

THE DESIGN AND APPLICATION OF A SCALE
TO MEASURE ATTITUDES OF SECONDARY SCHOOL ADMINISTRATORS
TOWARD VOCATIONAL EDUCATION

by

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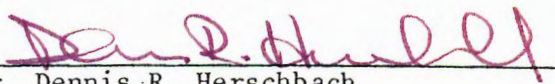
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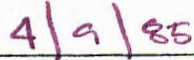
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ABSTRACT

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James Allan Burns, Doctor of Education, 1985

Dissertation directed by: Dr. Dennis R. Herschbach
Associate Professor
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Statement of the Problem. The problem of this study was to design a valid and reliable instrument to measure the attitudes of secondary school administrators toward vocational education.

Procedure. The parameters of the attitude to be measured were identified and defined. Based on these definitions, a 96-task universe of content was compiled and evaluated by a jury of vocational administrators and judged complete and relevant to the role of a vocational administrator. Fifty tasks were randomly selected from the universe and related attitude statements were written. In addition to the 50 statements, 7 selected demographic questions were included in the original instrument. A Likert summated rating scale was chosen as the method of measurement. The instrument was pilot tested, revised, and field tested on a population of 200 subjects. Through item analysis, the final instrument was reduced to the 24 highest discriminating attitude statements and 3 demographic questions.

Analysis of Data and Findings. An estimate of scale reliability with a coefficient of .88 was computed with the K-R 20 formula. One claim of content validity was made as a result of the completeness of the universe of content. One claim of construct validity was made based on the significant difference in scores between the known groups.

Conclusions. Based on the findings in this study, several conclusions were made:

1. The scale items are unidimensional.
2. The scale has a high level of internal consistency.
3. The scale appears to be significantly reliable.
4. The scale has content validity.
5. The scale has construct validity.
6. The demographic questions provided no significant correlational data.
7. The 24-item scale designed in this study appears to be able to measure the attitudes of secondary school administrators toward vocational education.

Recommendations. From the general conclusions presented, recommendations related to the scale designed in this study were:

1. Research should be conducted in an effort to replicate the statistical estimates of reliability and validity.
2. Research should be conducted utilizing this instrument to measure the attitudes of secondary school administrators.
3. Research should be conducted to re-evaluate the validity and reliability of this scale incorporating alternate statistical procedures.

4. Research should be conducted to determine if selected demographics beyond those used in this study influence attitude scores.

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CHAPTER I

Introduction

Within the past 75 years, vocational education has become established as a viable entity within the educational framework of the American secondary school system and an accepted element of the total educational curriculum in public secondary schools. Most school districts throughout the United States have included a vocational education goal as part of their comprehensive school philosophy. However, even with a firm instructional foundation and a generally-accepted philosophical base, the vocational education needs of today's secondary youth have not been fully met. Tyler (1970:794), for example, voiced his concern that American education was unconsciously catering to the academic student.

The schools are steeped in the academic traditions which emphasize scholarship, not effectiveness in performing one's roles . . . Although presumably dedicated to the education of all children and youth, the instructional programs are related specifically to the needs of the academically-able students and little deviation is provided for the needs of non-academic students.

Feirer (1978:8), in explicit agreement with Tyler, observed that students did not have available sufficient vocational training opportunities in secondary schools:

Most high school programs just do not offer adequate vocational education. Some high schools do work in cooperation with area vocational schools to supply a very small percentage of students with specific job skills. The great majority of high school students, however, do not have this opportunity. Most

students leave high school with absolutely no salable skills. The only jobs they can get are routine service jobs that require a strong back and little more.

Swanson (1979:49) expanded upon Tyler's and Feirer's concern that a disproportionate number of public school children were not being prepared for the post-secondary workforce when he wrote:

The United States is now the only large industrial nation in the world that continues to rely mainly on its system of general education as preparation for its workforce. Consider, for example, that for each 100 students entering first grade, only about 75 complete the twelfth grade. Of those who complete the twelfth grade, approximately 10 have had the opportunity to complete a vocational program at the secondary level. While many students choose to go on to post-secondary or higher education, only 4 percent enter non-baccalaureate vocational programs at the post-secondary level.

