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ABSTRACT

This manual, which is designed to assist potential users of the Leader Attributes Inventory (LAI) and individuals studying leadership and its measurement, presents the rationale and psychometric characteristics of the LAI and guidelines for using it. Described in chapter 1 are the context in which the LAI was developed and the conceptualization of leadership that forms its foundation. Chapter 2 explains how the LAI is used. Presented in chapter 3 are the developmental history of the LAI and the measures of its reliability and validity. The process used to establish norm groups and standards for the LAI are outlined in chapter 4. Fourteen tables/figures and 69 references are included. Appended are the following: an LAI rating-by-observer form; information on the development of the Leadership Effectiveness Index (LEI), which provides a criterion used to estimate the LAI's validity; a copy of the LEI; a sample individualized feedback report; 38 tables converting LAI raw scores to normalized t-scores with standard errors of measurement (SEM); a table converting normalized LEI scores to normalized t-scores with SEM; and formulas for predicting leadership performance from the average score of all LAI attributes. (MN)

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National Center for Research in Vocational Education

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LEADER ATTRIBUTES INVENTORY MANUAL

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LEADER ATTRIBUTES INVENTORY
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EXECUTIVE SUMMARY

This manual should be of particular interest to potential users of the *Leader Attributes Inventory* (*LAI*), as well as to those who study leadership and its measurement. The manual contains (1) the rationale, (2) the development and psychometric characteristics, and (3) an explanation of how to use the *LAI*.

The *LAI* yields a diagnostic assessment by multiple observers of 37 attributes that predispose desirable leadership performance in vocational education. Individualized feedback reports contain three charts which (1) compare the ratee's self-ratings with the average of his or her ratings-by-observers on each attribute, (2) compare the average of her or his ratings-by-observers on each attribute with an appropriate norm group, and (3) predict the level of leadership performance expected of the participant in his or her norm group.

The manual is organized into four chapters plus appendices. Chapter 1 describes the context in which the *LAI* was developed, and the conceptualization of leadership that forms its foundation. Chapter 2 explains how the *LAI* is used. The developmental history of the *LAI* and the measures of its reliability and validity are presented in Chapter 3. Chapter 4 describes the process used to establish the norm groups and standards. Finally, the appendices contain a copy of the *LAI*, an explanation of the development of the *Leader Effectiveness Index* (*LEI*) (which provides a criterion used to estimate the validity of the *LAI*), a sample of the individualized *LAI* feedback report, and various tables.

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CHAPTER 1
LEADERSHIP AND LEADERSHIP DEVELOPMENT

Introduction

The *Leader Attributes Inventory* (*LAI*) has been designed to make a diagnostic assessment of 37 attributes—characteristics, knowledge, skills, and values possessed by individuals—that predispose successful performance as a leader in vocational education. The instrument consists of 37 items, with each item being a positive statement of an attribute. A 6-point response scale accompanies each item. The scale describes the extent to which the person being rated possesses the attribute. A self-rating form and an observer-rating form are available. (Appendix A contains a copy of the rating-by-observer form.)

The *LAI* has been developed over the past six years with funding from the National Center for Research in Vocational Education (NCRVE). NCRVE consists of seven institutions of higher education headed by the University of California at Berkeley. The other institutions are Teachers College at Columbia University, RAND Corporation, University of Illinois, University of Minnesota, University of Wisconsin, and Virginia Polytechnic Institute and State University. NCRVE is supported by a grant from the Office of Vocational and Adult Education, U.S. Department of Education, as authorized by the Carl D. Perkins Vocational Education Act. The grant is for conducting research, development, dissemination, and training that will improve the practice of vocational education in the United States.

NCRVE's Role in Leadership Development

NCRVE's interest in leadership and leadership development stems from three sources. First, the Carl D. Perkins Vocational Education Act requires that NCRVE "provide leadership development services to vocational educators." The language of the act, however, gives no clues about the way in which the requirement is to be satisfied. Second, persons throughout the country who were consulted about NCRVE's overall program of work, as well as those who were interviewed specifically for the purpose of exploring strategies for leadership development, agreed unanimously that vocational education does not now have the number of effective leaders which it urgently needs. More importantly, they also agreed that a systematic effort to develop leaders was not being

made. Third, leadership becomes especially critical to organizations in unstable situations—situations in which change in the environment makes familiar ways of conducting the affairs of the organization unsatisfactory or irrelevant. NCRVE's Board of Directors believes strongly that now, as much as in any previous era, vocational education is in just such an unstable situation. The field is faced with a series of changes that are rapidly and significantly altering the educational and economic environment in which it exists—the changing nature of work, the changing ethnic and cultural composition of the student body, and the increasing public demands upon the education system. Vocational education must begin its own transformation if it is to remain a viable form of education in the new environment. Leaders are needed who can point to new directions and who can influence others to believe and to follow.

The Status of Research About Leadership

A great deal of research about leadership has been conducted during the last four decades in a wide variety of disciplines and fields of practice. Philosophy, anthropology, psychology, sociology, political science, social psychology, management, and the military have all contributed to the body of literature. Education is a latecomer to the study of leadership and almost no research has been done in vocational education. Despite this considerable attention, it seems fair to say that, as yet, there is no consensus on a specific definition of leadership, an explanatory model of leadership behaviors, or the most useful means for measuring the effectiveness of leaders. There is, however, substantial agreement that leadership is a viable construct and that it can be recognized in practice, that aspects of leadership behavior can be measured and shown to be related to effective performance, and that educational interventions can effect the behavior of leaders. Summing up the progress made in the study of leadership since World War II, Kenneth Clark (1988) puts it this way:

> We may not have given the world a comprehensive theory of leadership, complete with knowledge about how to increase the quality and number of leaders in future generations, but we have learned an enormous amount about the importance of certain qualities, about the effects of certain corporate or societal policies, and about ways in which persons with selected talents can be identified. (p. 1)

NCRVE's Program of Work

On the one hand, NCRVE has a compelling need to provide leadership development services for vocational educators. On the other hand, however, it is faced with the absence

of an agreed-upon comprehensive theory of leadership. The first task of NCRVE has become the creation of its own conceptualization of leadership and leadership development. The requirements of this conceptualization were that it be consistent with the results of prior empirical research and that it serve as a foundation for designing leadership development services and evaluating their effectiveness.

The conceptualization that resulted from an extensive review of the literature, as well as interviews with leadership theorists and trainers, defines leadership and leadership development. It advances an explanation of the sources of leadership behavior, makes explicit the criteria for assessing leadership performance in vocational education, and hypothesizes 37 attributes—characteristics, knowledge, skills, and values possessed by individuals—which predispose desirable leader behaviors (Moss & Liang, 1990). Because the justification for the content and use of the *LAI* resides in the conceptualization, its most relevant ideas are presented in the next section of this chapter. The research that has been conducted to test the usefulness of the conceptualization and to support the development of the *LAI* is presented in Chapters 3 and 4.

Concurrent with the creation of the *LAI*, NCRVE has carried out a preliminary review of instructional materials used in leadership programs to identify those that are available, relevant, high quality, and low cost (Finch, Gregson, & Reneau, 1992). As a direct result of this review, NCRVE personnel created a series of case studies (Finch et al., 1992) and an administration simulation (Finch, 1993) that may be used in leadership programs to apply leader attributes in problem-solving and decision-making situations that are realistic to vocational educators.

NCRVE has also stimulated, facilitated, and then evaluated the conduct of 17 new leadership development programs in universities across the country. The participants of ten of the programs were graduate students majoring in vocational education; the participants of the other seven programs were inservice vocational teachers and administrators (Leske, Berkas, & Jensrud, forthcoming; Moss, Jensrud, & Johansen, 1992). The *LAI* proved to be useful as one of the tools for assessing program effect. The results of the evaluation provided insights that have been used by NCRVE personnel to create a new leader development program for underrepresented groups in vocational education (Moss, Schwartz, & Jensrud, in press).

Conceptualizing Leadership and Leadership Development

A Definition

From NCRVE's perspective, leadership may be thought of . . .

> as both a process and a property. The *process* of leadership is the use of noncoercive influence to direct and coordinate the attributes of the members of an organized group toward the accomplishment of group objectives. As a *property*, leadership is a set of qualities or characteristics attributed to those who are perceived to successfully employ such characteristics. (Jago, 1982, p. 315)

Leadership, then, is the *process* of perceiving when change is needed and influencing the group by such noncoercive means as persuasion and example in its efforts toward goal setting and goal achievement.

The *property* of leadership is ascribed to an individual by members of a group when they perceive the individual (inferred from individual behavior) to possess certain qualities or characteristics. Members of the group allow an individual to lead and influence them when the individual's behaviors match the group's ideas about what good leaders should do in that context. Since leadership as a property lies in the eye of the beholder, only those who are perceived that way are leaders. The specific properties of leadership depend upon the qualitative nature of the behaviors accepted by a particular group as evidence of leadership. Given this concept, the perceptions of potential followers—subordinates or peers in formal organizations—are of primary importance when assessing the effectiveness of leadership.

Individuals who are seen as leaders enjoy the power of influence that is voluntarily conferred (Gardner, 1986b). By contrast, individuals appointed to supervisory positions within organizations (e.g., head, administrator) have the power of authority as a result of holding their positions. However, although supervisors can be given subordinates, they cannot be given followers. They must earn followers by displaying the qualities their subordinates ascribe to leadership. Consequently, any individual in the vocational education community (e.g., teacher, counselor, and administrator) can demonstrate behaviors consistent with the properties of leadership and, thus, be considered a leader by the group. While administrative positions in organizations may offer more opportunities to demonstrate leadership than some other positions, the position itself does not automatically confer leadership upon the holder.

Vocational education institutions, agencies, and the vocational education enterprise as a whole must have leaders at all levels and in all professional roles. Certainly it is critical for top-level administrators to be good leaders, but in order for organizations to achieve peak efficiency, leaders are needed throughout the organization (and the profession) in positions that have no authority as well as those that do.

The Tasks

The process of leadership may be further elaborated and the concept of leadership better understood by describing the broad tasks that comprise the leader's expected role in organized groups.

Before the information age, when very few members of an organization were informed, the organization could be structured hierarchically and management could be control-oriented. Leadership as noncoercive influence mattered little. However, as more and more members of the organization became better informed, they began to demand an increasing voice in the affairs of the organization. Without that voice, they began to balk at authority and find ways to subvert group action. Leadership through consultation, persuasion, and inspiration became necessary to achieve maximum group productivity (Cleveland, 1985; Gardner, 1986a; Kanter, 1981). The perspective taken by the NCRVE conceptualization is that a leader's role is to bring into focus the organization's vision, mission, and values; to help adapt the organization to the environment; and to secure the commitment of individuals in the organization and foster their growth by tapping their intrinsic motivation. The conceived role is essentially one of facilitating the group process and empowering group members.

In order to translate this perspective into more specific criteria that can be used to evaluate a leader's performance, four leadership tasks were first synthesized from several sources (Bass, 1981; Gardner, 1987c; Posner & Kouzes, 1988; Yukl & Van Fleet, 1982). Two tasks, philosophically consistent with the first four, were added later as the result of a validation study conducted to determine the tasks that are actually used as criteria by vocational teachers when they evaluate the leadership performance of their administrators (Moss, Finch, & Johansen, 1991).[1] The six leader tasks that describe the envisioned role

[1] The study is more fully described in Appendix B. An instrument, the *Leader Effectiveness Index* (*LEI*), has been developed to assess the extent to which leaders accomplish the six tasks. The *LEI* is contained in Appendix C.

of leaders in vocational education and which serve as criteria for the measurement of leader performance are as follows:

1. Inspires a shared vision and establishes standards that help the organization achieve its next stage of development. For example, creates a sense of purpose, defines reality in the larger context, instills shared values and benefits.

2. Fosters unity, collaboration, and ownership, and recognizes individual and team contributions. For example, creates a climate of community, builds morale, sets a positive tone, resolves disagreements.

3. Exercises power effectively and empowers others to act. For example, facilitates change, shares authority, nurtures the skills of group members.

4. Exerts influence outside of the organization in order to set the right context for the organization. For example, serves as a symbol for the group, secures resources, builds coalitions, acts as an advocate.

5. Establishes an environment conducive to learning. For example, provides intellectual stimulation, creates a supportive climate for learners, facilitates the professional development of staff.

6. Satisfies the job-related needs of members of the organization individuals. For example, respects, trusts, and has confidence in members, adapts leadership style to the situation, creates a satisfying work environment.

Leader Behaviors

As leaders attempt to achieve the six tasks of leadership, their specific behaviors within an organization are determined by their own attributes, which Jago (1982) calls qualities, interacting with their perception of (1) the group members' attributes (including the group's culture), (2) the particular task at hand, and (3) the general context in which the organization is operating. The behaviors that stem from this interaction are very situational; they change with the leader's perception of the prevailing context, the immediate task, and the relevant qualities of the group.

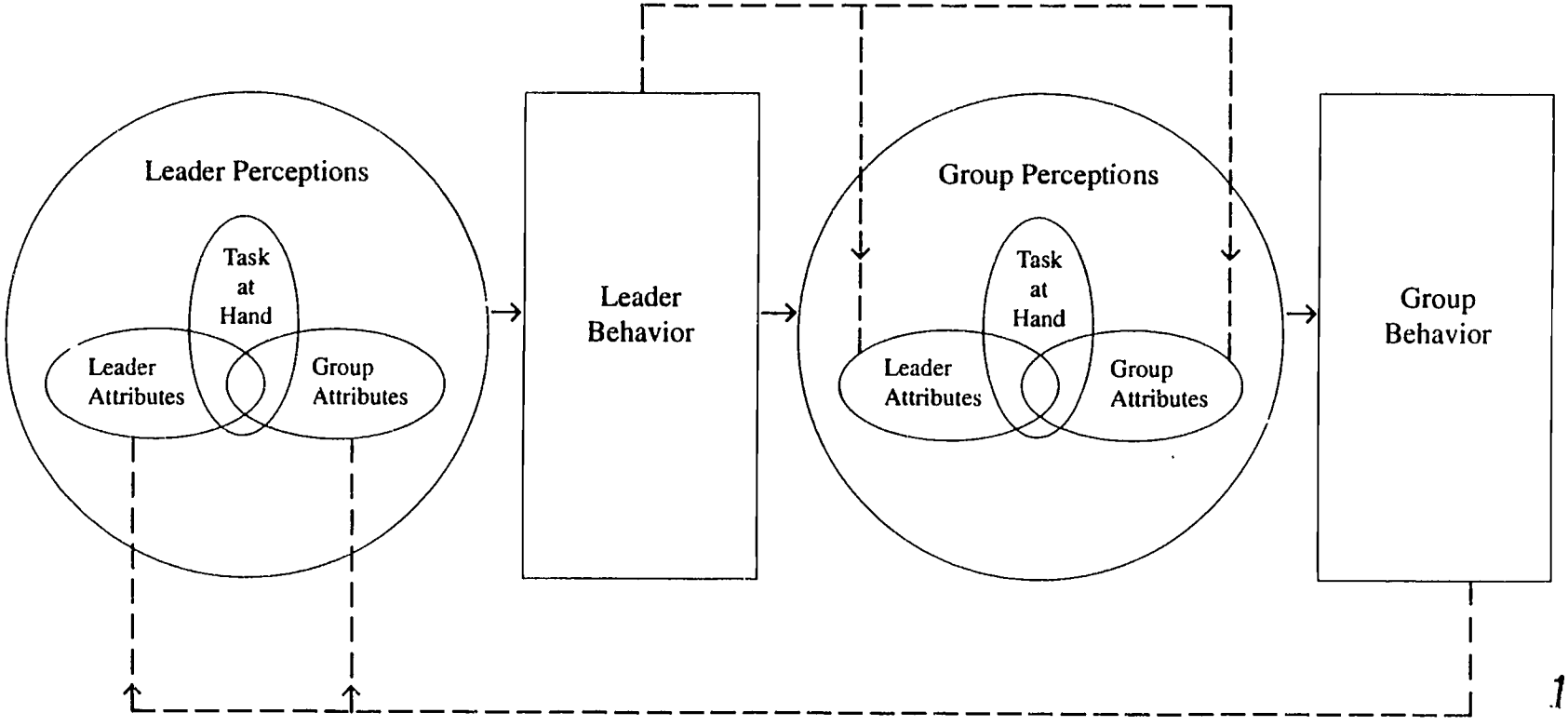
Group members filter the leader's behavior through their own perceptions of the context, the task at hand, and the leader's attributes, and then behave within the constraints

of their own attributes. The meaning systems of the leader and the group must, therefore, correspond or the intent of the leader's behavior will be misunderstood.

This model is depicted in Figure 1-1. Two feedback loops are shown. First, the leader may adjust perceptions of her or his own attributes, the group's attributes or both as the result of group behavior; this adjustment may result in an immediate (mid-course) correction of her or his behavior or changes in future behaviors. Second, members of the group may adjust their perceptions of the leader's or their own attributes, or both as a result of their assessment of the leader's behavior; this too may result in an immediate (mid-course) correction in their behavior or changes in future behaviors. One implication of the model is that the leader is influenced by the group, as well as vice versa, thereby making leadership behavior a possible dependent as well as an independent variable.

FIGURE 1-1

RELATIONSHIPS BETWEEN THE LEADER'S AND THE GROUP'S BEHAVIORS



Several classification systems have been created for categorizing the behaviors of leaders. One system classifies behavior as either initiating structure (task-oriented behaviors) or initiating consideration (people-oriented behaviors). Research has shown that the most effective leaders exhibit behaviors in both categories, with the balance influenced by the nature of the group, the task, and the context. More recently, behaviors have been categorized as either transactional or transformational (Bass, 1985; Burns, 1978). Transactional leaders give something in exchange for what they want; they direct energy, tend to live within the organizational culture, and hold followers in a dependent position. By contrast, transformational leaders synergize the energy of followers, alter the culture, and put themselves and their followers in an interdependent relationship. Researchers agree that both transactional and transformational behaviors are needed to accomplish the broad tasks of leadership. It has been shown, however, that leaders who exhibit greater amounts of transformational behaviors have a more positive impact on such criteria as team performance, subordinate's evaluation of effectiveness, satisfaction with leaders, and supervisor's ratings of leader performance (Avolio & Bass, 1988; Bass, 1987; Clover, 1988; Hater & Bass, 1987; Mueller, 1980; Yammarino & Bass, 1988).

Leader Attributes

While a leader's behaviors directly influence group performance, a leader's attributes—the characteristics, knowledge, skills, and values possessed by the leader—shape those behaviors. Within the constraints of a given situation—attributes, acting as predispositions, disinhibitors, and abilities—predispose individuals to behave in consistent ways. Attributes remain constant across situations to influence behavior in a wide array of tasks, groups, and contexts (Lord, DeVader, & Alliger, 1986). For example, attributes determine the tendency of an individual to use transactional or transformational behaviors (Brown & Hosking, 1986; Kuhnert & Lewis, 1987). The greater the latitude provided by the situation, the more likely it is that attributes will shape and guide behavior. Bass (1981) sums it up as follows:

> Strong evidence has been found supporting the view that leadership is transferable from one situation to another. Although the nature of task demands may limit transferability, there is a tendency for the leader in one group to emerge in this capacity in other groups. (p. 596)

Many researchers have linked attributes directly to an array of leadership criteria in a wide variety of situations. For instance, the kind and the amount of certain attributes an

individual possesses have been shown to be consistently and significantly related to such measures as rated managerial performance, advancement in business and education, and the emergence and succession rate of leaders (Arter, 1988; Behling & Champion, 1984; Hogan, Raskin, & Fazzini, 1988; Hollander & Offermann, 1988; House, 1988; Sashkin & Burke, 1988; Yukl, 1981). Earlier reviews of the literature such as Stogdill (1948) are often thought to have revealed that there are no relationships between intelligence, personality factors, and leadership. More recently, Lord et al. (1986) have used current meta-analysis methods to show that, to the contrary, there are significant and consistent relationships between personality factors and intelligence, and the emergence of leadership.

Thus, it can be presumed that there are some attributes, which, if possessed in adequate amounts, will increase the likelihood that desirable leadership behaviors will occur in a wide variety of situations. This is particularly true if those situations occur within a limited general context, such as vocational education.

What are those specific attributes? Although research on leaders and leadership in vocational education is almost nonexistent, the literature of several other fields is filled with ideas based upon theory, experience, and empirical research. In one publication alone, Bass (1981) reviewed 124 studies completed between 1904-1947 and 215 more between 1947-1970. Although no two studies were found to advance exactly the same set of attributes, there is a great deal of consistency among the kinds of attributes proposed. After reviewing a large number of available publications and interviewing several leadership theorists and trainers, a list of 37 attributes was compiled.[2] The list consists of the attributes that are hypothesized to predispose the behaviors that will achieve the six broad tasks of leaders in vocational education. (The 37 attributes are contained in the *LAI* shown in Appendix A.)

