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Locus-of-control orientation and assessment center performance as predictors in an administrative selection process

Dixon, Gail Williams, Ph.D.
University of Nevada, Las Vegas, 1989

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LOCUS OF CONTROL ORIENTATION AND
ASSESSMENT CENTER PERFORMANCE AS PREDICTORS
IN AN ADMINISTRATIVE SELECTION PROCESS

By

Gail Williams Dixon

A dissertation submitted in partial
fulfillment of the requirements
for the degree of

Doctor of Education

in

Educational Administration

Department of Educational Administration
and Higher Education
University of Nevada, Las Vegas
March, 1989
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March, 1989
ABSTRACT

The purpose of this study was to determine if locus of control orientation was related to the assessment center performance of prospective school administrators. It was not known if locus of control orientation and assessment center performance described similar administrative characteristics. If a relationship existed, locus of control orientation could be considered a valid predictor for use in an administrative selection process.

The quantitative descriptive, correlation study was based on data gathered from participants in the Nevada Assessment Center from fall of 1985 thru spring of 1988. The sample (n=120) consisted of individuals who had appropriately completed both an NASSP model assessment center which identified administrative skills and an ANS-IE opinion survey which identified locus of control orientation.

Descriptive and inferential statistical techniques were used to treat the data. Specifically, the Pearson Product Moment Correlation and a stepwise multiple regression technique produced correlation coefficients among the locus of control orientation score and the thirteen assessment center performance scores from the sample group. A statistical significance level of 0.05 was used for the study. The magnitude of the correlation coefficients or level of practical significance needed to determine if a relationship existed between variables in this study was 0.20.
The findings from the study served as the bases for the following conclusions:

1. Assessment center performance and locus of control orientation were valid predictors for use in an administrative selection process.

2. The majority of prospective administrators in the sample exhibited an internal locus of control orientation which was inversely related to assessment center performance.

3. The relationships between locus of control orientation and assessment center performance as measured by the correlation coefficients ranged from slight to little, if any.

4. It was not possible to predict locus of control orientation from assessment center performance using the correlation coefficients but; it was possible to predict the overall assessment center performance rating from the individual skill dimensions.

5. Organizational ability emerged as the single most important skill dimension for prospective administrators in the sample.

6. Locus of control orientation and assessment center performance did not describe similar characteristics related to administrative potential.
ACKNOWLEDGEMENTS

This project had its origin in an intense personal and professional competition between father and daughter which began more than thirty years ago. If George Williams had not constantly insisted on the pursuit of excellence in all endeavors and on the importance of achieving increasingly difficult goals, the writer would not have attempted a project of this magnitude. Even though he is gone, a very special thank you is in order. The writer publicly acknowledges "all that I am, I owe to my father!"

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Bob and Karl Hahn, Dr. Rodney Young, Dr. Chih-Hsiang Ho, and Dr. Judy Costa helped to make order out of what seemed in chaos and to reveal the mysteries of statistics. A special thank you to young Andy Tsang who helped the writer overcome the challenges of entering data on a minicomputer and deciphering SPSSX data.
Grateful acknowledgement is owed to the writer's doctoral committee. They knew when to challenge, explain, question, laugh, and when to give the positive strokes so essential to a student's fragile self-esteem.

Words of thanks are not enough to repay the debt owed for the patience, cooperation, and understanding displayed by the writer's daughter, Elizabeth Ann Dixon. Balancing the multiple roles of mother, wife, educator, and student was often very difficult.

Finally, the writer's husband, Ivy Owen Dixon, constantly, consistently, and unselfishly provided support throughout this project. He truly demonstrated through actions which spoke louder than words that

love is patient and kind.....Love bears all things, believes all things, hopes all things......So faith, hope, love abide, these three; but the greatest of these is love. I Corinthians 13: 4, 7, 13
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CHAPTER 1

Introduction

James Bryant Conant wrote that "the difference between a good school and a poor school is often the difference between a good and poor principal (qtd. in Fields and Carrick: 17)." The U.S. Department of Education described an effective or good principal as

an administrative and instructional leader who promotes school improvement. He or she not only performs managerial and instructional tasks well, but also motivates teachers and staff to share and work for the vision of the school that will enable them to meet their own highest expectations (Office of Educational Research and Improvement 13).

William J. Bennett, then U.S. Department of Education Secretary, in the 1987 Principal Selection Guide emphasized that

the choice of principals is too important to be left to chance - with patronage, politics, favoritism, or familiarity edging out merit. Their significance demands that we make every effort to find, hire, and groom good principals who will provide the leadership that American schools need (Office of Educational Research and Improvement iii).

John Goodlad, in A Place Called School, discussed the shortcomings of the majority of administrative selection processes which were "to say the least, casual (qtd. in Zakariya: 20)." With recent national, state, and local emphasis on excellence in education and strong emphasis on accountability, the selection of school administrators has been carefully scrutinized by both the public and the profession. Comprehensive and objective selection processes were considered essential.
Five basic selection methods were described as currently used in the United States to identify effective administrators. In the *Principal Selection Guide* prepared by the Office of Educational Research and Improvement, biographical data were considered the best single predictor of future administrative performance. This was usually gathered through written application forms and recommendations from references (23).

Written tests helped determine if administrative candidates knew specific information, had particular aptitudes, or demonstrated certain skills. The application form was also used to gather information in this way (Office of Educational Research and Information 24).

In structured interviews, selecting committees established questions in advance and decided on specific appropriate responses. Every candidate was asked the same questions so that interviewers made fair comparisons (Office of Educational Research and Improvement 24).

Job sample information was gathered by observing how candidates performed during site visits, intern training, and in simulated job situations. Structured interviews and references which included questions about candidates' skills on the job also gave this type of information (Office of Educational Research and Improvement 25).

The last basic selection method described was assessment centers. This widely known, successful technique for selecting school administrators provided valid on-the-job simulations that focused on the specific qualities and abilities that characterized effective principals (Office of Educational Research and Improvement 25).
All of the basic selection methods were considered useful in identifying effective administrators. The selection methods have been used individually or in various combinations depending upon the preferences and/or resources of a particular school district to appraise administrative candidates from a theoretical and practical standpoint (Office of Educational Research and Improvement 23, 27).

Unfortunately, with the exception of the NASSP assessment center model, very little has been written concerning the validation of these basic selection methods.

An attempt to determine the degree of concurrent validity between performance on the Administrator Perceiver Interview (API) and an NASSP Assessment Center was conducted by Roger D. Breed at the University of Nebraska in 1985. He concluded the "no significant correlations existed between API total scores and NASSP Assessment Center skill dimensions (Breed 116)." Breed also stated the "performance on the API seems to provide different information concerning a candidate's potential for school administration than did the NASSP Assessment Center (126)."

The first basic selection method chosen for comparison in this study was an assessment center which measured administrative ability in terms of various skill dimensions. This basic selection method has been used by increasing numbers of school districts and was considered a valid predictor for identifying individuals with administrative potential. This selection method was chosen because it was used with volunteer administrative candidates and assistant principals in the Clark County School District, recent data were available, and it had
been validated by Schmitt and his associates at Michigan State University.

An assessment center was described as a "psychometric procedure that evaluates the generic skills required of a school administrator ("Searching" 12)." Also, "the assessment center in recent years has become one of the most significant techniques for identifying and measuring managerial and administrative potential (Moses and Byham 76)."

The assessment center concept had its origin in the study of personality theory (Klemp I.9). However, the vast majority of assessment center data described in the literature were empirical in nature.

This type of objective administrative selection process was widely used both in the United States and other countries in the private sector for a number of years. Only recently has it gained popularity in some public school systems. A partial explanation for its limited use was the fact that a significant investment in time and money was required for the development and implementation of assessment centers.

Dr. Joseph L. Moses, of AT&T, described the components of an assessment center (Moses and Byham 5). First, a "list of qualities or dimensions related to the characteristics sought in the position or job level in question" was formulated. The second component was the series of activities which produced behaviors related to the job. Finally, a group of trained individuals administered the process and interpreted the behaviors observed.
The skill dimensions of an assessment center included a combination of motivational, ability, and skill characteristics. These dimensions varied somewhat with each position or job type. However, there was a list of common managerial or administrative skill dimensions in all assessment centers. These dimensions encompassed the basic elements common to administration first outlined early in this century.

Henri Fayol, in his work on industrial management in 1916, identified five basic elements or processes common to administration which related directly to current administrative assessment center skill dimensions (Knezevich 11). They were planning, organization, command, coordination, and control. In 1937, Gulick and Urwick expanded and revised the functions of an administrator to include planning, organizing, staffing, directing, coordinating, reporting, and budgeting (Knezevich 13). Others continued to modify this basic list of elements slightly. They included both Newman and Sears in 1950, AASA in 1955, Gregg in 1957, Campbell, et al, in 1958, Newman and Summer in 1961, and Johnson, et al, in 1967 (Knezevich 13). Both the Fayol and Gulick/Urwick "POSDCoRB" descriptions of administrative functions were still considered valid today.

The instructional and managerial tasks performed by an effective administrator as described in the 1987 Principal Selection Guide were:

- establishing an atmosphere conducive to learning; setting high expectations for faculty, staff, and students; setting school goals; supervising teaching and curriculum development; communicating effectively inside the school;
- building parent and community support; building sound relations with the central office; monitoring organizational information; coordinating school activities; managing financial resources, maintaining the school building;
directing school support services, and staffing (Office of
Educational Research and Improvement 10).

The literature indicated that ability or skill level as measured
by an assessment center was not the only predictor that should be
considered in selecting effective school administrators. Campbell
stated that

it is totally unrealistic to assume that performance on a
given managerial job is unidimensional. Successful
managerial performance results from an interaction of at
least ability, personality, motivational, and situational
factors (qtd. in Rawls and Rawls: 106).

The second basic selection method chosen for comparison in this
study was a written test. This was a brief, inexpensive instrument
which described the prospective administrators' locus of control
orientation as either external or internal. This selection method was
chosen to determine if locus of control orientation, the extent to
which an individual feels personally and socially efficacious, was a
valid predictor for selecting effective school administrators
(Richford and Fortune 19).

Locus of control was a personality variable developed from Julian
B. Rotter's Social Learning Theory. Rotter explained that "the
variable of locus of control is a theoretical construct which deals
with an individual's perceptual expectancy for control over life's
events in general (Farkas 6)." Roueche and Mink stated that according
to his Social Learning Theory

Rotter hypothesized that the development of a person's locus
of control orientation depends upon his reinforcement
history -- his distinguishing when there are and are not
causal relationships between events and therefore connecting
his actions with the reinforcements (both positive and
negative) that he receives in life. Through this,
expectancies are built up be the person about the
contingencies between specific behaviors and outcomes. These expectancies of reinforcement generalize from specific situations to situations that are more or less related; therefore generalized expectancies become established in a person's mind (10-11).

Richford and Fortune described Rotter's locus of control as

a personality state-like variable which distinguishes between those individuals who attribute the positive events or reinforcements in their lives to their own initiative (internals) and those who believe that life is fundamentally chaotic (externals). Moreover, externals attribute such reinforcements to fate, chance, luck or due to the intervention of powerful others (17).

A large volume of research verified the validity of Rotter's construct. Several major reviews by Joe, Lefcourt, and Rotter of the concept-related research explained that it operated across a wide diversity of people and situations. Studies in general indicated that an internal locus of control orientation was a more positive personality trait than one that was external (Roueche and Mink 10).

The best known scale for measuring locus of control orientation was Rotter's developed in 1966. However, subsequent research described several shortcomings for this scale. An instrument developed which eliminated these shortcomings was the ANS-IE scale (Nowicki and Duke 136).

Valecha, in "Construct-Validation of Internal-External Locus of Reinforcement Related to Work Related Variables", suggested that individuals who occupied managerial positions usually had an internally-oriented locus of control (455-456). In 1981, this view was also supported by Steers in his Introduction to Organizational Behavior. James Farkas determined that "principals, as a group, have a strong internally-oriented, perceived locus of control (16)."
There was a definite need cited in the literature by William J. Bennett and others, as well as, expressed by local education practitioners to determine through the use of validated selection methods the appropriate personal qualities and skill dimensions needed for prospective administrators. This was considered absolutely essential if the emphasis on excellence and accountability in the field of education was to continue. "The selection of the best person for administrative positions is no longer a desirable goal for school districts, it is a necessity (Hipps 105)."

The focus of this study was to determine if locus of control orientation was related to assessment center performance. It was not known if locus of control orientation and assessment center performance described similar administrative characteristics. Since both measured important criteria related to an individual’s potential for school administration, it was proposed that if a relationship existed, locus of control orientation could also be considered a valid predictor for use in an administrative selection process.

Need for the Study

As U.S. Department of Education Secretary, William J. Bennett eloquently explained the general need for this type of study. He said

selecting good leaders is always important, but it is absolutely essential when they form the educational vanguard that will lead our country into the 21st century. Principals are this vanguard, and they have never faced a more important or challenging task.

During the next ten years, almost half of all current principals will retire. The quality of the men and women who take their places will greatly influence the kind of education we enjoy, and eventually, the kind of society in which we live. We must take this opportunity to fill our schools with dynamic, committed leaders, for they provide
the key to effective schools where we will either win or lose the battle for excellence in education (Office of Educational Research and Improvement iii).

In "Occupational Stress as Affected by Locus of Control and Situational Powerlessness", James Farkas stated that

school district personnel charged with the hiring of principals should begin to pay more attention, during the selection and placement processes, to the 'job-fit' between the individual, the particular assignment, and the work environment itself. Selection criteria should be expanded to include a consideration of such individual qualities as, tolerance for ambiguity, skills in handling interpersonal and role conflicts, and the ability to deal with work overload. The findings with regard to locus of control indicate that internally-oriented individuals may be better suited to handling the stresses inherent in the principal's work role (33).

In "Concurrent Validity of Two Administrator Selection Procedures", Roger Breed recommended that "the selection of effective school administrators is essential to the vitality of the public schools and as such should be given priority in practice and in future research, particularly in identifying validated selection criteria (127)." He also recommended that his study be duplicated with a larger sample group and expanded to include additional administrator selection procedures (Breed 129).

Assessment center performance described the generic skills related to the job of a school administrator. Ample evidence existed relative to the validity of assessment center performance as a predictor of administrative effectiveness (Schmitt, et al 1982). However, effective performance of an administrator was not unidimensional. The personality of the prospective administrator was also an important consideration (Rawls and Rawls 106).
Anne Davis Toppins in "Strengths and Styles of School Leaders: Is Who They Are How They Lead" investigated the relationship between leadership style and personality of school administrators as perceived by themselves and by their teachers and peers using the LEAD-Self Questionnaire and the Bipolar Inventory. The results indicated a lack of evidence that leadership was related to personality. She recommended replicating the study with a larger sample and the use of other leadership assessments and personality inventories.

The Principal Selection Guide prepared by the Office of Educational Research and Improvement explained that "few standard psychological tests are likely to be useful in helping select the right principal. There are, however, some specifically developed tests such as 'The Principal Perceiver' that have proven useful in the selection process (24)." There was a need to determine if the identification of the personality trait of locus of control was useful in an administrative selection process.

Statement of the Problem

The purpose of this study was to determine if locus of control orientation was related to the assessment center performance of prospective school administrators. It was not known if locus of control orientation and assessment center performance described similar administrative characteristics. If a relationship existed, locus of control orientation could be considered a valid predictor for use in an administrative selection process.

Five (5) research questions were formulated, investigated, and served as the bases for the collection of data in this study. The
five research questions were:

1. Will assessment center participants exhibit a predominant locus of control orientation?

2. Will the locus of control orientation for assessment center participants be inversely related to assessment center performance scores?

3. What relationships exist between the locus of control orientation of assessment center participants and overall assessment center performance?

4. What relationships exist between the locus of control orientation of assessment center participants and individual assessment center skill ratings?

5. Is locus of control orientation a valid predictor for selecting school administrators?

**Hypotheses**

The null hypotheses served as the bases for the analysis of data for each research question. Following data analysis, the null hypotheses were accepted if the level of significance or the probability of a Type I error was 0.05. The null hypotheses for this study were:

1. There will be no predominant locus of control orientation exhibited by assessment center participants.

2. There will be no inverse relationship between the locus of control orientation for assessment center participants and their assessment center performance scores.
3. There will be no significant relationship between the overall assessment center rating used for school administrator selection and the locus of control orientation score.

4. There will be no significant relationship between the individual assessment center skill ratings used for administrator selection and the locus of control orientation score.

5. Locus of control orientation is not a valid predictor in selecting school administrators.

Research Hypotheses

Expected results of the study were obtained through a review of the literature and stated in terms of research hypotheses. The research hypotheses for this study were:

1. There will be a predominant locus of control orientation exhibited by assessment center participants.

2. There will be an inverse relationship between the locus of control orientation for assessment center participants and their assessment center performance scores.