Educators like Tyler, Feirer, and Swanson did not stand alone as advocates for increased vocational training opportunities in the secondary schools. Across the nation, parents of school-age children voiced their concern about vocational opportunities. Bottoms (1978:34-35) related the fact that:

The 1978 Gallup Poll of the public's attitudes toward the public schools listed an increased emphasis on careers among the top things parents would like to see public schools doing that they are not now doing. This desire applied both to parents whose children do not intend to go on to college and to those who do. This is not a new development. In almost every one of the past ten studies conducted by Gallup, the public has made known its belief that public school education should prepare graduates for jobs.

To compound the problems of inadequate vocational education training opportunities, the United States will probably experience an economic upsurge in the mid 1980's. This may further strain the ability of secondary vocational education programs to meet the needs

of its students. The impact of anticipated workforce needs during the 1980's may have a rippling effect upon the existing shortage of vocational programs at the secondary level. Vocational education training opportunities will need to grow during the 1980's to just eliminate current training shortages, not to mention anticipated future workforce demands.

The level of support for, or opposition to, vocational education by secondary school decision-makers may well determine whether vocational education will meet the demands of the 80's. Divita's research supported the concept that secondary administrators are key people in deciding the types and the very existence of programs to be offered in the schools. Divita (1968:134) stated: "Much of the success of vocational education programs was felt to depend largely upon the degree to which school administrators encouraged and supported such programs." Heathman (1972:3) supported the positions of Divita and other researchers by stating that by virtue of their administrative position, many educational decision-makers determine the direction and emphasis of educational programs. Additionally, Barth (1974:3) identified secondary administrators as key individuals who can have an impact on the success or failure of vocational programs. The impact Barth described was a result, in part, of related positive or negative decision making.

Shaw (1967) recognized a relationship between the daily performance of secondary education decision-makers and the affective component of their attitudes. In a general statement, Shaw described how an individual might perform as a result of attitudinal influence. He stated:

The affective reactions that constitute the attitude toward a given object derive from the underlying cognitive structure relevant to that object. In the course of the individual's experiences with the object, he formulates a set of evaluative concepts or beliefs about it. These beliefs may arise from direct experience with the object or through indirect experiences in interaction with other persons. The beliefs thus formed are relevant to the goal striving of the individual and partially determine what further beliefs may be formed regarding the object. As the individual encounters the object, evaluative concepts regarding the relationship of the object to his goal attainment are formed or elicited. These perceived or anticipated effects upon goal attainment result in such affective reactions as anxiety or frustration, which in turn produce such motives as aggression or affiliation. (Shaw, 1967:11-12)

Divita (1968:14) also concluded that the attitudes of administrators often determined what programs were offered in the schools and the eventual failure of some school programs. More specifically, an administrator's attitude toward vocational education produced latent predispositions to react either positively or negatively in his/her daily routine within the job.

Additionally, there has been a variety of vocationally-related research dealing with obtaining and utilizing knowledge about attitudes toward vocational education. In one study, Young (1971:69) observed:

It seems logical to assume that information concerning the attitudes of professional personnel toward vocational education at the high school level will be useful to those educators who are responsible for the development of vocational education programs in the public schools.

Furthermore, Young's study also described vocational administrators in decision-making positions with less than significantly positive

attitudes toward vocational education. He recommended that these persons experience activities such as workshops or in-service training to stimulate an attitude change. Young believed an attitude change would be a desirable advantage for the future of vocational education. Rothenberg (1972:21), in agreement with Young, also recognized the value of obtaining information regarding attitudes of secondary school administrators toward vocational education.

Rothenberg suggested:

The determining of attitudes toward vocational education would allow for measures to be taken to achieve positive attitudes that would play an important role in achieving strong vocational education programs.

Knowledge of attitudes toward vocational education of secondary school administrators who could impact upon the future of vocational education would be beneficial in the selection process of administrators who would become influential decision-makers. Furthermore, knowledge of attitudes would facilitate the development of programs to stimulate positive attitudes. However, in order to obtain such knowledge, it would be necessary to measure the attitudes using a statistically valid and reliable instrument.