It has been assumed that the amount of each attribute possessed by individuals is normally distributed in the population of vocational educators. While some of the 37 leader attributes may be quite resistant to improvement, prior research has demonstrated that some of the attributes common to successful leaders can be increased by a reasonable amount of planned educational experiences (Bass, 1981; Lester, 1981; Manz & Sims, 1986; Yammarino & Bass, 1988; Yukl, 1981). The objective of leadership-development

[2] Originally, the list consisted of 35 attributes. In the process of developing the *LAI*, one of the attributes was found to be best stated as two attributes, and one new attribute was added, bringing the total to 37.

activities should, therefore, be to improve those leader attributes that prove to be susceptible to change by educational interventions. Those attributes that prove to be resistant to change might provide a basis for selection.

The Objectives of Leadership Development

The general purpose of leadership development in vocational education is, therefore, to increase the number and quality of leaders prepared to meet present and future challenges facing the field. More specifically, NCRVE has sought to accomplish that purpose by deliberately attempting to effect positive change in selected attributes (i.e., characteristics, knowledge, skills, and values possessed by individuals) to increase the likelihood that vocational educators will (1) perceive opportunities to behave as leaders, (2) grasp those opportunities, and (3) succeed in achieving the six tasks of leaders in a wide variety of situations and professional roles.

Leadership Development as a Part of Professional Development

Leadership development attempts to cultivate selected attributes to enhance the probability of successful performance as a leader in a wide variety of situations. These attributes are common to leadership behavior in all professional roles in vocational education; administrators, teachers, and counselors should have them. But in order to perform successfully as administrators or teachers, individuals need more than the common leadership attributes. They also need the knowledge and skill attributes that are unique to their given roles. These are the attributes that distinguish administrators from teachers, teachers from counselors, and counselors from administrators, determining whether individuals can perform the specific occupational or technical tasks of their professional roles. Leadership development is, thus, only one part of professional development. Professional development consists of cultivating both the leadership attributes *and* the attributes that facilitate successful performance in a particular professional role.

CHAPTER 2
USING THE *LEADER ATTRIBUTES INVENTORY*

Description

The *Leader Attributes Inventory* (*LAI*) is available in two forms—a rating-by-observer form and a self-rating form. Each form takes about 15 minutes to complete. The rating-by-observer form contains 37 items. Each item is a positive statement of a different attribute accompanied by a 6-point response scale which describes the extent to which the rater believes the person being rated (ratee) possesses the attribute. The response scale ranges from 1 (*very undescriptive*) to 6 (*very descriptive*). In addition, the form provides for entering an identification number for the rater; the date the rating is done; and the rater's gender, ethnic group, relation to the person being rated (e.g., subordinate, peer, supervisor), and extent of knowledge about the ratee (e.g., knows very well, and so on). The use of an identification number eliminates the need to obtain the name of the rater, thereby helping to preserve confidentiality while permitting the rating to be identified with a ratee. Appendix A contains a copy of the rating-by-observer form.

The self-rating form contains the same 37 items except that the positive statement of the attribute in each item is introduced with "I" (e.g., "*I* approach tasks . . ." instead of "Approaches tasks . . ."). The self-rating form also provides for entering the ratee's identification number; name and address; position, years of experience in similar positions, gender, ethnic group membership, and type and location of employer; and the date of the rating.

Applications

There are two major reasons for using the *LAI*. It can be used to secure an assessment of leader attributes at a point in time, or it can be used to measure change in leader attributes over time.

Point-in-Time Assessments

A self-assessment is the first step in leadership development. It pinpoints the attributes that should be strengthened, thereby establishing developmental goals from which action plans can be created. By completing just the self-rating form, the ratee

focuses her or his attention on the attributes that predispose desirable performance as a leader. The results increase self-knowledge about the rater's own leadership qualities and can provide input for career counseling.

Individuals who wish to improve their performance as leaders can complete the self-rating form and also have three to five subordinates (or peers if they have too few subordinates) who know them well at work complete the rating-by-observer form. In order to preserve the confidentiality of the ratings-by-others (and therefore their candidness), all the completed forms should be returned directly to the *LAI* vendor for scoring and completion of feedback reports. Individualized feedback reports contain three charts which (1) compare the ratee's self-ratings with the average of her or his ratings-by-observers on each attribute, (2) compare the average of the ratings-by-others on each attribute with an appropriate norm group, and (3) predict the effectiveness of leadership performance expected of the ratee in her or his norm group. Appendix D presents a sample of the feedback report which contains the three charts and an explanation of how the feedback is to be interpreted. Chapter 4 provides a description of the norm groups presently available for comparison and how they were created.

The comparison of the ratee's self-rating with the average of her or his ratings-by-observers on each attribute highlights discrepancies in perception. Knowledge of the discrepancies can, on the one hand, help the ratees understand frictions in interpersonal relationships and motivate them to strengthen selected attributes, or, on the other hand, can build self-confidence and psychological capital with attendant improved performance. The information can also provide the bases for constructive discussions with raters. The comparisons of the average ratings-by-observers on each attribute with the ratee's appropriate norm group and the prediction of level of leadership performance in the norm group indicate the ratee's relative standing in the group to which she or he belongs or aspires. This knowledge can also motivate efforts to improve leadership performance, provide additional evidence about specific attributes that need to be strengthened, and enhance self-confidence about present performance.

Change in Leader Attributes

The self-rating form can be used to measure change in leader attributes over time such as change influenced by a leadership development program. The change, however, reflects change in self-perception and should be assessed *retrospectively*. That is, the *LAI*

self-rating form can be administered twice *after* the leadership development program (or other intervention) has been completed. At the first administration the ratees should be instructed to rate themselves as they now perceive themselves to have been *before* beginning the leadership program (a retrospective measure). At the second administration (a few minutes after the first administration), the ratees are directed to rate themselves as they *currently* perceive their attributes. After adjusting the scores of the current ratings to account for "inflationary" tendencies,[3] the differences between current and retrospective scores indicate change in the rater's self-perception of her or his attributes.

Evidence from Moss, Johansen, and Preskill (1991), as well as Howard and his various colleagues (1979a, 1979b, 1979c), has shown that using a *retrospective* pretest often yields a more valid assessment of program effects than does the traditional pretest. In the case of measuring a socially desirable but ambiguous concept like leadership, especially when the rater knows that observers will not also be rating her or him, pretreatment self-ratings are apt to be inflated. At the time of the pretest, the rater lacks sufficient knowledge about the constructs being measured to make valid self-ratings. After engaging in the intervention (treatment program), participants have greater awareness of the constructs and of their own levels of functioning with respect to them. They are, therefore, able to make more accurate self-ratings. This change in frames of reference—lowering and making them more realistic—is a change in developmental level. It permits individuals to behave intellectually and interpersonally in a more flexible, effective manner (Hunt, 1971).

Another approach to measuring change in leader attributes is to use the traditional pretest-posttest design (with appropriate experimental precautions). The same three to five observers should complete the rating-by-observer form before the intervention starts and again sometime after the intervention has been completed. Differences in the average observer's pre- and posttest scores indicate changes in the ratee's attributes as perceived by the observers.

[3] The "inflationary" effect is estimated by averaging the increase in ratings on certain attributes which should *not* have been affected by the intervention, and by subtracting that average from the current ratings of all attributes.

Supporting Materials

In January 1994 a team of developers supported by NCRVE completed a leadership program entitled *Preparing Leaders for the Future: A Developmental Program for Underrepresented Groups in Vocational Education* (Moss, Schwartz, & Jensrud, in press). The program consists of 32 learning experiences (lessons) requiring approximately 90 clock hours of in-class instruction plus out-of-class assignments. The program, however, may be adapted to various lengths to suit the developmental needs of particular groups and individuals.

One section of the program is designed to assist participants in planning for their leadership development. Included in that section are two learning experiences which (1) introduce the conceptualization of leader attributes and (2) use the *LAI* self-rating and rating-by-observer forms to produce an assessment of each participant's leader attributes. A third learning experience in the same section uses the results of the attribute assessment, together with the results of other instruments, to help each participant formulate a leadership development plan.

Another section of the program is designed to develop specific leader attributes. Twenty-four learning experiences are provided to improve participants' performance on 23 of the 37 attributes assessed by the *LAI*. Each learning experience focuses on an attribute that is presumed to be improvable through a planned learning experience and relevant to the developmental needs of underrepresented groups in vocational education. The final learning experience requires the application of all the attributes through a simulation exercise in which participants administer a large postsecondary technical institute (Finch, 1993).

Each learning experience contains (1) a statement of a performance objective; (2) a description of the steps in the process and the knowledge base required to perform the desired behavior(s); (3) a plan for delivering the learning experience; (4) an outline of the content to be covered by the learning experience; (5) out-of-class assignments, and (6) master copies of the handouts and transparencies to be used in the delivery of the learning experience.

CHAPTER 3
DEVELOPING THE *LEADER ATTRIBUTES INVENTORY*

Developmental Stages

The *Leader Attributes Inventory* (*LAI*) was initially created in 1989 by Moss based upon the conceptualization reported in Chapter 1. After reviewing a large number of publications and interviewing several theorists and trainers, a list of 35 attributes was compiled. The attributes were compatible with the conceptualized role and tasks of leaders and had been shown in many prior studies to be related to effective leadership performance in a wide variety of situations.

The first instrument, then called the "Leadership Attributes Questionnaire," was an observer-rating form consisting of a list of the 35 attributes (without definitions), each accompanied by a 5-point response rating scale ranging from *exceptionally high* to *exceptionally low*. The reliability and validity of the instrument were tested by Liang (1990) in his dissertation and reported, together with the conceptualization, in Moss and Liang (1990). (The Liang study and its results are described in the sections of this chapter dealing with validity and reliability.)

One of the potential uses of the *LAI* is to evaluate the impact of leadership development programs. For this purpose, an instrument is needed that is sensitive to changes in attributes brought about by planned educational interventions. Many of the leadership programs were expected to be taken by full-time graduate students whose in-school peers and advisors are usually not familiar with their behavior in typical work situations. Consequently, reports by observers about the leader attributes of full-time graduate students would probably not be valid. The alternative was to create a self-rating form of the *LAI*. Definitional statements were written for each leader attribute to improve interrater reliability, and a 5-point and a 9-point rating scale based on the extent to which the attribute described the respondent (e.g., *nearly always true of me*, *not at all true of me*) were created. In addition, the name *Leader Attributes Inventory* was adopted and a 36th attribute (delegating) was added to the list. Each form was tried with a group of graduate students. The resulting self-ratings in both groups were bunched at the top of the scales; they allowed almost no room to show any improvement after a leadership development activity. Moreover, the low variability of scores on each attribute inevitably yielded low test-retest correlation coefficients. In an attempt to spread the scores of respondents, many

of the definitional statements were revised to improve clarity, one of the attributes was split into two (making a total of 37), and a 7-point rating scale from 40% to 100% in 10% intervals was introduced. A tryout of this form yielded equally unsatisfactory results; ratings were still bunched at the top of the scale and test-retest correlation coefficients were still unsatisfactory. It was evident that the *LAI* could not be used with graduate students as a self-report if the purpose was to obtain a pretreatment measure of leader attributes. Graduate students perceive themselves as leaders or potential leaders and rate themselves highly on leader attributes—particularly when they know that their self-ratings will not be compared with ratings by their subordinates or peers.

Fortunately, a leadership development program for graduate students in vocational education was just ending and it was possible to administer the self-rating form of the *LAI* twice to the 24 participants immediately *after* the conclusion of instruction. For the first administration, the students were instructed to rate themselves as they currently perceived themselves to have been *before* beginning the leadership program (a retrospective measure). For the second administration, the students were directed to rate themselves as they presently perceived their attributes. The results of using the *LAI* as a retrospective pretest instead of as a traditional pretest were very encouraging. The average of the *before* ratings for the 37 attributes on the 7-point scale (40%-100%) was 78.0 (SD = 7.8). The average of the *current* ratings was 85.3 (SD = 6.2). After reducing the current ratings to allow for an "inflationary" effect,[4] 24 of the 37 leader attributes showed statistically significant ($p \leq .05$) increases in ratings between the perception of *current* and *before* attributes. Three weeks later the *LAI* was administered again and the results compared with perceptions of attributes before the program. Seventeen of the 37 attributes continued to show statistically significant gains ($p \leq .05$) (Moss, Johansen, & Preskill, 1991). The leadership development program had, indeed, changed participants' perceptions of their attributes, and the *LAI* was sensitive to those changes. In all likelihood the leadership development experience had shifted participants' frames of reference about their own attributes. It lowered their pretreatment perceptions and probably made them more consistent with the ratings others would have given them. This change in participants' frames of reference—making them more realistic—is a change in developmental level. It permits individuals to behave intellectually and interpersonally in a more effective, flexible

[4] The "inflationary" effect was estimated by averaging the increase in ratings on certain attributes which should not have been affected by the program, and by subtracting that average from the current ratings of all attributes.

manner (Hunt, 1971). Studies by a number of other researchers have shown that the use of retrospective pretests in place of traditional pretests more accurately reflect the degree of change due to treatment as assessed by behavioral measures (Bray & Howard, 1980; Froberg, 1984; Hoogstraten, 1982; Howard & Dailey, 1979a; Howard, Ralph, Gulanick, Maxwell, Nance, & Gerber, 1979b; Howard, Schneck, & Bray, 1979c).

As previously pointed out, a lack of variability in ratings will always lead to low test-retest correlation coefficients, but the bunching of individual scores on an attribute is not important in the evaluation of programs—there is no need to discriminate among individuals. The critical question is the *consistency* with which individuals respond to the *LAI* on repeated administrations. To test consistency of responses, two samples of graduate students were used. The first sample was administered the *LAI* self-rating form twice, with an interval of two weeks. The second sample was administered the *LAI* observer-rating form twice with a three-week interval. The percentage of individuals who responded either exactly the same or plus/minus one point on the rating scale on the two administrations was calculated for each attribute. Despite the fact that the test-retest correlation coefficients on the observer-rating form were satisfactory (the range was .53 to .89) and the coefficients on the self-report (ranging from .15 to .77) were not, there was as much *consistency* of responses on the self-rating form as there was on the observer-rating form (Moss, Johansen, & Preskill, 1991). Thus, it was concluded that the reliability of the *LAI* as a self-report, when assessed in terms of response consistency, is satisfactory, and that it can be used as a retrospective measure to assess the effects of leadership development activities.

Attention then returned to testing the *LAI* observer-rating form using the 37-item instrument with a 7-point rating scale (40%-100% in 10% intervals). A class of master's- and baccalaureate-level students (n=38) from Cardinal Stritch College majoring in management agreed to cooperate. All of the students were employed in business and most claimed to have managerial experience. They were asked to rate their current supervisors on each of the 37 leader attributes. An average rating of 76.3 (SD = 4.0) was obtained. This average can be compared with the 78.0 average (SD = 7.8) of the *before* (retrospective) self-report ratings of the graduate student group who had completed the leadership development program. It tends to confirm that an effect of the leadership development program is to make participants' assessments of their own leader attributes more realistic. The sample of management students also rated the managers whom they

knew best on the *Leader Effectiveness Index (LEI)*[5] (four tasks using a 5-point response scale), and were readministered the *LAI* three weeks later. (The validity and reliability data of the *LAI* observer-rating form are described in later sections of this chapter.)

In preparation for establishing norms and standards for the *LAI* observer-rating form, a series of versions in the 37-item, 7-point response scale (40%-100% in 10% intervals) instrument were tried out.

First, the 7-point response scale was changed to a 6-point descriptive scale ranging from *very undescriptive* to *very descriptive*. A number of respondents from earlier samples had complained about trying to distinguish between percentages of time that the attributes applied to ratees; they did not think about attributes in those terms. In a meeting with David Campbell (personal communication, January 7, 1993) he reported using a 6-point descriptive scale with a large number of respondents. None complained about the lack of a mid-point, and he had found it useful to force a non-neutral choice. At the same time, the wording of two of the 37 attributes and the definitions of two other attributes were slightly changed to improve clarity and precision of meaning. This version of the *LAI* was then administered to a group of 37 graduate students in vocational education together with the final form of the *LEI*. The *LAI* was readministered one week later.

For the next two versions, a negative statement expressing the same concept as the positive definition was prepared for each attribute and added to the instrument. The positive and negative statements for each attribute described opposite ends of the continuum for the attribute. The intent was to force the rater to take two looks at the ratee in terms of each attribute and to place the ratee on the continuum twice—once from a positive perspective and once from a negative perspective. Theoretically, both ratings should place the ratee at the same point on the continuum, but where they do not, the average of the two ratings should represent the most reliable, valid judgment of the rater. Using a 6-point scale, each attribute could be rated from 2 to 12 points (the sum of the ratings on the positive and negative statements) which could increase the variability of the scores, at the same time reducing response set. One version of the *LAI* contained 74 items, with the name of each attribute accompanied by a positive and a negative statement (in random order). The second version of the 74-item *LAI* did not include the name of the attribute, but simply randomly ordered all 74 positive and negative items. These two versions were

[5] See Appendix B for an explanation of the *LEI*.

tested with groups of 37 and 25 graduate students in vocational education. The 1993 form of the *LEI* was also administered to each group, and each *LAI* version was readministered one week later to estimate test-retest reliability.

The psychometric characteristics of the two 74-item versions of the *LAI* were almost identical to the 37-item version (all versions using the 6-point descriptive response scale). Further, several respondents complained about having to complete the negative items; they felt uncomfortable with rating their supervisors in negative terms and said that the items were too repetitive. Since the 37-item version was considered more user friendly, and the psychometric characteristics did not differ appreciably among the versions, it was decided to proceed with developing norms and standards using the 37-item version of the *LAI* with a 6-point descriptive response rating scale.

In the process of trying out various forms of the *LAI*, it was recognized that the total score of the 37 attributes (or their average) was a very useful measure. While individual attribute scores can be compared with one another or with a comparison group, and they can provide the basis for creating an instructional program to improve each attribute, the total score is a measure of the extent to which the individual possesses all of the attributes. Using the total score is also consistent with the psychometric properties of the *LAI*. As will be reported later in this manual, the *LAI* has very high internal consistency, and attempts at factor analysis result in a dominant first factor, both indicating that the instrument is measuring one rather homogenous concept—leadership.

Reliability

Reliability measures consistency. However, the consistency of the measures yielded by an instrument can be assessed in several ways. The consistency of responses by an individual to an item over short periods of time—the stability of his or her responses—is test-retest reliability. The internal consistency of the items on the instrument is the extent to which the items are measuring the same (homogeneous) concept (i.e., leadership). Interrater reliability measures agreement among raters—the extent to which two or more group members, each having an equal opportunity to know the leader, agree on their ratings of the leader. Some evidence of all three types of reliability of the *LAI* have been gathered.

Test-Retest Reliability

Three studies have been completed which provide estimates of the *LAI* test-retest reliability over short periods of time.

Table 3-1 presents the ranges of the test-retest correlation coefficients of the individual attributes as well as the means of the individual attribute test-retest correlations in the three studies. Note the consistency of the summary data in the table despite differences in the *LAI* and in the nature of the samples used.

Table 3-1
***LAI* Test-Retest Reliabilities**

Sample	Correlation Coefficients (Measured 1-3 weeks apart)	
	Range	Mean
MN Technical College Instructors (n=36)[1]	.64-.87	.78
Management Students (n=38)[2]	.53-.89	.76
Voc. Ed. Graduate Students (n=37)[3]	.47-.89	.74

[1] 35 attributes using a 5-point scale
[2] 37 attributes using a 7-point scale
[3] 37 attributes using a 6-point scale

Liang (1990), in his study using Minnesota's technical college instructors, administered the earliest observer-rating form of the *LAI* twice, two weeks apart, to a subsample of instructors (n=36). The *LAI* contained a listing of 35 attributes (with no definitions) and a 5-point response scale ranging from *exceptionally high* to *exceptionally low*. The instructors rated the vocational administrator whom they knew best.

Moss, Johansen, and Preskill (1991) reported a study of part-time master's- and baccalaureate-level management students enrolled in Cardinal Stritch College (n=38). The *LAI* observer-rating form was administered twice, three weeks apart. The students rated their current supervisors using the instrument measuring 37 attributes with 37 items (including definitions) and a 7-point response scale (40% to 100% in 10% point intervals).

The third study used a sample (n=37) of vocational education graduate students who rated the vocational administrator whom they knew best. The current observer-rating form of the *LAI* was administered one week apart. The *LAI* contains 37 items measuring 37 attributes (with their definitions), and uses a 6-point response scale from *very undescriptive* to *very descriptive*.

Table 3-2 contains the test-retest reliability coefficient of each item and the total score on the current *LAI* observer-rating form. Typically, the test-retest coefficients should be at least .40, with .69 to .70 considered *quite high* (Velsor & Leslie, 1991). Using that standard, only two or three of the items would be considered only acceptable, but the rest of the coefficients are at least *quite high*. It is likely that the lowest coefficients are a function of the particular sample used because the coefficients found on those same items in the other two studies were in the range of .60 to .80. Note that the coefficient of the average score of the *LAI* is .97.