3. There will be a significant relationship between the overall assessment center rating used for school administrator selection and the locus of control orientation score.

4. There will be a significant relationship between the individual assessment center skill ratings used for administrator selection and the locus of control orientation score.

5. Locus of control orientation is a valid predictor for selecting school administrators.
Assumptions

For the purpose of this study, the following assumptions were made:

1. A statistical significance level of 0.05 was appropriate for this study.

2. An assessment center defined the generic skills related to the job of an administrator.

3. An assessment center was composed of a series of activities and techniques designed to measure generic skills related to the job of an administrator.

4. The NASSP assessment center model as used by the Nevada Assessment Center was a valid method for selecting administrators.

5. Assessors were appropriately trained in the use of behaviorally anchored rating scales and to identify, classify, and report behaviors demonstrated by assessment center participants.

6. No particular group of participants had an advantage at an assessment center.

7. Locus of control as a personality construct and/or variable was validated empirically.

8. The Nowicki-Strickland Internal-External Control Scale for adults (ANS-IE) was a valid instrument for measuring locus of control.

9. An effective school administrator exhibited an internal locus of control orientation.

Delimitations

The delimitations relative to this study were:

1. This study was limited to a quantitative descriptive,
correlation research design.

2. This study was limited to participants in the Nevada Assessment Center from fall of 1985 thru spring of 1988.

3. The review of literature was limited to the period from 1930 to the present.

4. The findings for this study were limited by the statistical treatments used with the data.

**Procedures**

A review of the literature was conducted using a variety of sources. Several computer searches using a broad range of nation-wide data bases were conducted as part of the search to ensure as complete an exploration of the existing written material as possible.

The study was based on data gathered from 170 participants in the Nevada Assessment Center from fall of 1985 thru spring of 1988. The assessment centers in this study were conducted by the Nevada Assessment Center under the auspices of the Clark County School District. The Nevada Assessment Center was part of the National Association of Secondary School Principals' National Assessment Center Project and followed its guidelines for content and structure (Yerkes 9; Jeswald 82).

All of the participants from the Clark County School District were on the "Administrative Eligibility List" or were already assigned as assistant principals. This created a relatively homogeneous sample. Participants had a minimum of three years teaching experience in Clark county, at least a master's degree, state administrative certification, and had successfully completed a highly competitive,
screening process which included written tests, a review of background and experience, plus a structured interview. The sample also included a very small number of participants from outside Clark county, Nevada. Several of the participants from other counties were vice-principals.

All participants in this study completed an assessment center. The opinion survey to determine locus of control orientation was administered outside of the assessment center during either December, 1988, or January, 1989.

Correlation coefficients among both overall assessment center performance and individual skill ratings plus locus of control orientation were developed and analyzed. Relationships among the assessment center variables were also explored.

For the purpose of this study, the individual generic skills needed to be an administrator were those identified by Hersey and his associates. They were problem analysis (PA), judgment (J), organizational ability (OA), decisiveness (D), leadership (L), sensitivity (S), stress tolerance (ST), oral communication (OC), written communication (WC), range of interest (RI), personal motivation (PM), and educational values (EV) ("Searching" 2-3).

The information and results from all the sources were summarized, questions answered, conclusions drawn, and recommendations formulated as to the relationships among assessment center performance variables and the variable of locus of control orientation as criteria for selecting administrators.

Statistical Design

The mechanics for computing the statistics for this study were
based on the *Statistical Package for the Social Sciences* outlined in the *SPSS User's Guide, 2nd Edition* and the related computer program. The Pearson-Product Moment Correlation was used to produce a matrix of correlation coefficients and related descriptive statistics (SPSSX 639-646). Multiple regression equations and associated statistics and plots were then computed and correlation matrices prepared (SPSSX 663-686). The data were analyzed using appropriate descriptive and inferential statistical techniques. A statistical significance level of 0.05 was used for this study.

**Definition of Terms**

Terms or words used in this study were defined as follows:

**Assessment Center** - event which "represents a validated process of assessing the generic skills of potential administrators ("Searching" 12)."

**Assessor** - trained individual who evaluated the performance of an assessment center participant in an objective, detached, and analytical manner (Burleson 13).

**Construct** - a term that represented an attempt to abstract the nature of an event or events (Rotter "Social Learning" 85).

**Coefficient of Determination** (R square) - a measure of the proportion of the variance in one variable "explained" by the other (Nie 279).

**Correlation Coefficient** - a pure number that expressed the degree of relationship between two sets of values considered to be directly connected (Hopkins 453).

**Decisiveness** (D) - ability to recognize when a decision is required (disregarding the quality of the decision) and to act quickly (Jeswald...
Educational Values (EV) - possession of a well-reasoned educational philosophy; receptiveness to new ideas and change (Jeswald 81).

Externals - those who believed consequences were directed by agents outside of themselves (Rouche and Mink 37).

Fact-finding - assessment center activity in which the participant read a description of a problem, sought additional information from an independent resource, and developed a solution to the problem. A report was prepared and presented orally to an observer ("Searching" 4).

Inbasket - assessment center activity in which the participant role-played and responded within a specific time period to a variety of job-related problems by using written memoranda, lists, letters, and notes ("Searching" 4).

Internals - those who believed they had some control over the payoffs in their lives (Rouche and Mink 37).

Judgment (J) - ability to reach logical conclusions and make quality decisions based on available information; skill in identifying educational needs and setting priorities; ability to evaluate critically written communications (Jeswald 81).

Leaderless Group - assessment center activity in which the participant individually reviewed background information concerning an issue, then performed a specific task in a group where consensus on a plan of action was the goal ("Searching" 4).

Leadership (L) - ability to get others involved in solving problems; ability to recognize when a group requires direction, to interact with
a group effectively, and to guide them to the accomplishment of a task (Jeswald 82).

**Locus of Control** - the extent to which persons perceived contingency relationships between their actions and subsequent outcomes (Rouche and Mink 37).

**Multiple Regression** - a prediction method that used more than one predictor (independent variable) to predict values on a predicted (dependent) variable (Hopkins 458).

**Organizational Ability (OA)** - ability to plan, schedule, and control the work of others; skill in using resources in an optimal fashion; ability to deal with a volume of paperwork and heavy demands on one's time (Jeswald 81).

**Oral Communication (OC)** - ability to make a clear oral presentation of facts or ideas (Jeswald 82).

**Pearson-Product Moment Coefficient of Correlation (r)** - a parametric test of correlation based on pairing each X score with each Y score and discovering whether the two scores vary similarly from their group means (Saville 119).

**Personal Motivation (PM)** - need to achieve in all activities attempted; evidence that work is important to personal satisfaction; ability to be self-policing (Jeswald 81).

**Problem Analysis (PA)** - ability to seek out relevant data and analyze complex information to determine the important elements of a problem situation; searching for information with a purpose (Jeswald 81).

**Range of Interest (RI)** - competence to discuss a variety of subjects—educational, political, current events, economic, etc.;
desire to actively participate in events (Jeswald 81).

**Sensitivity (S)** - ability to perceive the needs, concerns, and personal problems of others; skill in resolving conflicts; tact in dealing with persons from different backgrounds; ability to deal effectively with people concerning emotional issues; knowing what information to communicate and to whom (Jeswald 81).

**Social Learning Theory** - as described by Rotter adopted a construct point of view and derived from the principles that (1) reinforcement was not tied to physiological drives or drive stimulus reduction, and (2) in complex postinfancy behavior, it was the behavior of other humans - that is, social reinforcement - that became the more important determinant of behavior (Rotter 3-4).

**Stress Tolerance (ST)** - ability to perform under pressure and during opposition; ability to think on one's feet (Jeswald 81).

**Written Communication (WC)** - ability to express ideas clearly in writing; to write appropriately for different audiences—students, teachers, parents, et al (Jeswald 82).

**Organization of Study**

Chapter 1 presented the general background information pertinent to the topic under investigation and the need for the study. A statement of the problem was provided which included questions to be answered, as well as, assumptions, delimitations, procedures, and statistical design. It concluded with the definition of terms used and the organization of the study.

Chapter 2 reviewed the related literature that applied to the topic. There were two major divisions - assessment centers and locus
of control. The review concerning assessment centers included a description, history, purpose, and components. Followed by the theoretical and research base. It concluded with the National Assessment Center Project - NASSP and attitudes concerning assessment centers.

The review concerning locus of control included an introduction, theoretical base, description, and research base. Followed by measurement scales and application to school administrators. The chapter concluded with a summary.

Chapter 3 described the research design and the data collection procedures used in this study. The data collection section included a description of the sample and instrumentation. The chapter continued with data treatment and concluded with a brief description of the data analysis.

Chapter 4 presented the data which were analyzed and interpreted. It included an introduction, sample characteristics, assessment center performance characteristics, locus of control characteristics, and a summary of assessment center performance and locus of control characteristics. It concluded with a discussion of the findings in relation to the research questions.

Chapter 5 briefly restated the problem, then summarized the findings from the literature and the research. Followed by conclusions and recommendations, as well as, recommendations for further study.

The dissertation concluded with appendages and a list of works cited.
CHAPTER 2
Review of Literature

This study examined locus of control orientation and assessment center performance as predictors for use in an administrative selection process. Literature pertinent to the study was reviewed in this chapter. A variety of sources were used including books, periodicals, professional papers, doctoral dissertations, and information from professionals in the field. A careful search of the card catalog was conducted relative to the topics of assessment centers and locus of control. Computer searches of periodical literature were also conducted including the ERIC data base, Psychological Abstracts, Sociological Abstracts, Dissertation Abstracts, and others to ensure as complete an exploration of the existing written material as possible.

The major areas that provided background for this study were a description and discussion of assessment centers, and a description and discussion of locus of control orientation. The chapter ended with a summary.

Assessment Centers

Description

An assessment center was both a place and a process (Moses and Byham 4). It was a multimethod, multimedia, multitrait technique for the identification of specific skills needed in management and
administration (Kraut 31).

Seymour Adler, an industrial/organizational psychologist, described an assessment center as

a standardized evaluation of behavior based on multiple inputs. Multiple trained observers and techniques are used. Judgments about behavior are made, in part from specially developed assessment simulations. These judgments are pooled by the assessors at an evaluation meeting during which all relevant assessment data are reported and discussed, and assessors agree on the evaluation of the dimensions and any overall evaluation that is made (484).

Well known assessment center proponents Douglas Bray, the father of the assessment center (Craig 78-79), and Joseph Moses (Moses and Byham 3-4) both of AT&T presented similar descriptions of an assessment center. Moses explained that an assessment center was a "system used for identifying individual strengths and weaknesses for some specified purpose such as promotion, upgrade, development, or placement (Moses and Byham 3)." He went on to explain that the strengths of an assessment center were that it simulated critical behaviors related to success on the job. Also, data were pooled from a variety of sources.

Both Bray and Moses described a typical assessment center. There were usually six to twelve participants. A variety of exercises and techniques were used to measure predetermined skill dimensions. Examples of exercises and techniques were inbasket activities, group activities, leaderless group discussions, role-playing, and interviews. Sometimes paper-and-pencil tests were included.

The performance of participants was observed by a team of assessors. They were usually representatives of the organization conducting the center and were aware of the kinds of behaviors that
were needed on the job. Assessors were trained in observation, recording, and reporting techniques.

Each assessor performed more than one function. First, they conducted the assessment center exercises and observed the performance of participants. Then, an assessor also reported his or her observations to other members of the evaluation team. The team made a judgment about the observations. A report was then prepared and presented to each participant describing and evaluating the performance at the assessment center.

Moses also defined an assessment center "as a sophisticated rating process which is designed to minimize as many forms of potential rater bias as possible (Moses and Byham 4)." The objectivity of the process was enhanced by the use of multiple observers, multiple sources of information, and specifically defined objective dimensions of performance.

Bray emphasized that another important characteristic of an assessment center was that it was flexible (Craig 78). An average length was two days. It was possible to adapt it to meet the specific needs of the organization using it. The length of time for the center, its components, the role of the assessors, and the feedback process all varied.

William Byham, president of Development Dimensions International, explained that an assessment center would "use behavior to predict behavior ("Training" 70)." This occurred because the center was organized around specific dimensions that were related to job success, such as, leading, planning, etc.
History

The assessment concept as a method of personnel selection appeared very early in recorded history. More than 2,300 years ago, Plato designed a series of tests to select the guardians of his ideal republic (Tesolowski and Morgan 109). Another use of situational techniques to assess personnel was found in the Bible in the book of Judges, Chapter 7 (TielSch and Whisenand 9). The Lord instructed Gideon how to choose the best among his warriors to fight the Midianites. "Bring them down unto the water and I will try them for thee there...Separate everyone that lappeth of the water with his tongue, as a dog lappeth, him shalt thou set by himself; likewise everyone that boweth down upon his knees to drink...." Gideon chose the men that lapped, putting their hand to their mouth, rather than those who bowed down on their knees. This situational technique permitted him to separate the best 300 warriors from the rest of his army.

Some references to the assessment center concept were seen in the work of German psychologists in the early 1900's (Moses and Byham 8). There were also some studies from Harvard University in the 1930's (Tesolowski and Morgan 109). Dr. Joseph Moses, in *Applying the Assessment Center Method*, gave "the most commonly accepted date for the development of a historical frame of reference for this process as the 1940's and the work of the U.S. Office of Strategic Services (8)."

Large scale usage of the assessment center concept was first attributed to the German military psychologists prior to World War II ("Training" 69). They used multiple-assessment of leadership
capabilities to select officers. "Many features of current management assessment center programs can be traced to this source, including multiple assessors, complex situational tests and a desire to measure characteristics more complex than atomistic traits ("Training" 69)." The Japanese made use of similar "holistic" appraisal methods (Moses and Byham 262).

Great Britain adapted the approach to screen their military and civil service officer candidates during World War II (Tesolowski and Morgan 109). They "developed a better definition of leadership, used group testing techniques, such as leaderless discussion groups, conducted the first validation studies, and provided the first evidence of predictive validity ("Training" 69)."

The U.S. Office of Strategic Services (OSS) borrowed the assessment center approach from the British (Tesolowski and Morgan 109). A group of psychologists, under the direction of Dr. Henry Murray of the Harvard Psychological Clinic, developed the first widely used assessment center selection process in the United States (Moses and Byham 8). It was necessary to identify operatives who could gather intelligence information under hazardous conditions.

At a secret site near McLean, Virginia, American intelligence officers trained more than 5,000 agents to spy on the enemy ("Spy" 245). Candidates were screened for stress tolerance and the ability to solve problems under pressure, as well as, other skills needed by spies. "The OSS contributed elaborate situational exercises and better observation procedures to the evolving methodology ("Training" 69)." A description of the contribution of the OSS was found in The
After World War II, the OSS type assessment center was not found in use in the United States except in a limited way by the CIA. The British Civil Service Selection Board continued using the concept and the Australians selected candidates for their military college using the War Officer Selection Board Assessment Center. Also, South Africans used the method to identify supervisors in gold mines (Moses and Byham 9).

There was a description of an attempt to apply the assessment center method to the selection of clinical psychologists for the Veterans Administration and to the selection of psychiatrists at the Menninger Clinic (Craig 78). The results of these attempts and several others outside the United States were summarized in reports from the mid-1950's. These showed mixed results and feelings expressed by psychologists working with the centers. The use of assessment centers for personnel selection and development was not recommended. Very few psychologists during this time period suggested that this method would be useful for the business community (Craig 9).

In the early 1950's, Robert K. Greenleaf and Douglas W. Bray of AT&T developed the first assessment center for use by industry in this country (Moses and Byham 9). A longitudinal research project, Management Progress Study, was begun by Bray at AT&T to study the factors that influenced the progress of young men in management (Craig 109). From 1956 to 1960, 422 male subjects were assessed. Each person involved in the study was rated on twenty-five dimensions and a prediction made concerning the likelihood of the person being promoted.
to middle management in the next ten years. Bray did not disclose the results of the assessments to either the company or the participants (Moses and Byham 10). The results of this study helped to establish the validity of the assessment center process.

In 1958, Michigan's Bell Telephone System documented the first assessment center using laypersons as assessors instead of trained psychologists (Craig 78). By 1973, more than 100 companies used assessment centers. Companies with established centers were Standard Oil of Ohio, General Electric, IBM, AT&T, J.C. Penny, Sears, and Caterpillar Tractor.

In 1985, "William Byham, president of D.D.I., put the count of assessment centers in U.S. organizations at 2,000 - up from just 20 in 1970 - and added to that total several hundred more operating in Japan, South Africa, and Australia ("Training" 69)." A large number of federal regulatory agencies, local law enforcement departments, and public school systems were also using assessment centers (Zakariya 24).

