is crucial to the evaluation process.

The current work relationship you have with the participant manager(s) may be very remote or even nonexistant. Consequently, you should concentrate on the work situation as it previously existed when completing the survey. Also, do not feel that your responses will be discounted or not used just because you presently do not work with the participant manager(s). All responses are essential to the evaluation.

An important point to remember when completing the instrument is that individual surveys will not be singled out. In addition, keep in mind that the program is being examined, not you or the participant manager(s). The confidentiality of information will be enforced at all times.

If you have any questions regarding any part of the evaluation I will be glad to try and answer them for you. If you have misplaced your survey(s) please call me at extension 6120 in Knoxville. Your cooperation is greatly appreciated.

Thank you.

Thomas F. Kohntopp

TFK:LC

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

TVA 64 (08-9-68)

UNITED STATES GOVERNMENT

APPENDIX D-8

Memorandum

TENNESSEE VALLEY AUTHORITY

TO :

FROM : Thomas F. Kohntopp, Training and Development Staff, 413 MIB-K

DATE : December 7, 1979

SUBJECT: MANAGERIAL DESCRIPTION SURVEY

The attached survey represents the last phase of the managerial assessment center assessor evaluation. Items included in the survey ask for your views about various supervisor/subordinate relationships and opinions about your skills as a manager. The information generated by this instrument will be used in conjunction with responses obtained from a similar survey which you completed several months ago.

Each survey has been stamped with a unique five-digit number specifically assigned to a single manager; the one on this survey has been assigned to you. I am the only one who has access to the number codes and no one else will ever have access to them. This confidentiality is guaranteed.

There are two purposes for the code numbers. First, I need to match your responseson this survey with those from the survey you completed several months ago. Second, I need to compare your responses from both surveys to responses from surveys which several of your coworkers have also completed. After matching the data collected from all surveys the code numbers will be destroyed!

It is important that you be as honest and objective as possible and respond to all of the survey items. Remember, no individual will be singled out; all data will be aggregated, and it is the program which is being examined, not you!

Please return your completed survey by Friday, December 14, 1979. For your convenience a preaddressed envelope has been attached for easy return. If you have any questions or would like to discuss a problem you may have with completing the survey, call me at extension 6120 in Knoxville. Your cooperation in this endeavor is greatly appreciated.

Thank you.

Thomas F. Kohntopp

TFK:LC
Attachment

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

TVA 44 (08-9-62)

UNITED STATES GOVERNMENT

APPENDIX D-9

Memorandum

TENNESSEE VALLEY AUTHORITY

TO :

FROM : Thomas F. Kohntopp, Training and Development Staff, 413 MIB-K

DATE : January 2, 1980 T.F.K.

SUBJECT: MANAGERIAL APPRAISAL FOLLOWUP SURVEY REMINDER

My records indicate that I have not received a completed MANAGERIAL APPRAISAL FOLLOWUP SURVEY from you. I have attached a duplicate copy for you to complete.

Though participation is voluntary, I want to remind you how important your ratings are to the evaluation process. The information you provide will help determine the impact of one part of the managerial assessment center.

If you have any questions, please call me at extension 6120 in Knoxville. Thank you for your time.

TFK:SAL
Attachment

Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

APPENDIX E

Exercise Report Form

Exercise Report Form

ASSESSOR: _____ DATE: _____

CANDIDATE: _____ EXERCISE: _____

Using the rating key provided below, rate the participant on each of the following skills based on what you have seen him/her do only in this exercise.

Rating Key

7 - Outstanding
6 - Well above satisfactory
5 - Above satisfactory
4 - Satisfactory
3 - Below satisfactory
2 - Well below satisfactory
1 - Poor
0 - Not observed

For any 100 participants you might observe, the following distribution of ratings is likely to occur: 5 percent of the participants are likely to be rated a "7"; 10 percent, a "6"; 20 percent, a "5"; 30 percent, a "4"; 20 percent, a "3"; 10 percent, a "2", and only 5 percent, a "1". Remember, these percentages are by no means binding, and you may consider several participants to perform in an outstanding manner on most skills; yet, when considering the entire group of participants, the full range of skills levels should be observable. The Skill/Exercise Matrix on the following page should help you in this evaluation task.

Exercise Summary (for comments on unique or extenuating circumstances only)

Leadership: Rating _____; Ability to take charge - to direct and coordinate the activities of others; to maintain control of situations and others; to achieve results through delegation and follow-up.