Attitude measurement utilizing Thurstone or Likert procedures has produced both valid and reliable data. Several researchers within the past twenty-five years have developed instruments using these procedures to specifically measure attitudes of selected populations toward vocational education. The most widely employed attitude instrument in previous studies has been the Wenrich and Crowley (1964) scale. This scale, while appearing to be well conceived and professionally designed, was prepared nearly two decades ago. Other

vocational education attitude scales (Woerdehoff and Bentley, 1959; and Lindgren and Patton, 1962) were developed concurrently with the Wenrich scale. However, vocational education has matured considerably since 1964. The purposes of the Wenrich and Crowley, Woerdehoff and Bentley, and Lindgren and Patton scales were relevant to that period of time, but have not been updated to address the issues facing vocational education at this time. Today, for example, minorities such as women and handicapped persons have made significant inroads into vocational education. Additionally, funding questions and technological change have created their own problems. These and other contemporary issues have not been addressed in previously developed attitude instruments. More recently utilized attitude scales (Young, 1971; Drake, 1972; Barth, 1974) were simply modifications to the Wenrich scale or independent scale designs. In each case, these scale designs either did not generalize to secondary administrators or lacked sufficient statistical analysis of reliability and validity. The nature of these various instruments suggested that none could be applied to the measurement of attitudes of secondary school administrators toward vocational education for the decade of the 80's. A new instrument was needed to measure the attitudes of secondary administrators toward vocational education.

The objective of this study was to produce an instrument that would measure the attitudes of secondary school administrators toward vocational education. Additionally, this instrument was designed to incorporate contemporary issues, to utilize established concepts in scale design methodologies, and to insure reliability and validity.

Statement of the Problem

The problem of this study was to design a valid and reliable instrument to measure the attitudes of secondary school administrators toward vocational education. Sub-problems related to the completion of this instrument were:

1. Define the construct of the psychological object to be measured.
2. Identify and evaluate for relevance and representation the universe of content related to the terms defined in sub-problem one.
3. Design an instrument to measure the attitudes of secondary school administrators toward vocational education.
4. Estimate the reliability and validity of the scale.

Statement of the Purpose

The purpose of this study was to design a valid and reliable instrument for use in the assessment of the attitudes of secondary school administrators toward vocational education.

Statement of the Procedure

A review of related research and literature was carried out to identify a procedure for the development of a valid and reliable instrument to measure attitudes of secondary school administrators toward vocational education.

This review was broken down into five sections:

1. Nature of Attitudes
2. Attitude Scale Development

3. Test Reliability
4. Test Validity
5. Studies of Attitudes Toward Vocational Education

Section one of the Review of Literature investigated the nature of attitudes. An attempt was made to link the concept of attitude with socially/psychologically congruent definitions which lent themselves to measurement. Section two was a review of literature on the developmental history of the construction of attitude scales. Different types of scale formats were investigated to help in the eventual selection of one for this study. In sections three and four, statistical procedures were reviewed to determine an analysis technique that would provide a statistically valid and reliable attitude scale. The final section of the review of literature was an analysis of the predominant scales used in measuring attitudes toward vocational education and a selection of the most recent attitude studies of selected populations toward vocational education.

Based upon the knowledge obtained in the review of literature and research, a theoretical and statistically-sound procedure was identified to address the four sub-problems for this study. A general overview of the procedure to address sub-problems one through four has been outlined in the remaining portion of this section. A detailed step-by-step procedure to address sub-problems one, two, and three was presented in Chapter Three; and sub-problem four was addressed in Chapter Four.

Sub-Problem One: Define the construct of the psychological object to be measured.