Purpose

An assessment center may be used for many purposes depending upon the need of the organization designing it. Moses explained that the original purpose was for "selection of management personnel (Mose and Byham 11)." The centers were also used for "individualized counseling, management development, and organizational development." Another important purpose of an assessment center was to predict supervisory and management potential of participants early in their careers ("Training" 69; Kraut 31).
"To help identify and develop potentially strong building administrators" was the purpose of an assessment center according to Paul W. Hersey, director of NASSP's National Assessment Center Project ("Director" 1). Hersey explained in "Searching for Excellence" that "the NASSP Assessment Center Project was originally designed to improve the selection process for entry-level elementary and secondary school building administrators. As the project matured, a long-term professional development link was added and has become another major part of this effort (1)."

The selection of effective entry-level school administrators was certainly a primary purpose for an assessment center with the present emphasis on accountability and excellence. "With the flood of research showing the critical influence of principals and assistant principals on the success of their schools, selecting the very best candidates for these posts has become a major concern for superintendents (Michaels 23)." John Goodlad, author of A Place Called School, said

it's nonsense to wait until you need a principal to start looking for one...If we believe the principal is pivotal in a good school, we must make a deliberate search for promising candidates for the principalship before we need them. That's what businesses do and then the company has an investment in that person (Zakariya 20).

In summary, the literature described various purposes for an assessment center. An organization emphasized a single purpose or, according to its needs, used any combination. The most common purposes mentioned were selection, placement, training and career development, rapid advancement, and organization development (Cohen 31-34).
Components

The literature did not show consistent use of a single term to describe the dimensions of an assessment center. The terms qualities, characteristics, variables, or skills were used interchangeably. The dimensions evaluated in an assessment center depended upon its purpose and the organization using the center (Moses and Byham 6; Craig 84). If the purpose was to evaluate potential for advancement, then the center emphasized management abilities such as leadership, communication, and decision-making skills. Moses explained that "these dimensions should be ones that are stable and do not change rapidly over time, are observable using assessment center techniques, can be definable and meaningfully interpreted, and make sense to the organization (Moses and Byham 6)." An assessment center was then constructed and organized around the dimensions identified by the organization.

The methods for defining the skill dimensions to be assessed varied. A job analysis was needed "to uncover the initial tasks, skills and situations relevant to the demands of the job in question (Cohen 989)." It was extremely important, particularly in light of recent court decisions concerning discrimination and affirmative action, that the skill dimensions assessed truly represented those needed for the target job. Observations and experience of management representatives gathered through group interviews, brain-storming sessions, or survey forms were often used. Thomas A. Jeswald, formerly of Ford Motor Company, also mentioned the use of a critical incident approach (Moses and Byham 58). Since there was some
similarity of management functions in all organizations, dimensions from other assessment centers were sometimes considered.

According to Moses, an assessment center evaluated from eight to twenty-five different dimensions (Moses and Byham 6). In 1966, early researchers Bray and Grant factor analyzed the original AT&T dimensions to identify seven clusters of dimensions important to rating management potential (Howard 32-33). They were administrative skills, interpersonal skills, intellectual ability, stability of performance, work involvement, advancement motivation, and independence of others. Currently, skill dimensions typically used were leadership, persuasiveness, perception, flexibility, decisiveness, organizing and planning skills, problem-solving skills, and oral and written communications skills (Moses and Byham 6). They were defined in behavioral terms. Skills more easily or economically measured without simulation techniques were excluded.

The exercises and techniques used to measure the identified skill dimensions also varied with the purpose of the assessment center. Multiple techniques were necessary because no single one was capable of measuring all the skills. Moses explained that "certain techniques provide information that is highly relevant to specific skills (Moses and Byham 6)." Exercises were chosen to simulate critical behaviors necessary for job success. An organization purchased relevant ready-made exercises or designed its own.

The literature showed agreement on the types of exercises used by assessment centers. Lois A. Crooks, of Educational Testing Services, described the types of exercises most commonly used in assessment
centers as inbasket exercises, management games, leaderless group
discussions, analysis/presentation/group discussion exercises, role
playing, personal interviews, fact finding and decision making,
writing exercises, and paper and pencil tests (Moses and Byham 72-77).

The quality of assessors was a critical factor in the assessment
process. Moses stated that an assessor "must be able to assimilate a
great deal of information rapidly, must be relatively free of personal
biases, and must be perceived by his or her organization as an
effective individual (Moses and Byham 7)." Most centers had
specialized selection processes for assessors. Often they were chosen
from prior successful assessment center participants. Assessors were
at least one and often two levels in the organization above the
participants.

Assessors were trained to collect reliable data. Training
stressed the need for objective observation of behavior, as well as,
systematic and open evaluation (Adler 486). Manuals or forms were
used to "give assessors step-by-step guidance on what to observe
during an exercise, provide an organized way of categorizing the
observations relative to the dimensions being measured, and guide
assessors in describing the total exercise for use of the other
assessors who will read the report (Moses and Byham 77)." Assessors
were trained to discuss, describe, and defend their ratings with the
group of assessors to reach consensus when a difference in ratings
occurred (Craig 82).
Theoretical Base

The assessment center concept had its origins in the study of personality theory (Klemp 1.9). Henry Murray and his associates at Harvard did the pioneering work in this country concerning the study of personality using multiple observers and multiple methods to elicit and measure individual differences (Moses and Byham 187). Thomas E. Standing, Manager-Psychological Service, The Standard Oil Company (Ohio), explained that the psychologists, using behaviors observed in the assessment center process, attempted "to determine 'what goes with what' in healthy, effective people as a basis for constructing personality theory (Moses and Byham 187)." The Management Progress Study at AT&T was closer to personality research than to later applications of the assessment center method.

Adrian D. Geering, Adelaid College of the Arts and Education, stated that Kaufman in Needs Assessment provides "applicable theoretical works relative to conducting needs assessments in education and recommend[s] that needs assessments of administrative competence be conducted within a total systems concept (1)."

Research Base

James R. Huck of the Wickes Corporation discussed the research base for assessment centers in detail in Applying the Assessment Center Method (Moses and Byham 261-287). He explained that "in many respects, the research conducted on the assessment center method represents a model for much of today's applied validation research (Moses and Byham 261)." After a review of the extensive literature, Huck stated that there were over fifty studies from a variety of
organizations, researchers, and assessment procedures that showed positive findings (Moses and Byham 261). The research identified both external and internal validity for the assessment center method.

The Management Progress Study by Bray and his associates at AT&T was the best known of the external validity studies and the stability of assessment dimensions over time (Moses and Byham 266). A 1962 study at Michigan Bell also concluded that the assessment process predicted potential for advancement. Later investigations starting in 1965 with AT&T; 1967, Campbell and Bray; 1970, Finley; 1970, Jaffee, Bender and Calvert; 1974, Huck; 1976, Huck and Bray all concurred with the Michigan Bell study results (Moses and Byham 267). Work by Moses in 1971 with 5,943 individuals from Bell System companies concurred as well (Moses and Byham 268). A variety of other studies done by AT&T from 1968 to 1976 illustrated the success of the assessment center method of prediction (Moses and Byham 269).

Studies done by other companies showed similar evidence for external validity. IBM studies by Hinrichs, 1969; Wollowick and McNamara, 1969; Dodd, 1971 and Kraut, 1972 showed positive relationships between assessment center results and job success (Moses and Byham 269). In 1972, Kraut and Scott using 1,086 participants in IBM assessment centers over a span of six years, showed that assessment centers had not "demotivated" candidates and caused the loss of "well-trained, adequately performing individuals (Moses and Byham 269-270)." Additional companies able to validate their assessment centers were General Electric, Sears Roebuck, Standard Oil, and Wickes (Moses and Byham 270).
Huck explained that comparing studies was difficult because of
the differences in assessment dimensions, techniques, samples,
criterion measures, and job targets (Moses and Byham 270). However,
he used a series of independent studies over a period of years to
estimate the probability of success for assessment center
participants. The probability of selecting at random an
"above-average-performer" was 15 per cent, by management
recommendation alone was 35 per cent, and by a combination of
management recommendation and an acceptable assessment center rating
was 76 per cent (Moses and Byham 271). The use of assessment center
results doubled the probability of choosing an individual with
management potential.

After a survey of twenty different companies in 1970, Byham
showed twenty-two studies that all indicated assessment centers were
more effective than other approaches (Moses and Byham 271). There was
only one as effective and none less effective.

In 1974, Cohen, Moses and Byham reviewed assessment center
literature "focusing on the predictive accuracy of the overall
assessment center rating (Moses and Byham 271)." They indicated that
eighteen studies from a variety of organization done from 1964 to
mid-1972 consistently showed "assessment center performance related to
several criteria: the predictive accuracy was highest for job
potential, followed by progress, then job performance (Moses and Byham
271)." Even though the vast majority of research on external validity
indicated positive results, Huck stated that there still was a
continuing need for additional research.
The internal validity of the assessment center process was also of importance. Huck described research from 1958 to 1974 that investigated the advantage of using assessment center techniques, as well as, the identification and reliability of the assessment dimensions and procedures (Moses and Byham 272). In 1966, Bray and Grant showed that "the assessment center process did contribute substantially more evidence than was gained by the simple administration of paper-and-pencil ability measures alone (Moses and Byham 272)." In 1969, Wollowick and McNamara "present results which clearly demonstrate the significant incremental validities of the multiple assessment process (Moses and Byham 273)."

Differential validity was also important for assessment centers. Huck, in 1973 and 1974, and Huck and Bray, in 1976, in their work with black and white females, showed that "assessment center procedures result in a high degree of predictive validity for both white and black female supervisors (Moses and Byham 279-280)." The Management Progress Study results closely paralleled these findings. In 1975, Moses and Byham compared assessment center performance of 4,846 women with 8,885 men from the same assessment program (284). They concluded that "assessment centers are both valid and "fair" for identifying management potential of women as well as men (Moses and Byham 284)."

In 1971, Donald W. MacKinnon, University of California, Berkeley also described in detail the majority of early studies discussed by Huck, as well as others, in "An Overview of Assessment Centers."

Research on assessment centers in the 1980's continued in the pattern set during the past ten to fifteen years (Muchinsky 139).
However, investigations were also now addressing issues other than reliability and validity of assessment ratings.

An important study was from an independent research team at Michigan State University who did a three year validity study for NASSP's National Assessment Center Project (Yerkes 9). In a 1983 interview in the "NASSP News Leader," Hersey described the objectives of the study which were to examine the internal validity of the process, to examine content validity of the exercises, and "to establish that the Assessment Center ratings (a reflection of the work done in assessment simulations) were indeed related to subsequent job performance as an administrator (1)."

The work of Neal Schmitt and his associates, from 1979 to 1982, was divided into four major sections: internal validity, criterion-related validity, school climate, and summary of expert opinions (1). The conclusion of the Criterion-Related and Content Validity of the NASSP Assessment Center stated that

we see the assessment center as a content valid procedure for the selection of school administrators. Evidence concerning its criterion-related validity is also positive, especially as it relates to supervisory performance ratings. Further, assessment center ratings are related to later student perceptions of school climate (2).

National Assessment Center Project - NASSP

Assessment centers were found in wide use by business and industry during the last twenty-five years, but not in education. During the 1970's, the assessment center approach began to appear in the field of education (Baltzell and Dentler 34). In 1975, the National Association of Secondary School Principals and a blue-ribbon committee from the Division of Industrial/Organizational Psychology of
the American Psychological Association established an assessment center for educators (Hersey "NASSP" 370). The original purpose of the assessment center was to assist school districts in "selecting potentially successful administrators (Hersey "Introduction" 74)."

Two nationally known industrial psychologists and assessment center experts worked with the design and implementation phases of the project. Joseph L. Moses of AT&T, 1974-76 chairman of the APA Public Policy and Social Issues Committee, described the design concepts and Thomas A. Jeswald of R.R. Donnelly & Sons, then current chairman of the APA Division 14 Committee was the lead technical advisor assisting with developmental and operational requirements (Hersey "Introduction" 74-75). Paul W. Hersey, then director of Professional Assistance, NASSP, assumed the role of director for the project and completed the preliminary research by collecting information from school systems throughout the country relating to job requirements and skills needed for administrators.

The Prince William County and Charlottesville, Virginia school districts were chosen for the pilot project in 1975 (Hersey "Introduction" 75). Since that time, the NASSP assessment project grew and doubled in size each year since 1981 with 40 comprehensive projects functioning in the United States, Canada, and Germany as of January, 1986 (Hersey "Selecting" 1). By September 1985, more than 3,500 participants and 1,900 trained assessors participated in the project (Hersey "Selecting" 2).

After extensive interviews with teachers and administrators, twelve generic skill dimensions were identified and defined as the
most important characteristics of successful school administrators 
(Hersey "NASSP" 370). They were problem analysis, judgment, 
organizational ability, decisiveness, leadership, sensitivity, stress 
tolerance, oral communication, written communication, range of 
interest, personal motivation, and personal values.

Specific activities and exercises were designed as data sources 
for the assessment and described in the NASSP pamphlet "Searching for Excellence?" (2). Simulation exercises were used because they "assess 'samples' of actual behavior." Types of individual and group 
activities and exercises were leaderless group discussions, inbaskets, 
fact-finding, and interviews. Some assessment centers also used 
paper-pencil tests.

A center took most of two eight-hour days for participants and 
five days for assessors to complete ("Searching" 6). There were 
defne participants, six assessors, and a director. Assessors 
observed, recorded, and reported the participants' behavior. 
Participants were observed by different assessors during each activity 
("Searching" 7).

Assessor selection and training was of critical importance to the 
success of a NASSP assessment center. Assessors had to be highly 
qualified and successful administrators from the principal level or 
above ("Searching" 9). The assessors received training prior to the 
center in observing and recording behavior, in writing objective and 
comprehensive reports, and in reaching consensus during group 
discussions ("Searching" 7). Initial NASSP training took four days 
and included the use of "training manuals, standardized report forms,
final report writing guides, and other uniform processes to increase the reliability of assessors' observations and written reports ("Searching" 9)." Baltzell and Dentler in Selecting American School Principals, stated assessors "must be accurate, precise, and comfortable with the 'behavioral evidence' approach to observation and evaluation of staff (35)." The assessor team had to have a balance of race, sex, school principals, and district administrators (Baltzell and Dentler 35).

The assessors met as a group to discuss the observations of the participants. A consensus discussion was held for each participant and each skill dimension was given a rating. A written report was prepared for each participant identifying strengths and weaknesses. The report was carefully discussed in a confidential feedback conference with the director of the center ("Searching" 8).

In 1979, a validation study for the NASSP project was begun at Michigan State University and was funded by the Rockefeller Family Fund (Hersey "NASSP" 371). In 1981, the Spencer Foundation funded an additional year for the validation study which covered the areas of content validity, criterion or predictive validity, internal validity, realistic job preview information, and school climate. The results of the study were positive.

The NASSP Assessment Center Project has been functioning for more than ten years. It "represents a validated process of assessing the generic skills of potential school building administrators and can lead to the identification of superior administrators who will serve
as successful leaders in schools ("Searching" 12)."

**Attitudes Concerning Assessment Centers**

The majority of literature available from the public sector summarized attitudes concerning assessment centers in a positive manner. No authors were found criticizing the concept as a whole or its validity as a selection, development, and training tool. Because of the wide variety of individuals expressing opinions, a selection of quotations illustrated attitudes concerning assessment centers.

The literature that described assessment centers for school district administrators presented positive attitudes on the part of those involved in the process. In "How to Add Snap, Crackle, and Pop to Principal Selection", by Sally Banks Zakariya, John Goodlad author of *A Place Called School*, was somewhat critical of the assessment center method (23). He said "assessment centers are good beginnings but the performance standards they use tend to be routinized and behavioristic (Zakariya 23)." Robert Dentler, co-author of *Selecting American School Principals*, in the same article said that the NASSP centers were among the most promising selection approaches he studied (Zakariya 23).

Jack C. Van Newkirk, director of personnel and staff development, Portsmouth, Virginia Public Schools, in the article "NASSP's Assessment Center: The Portsmouth, Va., Public Schools," said the vast majority of candidates had only positive comments regarding their experience. Most said they wished that they had had the opportunity to experience something like the Assessment Center during their graduate work; preferably prior to the completion of degree requirements. At that point, it would have been less difficult to have changed their career direction (89).
Ron Jones, director of staff development for Jefferson County Schools, Birmingham, Alabama, in "NASSP's Assessment Center: Jefferson County School District, Birmingham, Ala.," stated that the assessment center "increased evaluation and management skills, [is] a fair and objective process, identifies the role and expectations of a building manager, [is] being more honest with potential candidates, and [is] restoring credibility to administrative employment practices (95)."

Locus of Control

Introduction

James Farkas explained that

the variable of locus of control is a theoretical construct which deals with an individual's perceptual expectancy for control over life's events in general. As such, it can be measured as a general personality variable; and it may be anticipated to differ in degree from one individual to the next depending upon one's past history of reinforcement. Numerous studies indicate that locus of control is not a dichotomous variable that is evidenced only in absolutes of one orientation (internal) or another (external). Rather, the construct is multidimensional in nature; and each person may exhibit a combination or blend of its dimensions simultaneously. However, one orientation usually predominates to a greater degree relative to the other (4).