Sensitivity: Rating _____; Ability to be sensitive to the needs and feelings of others; to develop rapport and trust; to accept interpersonal differences; to deal effectively with others regardless of level or status.

Perception: Rating _____; Ability to identify, assimilate and comprehend the critical elements of a situation; to extract and interpret implications of courses of action; to attend to details of a problem (includes both data and people related issues).

Decision-Making: Rating _____; Ability to use logical and sound judgment in choosing a particular course of action (this refers to the quality as opposed to the quantity of decisions).

Decisiveness: Rating _____; Ability to take action when called upon to do so, (quantity of decisions); and to defend decisions when challenged.

Organizing and Planning: Rating _____; Ability to systematically structure tasks, plans and objectives; to establish priorities and set goals, to classify and categorize information.

Adaptability: Rating _____; Ability to alter normal posture with presentation of additional information; to appropriately change courses of action dictated by changes in the situation; to have the ability to behave in more than one way in a given situation; to adapt to stressful situations.

Oral Communication: Rating _____; Ability to effectively and clearly present and express information orally, in both formal and informal situations.

Written Communication: Rating _____; Ability to present and express information effectively and clearly through written means.

APPENDIX F

Skill Matrix Weighting Form

SKILL MATRIX WEIGHTING FORM

PARTICIPANT: _____ ASSESSOR: _____

SKILL	IN-BASKET I, II or III	GROUP DISCUSSION	TASK DIRECTION	OVERALL
Leadership	XX	XX	XXX	
Sensitivity	X	XX	XX	
Perception	XXX	XX	XX	
Decision-Making	XX	XX	XX	
Decisiveness	X	XX	XX	
Organizing & Planning	XXX	XX	XX	
Adaptability	N/A	XX	XX	
Oral Communication	X	XX	XXX	
Written Communication	XX	N/A	XX	

Weighting:

XXX - Very Strongly Measured

XX - Strongly Measured

S - Measured

N/A - Not Appliable

APPENDIX G

Summary Overview of "Assessment Center" Exercises

SUMMARY OVERVIEW OF "ASSESSMENT CENTER" EXERCISES

Leaderless Group Discussion

This is a 65 minute exercise, 20 minutes of which is spent individually analyzing data in preparation for the group discussion. The final 45 minutes is spent in the discussion with the other participants. The task involves the preparation of a group recommendation, reached by consensus of opinion, regarding which of several locations will be selected and submitted for the development of a kelp farm. During the individual analysis period, each participant analyzes the data in preparation for discussing and prioritizing the selected projects in the ensuing group meeting.

Task Direction

This is a 75 minute exercise in which the participant is required to devise a schedule for a department of a large firm. In the first five minutes of the exercise, the participant individually reviews material concerning the production needs and the capabilities in the department. In the next forty minutes, the participant, with the help of an assistant must complete a schedule of work for each of the employees in the department. The next fifteen minutes is designed to give the participant an opportunity to provide feedback and job counseling to the assistant. The final fifteen minute period is alloted to the participant to write summaries of both the task progress and the counseling session.

In-Basket I - City of Ridder

This is a one hour individual task in which the participant is asked to assume the position of a superintendent of a department in a city in Kansas. The participant must process and respond to a large number of accumulated memos, letters and other correspondence which vary in their importance and urgency. All actions taken, directions/ instructions given other members of the hypothetical organization must be in the form of written memos or letters.

In-Basket II - Marion Valley District

This is a one hour individual task in which the participant is asked to assume the role of a director who is responsible for a toll road district called Marion Valley. The participant must process and respond to a large number of accumulated memos, letters and other correspondence which vary in their importance and urgency. All actions taken, directions/instructions given other members of the hypothetical organization must be in the form of written memos or letters.

In-Basket III - Consolidated Light and Power Company

This is a one hour individual task in which the participant is asked to assume the role of a service manager for a power company. The participant is asked to process and respond to a large number of accumulated memos, letters and other correspondence which vary in their importance and urgency. All actions taken, directions/ instructions given other members of the hypothetical organization must be in the form of written memos or letters.