It is also important to point out that the coefficients reported in Table 3-2 are indices of the stability of responses by individual raters. The recommended use of the *LAI* observer-rating form is to utilize the average rating of three to five raters for each ratee. This average rating is very likely to be more stable than any individual rating, and the test-retest correlation coefficient will be correspondingly higher. (Test-retest data using average ratings for each ratee is not available yet.)

Table 3-2
Test-Retest Reliabilities of *LAI* Attributes[1]
(Measured with a one week interval)

Attribute	CC[2]	Attribute	CC
1. Energetic with stamina	.75	20. Ethical	.72
2. Insightful	.63	21. Communication (listening, oral, written)	.80
3. Adaptable, open to change	.78	22. Sensitivity, respect	.85
4. Visionary	.67	23. Motivating others	.67
5. Tolerant of ambiguity and complexity	.68	24. Networking	.81
6. Achievement-oriented	.87	25. Planning	.73
7. Accountable	.62	26. Delegating	.79
8. Initiating	.50	27. Organizing	.74
9. Confident, accepting of self	.68	28. Team building	.85
10. Willing to accept responsibility	.66	29. Coaching	.73
11. Persistent	.47	30. Conflict management	.79
12. Enthusiastic, optimistic	.64	31. Time management	.84
13. Tolerant of frustration	.73	32. Stress management	.73
14. Dependable, reliable	.89	33. Appropriate use of leadership	.75
15. Courageous, risk taker	.55	34. Ideological beliefs appropriate to the group	.81
16. Even disposition	.80	35. Decision-making	.78
17. Committed to the common good	.75	36. Problem-solving	.83
18. Personal integrity	.72	37. Information management	.77
19. Intelligent with practical judgment	.80	Average score of all attributes	.97

[1] *LAI* consists of 37 items with a 6-point response scale.
[2] Correlation coefficient

Internal Consistency

Internal consistency indicates the extent to which the items making up a scale or the complete instrument are measuring the same thing. Cronbach's alpha is the statistic most widely used to assess internal consistency.

Two estimates of internal consistency have been made to date. In the first, 37 graduate students majoring in vocational education rated vocational administrators whom they knew best using the current (1993) version of the *LAI* (37 attributes with definitions) and a 6-point response scale. The alpha obtained was .97.

The second estimate was made as a part of a study to establish norm groups for the *LAI* (see Chapter 4 for a description of the samples and the norming process). Using the average of three to five ratings-by-observers as the score for each of the 37 attributes and a sample size of 551, the alpha of the current version of the *LAI* was .98. (After normalizing and standardizing the scores, the alpha remained at .98.)

Interrater Reliability

Agreement within groups of raters is called interrater reliability. In this case it measures the extent to which a group of three to five raters, each rater using his or her own perception of the ratee and of the attribute, agree on their ratings of the ratee. The interrater reliability of each of the 37 attributes and the average of the 37 attributes is reported in Table 3-3. The data from three to five raters about each ratee was collected as a part of the study designed to establish norms and standards for the current *LAI*. Consequently, interrater reliabilities are shown for each of the two norm groups that were created. (See Chapter 4 for a description of the norming study.) The raters were either subordinates or peers of the ratees (peers were used when the ratee did not have five subordinates). Interrater reliabilities of the individual attributes for the two norm groups ranged from .75 to .84; the coeff cients for the average score of the 37 attributes were .91 for both groups.[6]

[6] Coefficients of interrater reliability equal $1-(SE/Sx)^2$, where SE is the standard error of a given attribute and Sx is the standard deviation of the scores of all the raters.

Table 3-3
Coefficients of Interrater Reliability of the *LAI*[1]

Attributes	Norm Group	
	Vocational Administrators (n=388)	Vocational Teacher Leaders (n=163)
1. Energetic with stamina	.82	.80
2. Insightful	.79	.80
3. Adaptable, open to change	.84	.81
4. Visionary	.82	.78
5. Tolerant of ambiguity & complexity	.79	.78
6. Achievement-oriented	.80	.80
7. Accountable	.79	.79
8. Initiating	.80	.81
9. Confident, accepting of self	.79	.78
10. Willing to accept responsibility	.79	.78
11. Persistent	.77	.78
12. Enthusiastic, optimistic	.80	.79
13. Tolerant of frustration	.81	.86
14. Dependable, reliable	.82	.79
15. Courageous, risk-taker	.79	.80
16. Even disposition	.81	.81
17. Committed to the common good	.79	.78
18. Personal integrity	.79	.81
19. Intelligent with practical judgment	.80	.77
20. Ethical	.80	.79
21. Communication (listening, oral, written)	.80	.81
22. Sensitivity, respect	.81	.80
23. Motivating others	.81	.78
24. Networking	.79	.78
25. Planning	.79	.78
26. Delegating	.77	.77
27. Organizing	.80	.78
28. Team building	.80	.78
29. Coaching	.78	.76
30. Conflict management	.79	.78
31. Time management	.82	.75
32. Stress management	.79	.79
33. Appropriate use of leadership style	.79	.77
34. Ideological beliefs appropriate to the group	.79	.76
35. Decision-making	.81	.81
36. Problem-solving	.80	.77
37. Information management	.79	.76
Average score of all attributes	.91	.91

[1] *LAI* with 37 attributes using a 6-point scale

Validity

Several aspects of validity are being assessed for the *LAI*. First, face and content validity ask the following questions: Do the items make sense to the respondents, and do leaders actually behave in ways that utilize the attributes measured by the instrument? Second, concurrent validity seeks to determine the extent to which the instrument explains the variance in other indicators of concurrent performance as a leader. Third, the factor structure of the instrument indicates the manner and degree to which the items can be grouped for diagnostic or instructional purposes. Fourth, the sensitivity of item scores indicates the usefulness of the instrument to assess the effectiveness of leadership training programs and the growth of leader qualities. Fifth, drawing upon the evidence of all the foregoing aspects of validity, a judgment can be made about the instruments' construct validity; that is, does it measure NCRVE's conceptualization of leadership?

Face and Content Validity

In all of the studies conducted using the *LAI*, in every one of its versions, there have been no respondents who have said that any attribute was irrelevant to their concept of leadership. Quite the opposite is true. Many respondents have commented on the importance of all the attributes to leader performance.

Four studies have been reported which assess the extent to which the 37 attributes in the *LAI* are used by leaders in vocational education. Finch, Gregson, and Faulkner (1991) identified highly successful secondary and postsecondary vocational administrators in seven states. Each administrator and two teachers who worked with them were then interviewed. The administrators were asked to describe in detail two situations in which they felt successful and one situation in which they felt unsuccessful as leaders. The teachers were asked to describe just two situations in which they felt their administrators to have behaved exceptionally well as leaders. Two hundred seventy-two behavioral events resulted from that process. The events were then analyzed to determine the attributes that would predispose and direct the successful behaviors (and the attributes whose absence would predispose unsuccessful behaviors). The authors concluded that no new attributes were needed to explain the exemplary leadership behaviors, and although several attributes were linked to a small number of behavior examples, most attributes could be tied to a host of relevant behaviors.

NCRVE partially supported, and then evaluated, 17 new or completely revised programs of leadership development in institutions and agencies around the country. Ten of these programs were for graduate students majoring in vocational education (n=180); seven were for inservice vocational personnel (n=85). The programs varied greatly in length and intensity. They ranged from a total of six hours in one day to 90 hours of class instruction plus 180 hours of outside assignments spread over nine months. The mean length of the programs for graduate students was 39 hours, and for inservice personnel it was 24 hours.

The contents and methods of the 17 individual programs also varied greatly. For example, the key features of the ten programs for graduate students included (1) seminars with a semester-long internship; (2) seminars coupled with field trips (one to five days each); (3) seminars plus teams of participants instructing teachers in the field; (4) one-day workshops focused on health-related attributes; (5) seminars with a focus on self-assessment and planning for self-improvement; (6) three, 2½ to 5 day retreats with several months between sessions; and (7) team-taught seminars with applications to contemporary problems in vocational education.

The programs for inservice personnel were equally varied, and included (1) developing individualized leadership training plans; (2) seminars coupled with shadowing and workshops; (3) on-site workshops which included tele-learning and multiple-site tele-learning sessions; (4) a specialized undergraduate/graduate credit course; (5) a six-hour transportable model workshop combined with individualized plans of action; (6) a series of planning meetings plus a two- and a three-day training workshop; and (7) a 2½-day workshop followed by a series of four seminars. Class sizes were as small as three and as large as 26, with a mean of 15 (Leske et al., forthcoming; Moss et al., 1992).

As a part of the evaluation of the 17 programs, a student follow-up was conducted six months after each program was concluded. One of the questions asked was which of the 37 leader attributes had been *most useful* to them after leaving the program. (The item permitted more than one attribute to be checked.) Between 15% and 56% of the respondents from the graduate programs, and 6% to 46% from the inservice programs considered each of the 37 attributes *most useful*. Of particular interest is the fact that participants from both sets of programs agreed on eight of the ten attributes considered *most useful* to them (see Table 3-4).

Table 3-4

Ten Attributes Considered Most Useful by Each Group of Programs

Leader Attribute	Ten Most Useful Attributes[1]	
	10 Graduate Student Programs	7 Inservice Personnel Programs
Adaptable, open to change	56%	46%
Communication (listening, oral, written)	55%	44%
Insightful	51%	35%
Visionary	51%	38%
Team building	50%	39%
Willing to accept responsibility	50%	41%
Confident, accepting of self	48%	
Motivating others	47%	35%
Planning	47%	
Networking	45%	36%
Decision-making		39%
Delegating		38%

[1] Percent of participants who judged each attribute to be most useful to them

Wardlow, Swanson, and Migler (1992) conducted an interpretive study of 15 vocational institutions in 11 states, each of which offered exemplary vocational programs at the secondary or postsecondary level. The authors concluded that having an effective leader is a critical component of effective schools. They further concluded that effective leaders have good communication skills, are willing to delegate and share power, create a climate of trust and respect, and are sensitive to and respectful of the needs of staff. The effective leaders als instill a clear vision of the institution's mission, are willing to take reasonable risks, foresee trends and events, and are adaptable. All of these qualities are included among the 37 leader attributes identified by the literature review.

Thus, the evidence accumulated to date indicates that the 37 leader attributes in the *LAI* are actually used by vocational educators who are engaged in successful leadership activities.

In one study to assess the content validity of the *LAI* beyond the field of vocational education, Bensen (1994) sought to determine the importance of the 37 attributes to leaders in industrial technology/technology education. Data was collected from 22 faculty members and 81 recent doctoral graduates from 17 institutions. Bensen concluded that the very high ratings by both faculty and graduates appear to confirm the importance of all 37 attributes to leaders in industrial technology/technology education.

Concurrent Validity

Concurrent validity of the *LAI* has been assessed in three ways. First, *LAI* observer-ratings have been correlated with the ratings of the same observers on the *LEI*. As explained in Appendix B, the *LEI* measures the degree to which leaders in vocational education have attained six leadership tasks. These tasks provide the criteria of leader performance. They are the operational definition of NCRVE's conceptualization of effective leadership. Studies have also shown that these six tasks are those which vocational educators actually use to judge leader effectiveness, and that the *LEI* measures the tasks reliably. (Appendix C contains a copy of the instrument.) Second, *LAI* observer ratings have been correlated with ratings by the same persons on the *Multifactor Leadership Questionnaire* (*MLQ*). The *MLQ*, developed by Bass and Avolio (1990), has been designed to assess transformational, transactional, and laissez-faire (nonleadership) leader behaviors. Correlation coefficients indicate the extent to which the *LAI* and *MLQ* ratings are measuring the same concept. Third, scores on the *LAI* have been correlated with measures, other than test scores, that reflect current effectiveness as a leader.

In one study (Liang, 1990), the *LAI* was administered to a stratified (by gender and college) random sample of full-time vocational instructors in Minnesota's 34 technical colleges. The instructors were asked to rate the vocational administrator (director, assistant director, or adult evening director) whom they knew best on a two-part instrument. The first part contained a list of 35 leader attributes, each followed by a 5-point rating scale that ranged from *exceptionally high* to *exceptionally low*. The second part of the instrument contained four items, each one covering one of four tasks of leaders: (1) inspire a vision, (2) foster collaboration and ownership, (3) exercise power effectively and enable others to act, and (4) set the right (external) context for the organization. The four items included a 5-point response scale from *extremely effective* to *not effective*. On half of the instruments the 35 leader attributes were listed first, and on the other half, the four task/criterion items were listed first.

With 282 respondents, all 35 leader attributes were significantly (.001) related to all four items of leader effectiveness. The highest correlation coefficients, however, were obtained between each of the 35 attributes and the mean of the four items of effective performance. Correlation coefficients ranged from .56 to .82 and averaged .70. (See Table 3-4.) A stepwise multiple regression in which the 35 leader attributes were correlated with the mean of the four effective performance items revealed that six of the 35 attributes explained 81% of the variance in effectiveness (R = .90). The six attributes were (1) motivating others; (2) team building; (3) adaptable, open to change; (4) information management; (5) willing to accept responsibility; and (6) insightful.

In the same study (Liang, 1990), the 282 technical college instructors also completed the *MLQ* about the same vocational administrators. The scores on the seven scales of the *MLQ* were correlated with the ratings on each of the 35 *LAI* leader attributes. Multiple correlations (combining leader attributes) were also calculated for each of the seven *MLQ* scales. As shown in Table 3-5, there is a close relationship between the *LAI* attributes and the four transformational scales of the *MLQ* (r = .50 to .81; R = .83 to .92). The relationship between the *LAI* attributes and the contingent reward scale of the *MLQ* is also fairly high (r = .46 to .69; R = .74), but it is quite low with the management by exception scale. As might be expected, there are fairly high negative relationships between the *LAI* attributes and the *MLQ* laissez-faire scale (nonleadership).

A second study (Moss, Johansen, & Preskill, 1991) used 38 part-time graduate and undergraduate students majoring in management. The students, all of whom were employed in business and industry, were asked to rate the managers they knew best on the *LAI* and the *LEI*. The *LAI* contained 37 attributes with a 7-point response scale (40%-100%). The *LEI* contained the same four task/criterion items used in the Liang (1990) study reported above. Table 3-5 reports the findings. Note that the same high correlation coefficients found in the Liang study were also found by this study.

Table 3-5

Correlation Coefficients Between Ratings of Each of the Leader Attributes (*LAI*) and the Mean of the Leader Tasks (*LEI*)

Sample	Range	Mean
MN Technical College Instructors (n=282)[1]	.56-.82	.70
Management Class (n=38)[2]	.40-.88	.72
Voc. Ed. Graduate Class (n=37)[3]	.35-.87	.73

[1] *LAI* with 35 attributes using a 5-point scale; *LEI* with 4 items
[2] *LAI* with 37 attributes using a 7-point scale; *LEI* with 4 items
[3] *LAI* with 37 attributes using a 6-point scale; *LEI* with 6 items

A third study, completed in 1993, was carried out as a pilot effort in preparation for collecting data to establish norms and standards for the *LAI*. It utilized the current form of the *LAI* (37 attributes with a 6-point response scale) and the current form of the *LEI* (six items/tasks plus a seventh item to measure overall assessment of the leader's performance; all seven items used a 6-point response scale). Thirty-seven graduate students were asked to rate the vocational administrator whom they knew best on both instruments. Correlation coefficients between each of the 37 leader attributes and the mean of the six *LEI* items varied from r = .35 to .87; the mean of the 37 coefficients was r = .73 (see Table 3-6).

Table 3-6
Correlation Coefficients Between Leader Attributes (*LAI*) and *MLQ* Factors[1]

MLQ Factors	*LAI* Attributes		
	Mean Coefficient (r)	Range of Coefficients (r)	Multiple Correlation Coefficients (R)
Transformational Leadership			
1. Charisma	.70	.53-.81	.92
2. Individualized Consideration	.67	.51-.78	.86
3. Intellectual Stimulation	.61	.47-.75	.83
4. Inspiration	.67	.50-.81	.89
Transactional Leadership			
1. Contingent Reward	.57	.46-.69	.74
2. Management by Exception	.10	.01-.21	.29
Laissez-Faire Leadership	-52	-.32-.64	-.69

[1] n=282 technical college instructors

A fourth study utilized the actual data collected to establish norms and standards for the current (1993) version of the *LAI* (as shown in Appendix A). For this norming study, three to five observers were used to rate each person in the sample on both the *LAI* and the *LEI*. The average rating of these three to five observers for each ratee was used to correlate each of the 37 attributes (and the overall mean score of the 37 attributes) with the average rating of the same three to five observers for each ratee on the mean of the first six *LEI* items (see Appendix C). Table 3-7 reports the resulting correlation coefficients for the total sample of 551 ratees. Since two norm groups were subsequently established from the sample, Table 3-7 also reports the coefficients for each group: vocational administrators (n=388) and vocational teacher leaders (n=163). Correlation coefficients for the former group range from .51 to .80; coefficients for the latter group range from .45 to .70. (Chapter 4 describes the sample and process used to establish the norm groups.)

Table 3-7 shows that the correlation coefficients between the average score on the 37 *LAI* attributes and the average score of the first six *LEI* items are .84 for the total sample

of 551 ratees, .86 for the vocational administrator norm group, and .79 for the vocational teacher leader norm group. The coefficients indicate a close relationship between the attributes and leader performance, and are high enough to justify using the average score on the 37 *LAI* items to predict performance for the purpose of motivating ratees to engage in leadership development activities.

Only two studies have been found which test the relationship of current *LAI* scores to current effectiveness as a leader (other than using scores on the *LEI* and the *MLQ*). In other words, how accurately does the *LAI* assess some aspects of current leadership performance?

White, Asche, and Fortune (1992) reported on a study utilizing a volunteer sample of 812 adults in five Southern states, of whom 96% were African Americans and 62% women. Thirty-seven percent had less than a high school diploma. Immediately after undergoing a brief workshop to familiarize participants about leadership concepts, the *LAI* (self-rating form) and a questionnaire about the sample's current leadership activities were administered. It was found that in four out of seven organizations—community, youth, political, and civic—those who participated regularly in the organizations had significantly ($p \leq .05$) higher average *LAI* scores than those who participated in the organizations only occasionally or not at all.[7] In the remaining three organizations—church, professional, and fraternal—those who participated regularly had the highest average *LAI* scores, but their scores were significantly ($p \leq .05$) greater than only those who did not participate at all. Further, the correlation coefficients between the average *LAI* score and responses to the question, "Do others consider you a leader?" was $r = .28$.

In the second study, Migler (1991) compared the *LAI* scores of 24 administrators drawn from a national purposive sample of twelve excellent postsecondary vocational schools with a sample of 24 administrators employed at a random sample of twelve technical colleges in Minnesota. Groups of five teachers at each school were used to rate each administrator on the *LAI*. Migler found that the two groups of administrators had significantly different ($p \leq .05$) ratings on five of the 37 leader attributes: (1) insightful, (2) tolerant of ambiguity and complexity, (3) organizing, (4) time management, and (5) decision-making. For all five attributes the administrators at the excellent institutions had the higher scores.

[7] The effect sizes of the differences in means ranged from .22 to .31.

Table 3-7

Correlation Coefficients Between Average Ratings of Each Leader Attribute (*LAI*) and the Mean of the Leader Tasks (*LEI*)

Attribute	Total Sample (n=551)	Vocational Administrators (n=388)	Vocational Teacher Leaders (n=163)
1. Energetic with stamina	.53	.51	.55
2. Insightful	.60	.61	.59
3. Adaptable, open to change	.59	.62	.50
4. Visionary	.62	.61	.67
5. Tolerant of ambiguity & complexity	.66	.67	.63
6. Achievement-oriented	.65	.66	.61
7. Accountable	.63	.64	.59
8. Initiating	.58	.56	.62
9. Confident, accepting of self	.63	.66	.53
10. Willing to accept responsibility	.57	.61	.48
11. Persistent	.56	.55	.59
12. Enthusiastic, optimistic	.61	.62	.60
13. Tolerant of frustration	.53	.54	.51
14. Dependable, reliable	.60	.62	.52
15. Courageous, risk-taker	.55	.57	.52
16. Even disposition	.52	.53	.49
17. Committed to the common good	.62	.65	.52
18. Personal integrity	.68	.69	.65
19. Intelligent with practical judgment	.61	.65	.52
20. Ethical	.58	.59	.57
21. Communication (listening, oral, written)	.64	.65	.60
22. Sensitivity, respect	.57	.57	.57
23. Motivating others	.77	.80	.70
24. Networking	.63	.63	.62
25. Planning	.64	.67	.55
26. Delegating	.53	.55	.55
27. Organizing	.58	.60	.53
28. Team building	.76	.79	.66
29. Coaching	.69	.73	.59
30. Conflict management	.68	.69	.65
31. Time management	.52	.54	.45
32. Stress management	.57	.58	.55
33. Appropriate use of leadership style	.75	.76	.69
34. Ideological beliefs appropriate to group	.64	.67	.56
35. Decision-making	.74	.76	.69
36. Problem-solving	.70	.74	.61
37. Information management	.60	.62	.56
Average score of all attributes	**.84**	**.86**	**.79**

Grouping Attributes

It was never intended to group the 37 items of the *LAI* into separate measurable subscales. Each of the items assesses a separate attribute and each attribute is conceived to be important to a leader's performance. The instrument provides a diagnostic assessment of the attributes (i.e., characteristics, knowledge, skills, and values) possessed by individuals that predispose successful performance as a leader in vocational education. Each of the attributes can (at least theoretically) serve as an instructional objective of a program designed to improve the effectiveness of a leader's performance. Grouping attributes into scales for diagnostic purposes would lose the instructional precision and specificity necessary to create efficient learning experiences. On the other hand, when designing a leadership development program, knowing how the 37 attributes might be ordered for instruction would be helpful. Liang (1990) conducted a factor analysis to determine how the attributes might be organized. Using 282 postsecondary teachers who rated the vocational administrators whom they knew best, he carried out a principal component analysis with a varimax rotation (eigenvalue is greater than 1). The analysis yielded three factors which accounted for a total of 70.3 percent of the variance. Factor 1, accounting for 61.7%, was labeled "social skills and characteristics." Factor 2 was called "personal characteristics" and accounted for 5.6% of the variance. Factor 3 was named "management skills" and added only 3.0% to the variance explained.