Westbrook and Viney explained that "an important aspect of people's experience is their perception of control; whether they perceive their behavior as determined by their own choice or whether they perceive it as determined by forces beyond their control (167)."

Julian Rotter used the terms "internals" versus "externals" as descriptors (Rotter "Generalized" 171). In Personal Causation: The Internal Affective Determinants of Behavior, DeCharms used the terms "origin" and "pawn" to distinguish these perceptions. He suggested that people have a tendency to a predominance of origin or pawn perceptions but these fluctuate according to situations encountered (Westbrook and
Johnson, et al, in "The Role of Locus of Control in Leader Influence Behavior" outlined the multidimensionality of the locus of control construct by explaining that Bar-Zohar and Nehari propose three dimensions of locus of control, i.e. behavioral outcomes (success versus failure), control ideology (personal control over one's own life versus a general belief in people's ability to control their environment), and situational contents (different situations evoke different locus orientations) (62).

Theoretical Base

In his 1954 book, Social Learning and Clinical Psychology, Julian Rotter outlined his Social Learning Theory. This served as the impetus for the development of locus of control of reinforcement as an important personality construct by Rotter in Generalized Expectancies for Internal Versus External Control of Reinforcement, by Rotter, Seeman and Liverant in Decisions, Values and Groups, and by Rotter, Chance and Phares in Applications of a Social Learning Theory of Personality (Nowicki and Duke 136).

In his Social Learning Theory, Rotter developed seven postulates or principles. The most important one for the purpose of this study was

7. The occurrence of a behavior of a person is determined not only by the nature or the importance of the goals or reinforcements, but also by the person's anticipation or expectancy that these goals will occur. Such expectations are determined by previous experience and can be quantified (Rotter "Social Learning" 102).

Rotter explained that "a reinforcement acts to strengthen an expectancy that a particular behavior or event will be followed by that reinforcement in the future. Expectancies generalized from a
specific situation to a series of situations which are perceived as related or similar (Rotter "Generalized" 172)."

Rotter also stated that "this Social Learning Theory utilizes three basic constructs in the measurement and prediction of behavior...behavior potential, expectancy, and reinforcement value (Rotter "Social Learning" 105)." The Social Learning Theory included four broader or more general descriptive concepts - need, potential, freedom of movement, need value, and the psychological situation (Rotter "Social Learning" 184).

An important basic assumption of the Social Learning Theory was above all else, SLT adopts a construct point of view. That is, we regard scientific terms as constructs - abstractions of some aspect or aspects of events. The ultimate test of their validity is their utility in prediction (Rotter 4).

Description

Locus of control orientation was described as "distributing individuals according to the degree to which they accept personal responsibility for what happens to them (Lefcourt 207)." Rotter described locus of control reinforcement as

when a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control (Rotter "Generalized" 171-172).

Roueche and Mink explained that "those who believe they have some control over payoffs in their lives are called internals. Externals
on the other hand, believed consequences were directed by agents outside of themselves (37)."

Some examples of internal versus external locus of control orientation described by Rotter were:

<table>
<thead>
<tr>
<th>INTERNAL</th>
<th>EXTERNAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>I more strongly believe that:</td>
<td>or</td>
</tr>
<tr>
<td>Promotions are earned through hard work and persistence.</td>
<td>Making a lot of money is largely a matter of getting the right breaks.</td>
</tr>
<tr>
<td>When I am right I can convince others.</td>
<td>It is silly to think that one can really change another person's basic attitudes.</td>
</tr>
<tr>
<td>Getting along with people is a skill that must be practiced.</td>
<td>It is almost impossible to figure out how to please some people.</td>
</tr>
</tbody>
</table>
| In our society a man's future earning power is dependent upon his ability. | Getting promoted is really a matter of being a little luckier than the next guy.  
("External" 42) |

Rotter felt that there were certain characteristics that were exhibited by individuals along the locus of control orientation continuum. Those who tended to be externals "might be relatively passive in any attempts to change the world.....might not tend to actively seek to better or improve or condition (Rotter, Seeman and Liverant 475). Those in the middle of the continuum would "believe that although they cannot change the world much, they can by greater understanding of it increase their own satisfaction.....Some of these people would undoubtedly be described as opportunists.....anxious to learn the rules of the game (Rotter, Seeman and Liverant 475)."
Finally, those individuals with "a still greater belief in internal control may include those who believe in their own potential to change the environment or world around them (Rotter, Seeman and Liverant 475)."

Rotter described internals and externals in layman's terms as some persons are confident that they control themselves and their destinies. They tend to be surer of themselves, richer and better educated, and to be more readily able to quit smoking. They are internals. Other persons feel that their fates are in the hands of powerful others, that they are pawns, and they tend to be docile and suspicious. They cry a lot. They are externals ("External" 37).

In his article "External Control and Internal Control", Rotter used William Ernest Henly's famous poem "Invictus", to describe an individual with an internal locus of control orientation. He quoted

Out of the night that covers me,  
Black as the pit from pole to pole,  
I thank whatever gods may be  
For my unconquerable soul.  
In the fell clutch of circumstance  
I have not winced nor cried aloud:  
Under the bludgeonings of chance  
My head is bloody, but unbow'd.  
Beyond this place of wrath and tears  
Looms but the Horror of the shade,  
And yet the menace of the years  
Finds and shall find me unafraid.  
It matters not how straight the gate,  
How charged with punishments the scroll,  
I am the master of my fate:  
I am the captain of my soul (Rotter "External" 39).

Research Base

Joe in "Review of the Internal-External Control Construct as a Personality Variable," Lefcourt in "Internal Versus External Control of Reinforcement", and Rotter in Generalized Expectancies for Internal Versus External Control of Reinforcement presented
reviews which gave a large quantity of studies which verified the validity of the internal-external locus of control concept (Roueche and Mink 59). The fact that a variety of techniques were used to successfully measure locus of control orientation provided support for the construct validity of that dimension (Lefcourt 217). The major adult measure of locus of control was a modification of the earlier instruments by Phares and James and was described by Rotter and his associates in their work published in 1966.

Considerable research has been done concerning locus of control orientation in adults by using the Rotter I-E Scale along with a few other measures in well over 100 studies in the fifteen years prior to 1973 (Nowicki and Strickland 148). Nowicki and Duke described extensive validation for the CNS-IE and ANS-IE as alternative measurement scales and reported several other studies indicating that ANS-IE scores related appropriately to psychopathology, anxiety, etc., as Social Learning Theory would predict (Roeche and Mink 61). Roueche and Mink explained that this scale overcomes some of the problems of the Rotter scale — social desirability, denial of psychopathology, a better predictive of achievement behavior, easier to read and understand — but still compares favorably to the Rotter scale as far as validity and reliability are concerned. Also, it compares more favorably than Rotter's scale as a predictive based on Social Learning Theory. It further and importantly serves as a measure of control expectancy, as well as, success expectancy. Since the ANS-IE is an adaptation of the CNS-IE, its generalizability is increased (61).
Measurement Scales

The majority of locus of control research used the Rotter I-E Scale. It was a "forced-choice 29 item scale for measuring an individual's degree of internal or external control (Rotter "Internal" 42)." Rotter explained that the most significant evidence of the construct validity of the I-E scale comes from predicted difference in behavior for individuals above and below the median of the scale or from correlations with behavioral criteria. A series of studies provides strong support for the hypotheses that the individual who has a strong belief that he can control his own destiny is likely to (a) be more alert to those aspects of the environment which provide useful information for his future behavior; (b) take steps to improve his environmental condition; (c) place greater value on skill or achievement reinforcements and be generally more concerned with his ability, particularly his failures; and (d) be resistive to subtle attempts to influence him ("Generalized" 210).

In recent years the scale has received much criticism. Mirels and others have demonstrated the multidimensionality of this scale (Roueche and Mink 59). "The scale has been criticized for its relationship with social desirability, for confounding different types of locus of control, and for difficult reading level (Nowicki and Duke 136)." Cone in 1971 and Gold in 1968 showed the scale consistently related to social desirability (Roueche and Mink 59).

The Nowicki-Strickland Internal-External Scale (ANS-IE) was able to overcome the shortcomings of the Rotter I-E Scale. The forty items were written so that the test could be taken by adults with as low as a fifth grade reading level. It was based on the Children's Nowicki-Strickland Internal-External Scale (CNS-IE) and was keyed so that the higher the score the more external the locus of control orientation (Nowicki and Duke 136). Mink and Roueche stated that
"this scale has shown very acceptable psychometric characteristics (60)." The ANS-IE was a self-report instrument in the form of an opinion survey and could be completed in approximately fifteen minutes. The directions were self-explanatory and participants circled either yes or no for each question based on personal beliefs.

Application to School Administrators

James Farkas in "Occupational Stress as Affected by Locus of Control and Situational Powerlessness" explained that principals, as a group, have a strong internally-oriented, perceived locus of control. By the very nature of their role, principals are expected to be the kind of individuals who are educational managers capable of making independent decisions that direct and influence the school organizations for which they are responsible. The findings indicate that the principals believe that some form of purposeful, directed control generally governs events in their lives; and they perceive themselves as the individuals who are 'in control' (16).

Farkas also cited work done in 1981 by both Valecha and Steers which suggested that individuals in management positions were more likely to exhibit the characteristics associated with an internally-oriented locus of control (4).

M.L. Richford and and Jim Fortune in "The Secondary Principal's Job Satisfaction in Relation to Two Personality Constructs" used a questionnaire to investigate manipulativeness, job satisfaction, and locus of control with a group of 225 secondary school principals. Their results showed that external locus of control was positively associated with manipulativeness and low job satisfaction. Internal locus of control was positively related to nonmanipulativeness and high job satisfaction for the school principals (Richard and Fortune 17-20).
Newman, et al, in "Locus of Control as an Influencer of School Evaluation Needs" stated that

it appears that locus of control is a viable construct for examination of the decision-making process and the use of evaluative information. The consistency of the findings indicate, at least for educators, that the variable relates to reactions and opinions affecting evaluation information use. Overall, subjects with external locus of control want more information, more informal contacts, and are less supportive of new programs than internal subjects (549).

Lester M. Snyder Jr. stated that "externals appear to be more susceptible to influence attempts than do internals (233)." Powell and Vega in describing various locus of control studies explained that "individuals obtaining a more internal locus of control score.....have been found to have a higher need achievement.....be less anxious.....and to have a greater need for social approval than individuals obtaining a relatively greater external score (455)."

Victor Clark Joe also described a number of locus of control studies and stated that their "findings depict externals, in contrast to internals, as being relatively anxious, aggressive, dogmatic, and less trustful and more suspicious of others, lacking in self-confidence and insight, and having low needs for social approval (623)." It seemed from the studies reviewed that an internal locus of control orientation was a much more positive personality trait for school administrators than one that was external.

Rawls and Rawls in "Recent Trends in Management Selection" stated that

there is presently a movement away from the old model and single criterion measures towards a systems view of selection. Since management selection does not take place in a neat, unidimensional world, managerial performance must be viewed as a product of many interacting variables (106).
The managerial and instructional skill level of a prospective school administrator should be considered in relation to the variable of his/her personality if the most effective individuals are to be selected.

**Summary**

The first section of the review of the literature presented a thorough investigation of assessment centers. It included a description, history, purpose, components, along with both the theoretical and research base. It continued with a discussion of the National Assessment Center Project - NASSP, and attitudes concerning assessment centers.

The second section of the review of the literature presented a thorough investigation of locus of control. It included an introduction, theoretical base, description, and research base. It concluded with measurement scales, application to school administrators, and a summary.

The findings from the literature discussed in Chapter 1 and this chapter were:

1. An effective school administrator was both an administrative and instructional leader, promoted school improvement, and motivated staff.
2. Current administrative selection processes were often casual and often did not include validated procedures.
3. Basic administrative selection methods currently used were biographical data, written tests, structured interviews, job samples, and assessment centers.
4. The basic administrative selection methods were used individually or in various combinations depending upon the preference and/or resources of a particular school district.

5. With the exception of the assessment center model developed by the National Association of Secondary School Principals, very little was written concerning the validation of selection methods for school administrators.

6. Assessment centers were widely known, successful methods for selecting school administrators.

7. Locus of control was a validated personality variable which operated across a wide diversity of people and situations.

8. Internal locus of control orientation was a more positive personality trait than one that was external.

9. The best known scale for measuring locus of control orientation was developed in 1966 by Julian Rotter but; subsequent research described several shortcomings for the scale.

10. The Nowicki-Strickland Internal-External Scale for adults (ANS-IE) eliminated the shortcomings of the Rotter scale and was a valid instrument to describe locus of control orientation.

11. Individuals in managerial positions and school principals, as a group, had an internal locus of control orientation.

12. Internal locus of control orientation of school principals was positively related to nonmanipulativeness, high job satisfaction, and the ability to cope with stress. It was also related to the decision-making process and the use of evaluation information by school principals.
13. There was a need to determine through the use of validated selection methods both appropriate personal qualities and skill dimensions needed by prospective school administrators.
This chapter began with a description of the research design for this study. Followed by data collection which included a description of the sample and instrumentation, and data treatment. It concluded with a brief description of the data analysis.

Research Design

A quantitative descriptive, correlation research design was utilized in this study. Isaac and Michael explained that the purpose of descriptive research was to "describe systematically the facts and characteristics of a given population or area of interest, factually and accurately (46)." Best and Kahn outlined the characteristics of descriptive research studies as those which involve hypothesis formulation and testing, .....use the logical methods of inductive-deductive reasoning to arrive at generalizations, .....employ methods of randomization so that error may be estimated when inferring population characteristics from observations of samples, .....describe variables and procedures as accurately and completely as possible so that the study can be replicated by other researchers, .....and are nonexperimental, for they deal with relationships between nonmanipulated variables in a natural rather than artificial setting. Since the events or conditions have already occurred or exist, the researcher selects the relevant variables for an analysis of their relationships (90).

Hopkins stated that "descriptive research seeks to answer those questions about the present state of affairs which have implications beyond the limits of the subjects or other elements studied (272)."
He explained that descriptive research can be viewed as having two distinct parts. First, the study by description provides the required data about present conditions. Second, the phase of establishing the meaning takes the data collected for the present study and by contrasting, comparing, or identifying relationships, forms conclusions about what these data mean to education in general (Hopkins 273).

Descriptive research was divided into two broad categories representing quantitative and qualitative approaches (Mason and Bramble 36). In Understanding and Conducting Research, Mason and Bramble described quantitative descriptive research as that which "uses measurement and statistical principles and models.....involves quantification of the phenomena under study (36)." Ex post facto research, correlation research, developmental research, and survey research were also described as quantitative descriptive (Mason and Bramble 36).

This study consisted of the collection of two sets of scores from a sample (n=120) of subjects and the preparation of correlation coefficients among these sets of scores.

The research methodology used was a normative survey approach (Jones 139). Survey research was described as a method of systematic data collection which was quantifiable and accounted for a substantial proportion of the research done in the field of education.

The data collecting tools or techniques used were an examination of the assessment center participants' records and an opinionnaire to determine locus of control orientation (Borg and Gall 283-285). Locus of control orientation results for each prospective administrator were composed of a single score ranging from zero to forty. Assessment
center results for each prospective administrator were composed of thirteen scores ranging from one to eleven.

Borg and Gall explained that "correlational studies include all those research projects in which an attempt is made to discover or clarify relationships through the use of correlation coefficients (475)." They also explained that

the purpose of the correlation coefficient is to express in mathematical terms the degree of relationship between any two variables.... Thus the correlation coefficient is a precise way of stating the extent to which one variable is related to another (Borg and Gall 475-476).

Isaac and Michael stated that correlational research

is appropriate where variables are very complex and/or do not lend themselves to the experimental method and controlled manipulation. Permits the measurement of several variables and their interrelationships simultaneously and in a realistic setting. Gets at the degrees of relationship rather than the all-or-nothing question posed by experimental design: 'Is the effect present or absent?' (49).

The advantages of a correlation design were that it permitted the researcher to measure a great number of variables and their interrelationships simultaneously and provided information concerning the degree of relationship between the variables being studied (Borg and Gall 477-478).

Data Collection

Approval of the data collection procedures and schedule of collection within the Clark County School District was secured from the Associate Superintendent of Personnel Services of the Clark County School District in July of 1986 and again in October of 1988. Similar approval was also secured from the Director of the Nevada Assessment Center in July of 1986. The data were gathered over a period of four
years using two separate procedures. The researcher was provided the
data summary from the Nevada Assessment Center on June 14, 1988. The
researcher prepared the opinion survey packets for mailing in

Sample

Borg and Gall stated that "the general rule is to use the largest
tax emphasis possible" and that "in correlation research it is generally
desirable to have a minimum of 30 cases (194-195)." They also quoted
Seymour Sudman concerning survey research and stated he "suggests that
there be at least 100 subjects in each major subgroup and 20 to 50 in
each minor subgroup whose responses are to be analyzed (Borg and Gall
195)." Isaac and Michael explained that "large sample statistics
involve smaller sampling errors, greater reliability, and increase the
power of the statistical test applied to the data (96)."