APPENDIX H

Factor Analyses Figure and Tables

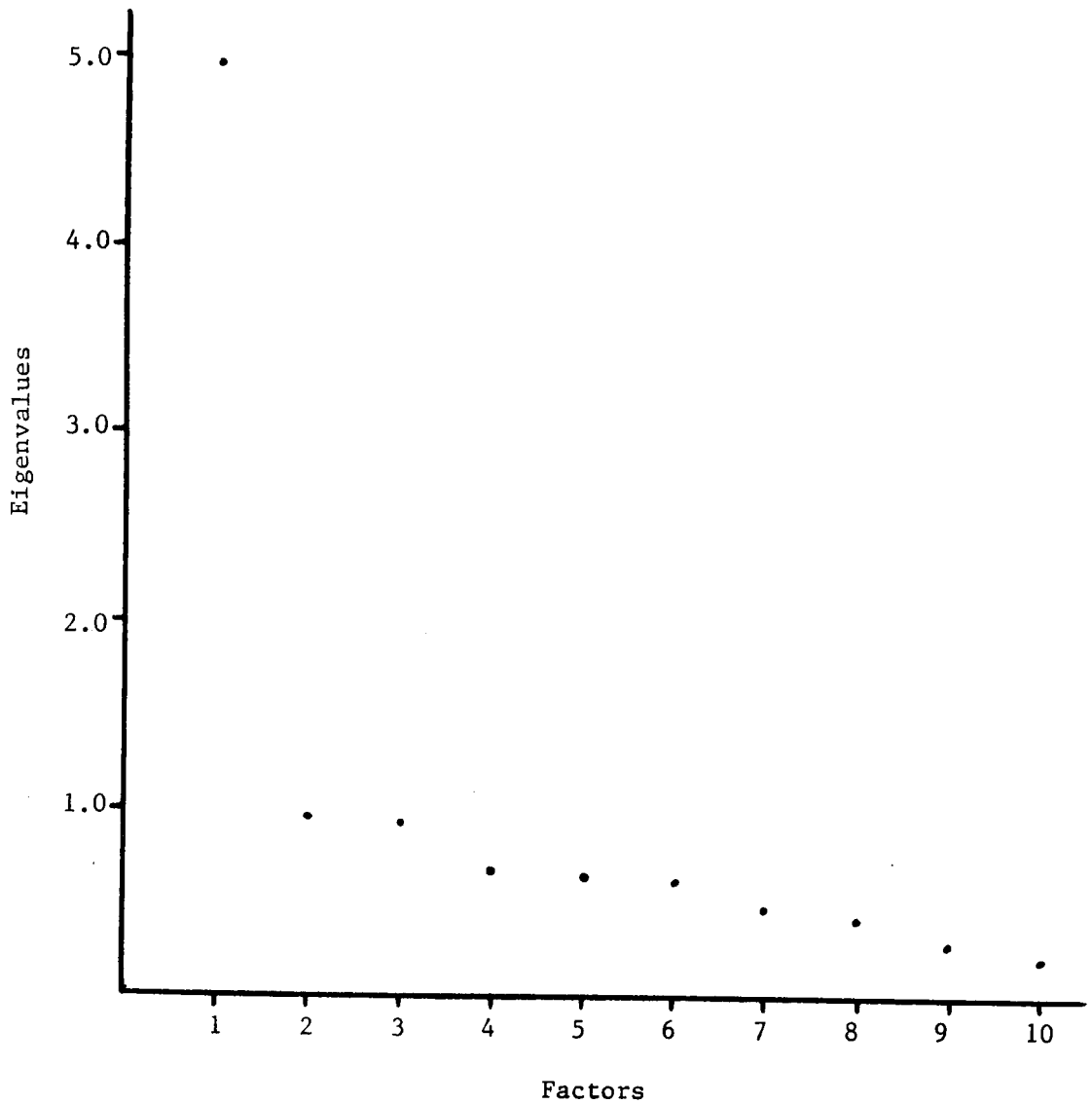

Figure 1. Scree Plot of Eigenvalues.