Moss, Schwartz, and Jensrud (in press) recently completed the development of a leader preparation program for underrepresented groups in vocational education. The program contains learning experiences (lessons) aimed at improving 25 of the 37 leader attributes. Without reference to the Liang study, the program developers chose to organize the 25 learning experiences into three groups: (1) personal characteristics, (2) interpersonal skills, and (3) management knowledge and skills. This grouping was chosen *after* preparing each of the 25 learning experiences because it made logical sense, and because it took maximum advantage of the obvious interrelationships and opportunities for mutual reinforcement among the attributes within each group.

Table 3-8 presents the results of the Liang (1990) factor analysis and the groupings selected by the creators of the leadership preparation program for underrepresented groups. Note that 20 of the 25 attribute groupings (80%) in the preparation program were assigned to the same grouping by the program developers as by the empirical analysis.

Table 3-8

Factor Loadings of Postsecondary Teacher Ratings of Their Vocational Administrators[1] and Assigned Category in the Leadership Preparation Program for Underrepresented Groups

Attribute	Social Skills & Characteristics (Interpersonal)	Personal Characteristics	Management Skills
1. Energetic with stamina	.37	.65	.21
2. Insightful	.48	**.50**	.46
3. Adaptable, open to change	**.73**	.41	.16
4. Visionary	.38	**.68**	.32
5. Tolerant of ambiguity & complexity	.59	**.25**	.30
6. Achievement oriented	.33	**.68**	.35
7. Accountable	—	—	—
8. Initiating	.18	**.78**	.33
9. Confident, accepting of self	.32	**.72**	.22
10. Willing to accept responsibility	.44	**.57**	.37
11. Persistent	.32	**.70**	.33
12. Enthusiastic, optimistic	.46	.68	.14
13. Tolerant of frustration	.70	**.28**	.15
14. Dependable, reliable	.73	.31	.33
15. Courageous, risk taker	.15	**.75**	.25
16. Even disposition	.73	.30	.28
17. Committed to the common good	**.76**	.31	.20
18. Personal integrity	.76	.23	.30
19. Intelligent with practical judgment	.60	.36	.46
20. Ethical	**.75**	.20	.32
21. Communication (listening, oral, written)	**.70**	.37	.26
22. Sensitivity, respect	**.83**	.20	.21
23. Motivating others	**.58**	.55	.34
24. Networking	**.45**	.43	.51
25. Planning	.31	.38	**.76**
26. Delegating	—	—	—
27. Organizing	.26	.38	.79

Table 3-8 (cont.)

28. Team building	.50	.50	**.52**
29. Coaching	.54	.49	.43
30. Conflict management	.50	.40	**.50**
31. Time management	.48	.20	.66
32. Stress management	.61	**.27**	.41
33. Appropriate use of leadership styles	.61	.42	**.45**
34. Ideological beliefs are appropriate to the group	.62	.36	.44
35. Decision-making	.30	**.60**	**.55**
36. Problem-solving	.39	.50	.61
37. Information management	.34	.48	**.60**
Eigenvalues	21.58	1.97	1.05
Percent of variance accounted for	61.7	5.6	3.0

[1] n=282; principal component, Varimax rotation
Bold = Items in bold typeface are assigned a category in the Leadership Development Program for Women & Minorities.

Further factor analyses with different raters and ratees, as well as more program development experiences, are needed to test the generalizability of the three groups of attributes. The use of the groupings to create scoring scales for diagnostic purposes is not, however, advised at this time. Given the very high internal consistency of the 37 items (r = .97) and the heavy loading on the first factor, it is better to conceive of the *LAI* as a one factor instrument—that factor being "leadership"—with the total score being more useful than any subgroup of attributes.

Sensitivity to Training

Although it has been shown that the 37 leader attributes predispose successful leadership performance, and that they can be measured reliably, the question remains whether the attributes can be improved by reasonable amounts of planned instruction. While some of the attributes appear to be very difficult to change—for example, intelligence with practical judgment—other attributes seem amenable to improvement—for example, delegating skills. In the long run it would be desirable to learn which attributes can be improved (and how), and which attributes cannot be improved; the former might comprise

objectives for leadership development activities while the latter might be used as selection criteria.

As a start on answering this question, NCRVE partially funded ten leadership development programs for graduate students in vocational education and seven programs for inservice personnel. These programs were held in universities throughout the country, and ranged in length from six hours in one day to 90 hours of class instruction plus 180 hours of outside assignments spread over nine months. Class sizes varied from 3 to 26 students with a mean of 16. Content and methods of the 17 individual programs also varied considerably. For example, the key features of some programs included (1) developing individualized leadership training plans, (2) seminars with a semester-long internship, (3) seminars coupled with field trips (one to five days each), (4) seminars plus teams of participants instructing teachers in the field, (5) three, 2½ to 5 day retreats with several months between sessions, and (6) team-taught seminars with application to contemporary problems in vocational education. All of the programs, however, utilized one or more of the 37 attributes assessed by the *LAI* as instructional objectives.

One of NCRVE's major responsibilities was to evaluate the 17 programs. The *LAI*, two questionnaires, reports, interviews, and focus groups were used to collect data about the programs, participants, program costs, and a variety of program outcomes. The complete results of the evaluations are reported in Moss et al. (1992) and Leske et al. (forthcoming). Based upon two administrations of the *LAI*, three of the results were as follows:

1. Both the ten programs for graduate students and the seven programs for inservice personnel made significant impacts upon the participants' retrospective perceptions of their leader attributes. As measured by the *LAI*, 14 of the 37 attributes improved significantly ($p \leq .05$) in the programs for graduate students, and 11 improved significantly ($p \leq .05$) in the programs for inservice personnel.

2. The number of leader attributes that improved significantly was positively related to certain program characteristics. These characteristics included (1) the extent to which participants were actively involved; (2) whether the participants were given an opportunity to assess their own attributes, with time for reflection and goal setting; (3) the degree to which cohesive teams were built; and (4) the amount of supervised instruction provided.

3. In both sets of programs, significant improvements in *LAI* scores were *not* meaningfully related to the degree objective, gender, ethnicity, experience as a school administrator, experience as a nonschool administrator, age, or full- versus part-time student status of the participants.

Thus, the *LAI* has been shown to be capable of measuring change in participants' perspectives of their attributes as the result of instruction, and that the extent of that change is related to meaningful program characteristics.

Construct Validity

Construct validity is the extent to which the *LAI* measures NCRVE's conceptualization of leadership. Evidence about construct validity is drawn from the evidence about other aspects of validity. In this case, the *LAI* appears to have high construct validity. The 37 attributes have been shown empirically to be highly related to the six leadership tasks which comprise the operational definition of NCRVE's conceptualization of leadership. Vocational educators actually use those same six tasks when evaluating leadership performance. The attributes have high internal consistency, indicating they are assessing the same concept—leadership—and they have the desired relationships with *MLQ* scores. Finally, the attributes can provide the basis for designing educational experiences and many attributes can be improved by reasonable amounts of those experiences, thus providing a useful tool for helping to carry out NCRVE's responsibility for leadership development in vocational education.

CHAPTER 4
ESTABLISHING NORMS AND STANDARDS FOR THE *LAI*

Establishing norms and standards is second in importance only to the identification of relevant attributes and their consistent measurement. Without appropriate norms and standards, the most meaningful interpretation of scores is not possible. Comparing self-ratings with the average of ratings-by-observers who know the ratees well at work certainly provides very useful information, but persons being rated also want to know, "How are my ratings relative to the ratings of others in my group (or the group to which I aspire)?" Research has demonstrated (Moss et al., 1992) that knowledge about the strength of one's attributes, relative to an appropriate comparison group, motivates participants of leadership development programs to set meaningful personal improvement goals and to strive to attain them. Standards are also very important in interpreting the practical value of attribute ratings. They serve to interpret ratings on the *LAI* in terms of predicted levels of performance as a leader. Consequently, a study was conducted during 1993 to establish norms and standards for the *LAI*.

Identifying the Samples

Vocational educators with three different roles (each with an expectation that effective leadership should be provided), were used to form three purposive samples:

1. *Chief Vocational Administrators (CVA).* These were the chief line administrators in (1) specialized public secondary vocational institutions (e.g., principals, directors); and (2) both specialized and comprehensive public postsecondary institutions (e.g., presidents, directors, and deans).

2. *Vocational Department Heads (VDH).* These were administrators/managers of clusters of vocational programs (e.g., department heads, coordinators, in specialized public secondary vocational institutions, and both specialized and comprehensive public postsecondary institutions).

3. *Vocational Teacher Leaders (VTL).* These were professionals in non-administrative/management positions—that is, teachers and counselors who were viewed by their chief administrator and department head as particularly influential

among their peers. Examples are teachers who held elective positions in faculty associations, professional organizations, or unions.

With the advice of consultants, a group of 12 states was selected from which the three samples were drawn. These states were deemed to have well- developed secondary or postsecondary vocational systems with relatively high proportions of minority teachers and administrators. Table 4-1 presents the total population of CVAs in each of the twelve states by type of institution. It is from this population that the sample of chief vocational administrators was selected.

All of the 329 CVAs in the 12 states were contacted by letter and then by telephone. The study and their role in it was explained, and their agreement to participate was solicited; 311 CVAs agreed to take part. Whether or not the CVAs agreed to participate, they were also asked to nominate (1) three VDHs including (where possible) at least one member of a minority group and one female; and (2) up to three VTLs, giving consideration to minorities and females whenever possible.

Table 4-1
Population of Chief Vocational Administrators (CVAs)
(n=329)

State	Technical College Administrators	Community College Administrators	Secondary Administrators
Arkansas	24		
Colorado		12	
Florida		27	
Georgia	32		
Illinois		38	
Iowa		18	
Maryland			33
Ohio			60
Oklahoma			30
Oregon		13	
Tennessee	26		
Wisconsin	16		
Totals	**98**	**108**	**123**

VDHs were then called and their participation in the study solicited. Minority VDHs were contacted whenever they had been nominated by CVAs. When no minority member had been nominated, or if the nominee declined to take part in the study, an attempt was made to randomly select an equal number of men and women to contact for the VDH sample. Of those contacted, 289 VDHs consented to take part in the study. During the interviews, VDHs were asked to provide the names of up to three VTLs, including minorities and females whenever possible.

Finally, VTLs were called and invited to be a part of the study. Minority members who had been nominated by either the CVA or VDH at a given institution were called first. If no minority member had been nominated, or if she or he refused to participate, individuals who had been named by both the CVA and the VDH were called. In lieu of joint nominees, an attempt was then made to randomly telephone an equal number of women and men. A total of 305 VTLs agreed to participate in the study.

Collecting the Data

Each of the 905 persons who consented to take part in the norming and standards study was sent a packet of materials containing the following pieces: (1) a cover letter explaining what they as ratees were being asked to do; (2) a form to collect demographic information about the ratee (participant); (3) a form for the ratee to name the five persons who were to complete the *LAI* and the *LEI* as observer-raters; (4) five copies of the *LAI* rating-by-observer forms; (5) five copies of the *Leader Effectiveness Index* (*LEI*); (6) five copies of a cover letter; and (7) envelopes (return addressed and postage paid) for completed forms to be sent back directly to the researchers.

Directions to the ratees (the 905 persons who agreed to participate in the study) stipulated that the *LAI* and *LEI* were to be given to five persons who "(a) Report to you either directly or indirectly (or in the event that you do not have five subordinates, they may be peers); (b) know you well at work; and (c) who, as far as possible, include females and persons from minority groups."

These directions call for raters to be persons who know the ratee well at work so that both the validity and reliability of ratings would be maximized. Edwards and Sproule

(1985), for example, found that maximum agreement among raters occurs as their knowledge about the ratee increases.

For several reasons, the directions allowed ratees to select their own raters. First, in contrast to a random selection of raters, it helped assure that the raters were persons who knew the ratee fairly well. Second, it guaranteed the credibility of the raters and, therefore, the acceptability of their ratings by the ratee and the utility of the results for professional development purposes. Third, empirical research (Edwards, 1990; Hollander, 1956; Waters & Waters, 1970; Wherry & Fryer, 1949) has shown that friendship does *not* bias evaluations.

The directions also call for five raters who are subordinates, or if necessary, peers. In a conversation with David Campbell (personal communication, January 1993) he reported that after "four plus" raters, the average and the standard deviation of raters' scores hardly change. The use of subordinates as raters whenever possible is consistent with NCRVE's conceptualization of leaders as individuals who, through such noncoercive means as persuasion and example, influence the behavior of group members. That is, leaders are individuals who have earned followers. Who knows more about an individual's leadership behavior and influence than those subordinates who are most impacted? A study by Edwards (1992) compared the ratings of subordinates with those of peers on 35 kinds of leadership behavior of over 5,000 managers. He found that subordinates' ratings were (1) more consistent than those of peers and (2) somewhat more rigorous than peers on many of the leadership behaviors. However, subordinates and peers agreed far more than they disagreed about the strongest and weakest leadership behaviors of the managers.

One follow-up was conducted with individuals who had agreed over the telephone to participate in the study, but who either had not returned completed forms containing demographic information, or who had fewer than three observer-raters return completed *LAI* and *LEI* instruments. (A minimum of three raters was considered essential for reliable ratings.) Most of the follow-ups were conducted by telephone; the remainder were sent letter reminders.

All of the completed *LAI*s were electronically screened for eligibility and then scored. To be eligible, the respondent had to report that she or he (1) knew the

participant/ratee *very well* or *fairly well* (not *casually* or *not at all*); and (2) was a subordinate or peer (not a superior) of the ratee. The responses of ineligible raters were eliminated, and if this reduced the number of eligible raters below three, the ratee was dropped from the sample.

Table 4-2 summarizes the numbers of participants by each of the three samples at key stages of the data collection process. The required number of completed *LAI* forms (at least three) was received from 77% of the individuals who had agreed over the telephone to participate in the study (the ratees). After screening the completed *LAI* forms for eligibility, 61% of those who had agreed to participate remained in the three samples.

Table 4-2
Numbers of Participants by Sample Groups at Key Stages of the Data Collection Process

Data Collection Stage	Chief Vocational Administrators (CVAs)	Vocational Department Heads (VDHs)	Vocational Teacher Leaders (VTLs)	Total
1. Total Number in the 12 Selected States	329	-	-	-
2. Agreed To Participate in the Study	311	289	305	905
3. Returned a Sufficient Number of Responses	260	221	212	693
4. Returned a Sufficient Number of Eligible Responses	220	168	163	551
5. Eligible Responses as a Percent of Those Agreeing To Participate	71	58	53	61

Establishing Norm Groups

Combining Samples

With ratings on the *LAI* collected from three to five eligible observers for each of 551 ratees in three sample groups, the first stage of the data analysis was to determine whether two or more of the three groups could be combined to form norm groups. More precisely, were the observer-ratings for the three samples sufficiently different to warrant establishing three separate norm groups?

First, the three to five observer-ratings for each ratee on each attribute (and the average of the 37 attributes) were averaged. This average score was considered to be the best estimate available of the extent to which a ratee possessed that attribute and was, therefore, used in subsequent steps of the analysis.

Two criteria were employed to decide whether the average observer-ratings in the samples were sufficiently different to warrant establishing separate norm groups. One criterion was to use *t* tests to determine whether the probability of obtaining three *sets* of 38 average ratings as different as those actually obtained for each sample was equal to or less than .05. One-hundred fourteen two-tail *t* tests were conducted comparing average ratings from the three sample groups with each other (38 ratings x 3 sample groups). A *set* of ratings, consisting of the 37 attributes and the average of the 37 attributes, was considered different from another set if *any one* of the attributes in the set was different at the .000439 level (.05/114). The second criterion, used to confirm the measures of the statistical tests, was to examine the sets of ratings to see whether there were perceivable, reasonable differences among the ratings of the three samples.

The statistical tests revealed that the average ratings of two attributes (coaching and dependable, reliable) were significantly higher ($p \leq .000439$) in the VTL sample than in the CVA group. The average ratings of the VDH sample did not differ significantly from either of the other two sample groups on any attributes. Inspection of the data showed that the average ratings of the VTL group were higher than the other two groups on 74% of the attributes, and that the VDH average ratings were more like the CVAs than the VTLs. The actual numbers of average ratings that ranked highest, in the middle, and lowest among the three sample groups are shown in Table 4-3.

Table 4-3
Frequencies of Rankings of Average Attribute Ratings Among the Three Sample Groups

Ranking	Chief Vocational Administrators (CVAs)	Vocational Department Heads (VDHs)	Vocational Teacher Leaders (VTLs)
Highest	5	5	28
Middle	6	26	6
Lowest	27	7	4
Totals	**38**	**38**	**38**

Given the results of the statistical tests and the confirming evidence revealed by inspecting the data in Table 4-3, it was decided that two norm groups should be formed: (1) a *vocational teacher leader* group and (2) a *vocational administrator* group consisting of the chief vocational administrators and the vocational department heads. The latter two samples were combined because their average ratings were most alike and because it made logical sense to create one norm group of formal, managerial leaders to contrast with the group of informal, nonmanagerial teacher leaders. Tables 4-4 and 4-5 describe the composition of the two norm groups.

There are at least two plausible explanations for the VTLs being rated higher than the chief vocational administrators. First, VTLs have earned their role as leaders through noncoercive means; they have gained influence without the use of authority. By contrast, managers have authority and may use it coercively in order to satisfy the responsibilities of their role. Unlike teacher leaders, managers may be viewed by subordinates as displaying a mix of both controlling and empowering behaviors. Second, the sample of CVAs consists of all those individuals who were willing to participate in the study, and about whom sufficient eligible ratings were received; no doubt both good and bad leaders are included. On the other hand, only those who had already proven themselves to be effective leaders were nominated for the VTL sample; it is a more select group.

Table 4-4
Vocational Teacher Leader Norm Group

State (Institution Type)	Caucasian		Other		Total
	Female	Male	Female	Male	
AR (Technical Colleges)	3	3	2	1	9
CO (Community Colleges)	1	-	-	-	1
FL (Community Colleges)	14	5	4	2	25
GA (Technical Colleges)	10	2	-	-	12
IA (Community Colleges)	2	8	-	-	10
IL (Community Colleges)	12	18	-	-	30
MD (Secondary Centers)	11	8	1	1	21
OH (Secondary Centers)	13	5	-	1	19
OK (Secondary Centers)	6	3	1	1	11
OR (Community Colleges)	3	-	-	1	4
TN (Technical Colleges)	7	2	-	-	9
WI (Technical Colleges)	8	3	1	-	12
Totals	**90**	**57**	**9**	**7**	**163**

Gender Differences

Data from the two norm groups—vocational teacher leaders and vocational administrators—were each examined for gender differences. Thirty-eight *t* tests were conducted (37 attributes plus the average of the 37 attributes) comparing the average ratings of men and women. A probability level of $p \leq .00132$ (.05/38) was used with the criterion that if one or more attributes were found to be different then the whole *set* of attributes would be considered different.

No significant differences were found between the average ratings of men and women on any attributes in the vocational teacher leader group. In the vocational administrator group, however, women were found to have significantly higher average ratings on two attributes—energetic with stamina and information management. Inspection of the data in the vocational administrator group revealed that women had higher average ratings (albeit not statistically significant) in 35 of the 38 comparisons, and were tied with men on a 36th attribute. It was concluded, therefore, that women administrators had higher

ratings on the *LAI* than men administrators. The data does not explain why women were rated higher, but two explanations seem reasonable. First, since it is typically more difficult for women than men to attain administrative positions, those that do are likely to be a more select group. Second, the attributes are consistent with the facilitating, empowering function of leadership, and these are often thought to be among the strengths our culture develops in females.