The population for this investigation was all 170 individuals who
had completed an assessment center conducted by the Nevada Assessment
Center. The sample for this study also encompassed all 170
participants in the Nevada Assessment Center from its inception in
fall of 1985 thru spring of 1988. The sample met the guidelines
outlined by Borg and Gall.

E.R. Babbie, in Survey Research Methods, explained what was an
adequate percentage of survey returns to allow conclusions to be drawn
with "50 percent is adequate for analysis and reporting; 60 percent is
good; and 70 percent is very good (165)." He also stated that "a
demonstrated lack of response bias is far more important than a high
response rate (Babbie 165)."
Hopkins, in discussing sample size, stated that an accepted practice when figuring the rate of return is to reduce the potential sample size by the number of undeliverables and figure the percentage by dividing the number of returns by the net sample size (number mailed less those undelivered)....This procedure of taking net sample size for the denominator assumes that the undeliverables represent a random sample of the original sample. Any independence from bias would be difficult to establish because of the characteristics of a population that is not locatable (299-300).

A total of 170 opinion surveys were sent by U.S. mail and ten were returned as undeliverable. This reduced the sample size to a net sample of 160. There were 127 surveys returned for a 79 per cent rate of return. However, one survey arrived after the statistics were computed and six were incomplete which resulted in 120 surveys or 75 per cent that were used for statistical analysis. Without application of the formula there was a 75 per cent rate of return and 71 per cent of the surveys which were used for statistical analysis.

With or without the application of the formula, the return rate and percentage of usable surveys were both above 70 per cent and fell in the very good category for analysis and reporting described by Babbie. The researcher determined that a lack of response bias was associated with the high response rate.

All of the participants from the Clark County School District were on the "Administrative Eligibility List" or were already assigned as assistant principals. This created a relatively homogeneous sample. They had a minimum of three years teaching experience in Clark county, at least a master's degree, and had successfully completed a highly competitive screening process which included written tests, a review of background and experience, plus a
structured interview. The sample also included a very small number of participants from outside Clark county, Nevada. Several of the participants from other counties were vice-principals.

**Instrumentation**

All participants were assigned a code number by the assessment center secretary in place of their name to ensure anonymity.

Two procedures were used with the sample group. They were an assessment center and an opinion survey. There was an established reliability and validity for both the NASSP assessment center and the Nowicki-Strickland Internal-External Control Scale for Adults described in the literature.

There were fifteen assessment centers conducted by the Nevada Assessment Center according to NASSP guidelines from 1985 thru 1988. Each assessment center took two days to complete and consisted of a leaderless group activity, an assigned-role activity, a fact-finding activity, two written inbasket activities, and a personal interview ("Searching" 2).

Each activity was coded according to the skill dimensions it contained. The skill dimensions used in this assessment center and described by Jeswald were problem analysis (PA), judgment (J), organizational ability (OA), decisiveness (D), leadership (L), sensitivity (S), stress tolerance (ST), oral communication (OC), written communication (WC), range of interest (RI), personal motivation (PM), and educational values (EV) (81-82).
The six trained assessors observed, recorded, and reported the participants' behavior. Participants were observed by different assessors during each activity ("Searching" 7). The assessors then met as a group to discuss their observations. A consensus discussion was held for each participant and a numeric skill descriptor given for each of the twelve skill dimensions plus a numeric overall performance rating descriptor.

A written report which identified strengths and areas for improvement was prepared for each participant. The report was discussed in a confidential feed-back session with the director of the assessment center ("Searching" 8).

The director of the Nevada Assessment Center provided a sixteen page computer print-out for the 170 assessment center participants which included demographic data and a listing of both individual skill descriptors and overall performance rating descriptors ranging in value from one to eleven. The print-out used code numbers instead of names for the participants.

The assessment center individual skill descriptors were identified as:
1. no skill
2. less than little skill
3. little skill
4. a less than moderate degree of skill
5. a moderate degree of skill
6. a more than moderate degree
7. a moderate to high degree
8. a high degree of skill
9. a more than high degree
10. a high to very high degree
11. a very high degree of skill.

The assessment center overall performance rating descriptors were identified as:
1. a poor candidate
2. a below average to poor candidate
3. a below average candidate
4. an average to below average candidate
5. an average candidate
6. a better than average candidate
7. a very good to average candidate
8. a very good candidate
9. a better than very good candidate
10. an outstanding to very good candidate
11. an outstanding candidate (Aldrich 17).

Each assessment center participant was asked to complete an opinion survey outside of the assessment center during December, 1988 to determine locus of control orientation. The survey was composed of forty questions with either a yes or no answer (Rouche and Mink 62-66). The survey was group-referenced and keyed to an external locus of control orientation. The lower the score, the more internal the locus of control orientation for the individual (Rouche and Mink 19). Each survey was hand-scored by the researcher and a locus of control score from zero to forty assigned for each participant who
responded with an appropriately completed survey.

The data collection for the opinion survey involved the assessment center secretary to ensure the confidentiality of the assessment center data. For the first mailing, a home address label was provided for each assessment center participant. The secretary attached the label to the stamped envelope with the appropriate code number in the upper left-hand corner and mailed the envelopes.

Each envelope contained:

1. a cover letter which included directions and explained the purpose of the study plus the use of the code number for each assessment center participant,

2. an opinion survey with the appropriate assessment center participant code number in the upper left-hand corner,

3. a stamped return envelope, and

4. a small candy cane.

Subject participation for the survey was on a voluntary basis. Only those surveys with all questions answered as directed were used in this study. Only surveys returned by February 8, 1989 were included in the statistical treatment and analysis. Code numbers on the survey were used to indicate those individuals who did not respond.

The original response rate fell slightly below 70 per cent. In January, 1989, the non-respondents were sent a duplicate opinion survey with a second cover letter encouraging them to participate.
The list of code numbers for surveys not returned was given to the assessment center secretary who provided a set of school address labels for those individuals and mailed the follow-up information. With the second mailing, the response rate exceeded 70 per cent.

It was not possible to conduct a telephone survey of the remaining non-respondents because the researcher was not permitted access to their names. No further follow-up was attempted.

Data Treatment

The data were entered into a Sun 3/280 ("uns-helios") minicomputer associated with University of Nevada Computing Services, Las Vegas. The mechanics for computing the statistics for this study were based on the Statistical Package for the Social Sciences outlined in the SPSS User's Guide, 2nd Edition and the related computer program. The Pearson Product Moment Correlation was used to produce a matrix of correlation coefficients and related descriptive statistics (SPSS 639-646). Multiple regression equations and associated statistics and plots were then prepared and correlation matrices constructed (SPSS 663-686). The statistical significance level used was 0.05.

The data collected for locus of control orientation and assessment center performance were defined according to S.S. Stevens' traditional classification for levels of measurement (Nie 4). It was determined that they were interval level measurements because in addition to ordering, the data had the property that the distances between the categories were defined in terms of fixed and equal units (Nie 4).
The possibility that the data might fit in the ordered metric level of measurement as defined by Coombs was also considered (Nie 6). He expanded on Stevens' four-level typology by adding two more levels and stated that falling between the ordinal and interval levels, an ordered metric consists of ordered categories where the relative ordering of the inter category distances is known even though their absolute magnitude cannot be measured (Nie 6).

Since this study was exploratory in nature, the decision to use interval level statistics was justified with the positions taken by Abelson and Tukey, as well as, Labovitz who explained "that, except for extreme situations, interval statistics can be applied to any ordinal-level variable (Nie 6)."

In Understanding and Conducting Research, Mason and Bramble explained a test might be used as an interval scale because between successive points one the scale is one item.....Items on the test may vary considerably in difficulty, and the difference between consecutive scores, while representing a single item, may not correspond to equal increments of actual.....achievement. As a general practice, however, this is ignored in education, and such measurements are considered to be interval (150).

The Pearson Product Moment Correlation and a stepwise multiple regression treatment of the data were selected after consultation with faculty members of the mathematics department of the University of Nevada, Las Vegas, Clark County School District staff with statistics and testing expertise, and statisticians from the private sector.

The Pearson Product Moment Correlation was chosen to compare the locus of control orientation and the assessment center performance scores because it was considered to be the basic measure of
association, most often used, and most precise coefficient of
correlation (Best and Kahn 234). It provided zero-order correlation
coefficients which were best suited for normally distributed data with
an interval level scale (Nie 8). Nie, et al, in the SPSS-
Statistical Package for the Social Sciences also stated that
this type of bivariate correlation analysis provides the
researcher with a technique for measuring the relationship
between two variables and produces a simple summary
statistic describing the strength of the association: this
statistic is known as the correlation coefficient (8).

Borg and Gall explained that "the product-moment correlation is
subject to a smaller standard error than the other techniques...and
is generally preferred when its use is possible (488)." Charles
DuVall explained that
the product-moment correlation coefficient is properly used
to describe the strength (and, by its sign, the direction,
of the relationship between two continuous variables, each
of which has been measured so as to yield at least
interval-quality data and each of which may be assumed to be
normally distributed in the population of interest. In
plain language, this means: (1) both of the underlying
attributes involved could exist in any amount in a given
case (no matter how coarsely they are measured) and not in
just discrete amounts; (2) equal differences in the amounts
of these two attributes have the same "significance," no
matter what the absolute values involved may be; and (3)
both of these attributes are more or less symmetrically
distributed in the population of interest, as opposed to
there being a very few having much more or less of either of
them than most of the other cases (Jones 315-316).

The multiple correlation technique chosen for this study was
multiple regression. Multiple correlation is one type of multivariate
measure of association and was described in Methods and Techniques of
Educational Research as
an extension of product-moment correlation. It is used to
assess the relationship between an optimally weighted
combination of two or more continuous, interval-quality,
normally distributed variables and a single criterion variable of the same type (Jones 324).

Cohen and Manion noted that

multiple correlation measures indicate the degree of association between three or more variables simultaneously. Multiple correlation, or regression as it is sometimes called, indicates the degree of association between n variables. It is related not only to the correlations of the independent variable with the dependent variables, but also to the intercorrelations between the dependent variables (129-130).

Finally, in *SPSS - Statistical Package for the Social Sciences*, Nie, et al, described multiple regression as

an extension of the bivariate correlation coefficient to multivariate analysis. Multiple regression allows the researcher to study the linear relationship between a set of independent variables and a dependent variable while taking into account the interrelationships among the independent variables. The basic goal of multiple regression is to produce a linear combination of independent variables which will correlate as highly as possible with the dependent variable (8).

There were several possible methods of multiple correlation or regression which depended upon the way in which the predictor variables were entered into the regression equation. It was determined that the best model for this study was stepwise multiple regression. In *Introductory Statistics Guide - SPSS*, Marija Norviss explained that

stepwise selection of independent variables is probably the most commonly used procedure in regression. It is really a combination of backward and forward procedures. The first variable is selected in the same manner as in forward selection. If the variable fails to meet the entry requirements, the procedure terminates with no independent variable in the equation. If it passes the criterion, the second variable is selected based on the highest partial correlation. If it passes entry criteria, it also enters the equation.
From this point, stepwise selection differs from forward selection: the first variable is examined to see whether it should be removed according to the removal criterion as in backward examination. In the next step, variables not in the equation are examined for entry. After each step, variables already in the equation are examined for removal until none remain that meet the removal criterion. Variable selection terminates when no more variables meet entry and removal criteria (163).

In the Handbook in Research and Evaluation, Isaac and Michael also clarified two important objectives of multiple regression analysis as

(a) to determine the degree of relationship given be an index number known as the multiple correlation coefficient between a customarily continuous criterion measure (dependent variable) and an optimally weighted combination of two or more predictor (independent) variables that are usually continuous and (b) to predict the standing of individuals in a sample on the criterion variable from scores earned in a weighted linear combination of predictor variables along with an expected margin of error (200).

For this study, the choice of a correlation research design was appropriate as outlined by Cohen and Manion who stated

first, it is appropriate when there is a need to discover or clarify relationships and where correlation coefficients will achieve these ends. Second, correlation research is appropriate where the objective, or one of a set of objectives, is to achieve some degree of prediction. Finally, prediction studies are suitable where a group as opposed to an individual is the focus of the study (134-135).

Data Analysis

The descriptive and inferential statistical data that were generated by the Pearson Product Moment and stepwise multiple regression treatment of the raw data were analyzed in relation to the purpose of the study and the five research questions. First, means, medians, and standard deviations were obtained from the 120 data sets in the sample. The data set for each subject was composed of fourteen
data points which were the locus of control orientation, overall assessment center performance, and twelve individual assessment center skill dimensions. This step provided descriptive information useful in later analysis and determined the locus of control orientation parameters for the sample group.

Second, a correlation matrix was constructed using locus of control orientation and the assessment center performance scores. Pearson Product Moment correlation coefficients were determined. The third step in this process was to complete a stepwise multiple regression analysis of the data to determine if combinations of the locus of control orientation and any of the thirteen assessment center scores correlated with each other and to what extent. Multiple correlation coefficients were determined and a correlation matrix constructed.

Additionally, tests of the level of statistical and practical significance for the correlation coefficients were applied. The statistical significance level of 0.05 for both sets of correlation coefficients was based on a one-tailed test. This was appropriate for the Pearson Product Moment correlations because the direction of the relationships between the pair of variables was specified in advance of the analysis (SPSSX 641). It was hypothesized that the direction of the locus of control orientation would be negative or inverse and the assessment center performance scores would be positive or direct.

Finally, analysis of the correlation coefficients and summary tables provided information on the existence, direction, and strength
of relationships among performance scores from the two instruments.

The cumulative affirmative and negative responses to the five research questions were then analyzed and evaluated in order to draw conclusions.
CHAPTER 4

Presentation and Analysis of Data

This chapter included an introduction with a restatement of the purpose for the study and of the research questions. It continued with a discussion of the sample characteristics, assessment center performance characteristics, and locus of control characteristics. It concluded with a summary of assessment center performance and locus of control characteristics and a discussion of the findings in relation to the research questions.

Introduction

The purpose of this study was to determine if locus of control orientation was related to the assessment center performance of prospective school administrators. It was not known if locus of control orientation and assessment center performance described similar administrative characteristics. If a relationship existed, locus of control orientation could be considered a valid predictor for use in an administrative selection process.

Five (5) research questions were formulated, investigated, and served as the bases for the collection of the data in this study. The five questions were:

1. Will assessment center participants exhibit a predominant locus of control orientation?

2. Will the locus of control orientation for assessment center participants be inversely related to assessment center performance
scores?

3. What relationships exist between the locus of control orientation of assessment center participants and overall assessment center performance?

4. What relationships exist between the locus of control orientation of assessment center participants and individual assessment center skill ratings?

5. Is locus of control orientation a valid predictor for selecting school administrators?

The two procedures used with the sample group (n=120) were an assessment center and an opinion survey. Relationships in this study were indicated by the direction and degree to which locus of control orientation correlated with the thirteen assessment center performance scores. The measure of the strength of the relationship was the correlation coefficients derived from the locus of control orientation score and the assessment center scores of the sample group.

Data were analyzed using appropriate descriptive and inferential statistical techniques to determine the extent of the relationship between the performance on the opinion survey and the performance in the assessment center. A statistical significance level of 0.05 for the correlation coefficients was used.

The data analyzed for this study were primarily in the form of correlation coefficients. Borg and Gall explained that the purpose of the correlation coefficient is to express in mathematical terms the degree of relationship between any two variables. If the relationship is perfectly positive (for each increment in one variable there is a corresponding increment in the other), the correlation coefficient will be 1.00. If the relationship is perfectly negative, it will be -1.00. If there is no relationship, the coefficient will be
zero. If the two variables are somewhat related, the coefficients will have a value between zero and 1.00 (if the relationship is positive) or between zero and -1.00 (if negative). Thus, the correlation coefficient is a precise way of stating the extent to which one variable is related to another. To express the idea in another way, the correlation coefficient tells us how effectively person's scores on one variable can be used to predict their scores on another test (475-476).

Borg and Gall also stated that correlation coefficients were often statistically significant even though they were quite low in magnitude. The size of the correlation coefficient indicated the degree of relationship between the variables (Borg and Gall 513). A low correlation indicated a low relationship regardless of the level of significance used. Since the purpose of a relationship study was to gain a better understanding of complex skills or behavior patterns being studied, low correlation coefficients were as meaningful as high ones. They stated that in prediction research, practical significance was of more importance than statistical significance because correlations must usually exceed the point of statistical significance if they were to be of practical value (Borg and Gall 513).