TABLE 13

EIGENVALUES AND PERCENTAGES OF VARIANCE FOR THE DERIVED MEASURES (ITEMS 1-10)

Factor	Eigenvalue	Percent of Variance	Cumulative Percent
1	4.99	49.9	49.9
2	.96	9.6	59.5
3	.91	9.1	68.6
4	.65	6.5	75.1
5	.62	6.2	81.3
6	.57	5.7	86.9
7	.47	4.7	91.6
8	.39	3.9	95.4
9	.26	2.6	98.1
10	.19	1.9	100.0

TABLE 14

FINAL COMMUNALITIES FOR THE DERIVED MEASURES
(ITEMS 1-10)

	Two-Factor Solutions			Three-Factor Solutions			
Item	TC	Minres	Alpha	TC	Minres	Alpha	Image
1	70	70	73	75	70	69	63
2	48	41	43	49	42	42	39
3	54	41	42	59	41	42	34
4	64	75	61	82	84	80	62
5	65	11	12	94	32	41	14
6	50	48	45	61	46	46	39
7	57	58	51	75	58	59	53
8	53	46	50	55	48	48	43
9	67	51	61	70	66	61	41
10	66	63	64	66	62	61	58

Note: Decimal points have been omitted.

Smallest Maximum Loading Criterion

The smallest maximum loading (SML) criterion was identified for each solution and was used to determine which items loaded significantly on which factors. A factor solution's unique SML criterion was determined by examining its final factor matrix in two steps. First, the absolute value of the largest loading for each item across factors was identified. Second, the smallest of all the loadings identified in the first step then served as the criterion for the factor solution. This loading was designated the SML criterion and the remaining loadings in the factor solution were compared against it for significance.

TABLE 15

TWO-FACTOR SOLUTIONS FOR THE DERIVED MEASURES
(ITEMS 1-10)

	Factoring Procedure					
	TC		Minres		Alpha	
Item	I	II	I	II	I	II
1	54[a]	64[a]	39	74[b]	29	80[c]
2	57[a]	39	49[b]	41	43	49[c]
3	73[a]	10	58[b]	26	57[c]	31
4	56[a]	57[a]	29	82[b]	30	72[c]
5*	-10	80	24	24	32	15
6	68[a]	21	64[b]	25	56[c]	36
7	51	55[a]	30	70[b]	28	65[c]
8	52[a]	50	53[b]	42	42	57[c]
9	82[a]	04	67[b]	24	75[c]	21
10	65[a]	50	58[b]	54[b]	49[c]	63[c]

Note: Decimal points have been omitted.

*Item 5 had a low final communality (<.20) in the minimum residuals and alpha factoring procedures.

a. Significant loadings ≧.52 (SML criterion).

b. Significant loadings ≧.49 (SML criterion).

c. Significant loadings ≧.49 (SML criterion).

TABLE 16

THREE-FACTOR SOLUTIONS FOR THE DERIVED MEASURES
(ITEMS 1-10)

	Factoring Procedure								
	TC			Minres			Alpha		
Item	I	II	III	I	II	III	I	II	III
1	31	78[a]	21	33	67[b]	37	36	69[c]	30
2	51[a]	43	21	44[b]	36	31	47[c]	37	25
3	73[a]	22	03	56[b]	26	17	58[c]	26	12
4	25	87[a]	05	29	86[b]	11	29	84[c]	11
5	08	12	96[a]	10	12	54[b]	11	13	62[c]
6	73[a]	20	20	57[b]	23	28	59[c]	24	23
7	21	84[a]	04	30	68[b]	18	30	70[c]	14
8	48[a]	44	35	46[b]	35	38	46[c]	38	35
9	80[a]	24	-06	77[b]	24	01	74[c]	23	01
10	53[a]	58[a]	22	51[b]	49[b]	35	53[c]	49[c]	29

Note: Decimal points have been omitted.

a. Significant item loadings ≧.48 (SML criterion).

b. Significant item loadings ≧.44 (SML criterion).

c. Significant item loadings ≧.46 (SML criterion).

TABLE 17

FIVE-FACTOR SOLUTION FOR THE DERIVED MEASURES
(ITEMS 1-10)

Item	Factor				
	I	II	III	IV	V
1	36	61[a]	34	-08	05
2	40[a]	36	28	01	14
3	48[a]	27	19	-03	05
4	34	67[a]	24	-01	02
5*	16	16	30	00	01
6	50[a]	25	26	00	-01
7	31	61[a]	22	09	00
8	43[a]	36	31	13	01
9	55[a]	27	17	03	00
10	49[a]	48[a]	33	-07	-04

Note: Decimal points have been omitted.

a. Significant item loadings ≧.40 (SML criterion).

*Item 5 had a low final communality (<.20).