Table 4-5
Vocational Administrator Norm Group

	Caucasian		Other		
State (Institution Type)	**Female**	**Male**	**Female**	**Male**	**Total**
AR (Technical Colleges)	5	17	-	-	22
CO (Community Colleges)	6	7	1	-	14
FL (Community Colleges)	24	33	1	4	62
GA (Technical Colleges)	11	15	-	1	27
IA (Community Colleges)	7	10	-	1	18
IL (Community Colleges)	18	42	2	1	63
MD (Secondary Centers)	4	14	3	1	22
OH (Secondary Centers)	32	30	-	-	62
OK (Secondary Centers)	9	20	1	1	31
OR (Community Colleges)	6	13	1	-	20
TN (Technical Colleges)	8	14	1	2	25
WI (Technical Colleges)	8	11	1	2	22
Totals	**138**	**226**	**11**	**13**	**388**

While recognizing that gender differences exist in the vocational administrator norm group, it is not very useful to create separate male and female norms. There is little to be gained by women comparing themselves with other women (or men with other men). It is more realistic and useful for all individuals to compare themselves with a group of practicing vocational administrators. Idealistically, of course, all leaders, regardless of gender, should aspire to be as high as possible on all attributes.

Ethnic Group Differences

Although attempts were made to include every available minority group member in the CVA, VDH, and VTL samples, a total of only 40 minority persons became a part of the two norm groups—24 among the vocational administrators and 16 among the vocational teacher leaders. Given these small numbers, and the fact that there were several ethnic groups included among the 40 persons, no attempt was made to test for norm group differences based upon ethnic group membership.

Feedback Calculations

One part of the individualized *LAI* feedback report (see Appendix D) compares the ratee's average observer ratings with the ratings of her or his norm group in terms of normalized *T*-scores and percentiles. Another part of the feedback report predicts the person's performance as a leader based upon individual *LAI* average observer ratings, also using normalized *T*-scores. Appendix E contains a set of tables which provide normalized *T*-score equivalents to *LAI* average observer ratings (as raw scores) for each attribute in each of the two norm groups.

The tables in Appendix E also show the standard error of measurement of the average observer ratings for each attribute in each of the two norm groups.[8] The standard error is a measure of uncertainty of the precision of the mean rating of the three to five observers actually used. More precisely, if a large number of sets of three to five observers were used to rate the same person (whom they knew well at work), in 68% of the cases their average rating would fall between "plus and minus one standard error." As the tables in Appendix E show, the mean and the modal standard error of the 37 attributes in both norm groups is .4 (on a raw score scale of 6 points). The standard error of the average observer rating of the 37 attributes is .3 for both norm groups.

Predicting Leadership Performance

In addition to knowing the relative standing of one's attributes in some appropriate norm group, it is important to be able to interpret one's attribute scores in terms of expected

[8] The standard error for each attribute is the variance of three to five raters for each ratee averaged across all ratees in the norm group divided by the square root of the average number of raters for each ratee.

performance as a leader. That is, what is the relationship between attribute score and leader performance?

The three to five observers of each of the 551 ratees completed the *Leader Effectiveness Index* (*LEI*) (see Appendix C) as well as the *LAI*. The first six items on the *LEI* (the six leader tasks/criteria) were averaged for each rater, and the resulting averages by the three to five raters were themselves averaged to obtain an *LEI* score for each ratee. The *LEI* scores for the ratees were then converted to normalized *T*-scores (see Appendix F). Finally, the normalized *LEI T*-scores were correlated with the normalized *T*-scores of the average score of all 37 *LAI* attributes (see Table E-38 in Appendix E).

Two correlation coefficients were obtained, one for each of the norm groups. The coefficient for the vocational administrator group (n=388) was .85; the coefficient for the vocational teacher leader norm group (n=163) was .79. The standard errors of estimate were, respectively, 5 points and 6 points. Regression equations for the two groups appear in Appendix G.

The prediction of an *LEI* score from an *LAI* score is used to complete Chart 3 of the "Individualized Feedback Report" (see Appendix D). Using Table E-38, the average (raw) score of all 37 attributes is converted to a normalized *T*-score, which is then used in the formula for the correct norm group (Appendix G) to yield a predicted *LEI* score. The predicted *LEI* score is entered on Chart 3 with a horizontal line drawn through the predicted score extending from one standard error above the predicted score to one standard error below the predicted score. In 68% of the cases, the actual *LEI* score will be within plus or minus one standard error of the predicted score.

Obviously, the predicted level of leader performance is only a gross estimate of what leader performance actually is. The prediction, however, is useful in motivating ratees (especially those who fall below the *T*-score mean of 50) to engage in leadership development activities.

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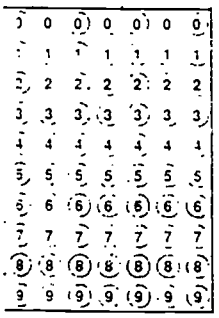
APPENDIX A

LEADER ATTRIBUTES INVENTORY
RATING-BY-OBSERVER FORM

LEADER ATTRIBUTES INVENTORY
Rating-by-Observer Form

ID NUMBER



Jerome Moss, Jr.
with the assistance of
Qetler Jensrud, Barry Johansen, Hallie Preskill

Marking Directions

- **Use pencil or black or blue pen.**
- **Darken the circle completely.**
- **Erase cleanly any marks you wish to change or X out mark if in pen.**
- **Do not make any stray marks on this form.**

Correct Mark
○●○○
Incorrect Marks
⊘⊗⊙◔

SECTION A

Please provide the following information about yourself.

1. Today's date: _____
   (MONTH) (DAY) (YEAR)
2. Your gender:
   - Female
   - Male
3. Your ethnic group:
   - African American
   - Asian
   - Hispanic
   - Native American
   - White
   - Other _____
4. In relation to the person you are rating, you are his/her:
   - Subordinate
   - Peer
   - Superior
5. How well do you know the person rated?
   - Very well
   - Fairly well
   - Casually
   - Not at all

SECTION B

You have been asked to rate the leadership characteristics (attributes) of another person (usually the person who gave you this form). The purpose is to assist in improving the leadership capabilities of the individual by identifying the relative strengths and development needs of her/his leader attributes, so please be as discriminating in your rating as possible.

You will return this form directly to the National Center for Research in Vocational Education so the person you are rating will not be able to identify your responses. All feedback to the person being rated will be in the form of averages from a group of raters. We urge you to reflect carefully about each statement. Then rate the person on each statement using the following scale.

1. Very Undescriptive
2. Undescriptive
3. Somewhat Undescriptive
4. Somewhat Descriptive
5. Descriptive
6. Very Descriptive

For each of the statements, fill in the circle that best describes the person you are rating.

Attributes

	Very Undescriptive	Undescriptive	Somewhat Undescriptive	Somewhat Descriptive	Descriptive	Very Descriptive
1. *Energetic with stamina* – Approaches tasks with great energy and works long hours when necessary	1	2	3	4	5	6
2. *Insightful* – Reflects on the relationship among events and grasps the meaning of complex issues quickly	1	2	3	4	5	6
3. *Adaptable, open to change* – Encourages and accepts suggestions and constructive criticism from co-workers, and is willing to consider modifying plans	1	2	3	4	5	6
4. *Visionary* – Looks to the future and creates new ways in which the organization can prosper	1	2	3	4	5	6
5. *Tolerant of ambiguity and complexity* – Comfortably handles vague and difficult situations where there is no simple answer or no prescribed method of proceeding	1	2	3	4	5	6
6. *Achievement-oriented* – Shows commitment to achieving goals and strives to keep improving performance	1	2	3	4	5	6
7. *Accountable* – Holds self answerable for work and willingly admits mistakes	1	2	3	4	5	6
8. *Initiating* – Frequently introduces new ideas	1	2	3	4	5	6
9. *Confident, accepting of self* – Appears secure about abilities and recognizes personal shortcomings	1	2	3	4	5	6
10. *Willing to accept responsibility* – Willingly assumes higher level duties and functions within the organization	1	2	3	4	5	6
11. *Persistent* – Continues to act on beliefs despite unexpected difficulties	1	2	3	4	5	6
12. *Enthusiastic, optimistic* – Thinks positively, approaches new tasks with excitement, and deals with challenges as opportunities	1	2	3	4	5	6
13. *Tolerant of frustration* – Acts calmly and patiently even when things don't go as planned	1	2	3	4	5	6
14. *Dependable, reliable* – Can be counted on to follow through to get the job done	1	2	3	4	5	6
15. *Courageous, risk-taker* – Willingly tries out new ideas in spite of possible loss or failure	1	2	3	4	5	6
16. *Even disposition* – Displays a sense of humor and a stable temperament even in stressful situations	1	2	3	4	5	6
17. *Committed to the common good* – Works to benefit the entire organization, not just self	1	2	3	4	5	6
18. *Personal integrity* – Speaks frankly and honestly and practices espoused values	1	2	3	4	5	6

Attributes

	Very Undescriptive	Undescriptive	Somewhat Undescriptive	Somewhat Descriptive	Descriptive	Very Descriptive
19. *Intelligent with practical judgment* – Learns quickly, and knows how and when to apply knowledge	1	2	3	4	5	6
20. *Ethical* – Acts consistently with principles of fairness and right or good conduct that can stand the test of close public scrutiny	1	2	3	4	5	6
21. *Communication (listening, oral, written)* – Listens closely to people at work, and organizes and clearly presents information both orally and in writing	1	2	3	4	5	6
22. *Sensitivity, respect* – Shows genuine concern for the feelings of others and regard for them as individuals	1	2	3	4	5	6
23. *Motivating others* – Creates an environment in which people want to do their best	1	2	3	4	5	6
24. *Networking* – Develops cooperative relationships within and outside of the organization	1	2	3	4	5	6
25. *Planning* – In collaboration with others, develops tactics and strategies for achieving organizational objectives	1	2	3	4	5	6
26. *Delegating* – Appropriately and effectively assigns responsibility and authority	1	2	3	4	5	6
27. *Organizing* – Establishes effective and efficient procedures for getting work done in an orderly manner	1	2	3	4	5	6
28. *Team building* – Facilitates the development of cohesiveness and cooperation among the people at work	1	2	3	4	5	6
29. *Coaching* – Helps people develop knowledge and skills for their work assignments	1	2	3	4	5	6
30. *Conflict management* – Brings conflict into the open and uses it to arrive at constructive solutions	1	2	3	4	5	6
31. *Time management* – Schedules own work activities so that deadlines are met and work goals are accomplished in a timely manner	1	2	3	4	5	6
32. *Stress management* – Effectively deals with the tension of high pressure work situations	1	2	3	4	5	6
33. *Appropriate use of leadership styles* – Uses a variety of approaches to influence and lead others	1	2	3	4	5	6
34. *Ideological beliefs are appropriate to the group* – Models and demonstrates belief in the basic values of the organization	1	2	3	4	5	6
35. *Decision-making* – Makes timely decisions that are in the best interest of the organization by analyzing all available information, distilling key points, and drawing relevant conclusions	1	2	3	4	5	6

Continue to the next page

Attributes

	Very Undescriptive	Undescriptive	Somewhat Undescriptive	Somewhat Descriptive	Descriptive	Very Descriptive
36. *Problem-solving* – Effectively identifies, analyzes, and resolves difficulties and uncertainties at work	1	2	3	4	5	6
37. *Information management* – Identifies, collects, organizes, and analyzes the essential information needed by the organization	1	2	3	4	5	6

Thank you for completing this survey!

Please return the completed survey directly to:

National Center for Research in Vocational Education
460 VoTech Building
1954 Buford Avenue
University of Minnesota
St. Paul, MN 55108

APPENDIX B

DEVELOPING THE *LEADER EFFECTIVENESS INDEX*

DEVELOPING THE *LEADER EFFECTIVENESS INDEX*

Introduction

As conceived by the National Center for Research in Vocational Education (NCRVE), the purpose of leadership development is to effect positive change in selected attributes (characteristics, knowledge, skills, and values possessed by an individual) to increase the likelihood that vocational educators will (1) perceive opportunities to behave as leaders, (2) grasp those opportunities, and (3) succeed in achieving the tasks of leaders in a wide variety of situations and professional roles. The role of leaders in vocational education is perceived primarily as facilitating the group process and empowering group members. Leaders carry out this role by performing the following six broad tasks: (1) inspire a shared vision and establish standards that help the organization achieve its next stage of development; (2) foster unity, collaboration, and ownership, and recognize individual and team contributions; (3) exercise power effectively and empower others to act; (4) exert influence outside of the organization in order to set the right context for the organization; (5) establish an environment conducive to learning; and (6) satisfy the job-related needs of members of the organization as individuals. The *Leader Effectiveness Index* (*LEI*) has been developed to measure the extent to which leaders in vocational education are achieving these six tasks.

This appendix describes the steps in the development of the *LEI*. It is included as a part of the *Leader Attributes Inventory* Manual because the *LEI* provides an important criterion measure used to estimate the validity of the *LAI*.

Developmental Process

Initially, the *LEI* contained only the first four of the six broad tasks listed above (Liang, 1990; Moss & Liang, 1990). The four tasks, as four items with a 5-point response scale ranging from *extremely effective* to *not effective*, were appended as a separate section of the *Leader Attributes Inventory* (*LAI*). As a part of the Liang study, a subsample of 36 postsecondary vocational teachers were asked to rate the vocational administrator whom each knew best two times, with an interval of two weeks between ratings. The test-retest reliability coefficient of the total score of the four items was .92.

In 1990, a class of 38 master's- and baccalaureate-level students majoring in management completed the next version of the *LEI*. This version continued to include the same four tasks used in the Liang study, but added a fifth task, *plays the political role*. The same 5-point response scale was utilized. Since all of the students were employed in business and industry, they were asked to rate their present supervisors on the five items and on the *LAI*. The *LEI* was administered twice three weeks apart. The test-retest correlation of the total *LEI* score was .90. The total score of the five items and the total score of the first four items (excluding *plays the political role*) were then correlated with each of the 37 items on the *Leadership Attributes Inventory*. The resulting coefficients were identical. It was concluded the fifth task-item, *plays the political role*, did not contribute any dimensions to the leadership role that were not already being assessed by the first four *LEI* task-items.

It was also recognized in 1990 that the type of outcomes or criteria that group members might utilize when they judge leader effectiveness can differ widely, and that it was critical to determine whether the criteria actually used by vocational educators were those reflected in the four tasks being used by NCRVE. In other words, was the NCRVE's views about the facilitating and empowering role of effective leaders the view used by vocational educators as they judged their leaders?

Three types of criteria for judging the effectiveness of leaders are found in the literature (Yukl, 1989). The most common type is the extent to which the leader's group or organization performs its tasks successfully or reaches its goals (organizational outcomes). A specific example of this type, assessed subjectively, might be the degree to which members of an organization ascribe its success to the efforts of the leader. Another common outcome is the personal impact of leaders on followers (impact on instructors). A subjective measure of this type might be the expressed strength of the followers' commitment to carry out the leader's requests. A third type of outcome is the leader's contribution to the quality of the group process (group process). For example, to what degree is the leader perceived to enhance group cohesiveness and member motivation (the facilitative, empowering role)?

A system for classifying leadership effectiveness criteria was created by Moss, Finch, and Johansen (1991) to reflect the three types of outcomes proposed by Yukl (1989). For each of the three types of outcomes, categories of criteria were created.

Examples of specific criteria were then specified to illustrate the types of outcomes that might be included as a part of each category. Table B-1 shows the three types of outcomes and the categories of criteria that were used for each type. Note that the five categories of criteria used with the type of outcome *group process*, that is, facilitating the group process and empowering group members, included the first four tasks that had previously been used as criteria on the *LEI*. A fifth category (or task), *establish a learning environment* was added to reflect a specialized category of outcomes appropriate to the educational context in which leaders in vocational education perform.

Data was collected from a purposive sample of seven states, each with a well-developed system of secondary or postsecondary vocational education (Finch, Gregson, & Faulkner, 1991). In each state, the chief state administrative officer for vocational education and his or her immediate subordinates were interviewed to identify the most successful administrators of specialized vocational institutions—area vocational schools, vocational centers, and technical colleges. The two to seven local administrators nominated most frequently by the state staff were then contacted and asked to take part in the study. A total of 39 chief administrators of specialized vocational institutions (all of those invited) agreed to participate. Twenty participants administered secondary schools and 19 administered postsecondary schools; only three were females.

Each of the 39 administrators was asked to provide the names of six instructors in his or her school. Two of the six instructors were then randomly selected by the investigators so as to balance gender and occupational fields. The 78 instructors chosen (39 administrators and 2 instructors per administrator) represented all of the vocational service areas as well as the related academic subjects.

The instructors were sent a letter requesting their cooperation in the study and telling them the kinds of questions they would be asked. Semi-structured telephone interviews were then conducted with all 78 instructors. As a part of the interview, each instructor was asked to recall two incidents or events in which his or her administrator was particularly effective as a leader and to provide a very detailed description of each event.

Each interview was recorded and transcribed and then the interviewer completed a write-up of each event. The purpose of the interview write-up was to organize and

present the interview transcript and note-taking information in a more easily understandable format. Information contained in the write-up was organized into sections on "situation," "who was involved," "behavior," "thoughts/feelings," "outcome," and "writer comments" (Mentkowski, O'Brien, McEachern, & Fowler, 1982). All the transcripts and write-ups were reviewed by a second person to assure their accuracy and completeness. The write-ups of 154 events (two instructors provided descriptions of only one event each) comprised the database.

Each write-up was analyzed to determine the category or categories of criteria that the instructor was implicitly using when he or she identified the event as a particularly effective leadership behavior (Moss, Finch, & Johansen, 1991). Two of the investigators read all of the write-ups in groups of ten. No difficulties were encountered in fitting the events into the classification system. After they had read and classified each write-up in a group as representing one or more of the categories of criteria, the investigators met to compare results. When they found a difference in the classification(s) of a write-up, they discussed their reasons and reached accord. For the first 80 write-ups, the average agreement of the investigators before discussion was 70%. For the last 74 write-ups, the agreement before discussion reached an average of 91%.

As the investigators classified the write-ups, it immediately became evident that for many of the events there was a primary criterion being used as well as one or two additional (secondary) criteria. Instructors were often employing multiple categories of criteria to judge an event as evidencing particularly effective leadership. In some cases, the multiple categories of criteria were a part of the same type of outcome (division of the classification system)—for example, quality of the group process—but in 56 events the multiple categories of criteria were drawn from different types of outcomes—for example, quality of the group process and personal impact on followers.

Since the interpretation of events revealed that many reflected the use of one or two secondary criteria as well as primary criterion, data analyses were conducted using two sets of data: (1) the primary criteria only and (2) combining all of the criteria and giving equal weight to primary and secondary criteria. There are theoretical advantages and disadvantages to using each data set, but as the two analyses yielded identical results, only the analysis using the combined criteria is presented here.

Table B-1 presents the frequencies and percentages with which instructors used the criteria to determine which behaviors represent effective leadership by administrators in vocational education. A number of chi-square analyses were conducted. Based on these tests, several conclusions were reached. First, in a hypothetical population like the sample in this study, vocational instructors use the type of outcome, *extent to which the leaders' behavior is perceived to improve the quality of the group process* more than either of the other two types of outcomes ($X^2 = 47.50$; df = 2; $X^2_{.01} = 9.21$). Second, it was concluded that the gender of the vocational instructor was *not* related to the category of outcomes used ($X^2 = 10.98$; df = 10; $X^2_{.01} = 23.21$). Finally, it was concluded that there are significant differences among the frequencies with which vocational instructors used the categories of outcomes to assess effective leader performance ($X^2 = 100.0$; df = 10; $X^2_{.01} = 23.21$). Although *satisfy followers' (instructors') job-related needs and expectations* was the single most utilized category of criteria, four of the five categories in the group process type outcome were ranked second to fifth in terms of their use. On the other hand, *inspire a shared vision* was tied for being used least frequently. Data from the study provides no explanation for this unexpected finding.