There were no strict rules for interpreting the size of correlation coefficients (Mason and Bramble 170). Best and Kahn presented the following table for evaluating the magnitude or the degree of relationship for correlation coefficients:

<table>
<thead>
<tr>
<th>Coefficient (r)</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 to 0.20</td>
<td>Negligible</td>
</tr>
<tr>
<td>0.20 to 0.40</td>
<td>Low</td>
</tr>
<tr>
<td>0.40 to 0.60</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.60 to 0.80</td>
<td>Substantial</td>
</tr>
<tr>
<td>0.89 to 1.00</td>
<td>High to very high (240)</td>
</tr>
</tbody>
</table>
Borg and Gall outlined the following rules, appropriate for most types of educational research, to provide for interpreting correlation coefficients obtained in relationship and prediction research:

Correlations ranging from 0.20 to 0.35
They showed a very slight relationship between the variables, although the relationship was statistically significant. Correlations in this range were of limited meaning in exploratory research but, were of no value in prediction.

Correlations ranging from 0.35 to 0.65
They were usually statistically significant beyond the one per cent level. With correlations around 0.50, crude group predictions were possible. Correlations within this range were useful when combined with other correlations in a multiple-regression equation.

Correlations ranging from 0.65 to 0.85
They made possible group predictions that were accurate enough for most purposes.

Correlations over 0.85
They indicated a very close relationship between the variables studied. Prediction studies in education very rarely yielded correlations this high (513-514).

The magnitude or level of practical significance needed to determine if a relationship existed between variables in this study was 0.20.

Mason and Bramble outlined yet another point of view and explained that

correlations between 0.80 and 1.00 are considered high, while correlations between 0.30 and 0.60 are considered moderate. Correlations which range between +0.30 and -0.30
are typically considered too low to be of importance. However, interpretations may vary in specific situations depending on sample size (170).

**Sample Characteristics**

The population for this investigation was all 170 individuals who had completed an assessment center conducted by the Nevada Assessment Center. The sample for this study also encompassed all 170 participants in the Nevada Assessment Center from its inception in fall of 1985 thru spring of 1988. They were sent an opinion survey to complete outside the assessment center during December, 1988 or January, 1989. This resulted in a net sample of 120 assessment center participants who appropriately completed and returned the opinion survey which measured locus of control orientation.

The demographics of the sample (n=120) were computed and reported in Table 1. The sample was composed primarily of individuals who were white (83 per cent), female (59 per cent), from the secondary level (55 per cent), and who were between thirty and thirty-nine years of age (45 per cent) at the time of the assessment. The largest job classifications represented were deans (24 per cent), closely followed by assistant or vice principals (21 per cent). The majority of the sample had ten to nineteen years (62 per cent) total experience in education and zero years (72 per cent) in administrative experience in the field of education.

The means, medians, standard deviations, minimum and maximum scores for the locus of control orientation score (x1) and the assessment center performance scores (x2-x14) were determined, analyzed, and reported in Table 2.
### TABLE 1

Sample Demographics

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Sample Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dean</td>
<td>29</td>
<td>24%</td>
</tr>
<tr>
<td>Assistant or Vice Principal</td>
<td>25</td>
<td>21%</td>
</tr>
<tr>
<td>Teacher</td>
<td>24</td>
<td>20%</td>
</tr>
<tr>
<td>Administrative Assistant</td>
<td>18</td>
<td>15%</td>
</tr>
<tr>
<td>Consultant</td>
<td>16</td>
<td>13%</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Race:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White (not of Hispanic origin)</td>
<td>100</td>
<td>83%</td>
</tr>
<tr>
<td>Black (not of Hispanic origin)</td>
<td>14</td>
<td>12%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>5</td>
<td>4%</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Sex:</strong></td>
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<td></td>
</tr>
<tr>
<td>Female</td>
<td>71</td>
<td>59%</td>
</tr>
<tr>
<td>Male</td>
<td>49</td>
<td>41%</td>
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<td><strong>Level:</strong></td>
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<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>66</td>
<td>55%</td>
</tr>
<tr>
<td>Elementary</td>
<td>34</td>
<td>28%</td>
</tr>
<tr>
<td>Central Office</td>
<td>20</td>
<td>17%</td>
</tr>
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<td><strong>Age at Assessment:</strong></td>
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<tr>
<td>30 to 39 years</td>
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<td>40 to 49 years</td>
<td>52</td>
<td>42%</td>
</tr>
<tr>
<td>50 to 59 years</td>
<td>14</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Total Experience - Education:</strong></td>
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<td></td>
</tr>
<tr>
<td>0 to 9 years</td>
<td>10</td>
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<td>10 to 19 years</td>
<td>74</td>
<td>62%</td>
</tr>
<tr>
<td>20 to 29 years</td>
<td>33</td>
<td>27.5%</td>
</tr>
<tr>
<td>30 to 39 years</td>
<td>3</td>
<td>2.5%</td>
</tr>
<tr>
<td><strong>Administrative Experience - Education:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 years</td>
<td>86</td>
<td>72%</td>
</tr>
<tr>
<td>1 year</td>
<td>12</td>
<td>10%</td>
</tr>
<tr>
<td>2 years</td>
<td>5</td>
<td>4%</td>
</tr>
<tr>
<td>3 years</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>4 years</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>5 years</td>
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<td>0%</td>
</tr>
<tr>
<td>6 years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>7 years</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>8 years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>9 years</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>10 years</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>11 years</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>12 years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>13 years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>14 years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>15 years</td>
<td>1</td>
<td>1%</td>
</tr>
<tr>
<td>16 years</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>17 years</td>
<td>2</td>
<td>2%</td>
</tr>
<tr>
<td>Variable</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>x1 Locus of Control Orientation</td>
<td>6.850</td>
<td>7.00</td>
</tr>
<tr>
<td>x2 Assessment Center Overall</td>
<td>5.700</td>
<td>5.00</td>
</tr>
<tr>
<td>x3 Problem Analysis</td>
<td>4.750</td>
<td>5.00</td>
</tr>
<tr>
<td>x4 Judgment</td>
<td>5.033</td>
<td>5.00</td>
</tr>
<tr>
<td>x5 Organizational Ability</td>
<td>5.367</td>
<td>5.00</td>
</tr>
<tr>
<td>x6 Decisiveness</td>
<td>7.283</td>
<td>8.00</td>
</tr>
<tr>
<td>x7 Leadership</td>
<td>5.767</td>
<td>5.00</td>
</tr>
<tr>
<td>x8 Sensitivity</td>
<td>5.283</td>
<td>5.00</td>
</tr>
<tr>
<td>x9 Stress Tolerance</td>
<td>6.758</td>
<td>7.00</td>
</tr>
<tr>
<td>x10 Oral Communication</td>
<td>6.792</td>
<td>7.00</td>
</tr>
<tr>
<td>x11 Written Communication</td>
<td>6.825</td>
<td>7.00</td>
</tr>
<tr>
<td>x12 Range of Interest</td>
<td>5.450</td>
<td>5.00</td>
</tr>
<tr>
<td>x13 Personal Motivation</td>
<td>6.742</td>
<td>7.00</td>
</tr>
<tr>
<td>x14 Educational Values</td>
<td>5.942</td>
<td>6.00</td>
</tr>
</tbody>
</table>
Assessment Center Performance Characteristics

This correlation study was both an attempt to discover and clarify relationships, as well as, to predict how effectively participants' scores on one instrument could be used to predict their scores on another instrument using correlation coefficients. The relationships among the assessment center performance scores were observed and analyzed prior to the study of the relationships between locus of control orientation and assessment center performance. The ability of the individual skill dimensions to predict the overall assessment center performance rating was considered important for comparison with their ability to also predict locus of control orientation.

The sample group's assessment center means, medians, standard deviations, minimum and maximum scores were reported in Table 2. A rating scale of one to eleven was used for the overall assessment center performance score and the individual skill dimension scores. The highest scores were earned in the individual skill dimension of decisiveness with a mean of 7.283. The lowest scores were earned in the individual skill dimension of problem analysis with a mean of 4.750. The overall assessment center performance ratings had a mean of 5.700, a high score of 8, and a low score of 2.

For more clarity and ease of comparison, the overall assessment center performance rating and each of the twelve individual skill dimension scores were described in detail in the appendix (see Table A-1 thru Table A-13). The tables included the range of scores, frequencies, percents, cumulative per cents, and other descriptive statistics for each assessment center variable (x2 thru x14).
Pearson correlation coefficients were determined among the overall assessment center performance rating (x2) and the twelve individual skill dimensions (x3-x14) and reported in Table 3. The direction of all the correlation coefficients was positive or direct.

Of the twelve possible correlations, all were statistically significant and all were practically significant with a magnitude greater than 0.20. There was one correlation in the low (0.20-0.35) magnitude range - range of interest (x12 RI), eight moderate (0.35-0.65) - problem analysis (x3 PA), decisiveness (x6 D), sensitivity (x8 S), stress tolerance (x9 ST), oral communication (x10 OC), written communication (x11 WC), personal motivation (x13 PM), and educational values (x14 EV), plus three that were in the substantial magnitude range (0.65-0.85) - judgment (x4 J), organizational ability (x5 OA), and leadership (x7 L). It was possible to predict the overall assessment center performance rating with confidence from eleven of the twelve correlations. The strength of the correlation with range of interest (x12 RI) was the exception.

Multiple regression correlation coefficients were determined among the fourteen variables of locus of control orientation (x1) and assessment center performance (x2-x14) using a stepwise procedure and reported in Table 4.

Using the overall assessment center performance rating (x2 OAC) as the dependent variable, the twelve individual skill dimension variables (x3-x14) were entered in the first multiple regression equation and reported in Table 5.
### TABLE 3

Pearson Correlation Coefficients -
Locus of Control Orientation and
Assessment Center Performance

<table>
<thead>
<tr>
<th>x1 Locus of Control Orientation</th>
<th>x2 Overall Assessment Center Performance</th>
<th>x3 Problem Analysis</th>
<th>x4 Judgement</th>
<th>x5 Organizational Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0000***</td>
<td>-.2040*</td>
<td>-.1183</td>
<td>1.2025*</td>
<td>-2.388**</td>
</tr>
<tr>
<td>x2 Overall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-.2040*</td>
<td>1.0000***</td>
<td>.6155***</td>
<td>.7187***</td>
<td>.7291***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>x6 Decisiveness</th>
<th>x7 Leadership</th>
<th>x8 Sensitivity</th>
<th>x9 Stress Tolerance</th>
<th>x10 Oral Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1 Locus of Control Orientation</td>
<td>-.1069</td>
<td>-.1033</td>
<td>-.0936</td>
<td>-.0395</td>
</tr>
<tr>
<td>x2 Overall Assessment Center Performance</td>
<td>.5917***</td>
<td>.7167***</td>
<td>.4927***</td>
<td>.4873***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>x11 Written Communication</th>
<th>x12 Range of Interest</th>
<th>x13 Personal Motivation</th>
<th>x14 Educational Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1 Locus of Control Orientation</td>
<td>.1239</td>
<td>-.0013</td>
<td>-.2089*</td>
</tr>
<tr>
<td>x2 Overall Assessment Center Performance</td>
<td>.4116***</td>
<td>.3209***</td>
<td>.4697***</td>
</tr>
</tbody>
</table>

NOTE: n = 120; one-tailed test;
* P < .05, ** P < .01, *** P < .001
### Stepwise Multiple Regression Correlations - Locus of Control Orientation and Assessment Center Performance

<table>
<thead>
<tr>
<th>x1</th>
<th>x2</th>
<th>x3</th>
<th>x4</th>
<th>x5</th>
<th>x6</th>
<th>x7</th>
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<th>x12</th>
<th>x13</th>
<th>x14</th>
</tr>
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<tbody>
<tr>
<td>LCO</td>
<td>GAC</td>
<td>PA</td>
<td>J</td>
<td>QA</td>
<td>D</td>
<td>L</td>
<td>S</td>
<td>ST</td>
<td>OC</td>
<td>WC</td>
<td>R1</td>
<td>PM</td>
<td>EV</td>
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<tr>
<td>LCO</td>
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<tr>
<td>x3</td>
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<td>J</td>
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<td></td>
<td></td>
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<td>.506</td>
<td>.511</td>
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<td>.180</td>
<td>.364</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
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<td>.271</td>
<td>.358</td>
<td>.277</td>
<td>.161</td>
<td>.303</td>
<td>.288</td>
<td>.286</td>
<td>.173</td>
<td>.080</td>
<td>.435</td>
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<td>.394</td>
<td>.047</td>
<td>.203</td>
<td>.206</td>
<td>.140</td>
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<td>.224</td>
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<td>.304</td>
<td>.267</td>
<td>.257</td>
</tr>
</tbody>
</table>

**Note:** n = 120
TABLE 5

Multiple Regression Summary:

Individual Assessment Center Skill Dimensions

(dependent variable = overall assessment center performance)

<table>
<thead>
<tr>
<th></th>
<th>Multiple R</th>
<th>Adjusted R Square</th>
<th>R Square</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.91935</td>
<td>0.82785</td>
<td>0.84521</td>
<td>0.65569</td>
</tr>
</tbody>
</table>

Analysis of Variance

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean of Squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>12</td>
<td>251.19691</td>
<td>20.93308</td>
</tr>
<tr>
<td>Residual</td>
<td>107</td>
<td>46.00309</td>
<td>0.42994</td>
</tr>
</tbody>
</table>

F = 48.68888
Signif F = 0.0000

This resulted in a multiple correlation (R) of 0.91935 and a coefficient of determination (R square) of 84.5 per cent.

In other words, if overall assessment center performance (x2 OAC) and the individual assessment center skill dimensions (x3-x14) correlated 0.91935, 84.5 per cent of the variance in the overall assessment center score was explained by the individual skill dimensions.

This left 15.5 per cent unexplained. Although the overall assessment center performance rating (x2 OAC) was reached by a consensus of the assessors and not mathematically, there was still a definite relationship between it and the twelve skill dimension scores.
In the second multiple regression equation, using overall assessment center performance (x2 OAC) as the dependent variable, ten individual skill dimensions were entered stepwise until the 0.05 limits were reached. In layman's terms, the individual skill dimensions were ordered by importance, tests for significance applied sequentially, and entered in the multiple regression equation. The first and most important skill dimension in the set was organizational ability (x5 OA). Step 1 was reported in Table 6.

### TABLE 6
Multiple Regression Summary:
Step 1  Organizational Ability
(dependent variable = overall assessment center performance)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.72910</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.52761</td>
</tr>
<tr>
<td>R Square</td>
<td>0.53158</td>
</tr>
<tr>
<td>Standard Error</td>
<td>1.08618</td>
</tr>
</tbody>
</table>

Analysis of Variance

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DF</td>
<td>1</td>
</tr>
<tr>
<td>Sum of Squares</td>
<td>157.98613</td>
</tr>
<tr>
<td>Mean of Squares</td>
<td>157.98613</td>
</tr>
</tbody>
</table>

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DF</td>
<td>118</td>
</tr>
<tr>
<td>Sum of Squares</td>
<td>139.21387</td>
</tr>
<tr>
<td>Mean of Squares</td>
<td>1.17978</td>
</tr>
</tbody>
</table>

F = 133.91167  Signif F = 0.0000

The coefficient of determination (R square) for the single skill dimension of organizational ability (x5 OA) was 53 per cent.

In simpler terms, if overall assessment center performance (x2 OAC) and the individual skill dimension of organizational ability (x5
OA) correlated 0.7291, 53.1 per cent of the variance in overall assessment center performance was explained by only the single skill dimension, organizational ability (x5 OA).

In order to study the additional effects which were over and above those explained by the first independent variable, the skill dimension of leadership (x7 L) was entered next in the multiple regression equation. Step 2 was reported in Table 7.

---

**TABLE 7**

Multiple Regression Summary:

Step 2  Leadership

(dependent variable = overall assessment center performance)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.83193</td>
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<tr>
<td>Adjusted R Square</td>
<td>0.68684</td>
</tr>
<tr>
<td>R Square</td>
<td>0.69211</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.88436</td>
</tr>
</tbody>
</table>

Analysis of Variance

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DF</td>
<td>2</td>
</tr>
<tr>
<td>Sum of Squares</td>
<td>205.69421</td>
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<td>Mean Square</td>
<td>102.84710</td>
</tr>
<tr>
<td>Regression</td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>117</td>
</tr>
<tr>
<td>Mean Square</td>
<td>91.50579</td>
</tr>
<tr>
<td>F</td>
<td>131.50109</td>
</tr>
<tr>
<td>Signif F</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

The coefficient of determination (R square) for organizational ability (x5 OA) and leadership (x7 L) reached 69 per cent.

Next, judgment (x4 J), was added to the multiple regression equation with organizational ability (x5 OA), and leadership (x7 L). Step 3 was reported in Table 8.
The coefficient of determination (R square) for organizational ability (x5 OA), leadership (x7 L), and judgment (x4 J) reached 75 percent.