APPENDIX I

Power Analyses

POWER ANALYSES

The power of a statistical test in a given situation can be defined as the probability of rejecting the null hypothesis when it is not true. Cohen (1969, pp. 266-397) has provided tables for determining the power of the $\underline{F}$ ratio based on the significance criterion (α), the degrees of freedom of the numerator of the $\underline{F}$ ratio (u), the effect size (f), and the sample size (n).

The effect size is defined as the standard deviation of standardized means (p. 348), such that $f = \sigma_m / \sigma$, where σ_m is the standard deviation of the k group means and σ is the standard deviation of the combined groups. The standard deviation of the k group means takes into account the separate effects of the k groups in proportion to their sizes (p. 353), such that

$$\sigma_m = \sqrt{(\sum_{i=1}^{k} n_i m_i)/N},$$

for k groups (i = 1, 2, ..., k). Here, N is the total number in the combined groups and

$$m = (\sum_{i=1}^{k} n_i m_i)/N,$$

the mean of the k group means.

Power values were obtained from Cohen (1969) pages 282 (α = .01), 304 (α = .05), and 326 (α = .10). The degrees of freedom of the numerator of the $\underline{F}$ ratio (u) was one. The average sample size for tabled values was calculated as

$$n = \sum_{i=1}^{k} n_i / k.$$

The results for self, subordinate, peer, and supervisor ratings appear in Tables 18, 19, 20, and 21, respectively.

TABLE 18

POWER ANALYSES OF THE MANAGERIAL SKILL MEASURES FOR SELF RATINGS

Survey Item Number	Group: Assessor m_1	Group: Control m_2	m	σ	σ_m	f	Power for α = .01	.05	.10
30	5.83	5.66	5.72	.72	.08	.12	03	11	20
31	5.74	5.86	5.81	.69	.06	.08	03	11	20
32	5.83	5.80	5.81	.74	.01	.02	-	-	-
33	5.87	5.80	5.83	.82	.03	.04	01	06	12
34	5.91	5.77	5.83	.65	.07	.11	03	11	20
35	5.78	5.53	5.63	.77	.12	.15	07	20	32
36	6.04	5.69	5.83	.80	.18	.22	13	33	46
37	5.57	5.43	5.48	.96	.07	.07	01	06	12
38	5.57	5.80	5.71	.96	.11	.12	03	11	20
39	5.83	5.77	5.79	.83	.03	.03	01	06	12
40	5.83	5.83	5.83	.73	.01	.02	-	-	-
41	5.74	5.60	5.66	.76	.07	.09	03	11	20
42	5.52	5.06	5.24	1.23	.23	.18	13	33	46
43	5.83	5.89	5.86	.66	.03	.04	01	06	12
44	5.57	5.43	5.48	1.03	.07	.07	01	06	12
45	5.57	5.57	5.57	.68	.03	.04	01	06	12
46	6.17	6.09	6.12	.77	.04	.06	01	06	12
47	5.22	5.37	5.31	.98	.08	.08	03	11	20
48	5.30	5.31	5.31	.80	.01	.01	-	-	-
49	5.52	5.69	5.62	1.02	.08	.08	03	11	20
50	5.96	5.71	5.81	.71	.12	.17	07	20	32
51	6.09	6.17	6.14	.54	.04	.08	03	11	20
52	5.52	5.74	5.66	.78	.11	.14	07	20	32

Note: N_1 = 23 (assessor group); N_2 = 35 (control group); N = 29. Decimal points have been omitted for power values.

TABLE 19

POWER ANALYSES OF THE DERIVED MEASURES (ITEMS 1-10) AND THE MANAGERIAL SKILL MEASURES (ITEMS 11-33) FOR SUBORDINATE RATINGS