Table B-1

Frequency of Use by Category of Criteria and Gender

Category	Female		Male		Total	
	n	%	n	%	n	%
Group Process						
1. Inspire a shared vision	1	0	3	1	4	2
2. Achieve unity and motivate	15	6	13	6	28	12
3. Implement change and power	21	9	19	8	40	17
4. Exert external influence	18	8	15	6	33	14
5. Establish learning environment	15	6	9	4	24	10
Impact on Instructors						
1. Satisfy job-related needs	20	8	27	11	47	20
2. Increase engagement with work	4	2	4	2	8	3
Organizational Outcomes						
1. Improve instruction	9	4	13	6	22	9
2. Provide equity and access	6	3	2	1	8	3
3. Increase labor market responsiveness	14	6	5	2	19	8
4. Satisfy student development	3	1	1	0	4	2
Totals	126	53	111	47	237	100

Based on the results of this study, it was decided to utilize six criteria (tasks) in future *LAI* validation studies: (1) *inspire a shared vision and establish standards that help the organization achieve its next stage of development*; (2) *foster unity, collaboration, and ownership, and recognize individual and team contributions*; (3) *exercise power effectively and empower others to act*; (4) *exert influence outside of the organization in order to set the right context for the organization*; (5) *establish an environment conducive to learning*; and (6) *satisfy the job-related needs of members of the organization as individuals*. The *visioning* task was included despite its low frequency of use as a criterion by vocational educators because it is consistent with NCRVE's philosophic position and because it is almost unanimously perceived by scholars as critical to what leaders *should* be accomplishing. The other five tasks were used most by instructors in the study; four of the five reflect improving the quality of the group process, which is consistent with NCRVE's facilitative, empowering perspective of the leader's role. It is apparent that the vocational educators used in the sample also see the role of effective administrator-leaders as empowerers rather than as controllers.

1993 Edition

The 1993 edition of the *Leader Effectiveness Index* (*LEI*) contains the six items/tasks listed above, plus a seventh item designed to measure the respondent's overall assessment of a leader's performance: "Overall, how effective is the leadership performance of the person you are rating?" A 6-point response scale is provided for the seven items, ranging from *not effective* to *extremely effective*. A response of *not applicable* is permitted. A copy of the *LEI* is contained in Appendix C.

Reliability

The 1993 edition of the *LEI* was administered one week apart to two groups of graduate students majoring in vocational education (n=37; n=38). The test-retest correlation coefficients of the average score of the six tasks were r = .94 and .93. The test-retest correlation coefficients of item 7 (overall assessment) were r = .95 and .92.

Validity

The correlation coefficients between the average score of the six tasks and item 7 (overall assessment) of the two samples were r = .91 and .92. The average difference

between the mean score of items 1-6 and item 7 was only .054 ($\overline{X}_{1-6} = 3.027$; $\overline{X}_{7} = 2.973$). Thus, with the average score of the six tasks practically the same as the score on item 7, and the correlation coefficient between them so high, the six tasks measured by the *LEI* appear to be assessing the complete criteria respondents used to judge leader effectiveness. This is a confirmation of the results of the study that showed the six tasks measured by the *LEI* represent the criteria used by vocational educators when they judge the effectiveness of a leader's performance.

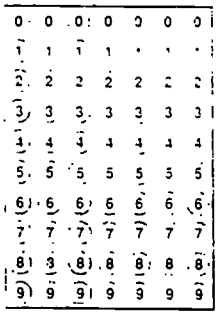
APPENDIX C

LEADER EFFECTIVENESS INDEX

LEADER EFFECTIVENESS INDEX

Jerome Moss, Jr.

ID NUMBER



Marking Directions

- **Use pencil or black or blue pen.**
- **Darken the circle completely.**
- **Erase cleanly any marks you wish to change or X out mark if in pen.**
- **Do not make any stray marks on this form.**

Correct Mark ○●○○

Incorrect Marks ⊘⊗⊟◕

SECTION A

We are seeking your opinion about how effectively an individual is performing as a leader. You will return this form directly to the National Center for Research in Vocational Education so the person you are rating will not be able to identify your responses. Therefore, we urge you to reflect carefully about each statement and select the rating that best describes the person.

For each of the statements which follow, fill in the circle that best describes the person you are rating.

SECTION B

	Not Applicable	Not Effective	Slightly Effective	Somewhat Effective	Effective	Very Effective	Extremely Effective
1. Inspires a shared vision and establishes standards that help the organization achieve its next stage of development. For example, creates a sense of purpose, defines reality in the larger context, instills shared values and beliefs	0	1	2	3	4	5	6
2. Fosters unity, collaboration and ownership, and recognizes individual and team contributions. For example, creates a climate of community, builds morale, sets a positive tone, resolves disagreements	0	1	2	3	4	5	6
3. Exercises power effectively and empowers others to act. For example, facilitates change, shares authority, nurtures the skills of group members	0	1	2	3	4	5	6
4. Exerts influence outside of the organization in order to set the right context for the organization. For example, serves as a symbol for the group, secures resources, builds coalitions, acts as an advocate	0	1	2	3	4	5	6
5. Establishes an environment conducive to learning. For example, provides intellectual stimulation, creates a supportive climate for learners, facilitates the professional development of staff	0	1	2	3	4	5	6
6. Satisfies the job-related needs of members of the organization as individuals. For example, respects, trusts, and has confidence in members, adapts leadership style to the situation, creates a satisfying work environment	0	1	2	3	4	5	6
7. Overall, how effective is the leadership performance of the person you are rating?		1	2	3	4	5	6

Thank you for completing this survey!

Please return the completed survey directly to: National Center for Research in Vocational Education
460 VoTech Building, 1954 Buford Avenue
University of Minnesota
St. Paul, MN 55108

R7332-Data Recognition Corp.-54321

APPENDIX D

SAMPLE INDIVIDUALIZED FEEDBACK REPORT

LEADER ATTRIBUTES INVENTORY

Individualized Feedback Report

Prepared for

Sample A. Sample-Name

University of Minnesota Site
National Center for Research in Vocational Education,
University of California at Berkeley

LEI INDIVIDUALIZED FEEDBACK REPORT

Introduction

You recently completed the self-report form of the *Leader Attributes Inventory* (*LAI*) and requested five of your subordinates (or peers) who know you well at work to complete the observer-rating form of the same instrument. The purpose of this report is to provide you with feedback based upon the completed forms so that you (the ratee) can (1) check on the realism of your perceived leader attributes and (2) plan to further develop a few of the leader attributes.

Three types of feedback are contained in the report. First, Chart 1 compares your self-ratings on the 37 leader attributes (and the average of the 37 attributes) with the average ratings of the observers you selected and who completed the *LAI*.[1] Second, Chart 2 compares the average ratings of your observers with an appropriate norm (comparison) group. Third, Chart 3 predicts the level of your performance as a leader in the appropriate norm (comparison) group.

In addition to presenting the charts the report will explain how each should be interpreted and, finally, provide some guidance about how the results may be used to plan the further development of a few leader attributes.

Comparing Self With Observer-Ratings

Chart 1 compares your self-ratings with the average observer-ratings on each attribute and on the average rating of all 37 attributes.

The average observer-rating score and the self-rating score are in raw score form as contained in the *LAI*: 1 means *very undescriptive*; 2 is *undescriptive*; 3 is *somewhat undescriptive*; 4 is *somewhat descriptive*; 5 is *descriptive*; 6 is *very descriptive*. The higher the rating the better the desirable attribute describes the ratee. Each average observer-rating score shown on the feedback report is the *mean* of the ratings of three to

[1] Observers who reported that they are your supervisors or who know you only casually were not included in calculating the average ratings. A minimum of three eligible observers was required to report average observer ratings.

five eligible individual observers who returned completed *LAI* forms. If fewer than three eligible observers completed the *LAI*, an average observer score is not shown on the feedback report.

The standard error of the mean of the three to five individual observer-ratings for each attribute is shown as a line through the average observer-rating. The standard error is a measure of the uncertainty of the precision of the mean rating of the three to five individual observers actually used. Sixty-eight percent of the mean ratings of all possible sets of three to five raters who rate you on each attribute will fall within plus or minus one standard error. If your self-rating is higher or lower than plus or minus one standard error from the average observer rating, then the difference between the average observer- and self-ratings should be worth noting.

Also note that differences between average observer- and self-ratings can be interpreted in terms of the descriptors used on the *LAI* scale. A difference of one or more points means raters and ratees have different qualitative perceptions of the extent to which the attribute is possessed, for example, *descriptive* vs. *very descriptive*.

Comparing Observer-Ratings with a Norm Group

Chart 2 compares the average observer-ratings on each attribute (and on the average rating of all 37 attributes) with a norm group. Two norm groups are available for comparison. One group consists of 388 chief vocational administrators and vocational department heads in technical colleges, community colleges, and specialized secondary vocational schools. The second group consists of 163 vocational teacher leaders. These are teachers, counselors, and other professional vocational educators who are not administrators but who are considered to be influential faculty members. All three groups were drawn purposively from the following states: Arkansas, Colorado, Florida, Georgia, Illinois, Iowa, Maryland, Ohio, Oklahoma, Oregon, Tennessee, and Wisconsin. *The name of the norm group used to compare with your average observer-ratings is shown in the title of Chart 2.*

On Chart 2, the raw scores of the average observer-ratings of norm group members on (1) each attribute and (2) the average score of all 37 attributes were

converted to normalized *T*-scores. This means that the distribution of the *T*-score scale is bell-shaped with a mean of 50 and a standard deviation (average deviation around the mean) of 10. Approximately 68% of the average observer scores on each attribute fall between 40 and 60 on the *T* scale. About 98% of the scores on each attribute fall between 30 and 70 on the *T* scale.

The line through the average observer-rating on each attribute (and the average of all 37 attributes) shows the standard error of that average observer-rating. The standard error is a measure of uncertainty of the precision of the mean rating of the set of three to five observers actually used. More precisely, if a large number of sets of three to five observers were used, in 68% of the cases their average rating would fall between plus and minus one standard error. Consequently, instead of thinking about *an* average observer-rating for an attribute, it is more accurate to think of a *range* of average observer-ratings for each attribute—the range shown by the line representing the standard error. One use of the standard error is to see whether the line representing plus or minus one standard error on a given attribute crosses the *T*-score of 50 (the mean) of the norm group ratings on that attribute. If it does, the observer *T*-score rating may be considered average in the norm group; if not, the observer-rating is either above or below the mean of the norm group.

Below the *T*-score scale there is a percentile scale. Each *T*-score (and each range of *T*-scores) has an equivalent percentile value. The percentile value of a *T*-score indicates the proportion of individuals in the norm group who scored at or below that *T*-score. For example, if Joan had a *T*-score equivalent to the 90 percentile, then 90% of the individuals in the norm group have scores equal to or lower than Joan. More appropriately, if the standard error of Joan's *T*-score represents a range equivalent to the 85 to the 93 percentiles, then it might be assumed that between 85% and 93% of the individuals in the norm group have scores equal to or less than Joan's on the attribute.

Predicting Level of Performance as Leader

Chart 3 predicts the level of your performance as a leader compared with others in the norm group named in the title of the chart.

The *Leader Effectiveness Index* (*LEI*) is an instrument that assesses the effectiveness of a leader's performance. Each observer in the norm group who completed the *LAI* also completed an *LEI* about the same individual. The average score of the observers on all 37 attributes in the *LAI* and the average ratings of the same observers on the six items in the *LEI* were converted to normalized *T*-scores and then the two average scores were correlated. The result was a correlation coefficient of .86, indicating that 74% of the variance in the leader effectiveness scores of the norm group can be explained by the average of their 37 leader attributes scores. Thus, given the average *LAI* score, it is feasible to predict *LEI* scores (leader effectiveness).

The predicted level of leader performance (*LEI* average score) is not precise. Because the correlation coefficient is not 1.00, the prediction has a standard error of estimate. Given a particular coefficient (less than 1.00), the standard error of estimate can be calculated to determine the margin of error to be expected in the prediction. The higher the correlation coefficient, the lower the standard error of estimate. Each participant's average observer-ratings of all 37 attributes was used to predict her or his average *LEI* score. The resulting predicted leader performance score plus or minus the standard error of estimate is shown on Chart 3. Use this range when interpreting the meaning of the average *LAI* rating in terms of the predicted *LEI* score descriptors.

Using the Feedback Results

Given the results shown on your individualized feedback report, the next steps are to utilize that information to plan how you might strengthen some of your leader attributes. The following questions are intended to help guide you in the planning process.

I. *Identify three to five leader attributes that should be further developed.*

A. What are the most important discrepancies between your self-ratings and the average ratings of the observers you selected?

1. On what attribute(s) did you rate yourself at least one standard error higher than your observers?

(a) Why do these differences exist?

(b) Did the observers have enough information to rate you accurately?

(c) Are these attributes you should consider strengthening?

2. On what attributes did your observers rate you at least one standard higher than you did?

(a) Did observers have enough information to rate you realistically?

(b) Are you giving yourself enough credit?

(c) How can you capitalize on your strengths?

B. On what attributes did your observers rate you at least one standard error higher or lower than a *T*-score of 50 (percentile value of 50) on the norm group?

1. Is the norm group appropriate? Is it a group you are now in or aspire to?

2. On what attribute(s) did your observers rate you at least one standard error lower than a *T*-score of 50 on the norm group?

(a) How did you rate yourself on these attributes?

(b) Are the observer-ratings realistic?

(c) Are these attributes you should consider improving?

3. On what attribute(s) did your observers rate you at least one standard error higher than a *T*-score of 50 or the norm group?

(a) How did you rate yourself on these attributes?

(b) Are the observer ratings realistic?

C. What is your predicted level of performance in the norm group?

1. How critical is your need to improve? (How far away is your predicted level of performance from the level you wish to attain?)

2. How many attributes should be strengthened?

D. What are the three to five attributes with greatest need for attention in the immediate future?

1. What attributes are rated lowest by your observers in relation to self-ratings?

2. What attributes are rated lowest by your observers in relation to the norm group?

3. Will improving these attributes be adequate to satisfy your need or desire to improve your predicted level of performance as a leader?

II. *Formulate a leadership development plan.*

A. Using the attributes to be improved as goals, create tentative "action plans" that stipulate the activities, resources needed, completion date, and method of measuring progress for each of the attributes.

B. Review the tentative goals and action plans with your observers.

C. Review the tentative goals and action plans with your mentor(s).

D. Revise the action plans.

E. Initiate the planned activities.

Chart 1
Comparing Self-Ratings with the Average of Observer-Ratings
(Raw Scores)

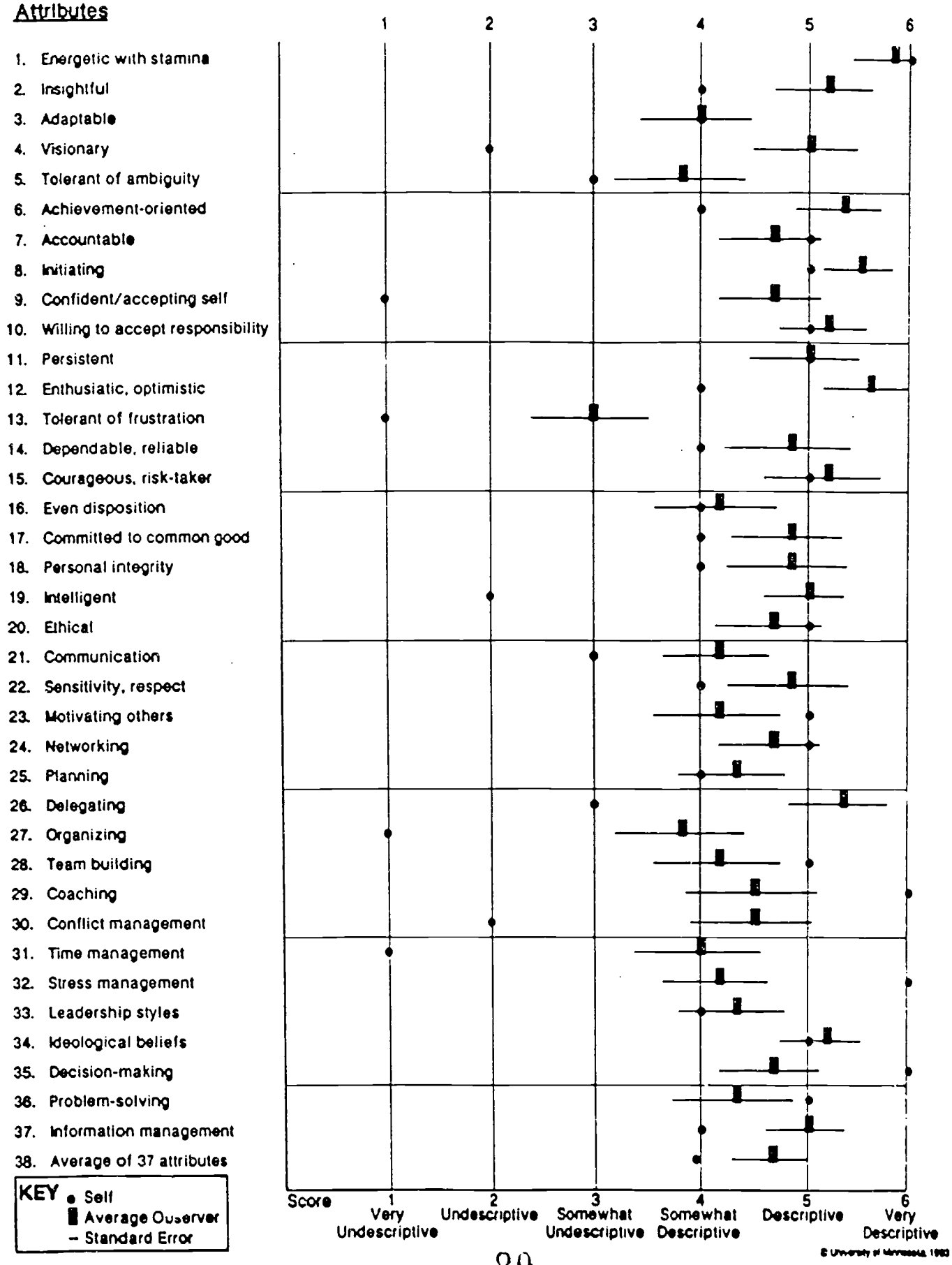


Chart 2
Comparing Average Observer-Ratings with the Vocational Administration Norm Group
(Normalized T-scores)

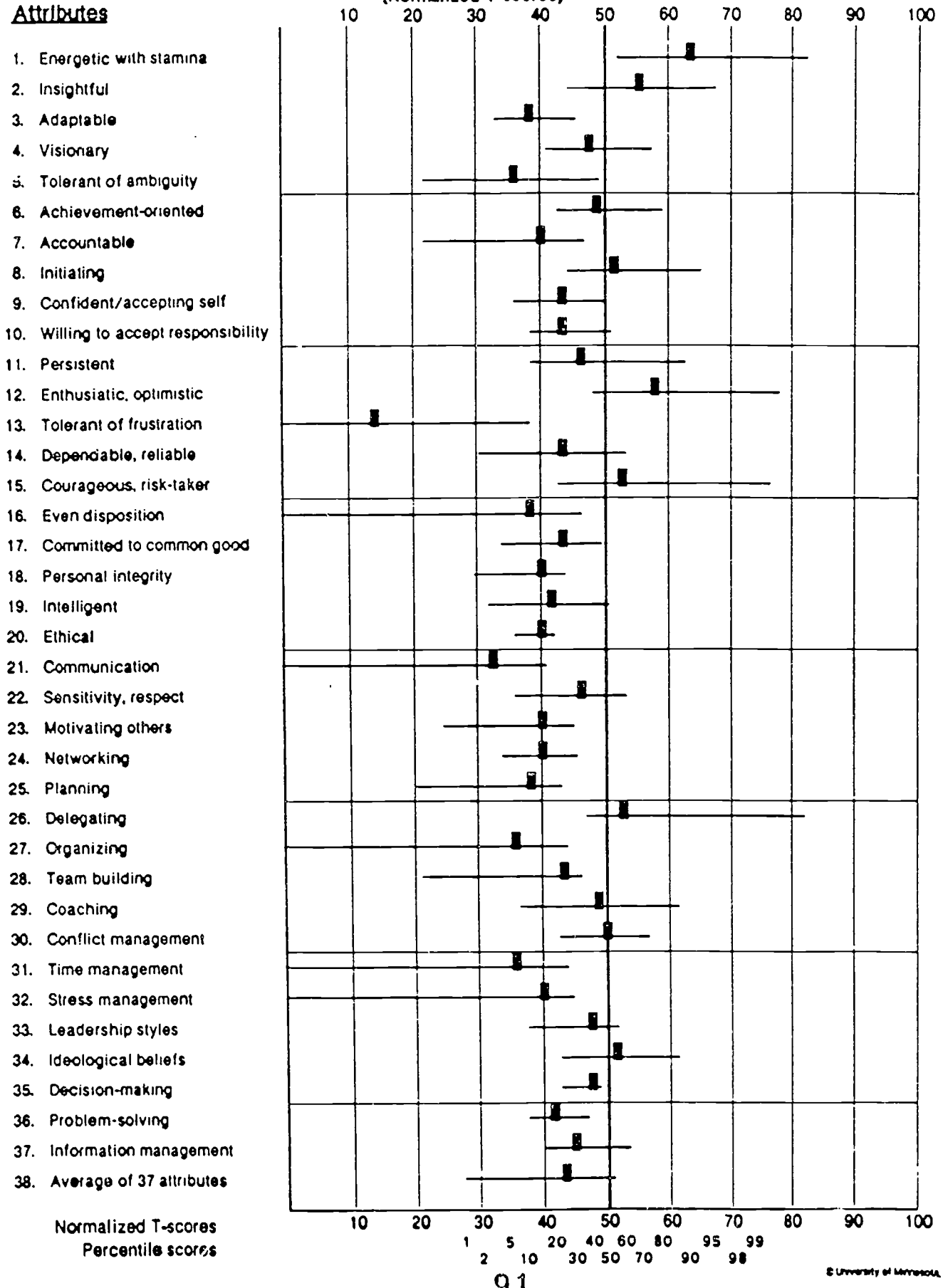
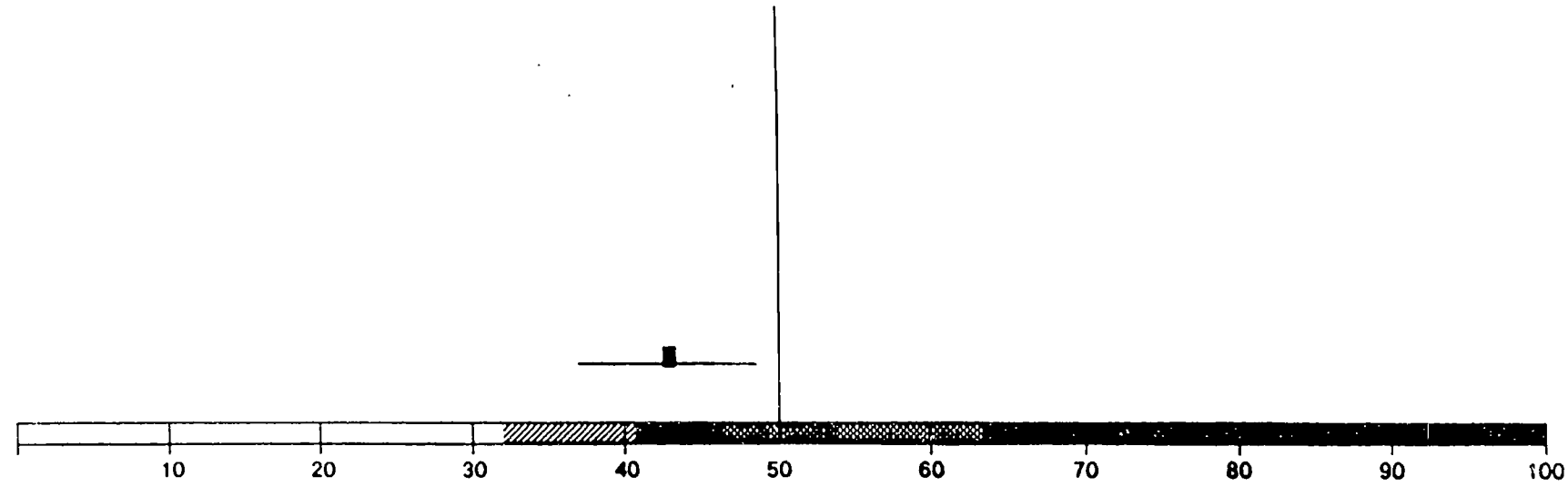