In layman's terms, if overall assessment center performance (x2 OAC) and the skill dimensions of organizational ability (x5 OA), leadership (x7 L), and judgment (x4 J) correlated 0.86815, 75 per cent of the variance in the overall assessment center performance score was explained by only three individual skill dimensions. While this group of three variables were the most important in predicting the overall assessment center performance score for an individual, the other seven independent variables added together were responsible for the remaining 9.5 per cent.

The fourth skill dimension added to the multiple regression equation was educational values (x14 EV). Step 4 was reported in

### TABLE 8

Multiple Regression Summary:

Step 3 Judgment

(dependent variable = overall assessment center performance)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.86815</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.74732</td>
</tr>
<tr>
<td>R Square</td>
<td>0.75369</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.79439</td>
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</table>

Analysis of Variance

<table>
<thead>
<tr>
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<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
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<td>223.99727</td>
<td>74.66576</td>
</tr>
<tr>
<td>Residual</td>
<td>116</td>
<td>73.20273</td>
<td>0.63106</td>
</tr>
<tr>
<td>F</td>
<td>118.31836</td>
<td>Signif F = 0.0000</td>
<td></td>
</tr>
</tbody>
</table>

The coefficient of determination (R square) for organizational ability (x5 OA), leadership (x7 L), and judgment (x4 J) reached 75 percent.
Table 9.

<table>
<thead>
<tr>
<th>Multiple R</th>
<th>Adjusted R Square</th>
<th>R Square</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.88295</td>
<td>0.77194</td>
<td>0.77961</td>
<td>0.75470</td>
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</tbody>
</table>

Analysis of Variance

<table>
<thead>
<tr>
<th>DF</th>
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<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>4</td>
<td>231.69964</td>
</tr>
<tr>
<td>Residual</td>
<td>115</td>
<td>65.50036</td>
</tr>
</tbody>
</table>

F = 101.69967  Signif F = 0.0000

The addition of the variable of educational values (x14 EV) increased the coefficient of determination (R square) for the group of skill dimensions to 77.9 per cent.

The fifth skill dimension added to the multiple regression equation was stress tolerance (x9 ST). Step 5 was reported in Table 10.
TABLE 10

Multiple Regression Summary:

Step 5  Stress Tolerance

(dependent variable = overall assessment center performance)

| Multiple R | 0.89489 | Adjusted R Square | 0.79209 |
| R Square   | 0.80082 | Standard Error    | 0.72060 |

Analysis of Variance

<table>
<thead>
<tr>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
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</thead>
<tbody>
<tr>
<td>Regression</td>
<td>5</td>
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<td>Residual</td>
<td>114</td>
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</table>

F = 91.67067  Signif F 0.0000

The addition of the stress tolerance (x9 ST) to the group of five skill dimensions increased the coefficient of determination (R square) to 80 per cent.

The sixth skill dimension added to the multiple regression equation was decisiveness (x6 D). Step 6 was reported in Table 11.
TABLE 11

Multiple Regression Summary:

Step 6  Decisiveness

(dependent variable = overall assessment center performance)

<table>
<thead>
<tr>
<th></th>
<th>Multiple R</th>
<th>Adjusted R Square</th>
<th>R Square</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.90188</td>
<td>0.80348</td>
<td>0.81339</td>
<td>0.70057</td>
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</table>

Analysis of Variance

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<tr>
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<td>Residual</td>
<td>113</td>
<td>55.46066</td>
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</table>

F = 82.08986  Signif F = 0.0000

The addition of the decisiveness (x6 D) to the group of skill dimensions increased the coefficient of determination (R square) to 81 per cent.

The seventh skill dimension added to the multiple regression equation was sensitivity (x8 S). Step 7 was reported in Table 12.
TABLE 12

Multiple Regression Summary:

Step 7  Sensitivity

(dependent variable = overall assessment center performance)

<p>| | | | |</p>
<table>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.90710</td>
<td>Adjusted R Square</td>
<td>0.81176</td>
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<tr>
<td>R Square</td>
<td>0.82283</td>
<td>Standard Error</td>
<td>0.68566</td>
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<tr>
<td>Analysis of Variance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DF</td>
<td>Sum of Squares</td>
<td>Mean Square</td>
<td></td>
</tr>
<tr>
<td>Regression</td>
<td>7</td>
<td>244.54555</td>
<td>34.93508</td>
</tr>
<tr>
<td>Residual</td>
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<td>52.65445</td>
<td>0.47013</td>
</tr>
<tr>
<td></td>
<td>F = 74.30956</td>
<td>Signif F = 0.0000</td>
<td></td>
</tr>
</tbody>
</table>

The addition of sensitivity (x8 S) to the group of skill dimensions increased the coefficient of determination (R square) to 82 per cent.

The eighth skill dimension added was personal motivation (x13 PM). Step 8 was reported in Table 13.
TABLE 13

Multiple Regression Summary:

Step 8  Personal Motivation

(dependent variable = overall assessment center performance)

| Multiple R | 0.91110 |
| R Square   | 0.83010 |
| Adjusted R Square | 0.81756 |
| Standard Error       | 0.67446 |

Analysis of Variance

<table>
<thead>
<tr>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
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<tr>
<td>Residual</td>
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<td>50.49375</td>
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</table>

\[ F = 67.79154 \quad \text{Signif} \ F = 0.0000 \]

The addition of personal motivation (x13 PM) to the group of skill dimensions increased the coefficient of determination (R square) to 83 per cent.

The ninth skill dimension added was written communication (x11 WC). Step 9 was reported in Table 14.
TABLE 14

Multiple Regression Summary:

Step 9  Written Communication

(dependent variable = overall assessment center performance)

<table>
<thead>
<tr>
<th>Multiple R</th>
<th>0.91512</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted R Square</td>
<td>0.82414</td>
</tr>
<tr>
<td>R Square</td>
<td>0.83744</td>
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<tr>
<td>Standard Error</td>
<td>0.66272</td>
</tr>
</tbody>
</table>

Analysis of Variance

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>9</td>
<td>248.88824</td>
<td>27.65425</td>
</tr>
<tr>
<td>Residual</td>
<td>110</td>
<td>48.31176</td>
<td>0.43920</td>
</tr>
</tbody>
</table>

F = 62.96536  Signif F = 0.0000

The addition of written communication (xll WC) to the group of skill dimensions increased the coefficient of determination (R square) to 83.7 per cent.

The final skill dimension that was within the limit of 0.05 added in this multiple regression equation was problem analysis (x3 PA). Step 10 was reported in Table 15.
Table 15
Multiple Regression Summary:
Step 10 Problem Analysis
(dependent variable = overall assessment center performance)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
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<td>Adjusted R Square</td>
<td>0.82986</td>
</tr>
<tr>
<td>R Square</td>
<td>0.84415</td>
<td>Standard Error</td>
<td>0.65187</td>
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</tbody>
</table>

Analysis of Variance

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>10</td>
<td>250.88285</td>
<td>25.08828</td>
</tr>
<tr>
<td>Residual</td>
<td>109</td>
<td>46.31715</td>
<td>0.42493</td>
</tr>
</tbody>
</table>

F = 59.04126  Signif F = 0.0000

The addition of problem analysis (x3 PA) to the group of skill dimensions increased the coefficient of determination (R square) slightly as it approached the total of 84.5 per cent described in Table 5. No further independent variables or skill dimensions were added because the 0.05 limits for the multiple regression equation were reached. The statistical significance (p) levels for the stepwise multiple regression correlation matrix describing both locus of control orientation and assessment center performance were reported in Table A-14 found in the appendix.

In other words, it was possible to predict the overall assessment center performance rating with some confidence using ten of the twelve individual skill dimensions as a group. They were in order of importance: organizational ability, leadership, judgment, educational
values, stress tolerance, decisiveness, sensitivity, personal
motivation, written communication, and problem analysis.

**Locus of Control Characteristics**

The sample group's locus of control orientation mean, median,
standard deviation, plus the minimum and maximum scores were reported
in Table 2. Table 16 also described in detail the locus of control
orientation of the sample group with the range of scores, frequencies,
per cents, cumulative per cent, and other descriptive statistics. Out
of a possible score of 40 points, the most internal or lowest earned
was 1 and the most external or highest was 23 points. The mean was
6.850 and the median score was 7 points. The instrument used to
determine locus of control orientation was group referenced so that
all scores below the median of 7 were considered internal and all
scores above were considered external. The mode or most frequently
earned score of 4 belonged to 15.8 per cent of the sample group. The
data summarized in Table 16 described a predominantly internal locus
of control orientation for the sample group.

Pearson correlation coefficients were determined among locus of
control orientation (x1) and both the overall assessment center
performance (x2) and the twelve individual assessment center skill
dimensions (x3-x14). This was reported in Table 3. The direction for
twelve of the correlation coefficients was negative or inverse. The
only exception was written communication (WC) which was positive or
direct.

Of the thirteen possible correlations, only four were
statistically significant and only four were practically significant,
as described by Borg and Gall, with a magnitude greater than 0.20.
### TABLE 16

**Descriptive Statistics - Locus of Control Orientation**

<table>
<thead>
<tr>
<th>Score (Possible=40)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>2.5</td>
<td>2.5</td>
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<tr>
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<td>2</td>
<td>1.7</td>
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<tr>
<td>23</td>
<td>1</td>
<td>0.8</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Total** 120 100.0

- **Mean** = 6.850
- **Median** = 7.000
- **Mode** = 4.000

**Standard Deviation** = 3.294

**Minimum** Score = 1
**Maximum** Score = 23
The four significant correlations all fell just within the lower limit of the low (0.20–0.35) magnitude range. They were overall assessment center performance (x2 OAC), judgment (x4 J), organizational ability (x5 OA), and personal motivation (x13 PM).

Multiple regression correlation coefficients were determined among the fourteen variables using a stepwise procedure and reported in Table 4.

Using locus of control orientation (x1 LCO) as the dependent variable, the thirteen assessment center variables (x2–x14) were entered in the third multiple regression equation and reported in Table 17.

TABLE 17

Multiple Regression Summary:
Assessment Center Performance
(dependent variable = locus of control orientation)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Multiple R</td>
<td>0.41000</td>
<td>Adjusted R Square</td>
<td>0.06608</td>
</tr>
<tr>
<td>R Square</td>
<td>0.16810</td>
<td>Standard Error</td>
<td>3.18343</td>
</tr>
</tbody>
</table>

Analysis of Variance

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<tr>
<td>DF</td>
<td>13</td>
<td>Sum of Squares</td>
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<tr>
<td>Mean Square</td>
<td>106</td>
<td></td>
<td>10.13425</td>
</tr>
<tr>
<td>Regrresion</td>
<td>13</td>
<td>217.07000</td>
<td>16.69769</td>
</tr>
<tr>
<td>Residual</td>
<td>106</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

F = 1.64765  Signif F = 0.0836

This resulted in a multiple correlation (R) of 0.41000 and a coefficient of determination (R square) of only 16.8 per cent.
In other words, if the variables of locus of control orientation (x1 LOC) and assessment center performance (x2-x14) correlated 0.41000, 16.8 per cent of the variance in locus of control orientation was explained by assessment center performance. This left 83.2 per cent unexplained. There was very little, if any, relationship between the locus of control orientation and the assessment center performance.

In the fourth multiple regression equation, using locus of control orientation (x1 LOC) as the dependent variable, two individual skill dimension variables were entered stepwise before the 0.05 limits were reached. The first skill dimension to be entered in the multiple regression equation was organizational ability (x5 OA). Step 1 was reported in Table 18.

<table>
<thead>
<tr>
<th>Table 18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Regression Summary:</td>
</tr>
<tr>
<td>Step 1 Organizational Ability</td>
</tr>
<tr>
<td>(dependent variable = locus of control orientation)</td>
</tr>
</tbody>
</table>

| Multiple R | 0.23875 | Adjusted R Square | 0.04901 |
| R Square | 0.05700 | Standard Error | 3.21239 |
| Analysis of Variance |
| DF | Sum of Squares | Mean Square |
| Regression | 1 | 73.60856 | 73.60856 |
| Residual | 118 | 1217.69144 | 10.31942 |
| F = 7.13301 | Signif F = 0.0086 |
The coefficient of determination (R square) for the variable organizational ability (x5 OA) was 6 per cent.

Finally, written communication (x11 WC) was entered in the multiple regression equation with the skill dimension of organizational ability (x5 OA). Step 2 was reported in Table 19.

<table>
<thead>
<tr>
<th></th>
<th>Multiple R</th>
<th>Adjusted R Square</th>
<th>R Square</th>
<th>Standard Error</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.31243</td>
<td>0.08219</td>
<td>0.09761</td>
<td>3.15586</td>
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**Analysis of Variance**

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<th>DF</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
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<td>63.02283</td>
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<tr>
<td>Residual</td>
<td>117</td>
<td>1165.25434</td>
<td>9.95944</td>
</tr>
</tbody>
</table>

F = 6.32795  Signif F = 0.0025

The coefficient of determination (R square) for written communication (x11 WC) was 10 per cent. No other independent variables or skill dimensions were added to the set because the 0.05 limits for the multiple regression equation were reached. In simpler terms, it was not possible to predict locus of control orientation from assessment center performance using only two of the possible thirteen independent variables.
Summary of Assessment Center Performance Characteristics
and Locus of Control Characteristics

For more clarity and ease of comparison, the relationships or correlations that met the 0.05 level of significance were summarized. When the correlation coefficients were determined using the Pearson Product Moment technique, all but one - written communication - of the correlations for locus of control orientation were negative and those for assessment center performance were all positive. Only four - organizational ability, judgment, overall assessment center rating, and personal motivation - were practically significant (0.20 - 0.35) for locus of control orientation as opposed to all twelve for assessment center performance.

The strongest Pearson Product Moment correlation for locus of control orientation was organizational ability at -0.2388. The strongest correlation for assessment center performance was also organizational ability at 0.7291.

When the correlation coefficients were determined using the stepwise multiple regression technique, all but one of the correlations for locus of control orientation were negative and those for assessment center performance were all positive.

Ten individual skill dimensions as a group (84.5 per cent) were used to predict overall assessment center performance. The most important of these was organizational ability at 53 per cent. Three of the individual skill dimensions - organizational ability, leadership, and judgment - accounted for 75 per cent while the other seven skill dimensions accounted for the remaining 9.5 percent. They were educational values, stress tolerance, decisiveness, sensitivity,
personal motivation, written communication, and problem analysis.

Only two individual skill dimensions as a group (16.8 per cent) were considered in an attempt to predict locus of control orientation. The most important of the two skill dimensions was organizational ability at 6 per cent. The other was written communication.

The individual assessment center skill dimension of organizational ability was the only independent variable that was present in the results from all the treatments of the data. It was also the strongest and most important when the correlations were ranked.

**Research Question One**

**Will assessment center participants exhibit a predominant locus of control orientation?** Assessment center participants exhibited a predominant internal locus of control orientation. The description of this variable for the sample group (n=120) was summarized in Table 16. The instrument used to measure locus of control orientation contained forty questions. It was a group referenced test keyed to an external locus of control orientation. The lower the score the more internal and the higher the score the more external the locus of control orientation of the subject. The highest score from the opinion survey was 23 points and the lowest score was 1 point. The median was a score of 7 which divided the sample group into internals and externals. The mean score was 6.850.

Based on the data from this study and findings from the literature, the answer to research question one was affirmative and the null hypothesis was rejected.
Research Question Two

Will the locus of control orientation for assessment center participants be inversely related to assessment center performance scores?  Locus of control orientation for assessment center participants was inversely related to assessment center performance. All but one of the locus of control coefficients from both the Pearson Product Moment correlation and the matching multiple regression correlation were negative. The exception was written communication. This study did not determine a specific reason for this variation from the overall pattern of negative correlations. All of the assessment center coefficients from both the Pearson Product Moment correlation and the matching multiple regression correlation were positive. This pattern was displayed in Table 3 and Table 4. As the scores for assessment center performance went up, the locus of control orientation scores went down. In other words, the majority of administrative candidates and practicing administrators had high assessment center performance scores and a low or internal locus of control orientation score.

Based on the data from this study and findings from the literature, the answer to research question two was affirmative and the null hypothesis was rejected.

Research Question Three

What relationships exist between locus of control orientation of assessment center participants and overall assessment center performance?  There was only a very slight relationship between locus of control orientation of assessment center participants and the overall assessment center performance. The correlation coefficient
was -0.2040 and, although statistically significant at the 0.05 level, was of very low strength or magnitude. The Pearson Product Moment correlation and matching multiple regression correlation were reported in Table 3 and Table 4.

This correlation just met the lower limit criteria for interpreting correlation coefficients as described by either Borg and Gall or Best and Kahn. The correlation of -0.2040 was considered negligible, demonstrated a very slight relationship among the variables, and was of no value in prediction.