Survey Item Number	Group: Assessor m_1	Group: Control m_2	m	σ	σ_m	f	Power for α = .01	.05	.10
1	4.91	5.06	5.00	1.66	.08	.05	01	06	12
2	5.18	4.69	4.89	1.40	.24	.17	06	19	30
3	4.86	5.00	4.94	1.60	.07	.04	01	06	12
4	4.86	5.28	5.11	1.61	.21	.13	06	19	30
5	5.68	5.88	5.80	1.37	.09	.07	01	06	12
6	5.05	5.19	5.13	1.40	.07	.05	01	06	12
7	4.59	5.13	4.91	1.55	.26	.17	06	19	30
8	4.73	4.75	4.74	1.53	.01	.01	-	-	-
9	5.45	5.63	5.56	1.35	.08	.06	01	06	12
10	5.14	5.34	5.26	1.39	.10	.07	01	06	12
11	5.64	5.69	5.67	1.27	.03	.02	-	-	-
12	5.45	5.84	5.69	1.02	.19	.19	12	31	44
13	5.27	5.78	5.57	1.54	.25	.16	06	19	30
14	5.09	5.41	5.28	1.24	.15	.13	06	19	30
15	5.23	5.16	5.19	1.33	.03	.03	01	06	12
16	5.64	6.06	5.89	1.25	.21	.17	06	19	30
17	5.32	5.06	5.17	1.70	.13	.07	01	06	12
18	5.32	5.13	5.20	1.65	.09	.06	01	06	12
19	5.23	5.56	5.43	1.35	.16	.12	03	10	19
20	5.50	5.28	5.37	1.26	.11	.09	03	10	19
21	5.50	5.59	5.56	1.16	.05	.04	01	06	12
22	5.23	5.59	5.44	1.37	.18	.13	06	19	30
23	5.23	5.13	5.17	1.38	.05	.04	01	06	12
24	4.73	4.69	4.70	1.86	.02	.01	-	-	-
25	5.14	5.28	5.22	1.36	.07	.05	01	06	12
26	5.27	5.31	5.30	1.30	.02	.02	-	-	-
27	5.32	4.97	5.11	1.74	.17	.10	03	10	19
28	4.73	5.47	5.17	1.53	.36	.24	21	45	58
29	4.82	5.34	5.13	1.61	.26	.16	06	19	30
30	5.64	5.97	5.83	1.16	.16	.14	06	19	30
31	5.41	5.63	5.54	1.13	.11	.09	03	10	19
32	5.41	5.91	5.70	1.35	.24	.18	12	31	44
33	4.95	5.53	5.30	1.37	.28	.21	12	31	44

Note: N_1 = 22 (assessor group); N_2 = 32 (control group); N = 27. Decimal points have been omitted for power values.

TABLE 20

POWER ANALYSES OF THE DERIVED MEASURES (ITEMS 1-10) AND THE MANAGERIAL SKILL MEASURES (ITEMS 11-33) FOR PEER RATINGS

Survey Item Number	Group: Assessor m_1	Group: Control m_2	m	σ	σ_m	f	Power for α = .01	.05	.10
1	5.32	5.38	5.35	1.17	.03	.02	-	-	-
2	5.14	4.88	4.98	1.25	.13	.10	03	10	19
3	4.73	4.25	4.44	1.51	.23	.16	06	19	30
4	5.59	5.53	5.56	1.08	.03	.03	01	06	12
5	5.86	5.75	5.80	1.09	.06	.05	01	06	12
6	5.14	5.28	5.22	1.25	.07	.06	01	06	12
7	4.86	5.16	5.04	1.32	.14	.11	03	10	19
8	4.95	5.22	5.11	1.30	.13	.10	03	10	19
9	5.68	5.44	5.54	1.27	.12	.09	03	10	19
10	5.23	5.34	5.30	1.44	.06	.04	01	06	12
11	5.45	5.53	5.50	1.24	.04	.03	01	06	12
12	5.50	5.44	5.46	.97	.03	.03	01	06	12
13	5.59	5.50	5.54	1.08	.04	.04	01	06	12
14	5.00	4.97	4.98	1.50	.02	.01	-	-	-
15	5.32	4.84	5.04	1.40	.23	.17	06	19	30
16	6.09	6.31	6.22	.74	.11	.15	06	19	30
17	5.64	4.84	5.17	1.62	.39	.24	21	45	58
18	5.27	4.78	4.98	1.65	.24	.15	06	19	30
19	5.09	5.50	5.33	1.08	.20	.19	12	31	44
20	5.09	5.44	5.30	1.21	.17	.14	06	19	30
21	5.23	4.94	5.06	1.38	.14	.10	03	10	19
22	5.45	5.19	5.30	1.14	.13	.11	03	10	19
23	4.95	5.16	5.07	1.30	.10	.08	03	10	19
24	5.09	4.75	4.89	1.70	.17	.10	03	10	19
25	5.18	5.31	5.26	1.15	.06	.06	01	06	12
26	5.36	5.25	5.30	1.09	.06	.05	01	06	12
27	5.00	4.53	4.72	1.83	.23	.13	06	19	30
28	5.23	5.28	5.26	1.48	.03	.02	-	-	-
29	5.23	5.25	5.24	1.34	.01	.01	-	-	-
30	5.55	5.88	5.74	.99	.16	.16	06	19	30
31	5.09	5.19	5.15	1.25	.05	.04	01	06	12
32	5.95	5.84	5.89	.95	.05	.06	01	06	12
33	5.27	5.50	5.41	1.12	.11	.10	03	10	19

Note: N_1 = 22 (assessor group); N_2 = 32 (control group); N = 27. Decimal points have been omitted for power values.