Chart 3
Predicted Level of Leadership Effectiveness*
Vocational Administration Norm Group
(Normalized T-scores)



- Not effective
- Slightly effective
- Somewhat effective
- Effective
- Very effective
- Extremely effective

93

* Based upon average LAI observer ratings

APPENDIX E

TABLES CONVERTING *LAI* RAW SCORES TO NORMALIZED *T*-SCORES WITH STANDARD ERRORS OF MEASUREMENT

Table E-1

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 1. Energetic with Stamina

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	59	5.8	57
5.7	54	5.7	53
5.6	53	5.6	51
5.5	52	5.5	50
5.4	49	5.4	49
5.3	48	5.3	48
5.2	46	5.2	-
5.1	-	5.1	-
5.0	44	5.0	43
4.9	-	4.9	-
4.8	41	4.8	40
4.7	39	4.7	39
4.6	38	4.6	37
4.5	37	4.5	35
4.4	36	4.4	34
4.3	35	4.3	34
4.2	32	4.2	-
4.1	32	4.1	-
4.0	32	4.0	30
3.9	-	3.9	-
3.8	27	3.8	-
3.7	25	3.7	-
3.6	24	3.6	-
3.5	-	3.5	-
3.4	-	3.4	-
3.3	-	3.3	23
3.2	21	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-2

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 2. Insightful

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	66	5.8	64
5.7	62	5.7	61
5.6	59	5.6	58
5.5	58	5.5	57
5.4	55	5.4	54
5.3	54	5.3	54
5.2	49	5.2	48
5.1	-	5.1	-
5.0	48	5.0	47
4.9	-	4.9	-
4.8	44	4.8	42
4.7	41	4.7	40
4.6	40	4.6	37
4.5	39	4.5	36
4.4	37	4.4	-
4.3	35	4.3	35
4.2	32	4.2	32
4.1	32	4.1	-
4.0	32	4.0	31
3.9	-	3.9	-
3.8	29	3.8	30
3.7	-	3.7	29
3.6	28	3.6	-
3.5	27	3.5	-
3.4	26	3.4	-
3.3	25	3.3	27
3.2	-	3.2	-
3.1	-	3.1	-
3.0	21	3.0	23
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-3

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 3. Adaptable, Open to Change

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	68	5.8	66
5.7	63	5.7	62
5.6	60	5.6	57
5.5	59	5.5	56
5.4	56	5.4	55
5.3	54	5.3	55
5.2	51	5.2	52
5.1	51	5.1	-
5.0	51	5.0	51
4.9	-	4.9	-
4.8	47	4.8	47
4.7	44	4.7	44
4.6	43	4.6	42
4.5	42	4.5	42
4.4	40	4.4	-
4.3	39	4.3	40
4.2	38	4.2	36
4.1	38	4.1	-
4.0	38	4.0	34
3.9	-	3.9	-
3.8	35	3.8	31
3.7	33	3.7	-
3.6	33	3.6	-
3.5	32	3.5	-
3.4	31	3.4	-
3.3	30	3.3	30
3.2	26	3.2	-
3.1	-	3.1	-
3.0	25	3.0	29
2.9	-	2.9	-
2.8	24	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	23
2.4	-	2.4	-
2.3	21	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-4

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 4. Visionary

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	62	5.8	67
5.7	58	5.7	64
5.6	56	5.6	58
5.5	55	5.5	57
5.4	53	5.4	55
5.3	52	5.3	54
5.2	49	5.2	49
5.1	-	5.1	-
5.0	48	5.0	48
4.9	-	4.9	-
4.8	44	4.8	43
4.7	42	4.7	40
4.6	41	4.6	38
4.5	40	4.5	38
4.4	38	4.4	37
4.3	38	4.3	37
4.2	35	4.2	35
4.1	-	4.1	-
4.0	34	4.0	34
3.9	-	3.9	-
3.8	31	3.8	-
3.7	28	3.7	31
3.6	-	3.6	-
3.5	-	3.5	29
3.4	25	3.4	-
3.3	-	3.3	27
3.2	-	3.2	-
3.1	-	3.1	-
3.0	24	3.0	23
2.9	-	2.9	-
2.8	21	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-5

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 5. Tolerant of Ambiguity and Complexity

Vocational Administrator Norm Group (Standard Error = ± .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	71	5.8	70
5.7	67	5.7	65
5.6	63	5.6	61
5.5	62	5.5	61
5.4	61	5.4	-
5.3	60	5.3	61
5.2	55	5.2	55
5.1	-	5.1	-
5.0	54	5.0	54
4.9	-	4.9	-
4.8	49	4.8	48
4.7	46	4.7	45
4.6	45	4.6	43
4.5	44	4.5	42
4.4	43	4.4	41
4.3	41	4.3	40
4.2	38	4.2	38
4.1	-	4.1	-
4.0	37	4.0	37
3.9	-	3.9	-
3.8	33	3.8	33
3.7	32	3.7	33
3.6	30	3.6	-
3.5	29	3.5	-
3.4	29	3.4	-
3.3	28	3.3	27
3.2	27	3.2	-
3.1	-	3.1	-
3.0	25	3.0	23
2.9	-	2.9	-
2.8	21	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-6

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 6. Achievement-Oriented

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .3 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	61	5.8	59
5.7	57	5.7	56
5.6	54	5.6	52
5.5	53	5.5	50
5.4	50	5.4	48
5.3	49	5.3	47
5.2	46	5.2	42
5.1	-	5.1	-
5.0	45	5.0	41
4.9	-	4.9	-
4.8	41	4.8	37
4.7	39	4.7	37
4.6	37	4.6	35
4.5	36	4.5	34
4.4	34	4.4	-
4.3	32	4.3	33
4.2	30	4.2	-
4.1	30	4.1	-
4.0	30	4.0	31
3.9	-	3.9	-
3.8	28	3.8	-
3.7	26	3.7	27
3.6	-	3.6	-
3.5	25	3.5	-
3.4	-	3.4	-
3.3	-	3.3	27
3.2	-	3.2	-
3.1	-	3.1	-
3.0	21	3.0	-
2.9	-	2.9	-
2.8	-	2.8	23
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-7

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 7. Accountable

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	64	5.8	61
5.7	59	5.7	58
5.6	56	5.6	53
5.5	55	5.5	52
5.4	53	5.4	50
5.3	52	5.3	49
5.2	49	5.2	44
5.1	-	5.1	-
5.0	57	5.0	43
4.9	-	4.9	-
4.8	44	4.8	38
4.7	42	4.7	37
4.6	41	4.6	36
4.5	40	4.5	35
4.4	39	4.4	35
4.3	38	4.3	35
4.2	35	4.2	-
4.1	-	4.1	-
4.0	34	4.0	-
3.9	-	3.9	-
3.8	30	3.8	-
3.7	29	3.7	29
3.6	-	3.6	-
3.5	28	3.5	27
3.4	27	3.4	-
3.3	26	3.3	-
3.2	25	3.2	-
3.1	-	3.1	-
3.0	24	3.0	23
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	21	2.2	-
2.1	-	2.1	-

Table E-8

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 8. Initiating

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	66	5.8	66
5.7	62	5.7	62
5.6	60	5.6	59
5.5	59	5.5	58
5.4	56	5.4	57
5.3	55	5.3	57
5.2	51	5.2	50
5.1	-	5.1	-
5.0	50	5.0	49
4.9	-	4.9	-
4.8	47	4.8	45
4.7	44	4.7	43
4.6	43	4.6	41
4.5	42	4.5	40
4.4	41	4.4	38
4.3	40	4.3	37
4.2	36	4.2	33
4.1	-	4.1	33
4.0	35	4.0	33
3.9	-	3.9	-
3.8	30	3.8	-
3.7	27	3.7	31
3.6	-	3.6	-
3.5	-	3.5	-
3.4	25	3.4	-
3.3	24	3.3	30
3.2	-	3.2	-
3.1	-	3.1	-
3.0	21	3.0	23
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-9

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 9. Confident, Accepting of Self

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	66	5.8	65
5.7	61	5.7	60
5.6	58	5.6	55
5.5	57	5.5	54
5.4	54	5.4	52
5.3	53	5.3	51
5.2	49	5.2	46
5.1	-	5.1	-
5.0	47	5.0	46
4.9	-	4.9	-
4.8	43	4.8	41
4.7	40	4.7	39
4.6	39	4.6	37
4.5	39	4.5	36
4.4	37	4.4	34
4.3	36	4.3	34
4.2	33	4.2	-
4.1	33	4.1	-
4.0	33	4.0	32
3.9	-	3.9	-
3.8	28	3.8	31
3.7	-	3.7	30
3.6	26	3.6	-
3.5	-	3.5	27
3.4	25	3.4	-
3.3	24	3.3	23
3.2	-	3.2	-
3.1	-	3.1	-
3.0	21	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-10
LAI Raw Scores to Normalized *T*-Score Equivalents
Attribute 10. Willing to Accept Responsibility

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	59	5.8	60
5.7	54	5.7	55
5.6	52	5.6	-
5.5	50	5.5	50
5.4	47	5.4	49
5.3	46	5.3	48
5.2	43	5.2	-
5.1	-	5.1	-
5.0	41	5.0	43
4.9	-	4.9	-
4.8	38	4.8	38
4.7	36	4.7	36
4.6	-	4.6	34
4.5	33	4.5	34
4.4	32	4.4	-
4.3	31	4.3	33
4.2	-	4.2	-
4.1	-	4.1	-
4.0	-	4.0	29
3.9	-	3.9	-
3.8	-	3.8	27
3.7	27	3.7	
3.6	-	3.6	-
3.5	25	3.5	-
3.4	24	3.4	-
3.3	-	3.3	23
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-11

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 11. Persistent

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	65	5.8	65
5.7	60	5.7	59
5.6	57	5.6	55
5.5	56	5.5	54
5.4	53	5.4	52
5.3	51	5.3	52
5.2	47	5.2	47
5.1	-	5.1	-
5.0	46	5.0	46
4.9	-	4.9	-
4.8	41	4.8	41
4.7	38	4.7	38
4.6	37	4.6	35
4.5	36	4.5	-
4.4	35	4.4	-
4.3	34	4.3	34
4.2	31	4.2	-
4.1	-	4.1	-
4.0	28	4.0	31
3.9	-	3.9	-
3.8	24	3.8	-
3.7	21	3.7	-
3.6	-	3.6	-
3.5	-	3.5	-
3.4	-	3.4	-
3.3	-	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	23
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-12

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 12. Enthusiastic, Optimistic

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	63	5.8	63
5.7	59	5.7	59
5.6	57	5.6	55
5.5	55	5.5	54
5.4	53	5.4	53
5.3	52	5.3	53
5.2	48	5.2	47
5.1	-	5.1	-
5.0	47	5.0	46
4.9	-	4.9	-
4.8	44	4.8	40
4.7	41	4.7	37
4.6	40	4.6	-
4.5	39	4.5	35
4.4	37	4.4	-
4.3	36	4.3	34
4.2	33	4.2	-
4.1	-	4.1	-
4.0	32	4.0	31
3.9	-	3.9	-
3.8	28	3.8	-
3.7	27	3.7	-
3.6	26	3.6	-
3.5	25	3.5	-
3.4	24	3.4	-
3.3	-	3.3	-
3.2	21	3.2	-
3.1	-	3.1	-
3.0	-	3.0	27
2.9	-	2.9	-
2.8	-	2.8	23
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-13
LAI Raw Scores to Normalized *T*-Score Equivalents
Attribute 13. Tolerant of Frustration

Vocational Administrator Norm Group (Standard Error = ± .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	68	5.8	69
5.7	64	5.7	64
5.6	61	5.6	-
5.5	60	5.5	60
5.4	58	5.4	59
5.3	57	5.3	58
5.2	54	5.2	54
5.1	-	5.1	-
5.0	53	5.0	54
4.9	-	4.9	-
4.8	49	4.8	48
4.7	46	4.7	46
4.6	45	4.6	-
4.5	44	4.5	45
4.4	43	4.4	44
4.3	42	4.3	44
4.2	40	4.2	40
4.1	-	4.1	40
4.0	39	4.0	40
3.9	-	3.9	-
3.8	35	3.8	35
3.7	34	3.7	34
3.6	33	3.6	33
3.5	32	3.5	32
3.4	31	3.4	-
3.3	30	3.3	31
3.2	-	3.2	30
3.1	-	3.1	-
3.0	29	3.0	-
2.9	-	2.9	-
2.8	-	2.8	29
2.7	-	2.7	-
2.6	-	2.6	-
2.5	29	2.5	27
2.4	26	2.4	-
2.3	25	2.3	-
2.2	-	2.2	-
2.1	-	2.2	-
2.0	-	2.0	-
1.9	-	1.9	-
1.8	21	1.8	-

Table E-14

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 14. Dependable, Reliable

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .3 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	59	5.8	55
5.7	54	5.7	51
5.6	52	5.6	47
5.5	51	5.5	47
5.4	49	5.4	44
5.3	48	5.3	42
5.2	45	5.2	36
5.1	-	5.1	-
5.0	44	5.0	-
4.9	-	4.9	-
4.8	41	4.8	34
4.7	40	4.7	34
4.6	39	4.6	-
4.5	38	4.5	32
4.4	36	4.4	-
4.3	36	4.3	-
4.2	33	4.2	-
4.1	33	4.1	-
4.0	33	4.0	31
3.9	-	3.9	-
3.8	30	3.8	29
3.7	29	3.7	27
3.6	28	3.6	-
3.5	26	3.5	-
3.4	25	3.4	-
3.3	-	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	24	2.7	-
2.6	21	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-

Table E-15

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 15. Courageous, Risk-Taker

Vocational Administrator Norm Group (Standard Error = ± .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	69	5.8	68
5.7	64	5.7	66
5.6	62	5.6	62
5.5	60	5.5	61
5.4	58	5.4	58
5.3	58	5.3	58
5.2	54	5.2	54
5.1	-	5.1	-
5.0	53	5.0	53
4.9	-	4.9	-
4.8	49	4.8	49
4.7	46	4.7	47
4.6	45	4.6	45
4.5	44	4.5	44
4.4	43	4.4	42
4.3	42	4.3	41
4.2	39	4.2	37
4.1	-	4.1	-
4.0	38	4.0	36
3.9	-	3.9	-
3.8	35	3.8	33
3.7	33	3.7	32
3.6	32	3.6	-
3.5	30	3.5	-
3.4	-	3.4	-
3.3	28	3.3	-
3.2	27	3.2	-
3.1	-	3.1	-
3.0	26	3.0	30
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	27
2.6	-	2.6	-
2.5	21	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	23

Table E-16

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 16. Even Disposition

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .5 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	64	5.8	65
5.7	59	5.7	60
5.6	57	5.6	55
5.5	56	5.5	54
5.4	54	5.4	53
5.3	53	5.3	52
5.2	50	5.2	48
5.1	-	5.1	-
5.0	49	5.0	48
4.9	-	4.9	-
4.8	45	4.8	44
4.7	43	4.7	42
4.6	42	4.6	41
4.5	41	4.5	40
4.4	40	4.4	39
4.3	39	4.3	39
4.2	36	4.2	-
4.1	36	4.1	-
4.0	36	4.0	36
3.9	-	3.9	-
3.8	33	3.8	-
3.7	31	3.7	32
3.6	30	3.6	-
3.5	-	3.5	-
3.4	-	3.4	-
3.3	29	3.3	31
3.2	29	3.2	30
3.1	29	3.1	-
3.0	29	3.0	29
2.9	-	2.9	-
2.8	27	2.8	-
2.7	26	2.7	-
2.6	-	2.6	-
2.5	-	2.5	23
2.4	-	2.4	-
2.3	25	2.3	-
2.2	24	2.2	-
2.1	-	2.1	-
2.0	21	2.0	-

Table E-17
LAI Raw Scores to Normalized *T*-Score Equivalents
Attribute 17. Committed to the Common Good

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	59	5.8	59
5.7	54	5.7	55
5.6	51	5.6	52
5.5	50	5.5	52
5.4	48	5.4	50
5.3	47	5.3	48
5.2	43	5.2	43
5.1	-	5.1	-
5.0	42	5.0	43
4.9	-	4.9	-
4.8	38	4.8	37
4.7	36	4.7	35
4.6	35	4.6	34
4.5	34	4.5	34
4.4	34	4.4	-
4.3	33	4.3	33
4.2	-	4.2	-
4.1	-	4.1	-
4.0	30	4.0	30
3.9	-	3.9	-
3.8	28	3.8	-
3.7	-	3.7	29
3.6	-	3.6	-
3.5	27	3.5	-
3.4	26	3.4	-
3.3	24	3.3	23
3.2	21	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-18

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 18. Personal Integrity

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .3 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	60	5.8	57
5.7	56	5.7	54
5.6	54	5.6	50
5.5	52	5.5	49
5.4	49	5.4	47
5.3	48	5.3	46
5.2	44	5.2	39
5.1	-	5.1	39
5.0	43	5.0	39
4.9	-	4.9	-
4.8	39	4.8	35
4.7	37	4.7	34
4.6	35	4.6	-
4.5	35	4.5	-
4.4	34	4.4	-
4.3	34	4.3	33
4.2	32	4.2	30
4.1	-	4.1	-
4.0	31	4.0	29
3.9	-	3.9	-
3.8	28	3.8	-
3.7	-	3.7	-
3.6	26	3.6	-
3.5	-	3.5	-
3.4	25	3.4	-
3.3	24	3.3	27
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	23
2.6	-	2.6	-
2.5	-	2.5	-
2.4	21	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-19

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 19. Intelligent with Practical Judgment

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .3 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	62	5.8	61
5.7	57	5.7	57
5.6	54	5.6	53
5.5	53	5.5	51
5.4	51	5.4	49
5.3	49	5.3	48
5.2	46	5.2	43
5.1	-	5.1	-
5.0	44	5.0	43
4.9	-	4.9	-
4.8	40	4.8	37
4.7	37	4.7	35
4.6	36	4.6	-
4.5	34	4.5	33
4.4	-	4.4	-
4.3	33	4.3	-
4.2	-	4.2	-
4.1	-	4.1	-
4.0	29	4.0	27
3.9	-	3.9	-
3.8	26	3.8	-
3.7	-	3.7	-
3.6	25	3.6	-
3.5	-	3.5	-
3.4	21	3.4	-
3.3	-	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-20