STEP 1: Define the parameters of the psychological construct to be measured. This step identified the social psychological area in which an individual's attitude was measured. A definition diminished vagueness and established a guide for identifying the universe of content associated with the defined attitude. For this study, two definitions appeared necessary to set parameters around the attitude to be measured. They were:

1. A definition of vocational education.
2. A definition of the occupational tasks of a vocational administrator.

STEP 2: Stratify the important elements of the defined terms. Identifying the relevant elements of each definition provided a means of constructing a chart to systematically display the universe of content within the previously defined parameters. The important elements of this study were the occupational tasks of a vocational administrator and the relevance of these tasks to the goals implied in the definition of vocational education. Eight primary task constructs or categories were identified for this study. They were:

TASKS OF ADMINISTRATION

1. Curriculum and Instruction
2. Finance and Business Management
3. Legal Responsibilities
4. Student Personnel
5. Community Relations
6. Educational Services and Facilities

7. Staff and Personnel Development

8. State, Federal, and Foundation Programs

The universe of content were those individually identified, vocationally-related administrative tasks categorized within each of the eight major task categories.

Sub-Problem Two: Identify and evaluate for relevance and representation the universe of content related to the terms defined in sub-problem one.

STEP 3: Once the universe of the construct was defined and the content outline framed, the process of identifying the sub-stratum or individual tasks within the eight constructs was necessary. Related literature and research were the primary sources for identifying the individual administrative tasks. The completed chart outline represented the content universe for a secondary administrator working within vocational education. The chart provided a systematic means of graphically exhausting the administrative tasks associated with vocational education. This increased the probability that the eventual scale will have content, not face, validity.

STEP 4: A group of 15 randomly selected vocational administrators was recruited to evaluate the universe of content listing prepared in Step 3. The judges were mailed a copy of the universe of content checklist with instructions to evaluate each of the vocational administrative tasks within the eight major task categories. A sub-stratum task was to be considered to be a member of the universe of content if the judge agreed on the following criteria:

1. The task item listed was relevant to the role of a vocational administrator.
2. The task item listed reinforced the goals of vocational education.

Once the evaluation forms were returned, an analysis was done to identify those items that remained in the universe of content. At the conclusion of the evaluation, each judge was asked to agree or disagree with the following statement: "The content listed above appears to be exhaustive and, therefore, constitutes a universe of content from which an attitude scale can be constructed."

Sub-Problem Three: Design an instrument to measure the attitudes of secondary school administrators toward vocational education.

STEP 5: Based on the literature search pertaining to scale format, the Likert-type summated rating scale was used in this study. Summated rating scales have produced reliability coefficients of .90 or higher. Furthermore, summated rating scales have developed acceptable reliability coefficients with a limited number of attitude statements.

STEP 6: Fifty task items were randomly selected from the 96-task universe of content and a related attitude statement was written for each task. An effort was made to write 25 positively and 25 negatively oriented attitude statements. The 50 attitudes statements were presented to a three-member panel of university professors of secondary education for review. The statements were edited according to their suggestions and recommendations. The edited version of the

50 attitude statements was randomly mixed and typewritten into a mailable format and used in a pilot test consisting of 15 vocational and 15 non-vocational secondary administrators. Stamped, self-addressed envelopes were provided to encourage a high response rate. A follow-up mailing was included.

STEP 7: The 50-item attitude instrument was then mailed to 100 vocational and 100 non-vocational secondary administrators for field testing. Stamped, self-addressed envelopes were provided to encourage a high response rate. A follow-up mailing was also included.

Sub-Problem Four: Estimate the reliability and validity of the scale.

Sub-problem four was presented in Chapter Four (Analysis of Data and Findings). The data received in field testing was treated at three levels. First, an item analysis, second, an estimate of reliability, and third, an estimate of validity was made on the instrument.

An item analysis of the 50 items identified the 24 best discriminating items to be used in the final attitude instrument. In addition, this analysis provided evidence of unidimensionality within the identified sub-scales and throughout the total scale.

The reliability of the instrument was estimated with a computerized program incorporating the Kuder-Richardson formula number 20.

Two independent claims of validity were made for this scale. One claim of content validity was made based on the subjective judgments

of a selected group of jurors who evaluated the 96-task universe of content. A second claim of construct validity was made based on the calculations of the 2-group t statistic.