TABLE 21

POWER ANALYSES OF THE DERIVED MEASURES (ITEMS 1-10) AND THE MANAGERIAL SKILL MEASURES (ITEMS 11-33) FOR SUPERVISOR RATINGS

Survey Item Number	Group: Assessor m_1	Group: Control m_2	m	σ	σ_m	f	Power for α = .01	.05	.10
1	5.77	5.76	5.76	1.10	.01	.01	-	-	-
2	5.55	5.39	5.45	1.20	.07	.06	01	06	12
3	5.05	4.94	4.98	1.39	.05	.04	01	06	12
4	6.27	5.91	6.05	1.06	.18	.17	06	19	31
5	6.14	6.18	6.16	1.12	.02	.02	-	-	-
6	5.86	5.73	5.78	1.23	.07	.05	01	06	12
7	5.82	5.48	5.62	1.19	.16	.14	06	19	31
8	5.68	5.36	5.49	1.26	.16	.12	03	11	19
9	6.00	5.91	5.95	1.11	.04	.04	01	06	12
10	5.64	5.54	5.58	1.23	.04	.04	01	06	12
11	5.82	5.76	5.78	1.12	.03	.03	01	06	12
12	6.32	5.88	6.05	.89	.22	.24	22	46	60
13	5.95	6.00	5.98	1.21	.02	.02	-	-	-
14	5.64	5.27	5.42	1.23	.18	.15	06	19	31
15	5.64	5.52	5.56	1.15	.06	.05	01	06	12
16	6.27	6.12	6.18	.84	.07	.09	03	11	19
17	5.86	5.70	5.76	1.43	.08	.06	01	06	12
18	5.41	5.30	5.35	1.39	.05	.04	01	06	12
19	5.95	5.85	5.89	.96	.05	.05	01	06	12
20	5.64	5.76	5.71	.98	.06	.06	01	06	12
21	6.09	5.76	5.89	.94	.16	.17	06	19	31
22	5.86	5.76	5.80	.99	.05	.05	01	06	12
23	5.41	4.97	5.15	1.11	.22	.19	12	32	45
24	5.55	5.52	5.53	1.45	.01	.01	-	-	-
25	6.00	5.67	5.80	1.11	.16	.15	06	19	31
26	5.68	5.42	5.53	1.09	.13	.12	03	11	19
27	5.64	5.48	5.55	1.32	.07	.06	01	06	12
28	5.41	5.58	5.51	1.26	.08	.06	01	06	12
29	5.68	5.45	5.55	1.39	.11	.08	03	11	19
30	5.91	5.73	5.80	1.08	.09	.08	03	11	19
31	5.77	5.52	5.62	1.21	.13	.10	03	11	19
32	6.14	6.18	6.16	1.07	.02	.02	-	-	-
33	5.86	5.70	5.76	1.04	.08	.08	03	11	19

Note: N_1 = 22 (assessor group); N_2 = 33 (control group); N = 27.5. Decimal points have been omitted for power values.

VITA

Thomas F. Kohntopp was born in Toledo, Ohio, on May 9, 1953. He attended elementary and high school there, graduating from E. L. Bowsher High School in June 1971. From September 1971 to June 1972, he attended The University of Cincinnatti, majoring in Mathematics. In September 1972, he enrolled in Bowling Green State University, Bowling Green, Ohio. He was awarded a Bachelor of Science degree from Bowling Green State University with a major in Psychology and a minor in Computer Science/Mathematics in June 1975.

In September 1975, he entered The University of Tennessee as a graduate student. He also began work at the Tennessee Valley Authority in 1977 where he is still employed. During 1980, he worked as a management consultant to Digital Equipment G.m.b.H., in Europe.

He was awarded a Doctor of Philosophy degree with a major in Industrial/Organizational Psychology in December 1981.