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 20. Ethical

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	62	5.8	57
5.7	56	5.7	54
5.6	53	5.6	50
5.5	52	5.5	49
5.4	49	5.4	47
5.3	47	5.3	46
5.2	45	5.2	41
5.1	-	5.1	-
5.0	43	5.0	40
4.9	-	4.9	-
4.8	39	4.8	37
4.7	37	4.7	35
4.6	37	4.6	34
4.5	36	4.5	33
4.4	35	4.4	32
4.3	34	4.3	-
4.2	33	4.2	-
4.1	33	4.1	-
4.0	33	4.0	-
3.9	-	3.9	-
3.8	30	3.8	-
3.7	-	3.7	-
3.6	-	3.6	-
3.5	26	3.5	-
3.4	25	3.4	-
3.3	-	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	24	3.0	27
2.9	-	2.9	-
2.8	-	2.8	23
2.7	-	2.7	-
2.6	21	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-21

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 21. Communication (Listening, Oral, Written)

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	63	5.8	62
5.7	59	5.7	58
5.6	57	5.6	55
5.5	56	5.5	54
5.4	54	5.4	52
5.3	53	5.3	52
5.2	49	5.2	45
5.1	-	5.1	-
5.0	48	5.0	45
4.9	-	4.9	-
4.8	44	4.8	42
4.7	42	4.7	39
4.6	41	4.6	-
4.5	39	4.5	37
4.4	39	4.4	37
4.3	38	4.3	36
4.2	36	4.2	-
4.1	-	4.1	-
4.0	35	4.0	34
3.9	-	3.9	-
3.8	32	3.8	-
3.7	32	3.7	31
3.6	30	3.6	-
3.5	30	3.5	-
3.4	28	3.4	-
3.3	25	3.3	30
3.2	24	3.2	-
3.1	-	3.1	-
3.0	-	3.0	27
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	21	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-22

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 22. Sensitivity, Respect

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	62	5.8	61
5.7	58	5.7	58
5.6	55	5.6	53
5.5	54	5.5	52
5.4	52	5.4	50
5.3	50	5.3	49
5.2	47	5.2	44
5.1	-	5.1	-
5.0	46	5.0	43
4.9	-	4.9	-
4.8	43	4.8	40
4.7	40	4.7	39
4.6	38	4.6	-
4.5	38	4.5	37
4.4	-	4.4	-
4.3	37	4.3	36
4.2	35	4.2	33
4.1	-	4.1	-
4.0	34	4.0	32
3.9	-	3.9	-
3.8	32	3.8	-
3.7	29	3.7	29
3.6	29	3.6	-
3.5	28	3.5	27
3.4	26	3.4	-
3.3	25	3.3	23
3.2	-	3.2	-
3.1	-	3.1	-
3.0	24	3.0	-
2.9	-	2.9	-
2.8	21	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-23
LAI Raw Scores to Normalized *T*-Score Equivalents
Attribute 23. Motivating Others

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	68	5.8	68
5.7	63	5.7	63
5.6	61	5.6	59
5.5	60	5.5	58
5.4	57	5.4	55
5.3	56	5.3	54
5.2	52	5.2	49
5.1	-	5.1	-
5.0	51	5.0	50
4.9	-	4.9	-
4.8	47	4.8	44
4.7	45	4.7	42
4.6	44	4.6	40
4.5	42	4.5	39
4.4	41	4.4	37
4.3	40	4.3	35
4.2	38	4.2	-
4.1	38	4.1	-
4.0	38	4.0	32
3.9	-	3.9	-
3.8	35	3.8	-
3.7	33	3.7	29
3.6	32	3.6	-
3.5	31	3.5	-
3.4	29	3.4	-
3.3	28	3.3	-
3.2	26	3.2	-
3.1	-	3.1	-
3.0	-	3.0	23
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	24	2.5	-
2.4	21	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-24

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 24. Networking

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	64	5.8	64
5.7	59	5.7	60
5.6	57	5.6	58
5.5	55	5.5	56
5.4	53	5.4	54
5.3	52	5.3	53
5.2	48	5.2	46
5.1	-	5.1	-
5.0	47	5.0	45
4.9	-	4.9	-
4.8	44	4.8	40
4.7	41	4.7	38
4.6	39	4.6	-
4.5	38	4.5	35
4.4	37	4.4	-
4.3	35	4.3	34
4.2	32	4.2	-
4.1	-	4.1	-
4.0	31	4.0	33
3.9	-	3.9	-
3.8	-	3.8	31
3.7	27	3.7	29
3.6	-	3.6	-
3.5	26	3.5	-
3.4	24	3.4	-
3.3	21	3.3	23
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-25
LAI Raw Scores to Normalized *T*-Score Equivalents
Attribute 25. Planning

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	65	5.8	66
5.7	60	5.7	63
5.6	57	5.6	58
5.5	56	5.5	57
5.4	54	5.4	54
5.3	53	5.3	53
5.2	50	5.2	47
5.1	-	5.1	-
5.0	48	5.0	46
4.9	-	4.9	-
4.8	43	4.8	40
4.7	40	4.7	38
4.6	39	4.6	36
4.5	38	4.5	35
4.4	37	4.4	-
4.3	36	4.3	34
4.2	34	4.2	-
4.1	-	4.1	-
4.0	32	4.0	31
3.9	-	3.9	-
3.8	29	3.8	30
3.7	28	3.7	-
3.6	26	3.6	-
3.5	-	3.5	-
3.4	-	3.4	-
3.3	24	3.3	27
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	23
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-26
LAI Raw Scores to Normalized *T*-Score Equivalents
Attribute 26. Delegating

Vocational Administrator Norm Group (Standard Error = ± .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .5 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	67	5.8	70
5.7	62	5.7	67
5.6	59	5.6	62
5.5	58	5.5	61
5.4	56	5.4	60
5.3	55	5.3	58
5.2	51	5.2	54
5.1	-	5.1	54
5.0	49	5.0	54
4.9	-	4.9	-
4.8	45	4.8	48
4.7	43	4.7	46
4.6	41	4.6	44
4.5	40	4.5	43
4.4	39	4.4	41
4.3	38	4.3	41
4.2	36	4.2	38
4.1	-	4.1	-
4.0	35	4.0	37
3.9	-	3.9	-
3.8	29	3.8	33
3.7	29	3.7	32
3.6	-	3.6	30
3.5	27	3.5	-
3.4	-	3.4	-
3.3	26	3.3	29
3.2	21	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-27

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 27. Organizing

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	66	5.8	63
5.7	61	5.7	60
5.6	59	5.6	56
5.5	58	5.5	55
5.4	56	5.4	53
5.3	54	5.3	53
5.2	51	5.2	48
5.1	-	5.1	-
5.0	50	5.0	47
4.9	-	4.9	-
4.8	47	4.8	42
4.7	-	4.7	40
4.6	43	4.6	39
4.5	41	4.5	38
4.4	40	4.4	-
4.3	39	4.3	37
4.2	36	4.2	32
4.1	36	4.1	-
4.0	36	4.0	29
3.9	-	3.9	-
3.8	32	3.8	-
3.7	31	3.7	-
3.6	29	3.6	-
3.5	-	3.5	-
3.4	27	3.4	-
3.3	26	3.3	23
3.2	25	3.2	-
3.1	-	3.1	-
3.0	24	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-28

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 28. Team Building

Vocational Administrator Norm Group (Standard Error = ± .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	68	5.8	67
5.7	62	5.7	65
5.6	61	5.6	60
5.5	59	5.5	60
5.4	57	5.4	57
5.3	56	5.3	55
5.2	52	5.2	50
5.1	52	5.1	-
5.0	52	5.0	49
4.9	-	4.9	-
4.8	48	4.8	44
4.7	46	4.7	42
4.6	44	4.6	40
4.5	43	4.5	38
4.4	41	4.4	37
4.3	41	4.3	37
4.2	39	4.2	34
4.1	-	4.1	-
4.0	38	4.0	33
3.9	-	3.9	-
3.8	36	3.8	-
3.7	35	3.7	30
3.6	33	3.6	-
3.5	33	3.5	29
3.4	32	3.4	-
3.3	31	3.3	27
3.2	26	3.2	-
3.1	-	3.1	-
3.0	25	3.0	-
2.9	-	2.9	-
2.8	21	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-29
LAI Raw Scores to Normalized *T*-Score Equivalents
Attribute 29. Coaching

Vocational Administrator Norm Group (Standard Error = ± .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	70	5.8	70
5.7	66	5.7	64
5.6	63	5.6	58
5.5	62	5.5	57
5.4	59	5.4	55
5.3	58	5.3	54
5.2	54	5.2	48
5.1	-	5.1	48
5.0	53	5.0	48
4.9	-	4.9	-
4.8	48	4.8	42
4.7	46	4.7	40
4.6	44	4.6	37
4.5	43	4.5	37
4.4	42	4.4	35
4.3	41	4.3	35
4.2	39	4.2	33
4.1	-	4.1	-
4.0	38	4.0	30
3.9	-	3.9	-
3.8	35	3.8	-
3.7	32	3.7	27
3.6	32	3.6	-
3.5	31	3.5	23
3.4	29	3.4	-
3.3	28	3.3	-
3.2	26	3.2	-
3.1	-	3.1	-
3.0	25	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-30

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 30. Conflict Management

Vocational Administrator Norm Group (Standard Error = ± .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	73	5.8	69
5.7	70	5.7	68
5.6	67	5.6	65
5.5	66	5.5	63
5.4	63	5.4	62
5.3	62	5.3	62
5.2	58	5.2	57
5.1	-	5.1	57
5.0	57	5.0	57
4.9	-	4.9	-
4.8	52	4.8	51
4.7	50	4.7	48
4.6	49	4.6	46
4.5	48	4.5	45
4.4	46	4.4	43
4.3	45	4.3	43
4.2	42	4.2	40
4.1	-	4.1	-
4.0	41	4.0	39
3.9	-	3.9	-
3.8	38	3.8	34
3.7	36	3.7	32
3.6	35	3.6	-
3.5	35	3.5	-
3.4	33	3.4	-
3.3	32	3.3	31
3.2	29	3.2	-
3.1	29	3.1	-
3.0	29	3.0	-
2.9	-	2.9	-
2.8	25	2.8	23
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	24	2.3	-
2.2	21	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-31

***LAI* Raw Scores to Normalized *T*-Score Equivalents**

Attribute 31. Time Management

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	64	5.8	62
5.7	59	5.7	58
5.6	56	5.6	54
5.5	55	5.5	54
5.4	54	5.4	52
5.3	52	5.3	50
5.2	49	5.2	46
5.1	-	5.1	-
5.0	48	5.0	45
4.9	-	4.9	-
4.8	45	4.8	39
4.7	43	4.7	37
4.6	42	4.6	-
4.5	42	4.5	36
4.4	40	4.4	-
4.3	39	4.3	35
4.2	37	4.2	-
4.1	37	4.1	-
4.0	37	4.0	33
3.9	-	3.9	-
3.8	35	3.8	-
3.7	33	3.7	31
3.6	32	3.6	-
3.5	32	3.5	30
3.4	31	3.4	-
3.3	30	3.3	29
3.2	29	3.2	-
3.1	-	3.1	-
3.0	28	3.0	27
2.9	-	2.9	-
2.8	24	24	23
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	21	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-32

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 32. Stress Management

Vocational Administrator Norm Group (Standard Error = ± .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = ± .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	67	5.8	73
5.7	64	5.7	65
5.6	61	5.6	61
5.5	59	5.5	61
5.4	57	5.4	59
5.3	56	5.3	58
5.2	52	5.2	51
5.1	-	5.1	-
5.0	51	5.0	50
4.9	-	4.9	-
4.8	47	4.8	45
4.7	44	4.7	44
4.6	43	4.6	-
4.5	42	4.5	41
4.4	40	4.4	-
4.3	39	4.3	39
4.2	37	4.2	37
4.1	-	4.1	-
4.0	36	4.0	36
3.9	-	3.9	-
3.8	32	3.8	-
3.7	29	3.7	33
3.6	28	3.6	-
3.5	-	3.5	30
3.4	-	3.4	-
3.3	-	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	27	3.0	29
2.9	-	2.9	-
2.8	-	2.8	-
2.7	24	2.7	-
2.6	21	2.6	-
2.5	-	2.5	23
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-33

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 33. Appropriate Use of Leadership Styles

Vocational Administrator Norm Group (Standard Error = .5 pts.)		Vocational Teacher Leader Norm Group (Standard Error = .5 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	71	5.8	77
5.7	66	5.7	73
5.6	63	5.6	64
5.5	62	5.5	62
5.4	60	5.4	60
5.3	59	5.3	59
5.2	55	5.2	-
5.1	-	5.1	-
5.0	54	5.0	53
4.9	-	4.9	-
4.8	50	4.8	48
4.7	47	4.7	46
4.6	45	4.6	44
4.5	44	4.5	42
4.4	43	4.4	41
4.3	42	4.3	40
4.2	39	4.2	37
4.1	-	4.1	-
4.0	38	4.0	36
3.9	-	3.9	-
3.8	35	3.8	31
3.7	32	3.7	29
3.6	-	3.6	23
3.5	30	3.5	-
3.4	29	3.4	-
3.3	27	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	26	3.0	-
2.9	-	2.9	-
2.8	24	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-34

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 34. Ideological Beliefs Appropriate to the Group

Vocational Administrator Norm Group (Standard Error = .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	64	5.8	65
5.7	59	5.7	61
5.6	56	5.6	57
5.5	55	5.5	56
5.4	52	5.4	54
5.3	51	5.3	53
5.2	47	5.2	48
5.1	-	5.1	-
5.0	46	5.0	46
4.9	-	4.9	-
4.8	41	4.8	40
4.7	39	4.7	38
4.6	37	4.6	-
4.5	36	4.5	35
4.4	34	4.4	34
4.3	33	4.3	33
4.2	30	4.2	-
4.1	-	4.1	-
4.0	29	4.0	30
3.9	-	3.9	-
3.8	28	3.8	29
3.7	-	3.7	27
3.6	27	3.6	-
3.5	25	3.5	-
3.4	24	3.4	-
3.3	-	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	21	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-35

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 35. Decision-Making

Vocational Administrator Norm Group (Standard Error = .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	65	5.8	65
5.7	60	5.7	61
5.6	58	5.6	57
5.5	57	5.5	56
5.4	54	5.4	54
5.3	53	5.3	54
5.2	49	5.2	49
5.1	-	5.1	49
5.0	48	5.0	49
4.9	-	4.9	-
4.8	44	4.8	42
4.7	42	4.7	39
4.6	41	4.6	37
4.5	40	4.5	36
4.4	39	4.4	36
4.3	39	4.3	35
4.2	35	4.2	-
4.1	-	4.1	-
4.0	34	4.0	31
3.9	-	3.9	-
3.8	32	3.8	-
3.7	-	3.7	29
3.6	31	3.6	-
3.5	-	3.5	-
3.4	-	3.4	-
3.3	28	3.3	27
3.2	27	3.2	-
3.1	-	3.1	-
3.0	25	3.0	23
2.9	-	2.9	-
2.8	-	2.8	-
2.7	21	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-36

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 36. Problem-Solving

Vocational Administrator Norm Group (Standard Error = .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	69	5.8	66
5.7	64	5.7	62
5.6	60	5.6	58
5.5	59	5.5	58
5.4	57	5.4	55
5.3	56	5.3	54
5.2	52	5.2	49
5.1	-	5.1	-
5.0	51	5.0	48
4.9	-	4.9	-
4.8	46	4.8	41
4.7	43	4.7	40
4.6	41	4.6	38
4.5	40	4.5	37
4.4	39	4.4	-
4.3	39	4.3	35
4.2	35	4.2	-
4.1	35	4.1	-
4.0	35	4.0	30
3.9	-	3.9	-
3.8	33	3.8	-
3.7	30	3.7	23
3.6	28	3.6	-
3.5	25	3.5	-
3.4	-	3.4	-
3.3	-	3.3	-
3.2	24	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-37

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 37. Information Management

Vocational Administrator Norm Group (Standard Error = .4 pts.)		Vocational Teacher Leader Norm Group (Standard Error = .4 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	79	6.0	77
5.9	-	5.9	-
5.8	64	5.8	64
5.7	59	5.7	60
5.6	56	5.6	55
5.5	55	5.5	55
5.4	53	5.4	52
5.3	51	5.3	51
5.2	47	5.2	46
5.1	-	5.1	-
5.0	46	5.0	45
4.9	-	4.9	-
4.8	42	4.8	40
4.7	40	4.7	38
4.6	38	4.6	-
4.5	38	4.5	35
4.4	37	4.4	34
4.3	36	4.3	34
4.2	31	4.2	-
4.1	-	4.1	-
4.0	31	4.0	29
3.9	-	3.9	-
3.8	29	3.8	-
3.7	25	3.7	27
3.6	-	3.6	-
3.5	24	3.5	-
3.4	-	3.4	-
3.3	-	3.3	23
3.2	21	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

Table E-38

LAI Raw Scores to Normalized *T*-Score Equivalents

Attribute 38. Average Score of All Attributes

Vocational Administrator Norm Group (Standard Error = .3 pts.)		Vocational Teacher Leader Norm Group (Standard Error = .3 pts.)	
Raw Score:	*T*-Score	Raw Score:	*T*-Score
6.0	-	6.0	-
5.9	79	5.9	77
5.8	72	5.8	73
5.7	70	5.7	68
5.6	65	5.6	64
5.5	61	5.5	60
5.4	56	5.4	55
5.3	54	5.3	52
5.2	51	5.2	49
5.1	49	5.1	47
5.0	47	5.0	44
4.9	44	4.9	41
4.8	42	4.8	39
4.7	41	4.7	36
4.6	39	4.6	35
4.5	37	4.5	-
4.4	35	4.4	33
4.3	34	4.3	32
4.2	32	4.2	-
4.1	30	4.1	-
4.0	29	4.0	30
3.9	-	3.9	29
3.8	-	3.8	-
3.7	26	3.7	27
3.6	25	3.6	23
3.5	21	3.5	-
3.4	-	3.4	-
3.3	-	3.3	-
3.2	-	3.2	-
3.1	-	3.1	-
3.0	-	3.0	-
2.9	-	2.9	-
2.8	-	2.8	-
2.7	-	2.7	-
2.6	-	2.6	-
2.5	-	2.5	-
2.4	-	2.4	-
2.3	-	2.3	-
2.2	-	2.2	-
2.1	-	2.1	-
2.0	-	2.0	-

APPENDIX F

TABLE CONVERTING *LEI* RAW SCORES TO NORMALIZED *T*-SCORES WITH STANDARD ERRORS OF MEASUREMENT

Table F-1

LEI Raw Scores to Normalized *T*-Score Equivalents

Vocational Administrator Norm Group (Standard Error = .2 pts.)		Vocational Teacher Leader Norm Group (Standard Error = .2 pts.)	
Raw Score: Average of Items 1-6	*T*-Score	Raw Score: Average of Items 1-6	*T*-Score
6.0	-	6.0	-
5.9	80	5.9	77
5.8	74	5.8	73
5.7	70	5.7	70
5.6	67	5.6	69
5.5	66	5.5	66
5.4	64	5.4	64
5.3	62	5.3	61
5.2	58	5.2	58
5.1	57	5.1	56
5.0	54	5.0	54
4.9	53	4.9	52
4.8	51	4.8	50
4.7	49	4.7	48
4.6	48	4.6	46
4.5	47	4.5	44
4.4	45	4.4	42
4.3	43	4.3	39
4.2	41	4.2	38
4.1	40	4.1	37
4.0	38	4.0	36
3.9	36	3.9	35
3.8	35	3.8	34
3.7	34	3.7	33
3.6	33	3.6	31
3.5	30	3.5	-
3.4	-	3.4	-
3.3	29	3.3	30
3.2	28	3.2	-
3.1	27	3.1	-
3.0	-	3.0	29
2.9	-	2.9	-
2.8	26	2.8	-
2.7	21	2.7	23

APPENDIX G

PREDICTING LEADERSHIP PERFORMANCE FROM THE AVERAGE SCORE OF ALL *LAI* ATTRIBUTES

Predicting Leadership Performance from the Average Score of All *LAI* Attributes

I. Vocational Administrator Norm Group

$Y = 7.49 + .85 X$

where X = Average *LAI* score of all 37 attributes (*T*-score form)
Y = Predicted average score of *LEI* items 1-6 (*T*-score form)
[Standard error of estimate is 5 points.]

II. Vocational Teacher Leader Norm Group

$Y = 10.61 + .79 X$

where X = Average *LAI* score of all 37 attributes (*T*-score form)
Y= Predicted average score of *LEI* items 1-6 (*T*-score form)
[Standard error of estimate is 6 points.]