Based on the data from this study, the answer to research question three was affirmative and the null hypothesis rejected. However, this should not be interpreted as an indication that the correlation had any amount of prediction value. Since the correlation was less than -0.30, Mason and Bramble explained that it would typically be considered too low to be of importance.

Research Question Four

What relationships exist between locus of control orientation of assessment center participants and individual assessment center skill ratings? There was little, if any, relationship between locus of control orientation of assessment center participants and individual assessment center skill ratings. Of the twelve possible correlations using the Pearson Product Moment coefficients, only three demonstrated a slight relationship as reported in Table 3 and Table 4. They were judgment (-0.2025), organizational ability (-0.2388), and personal motivation (-0.2089).

They were very low in strength or magnitude and just met the lower limit criteria for considering correlation coefficients as
described by Borg and Gall. The three statistically significant
correlation coefficients were considered negligible, demonstrated a
very slight relationship among the variables, and were of no value in prediction.

A multiple regression procedure was used with the locus of control orientation as the dependent variable and the twelve individual assessment center skill ratings as independent variables. The coefficient of determination displayed in Table 17 was only 16.8 per cent. Only two individual assessment center ratings were entered in the next equation in a stepwise manner before the 0.05 limits were reached. The first was organizational ability and the second was written communication as reported in Table 18 and Table 19. These multiple regression procedures produced a negligible or very slight relationship among the variables and were of no value in prediction.

Based on data from this study, the answer to research question four was negative and the null hypothesis was accepted.

Research Question Five

Is locus of control orientation a valid predictor for selecting school administrators? Locus of control orientation was a valid predictor for selecting school administrators. The data did not support concurrent validity between the assessment center and locus of control instruments. That is, it was not possible to interchange one with the other nor was it possible to predict locus of control orientation from assessment center performance using the strength or magnitude of the correlation coefficients. However, the negative direction of the locus of control correlations clearly demonstrated an inverse relationship with assessment center performance. This was
illustrated in Table 3 and Table 4. Those individuals who had high assessment center performance scores tended to have low scores for locus of control orientation or were considered internals.

The majority of individuals in the sample scored seven points or less on the forty point scale that measured locus of control orientation. The highest score was only twenty-three points. The lower the score, the more internal the locus of control orientation. Table 16 illustrated this point.

There was sufficient evidence from the literature and this study that administrative candidates and practicing administrators exhibited an internal locus of control orientation which was equated with effective leadership. This study demonstrated only that there was little or no linear relationship among the locus of control orientation and assessment center performance variables. Other relationships may exist.

Based on the data presented in response to research questions one, two, three, and four, as well as the rejection of the null hypotheses for three of the four questions, the answer to research question five was affirmative and the null hypothesis was rejected.
CHAPTER 5

Summary, Conclusions, Recommendations, and
Recommendations for Further Study

This chapter included a summary of the study, conclusions based on the questions asked in Chapter 1, and recommendations relative to the study. It concluded with recommendations for further study.

Summary

The purpose of this study was to determine if locus of control orientation was related to the assessment center performance of prospective school administrators. It was not known if locus of control orientation and assessment center performance described similar administrative characteristics. If a relationship existed, locus of control orientation could be considered a valid predictor for use in an administrative selection process.

A review of the literature was conducted to gather information describing administrative selection processes, assessment centers, and locus of control. The expected results of the study were based on this information.

The quantitative descriptive, correlation study was based on data gathered from participants in the Nevada Assessment Center from fall of 1985 thru spring of 1988. The sample (n=120) consisted of individuals who had appropriately completed both an NASSP model assessment center which identified administrative skills and an ANS-IE
opinion survey which identified locus of control orientation.

Descriptive and inferential statistical techniques were used to treat the data. Specifically, the Pearson Product Moment Correlation and a stepwise multiple regression technique produced correlation coefficients among the locus of control orientation score and the assessment center performance scores from the sample. A statistical significance level of 0.05 was used for the study. The magnitude of the correlation coefficients or level of practical significance needed to determine if a relationship existed among variables in this study was 0.20.

The information and results from all the sources were summarized, questions answered, conclusions drawn, and recommendations formulated as to the relationship between assessment center performance and locus of control orientation as criteria for selecting administrators.

**Findings From the Literature**

The findings of the study in relation to the literature were summarized below:

1. An effective school administrator was both an administrative and instructional leader, promoted school improvement, and motivated staff.

2. Current administrative selection processes were often casual and usually did not include validated procedures.

3. Basic administrative selection methods currently used were biographical data, written tests, structured interviews, job samples, and assessment centers.

4. The basic administrative selection methods were used individually
or in various combinations depending upon the preference and/or resources of a particular school district.

5. With the exception of the assessment center model developed by the National Association of Secondary School Principals, very little was written concerning the validation of selection methods for school administrators.

6. Assessment centers were widely known, successful methods for selecting school administrators. They provided valid on-the-job simulations that focused on the special qualities and abilities that characterized effective principals.

7. Locus of control was a validated personality variable which operated across a wide diversity of people and situations.

8. Internal locus of control orientation was a more positive personality trait than one that was external.

9. The best known scale for measuring locus of control orientation was developed in 1966 by Julian Rotter but; subsequent research described several shortcomings for the scale.

10. The Nowicki-Strickland Internal-External Scale for Adults (ANS-IE) eliminated the shortcomings of the Rotter scale and was a valid instrument to describe locus of control orientation.

11. Individuals in managerial positions and school principals, as a group, had an internal locus of control orientation.

12. Internal locus of control orientation of school principals was positively related to nonmanipulativeness, high job satisfaction, and the ability to cope with stress. It was also related to the decision-making process and the use of evaluation information by
There was a need to determine through the use of validated selection methods both appropriate personal qualities and skill dimensions needed by prospective school administrators.

Findings From the Study

The findings of the study in relation to the research questions were summarized below:

1. Assessment center participants exhibited a predominant internal locus of control orientation.

2. Locus of control orientation for assessment center participants was inversely related to assessment center performance.

3. There was only a very slight relationship (r = -0.2040) between locus of control orientation of assessment center participants and overall assessment center performance.

4. There was little, if any, relationship between locus of control orientation of assessment center participants and individual assessment center skill ratings. Only judgment (r = -0.2025), organizational ability (r = -0.2388), and personal motivation (r = -0.2089) correlated slightly above the 0.20 level for coefficient consideration used in this study. However, there was a clear-cut relationship between the overall assessment center performance rating and the individual skill dimensions with one low, eight moderate, and three substantial correlations.

5. Locus of control orientation was a valid predictor for selecting school administrators. This was based on a positive response to three of the other four research questions and descriptive statistics.
describing the locus of control orientation for the sample.

It was not possible to predict locus of control orientation from assessment center performance using the strengths of the correlation coefficients. In contrast, it was possible to predict the overall assessment performance rating from the individual skill dimensions.

However, the negative direction of the locus of control correlations for eleven skill dimensions and the overall assessment center performance rating clearly demonstrated an inverse relationship with assessment center performance. In simpler terms, high assessment center performance scores were matched with low or internal locus of control scores. The literature indicated that an effective administrator demonstrated a high level of skill and an internal locus of control orientation.

The majority of the individuals in the sample scored seven points or less on the forty point scale that described locus of control orientation. The highest score was twenty three points. The lower the score, the more internal the locus of control orientation for the individual.

6. The individual assessment center skill dimension of organizational ability was the only independent variable that was present in the results from all the treatments of the data. It was also the strongest and most important when the correlations were ranked.

Conclusions

The findings from this study served as the bases for the following conclusions:

1. Assessment center performance and locus of control orientation
were valid predictors for use in an administrative selection process.
2. The majority of prospective administrators in the sample exhibited an internal locus of control orientation which was inversely related to assessment center performance.
3. The relationships between locus of control orientation and assessment center performance as measured by the strength of the correlation coefficients ranged from slight to little, if any.
4. It was not possible to predict locus of control orientation from assessment center performance using the correlation coefficients but; it was possible to predict the overall assessment center performance rating from the individual skill dimensions.
5. Organizational ability emerged as the single most important skill dimension for prospective administrators in the sample.
6. Locus of control orientation and assessment center performance did not describe similar characteristics related to administrative potential.

Recommendations

The findings from the literature and the data generated by this study served as the bases for the following recommendations:
1. School districts should make every effort to select effective school administrators who are administrative and instructional leaders, promote school improvement, and motivate staff.
2. As many different basic selection methods as local needs and resources permit should be included in an administrative selection process.
3. An assessment center should be included in an administrative selection process because it was a basic selection method which provided on-the-job simulations that focused on the specific qualities and abilities that characterized effective principals.

4. A written test which determines locus of control orientation should be included in an administrative selection process because it measured an important aspect of an administrator's personality directly related to effectiveness.

5. Administrative selection processes should contain various basic selection methods that measure the skill or ability, as well as, the personal characteristics of an effective administrative and instructional leader.

6. School districts should be aware that an effective administrative and instructional leader exhibited a high degree of skill and an internal locus of control orientation.

**Recommendations for Further Study**

In view of the results of this study, seven suggestions were offered for future research:

1. It is recommended that this study be duplicated with a larger sample group, perhaps from assessment centers in several different states.

2. It is recommended that this study be repeated using other locus of control scales, such as the Rotter scale or other validated alternative, rather than the ANS-IE scale used in this study.

3. It is recommended that additional correlation research be conducted with assessment center performance and locus of control
orientation using different populations, particularly with one or more that displays less homogeneity than the sample used in this study.

4. It is recommended that other statistical techniques be used to more precisely determine the existence and strength of the relationship between locus of control orientation and assessment center performance.

5. It is recommended that organizational ability and its relationship to administrative potential be explored.

6. It is recommended that written communication and its relationship to locus of control orientation and administrative potential be explored.

7. It is recommended that this study be expanded to include additional basic selection methods to determine if similar results would be obtained.

In conclusion, it is important to emphasize that

the principalship is the single most powerful force for improving school effectiveness. Although better selection of school administrators is not the complete remedy for educational problems, it offers an important beginning. An effective selection process based on a clear view of the principal's role, combined with better preparation, orientation, development, and evaluation can help usher in a new era of productivity in American education (Office of Educational Research and Improvement 29).

School districts would do well to select and hire administrators who exhibit a high level of skill or ability and a low or internal locus of control orientation.
July 24, 1986

Mrs. Gail Dixon
6459 Gunderson Blvd.
Las Vegas, NV 89103

Dear Mrs. Dixon:

I am pleased that I will be able to work with you as you pursue your doctorate.

Your interest in the Nevada Assessment Center as the basis of your dissertation is exciting and your research on why some people do better than others on the activities will certainly be of significance both to us locally and to those involved internationally.

Although the confidentiality of personnel records must be maintained, I'm certain that we can work out methods of securing information for you.

Good luck with your project! Let me know when I can be of help.

Sincerely,

Judy Adrich, Director
Nevada Assessment Center
APPENDIX B

COVER LETTERS
November, 1988

Dear Fellow Educator,

As a doctoral candidate in the Department of Educational Administration and Higher Education at the University of Nevada, Las Vegas, I am currently conducting research investigating Assessment Center performance versus locus of control orientation as methods for selecting school administrators. This project has been approved by the Clark County School District. You have been included in this study because you have participated in the Nevada Assessment Center.

Enclosed is an Opinion Survey which I am using to investigate locus of control orientation. Since I do not have access to your name, both the survey and the return envelope have a code number in the upper left-hand corner. All information from the Assessment Center is also organized by code number to avoid any personal identifying characteristics and to ensure that all participants are anonymous. The responses will be used for research purposes only and will remain strictly confidential.

Your cooperation and assistance are critical to the success of this project and will require a maximum of fifteen (15) minutes of your valuable time. There are no right or wrong answers to the survey. You are asked to circle either yes or no in response to 40 brief questions. As an incentive which will help you with this task and to thank you for participating, there is a small surprise included with this request. Please enclose the completed survey in the stamped, return envelope and place it in the U.S. mail by December 15, 1988.

I am available to answer any questions concerning this research project from 7:00 a.m. to 3:30 p.m., Monday thru Friday. Please call Eldorado High School, 799-7223. Your willingness to assist in this effort is greatly appreciated.

Sincerely,

Gail Dixon
December, 1988

Dear Fellow Educator,

As a doctoral candidate in the Department of Educational Administration and Higher Education at the University of Nevada, Las Vegas, I am currently conducting research investigating Assessment Center performance versus locus of control orientation as methods for selecting school administrators. This project has been approved by the Clark County School District. You have been included in this study because you have participated in the Nevada Assessment Center.

Several weeks ago you were sent an Opinion Survey and it was not returned. This is a second request for your assistance. It is extremely important that the survey sample is as large as possible and I need your help.

Enclosed is an Opinion Survey which I am using to investigate locus of control orientation. Since I do not have access to your name or address, both the survey and the return envelope have a code number. The Assessment Center secretary will address and mail the envelopes. All information from the Assessment Center provided for my study is also organized by code number to avoid any personal identifying characteristics and to ensure that all participants are anonymous. The responses will be used for research purposes only and will remain strictly confidential.

Your participation is critical to the success of this project and will require a maximum of fifteen minutes of your valuable time. There are NO right or wrong answers to the survey. You are asked to circle either yes or no in response to 40 brief questions. Please enclose the completed survey in the stamped, return envelope and place it in the U.S. mail by January 13, 1989.

I am available to answer any questions concerning this research project from 7:00 a.m. to 3:30 p.m., Monday thru Friday. Please call Eldorado High School, 799-7223. Your willingness to assist in this effort is greatly appreciated.

Sincerely,

Gail Dixon

Gail Dixon
APPENDIX C

TABLES
TABLE A-1

Descriptive Statistics -
Overall Assessment Center Performance

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<thead>
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<th>Score (Possible=11)</th>
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Mean = 5.700  Median = 5.000  Mode = 5.000

Standard Deviation = 1.580  Minimum Score = 2  Maximum Score = 8
TABLE A-2

Descriptive Statistics - Problem Analysis

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<th>Score (Possible=11)</th>
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</tr>
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<td>8</td>
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</tr>
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</table>

Total 120 100.0

Mean = 4.750  Median = 5.000  Mode = 5.000

Standard Deviation = 1.304  Minimum Score = 3  Maximum Score = 8
### TABLE A-3

**Descriptive Statistics - Judgment**

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<thead>
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<th>Score (Possible=11)</th>
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| Standard Deviation = 1.341 | Minimum Score = 2 | Maximum Score = 8 |
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Descriptive Statistics - Organizational Ability

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Median = 5.000
Mode = 5.000

Standard Deviation = 1.650
Minimum Score = 3
Maximum Score = 9
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Descriptive Statistics - Decisiveness

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Total 120 100.0

Mean = 7.283 Median = 8.000 Mode = 8.000

Standard Deviation = 1.691 Minimum Score = 2 Maximum Score = 11
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Descriptive Statistics - Leadership

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Standard Deviation = 1.659  Minimum Score = 3  Maximum Score = 11
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Descriptive Statistics - Sensitivity

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Total 120 100.0

Mean = 5.283 Median = 5.000 Mode = 5.000

Standard Deviation = 1.524 Minimum Score = 2 Maximum Score = 10
TABLE A-8

Descriptive Statistics - Stress Tolerance

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Mean = 6.758  Median = 7.000  Mode = 8.000  
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**Mean = 6.792**  **Median = 7.000**  **Mode = 8.000**

**Standard Deviation = 1.544**  **Minimum Score = 3**  **Maximum Score = 11**
TABLE A-10

Descriptive Statistics - Written Communication

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Total 120 100.0

Mean = 6.825  Median = 7.000  Mode = 8.000

Standard Deviation = 2.180  Minimum Score = 1  Maximum Score = 11
TABLE A-11

Descriptive Statistics - Range of Interest

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Total 120 100.0

Mean = 5.450  Median = 5.000  Mode = 5.000

Standard Deviation = 1.743  Minimum Score = 3  Maximum Score = 11
TABLE A-12

Descriptive Statistics -
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Mean = 6.742    Median = 7.000    Mode = 7.000

Standard Deviation = 1.717    Minimum Score = 3    Maximum Score = 11
TABLE A-13

Descriptive Statistics - Educational Values

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Total 120 100.0

Mean = 5.942 Median = 6.000 Mode = 5.000

Standard Deviation = 1.672 Minimum Score = 3 Maximum Score = 10
Stepwise Multiple Regression Correlations -
Locus of Control Orientation and
Assessment Center Performance plus Statistical Significance (p)

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Note: n = 120; one-tailed significance


Breed, Roger D. Concurrent Validity of Two Administrator Selection Processes. Lincoln, Nebraska: The University of Nebraska, 1985.


Farkas, James. Occupational Stress as Affected by Locus of Control Situational Powerlessness. ERIC 1983. ED 231 047.

Geering, Adrian D. An Examination of the Use of Assessment Centers to Select and Develop Principals. ERIC 1980. ED 201 033.