Assumptions of the Study

The following assumptions were made in pursuit of this study:

1. The judges who ranked the 96 scale items for relevance had positive attitudes toward vocational education.
2. Random sampling of judges selected from the National Council of Local Administrators of Vocational, Technical, and Practical Arts Education generalized to the population of this study.
3. The participants in this study cooperated in a conscientious and professional manner.

Limitations of the Study

1. Attitudes toward vocational education in the secondary school were limited to those of secondary school administrators.
2. The judges for this study were limited to secondary school administrators randomly selected from the membership of the National Council of Local Administrators of Vocational, Technical, and Practical Arts Education.
3. The estimate of reliability for the scale designed in this study was limited to the statistical calculation of the Kuder-Richardson formula 20 corrected with the Spearman-Brown Prophecy formula.

Definition of Terms

1. Administrator (Secondary): A member of an educational staff with responsibilities in the direction, control, or management of a school or schools in an educational system. (Good, 1973:15)
2. Attitude: A concept representative of an individual's predisposition or general tendency to react in a consistent manner toward some aspect of his or her environment. (Eley, 1975:10)
3. Construct Validity: Evaluated by investigating what qualities a test measures, that is, by determining the degree to which certain explanatory concepts or constructs account for performance on the test . . . that studies of construct validity are done to validate the theory underlying the scale, score, or test constructed. The researcher validates the scale by investigating whether it confirms or denies the hypothesis predicted from the theory which is based on the constructs. (Bohrnstedt, 1970:94)
4. Content Validity: Evaluated by determining the degree to which the items of the scale sample the content of the attitude domain, i.e., the degree to which the content of the attitude scale corresponds to the content of the attitude system. (Shaw, 1967:18)
5. Instrument: The device used to assess the attitudes of a selected population toward a particular psychological object.
6. Likert Scale: A summated rating scale developed by R. Likert in 1932 to measure selected attitudes.

7. Post Secondary Workforce: Those individuals who have completed the high school curriculum and opted not to attend institutions of higher learning or post secondary trade school for the purpose of entering the workforce.
8. Psychological Object: Any symbol, phrase, slogan, person, institution, ideal, or idea toward which people can differ with respect to positive or negative affect. (Edwards, 1946:2)
9. Reliability: The degree to which a scale yields consistent scores when the attitude is measured a number of times. (Shaw, 1967:16)
10. Secondary Education: A period of education planned especially for young people of ages approximately 12 to 17, in which the emphasis tends to shift from mastery of basic tools of learning, expression, and understanding to the use and extension of the tools in exploring areas of thought and living, and in exploring and acquiring information, concepts, intellectual skills, attitudes, social, physical, and intellectual ideals and habits, understandings, and appreciations; often differentiated in varying degrees according to the needs and interests of the pupils; may be either terminal or preparatory. (Good, 1973:522)
11. Secondary High School: Public schools which have at least a tenth, eleventh, and twelfth grade. The terms high school and secondary level are used synonymously with the term secondary high school.
12. Thurstone Scale: A paired-comparison or equal-appearing interval scale developed by L. L. Thurstone in 1928 to measure selected attitudes.

13. Validity: The degree to which a test measures what it purports to measure or the extent to which a test does the job for which it is intended. (Ebel, 1972:50)
14. Vocational Education: A program of education below [baccalaureate level] organized to prepare the learner for entrance into a particular chosen vocation . . . ; includes such divisions as trade and industry, health education, agricultural education, business education, and home economics education. (Good, 1973:513)
15. Universe of Content: That class of all possible statements that could be made about a given psychological object. (Edwards, 1957:10)

CHAPTER II

Review of Literature

The review of literature in this chapter was presented in five sections. The first topic was a review of literature on the concept of attitudes as related to this research. Section two was a review of literature on the construction of attitude scales. Sections three and four addressed the issue of estimating reliability and validity of an attitude scale. Section five was an analysis of the predominant scales used in measuring attitudes toward vocational education and a selection of the most recent attitude studies of selected populations toward vocational education.

The Nature of Attitudes

Shaw (1967:1) suggested that the construct attitude was a latent psychological variable which was often evoked to account for consistency in social behavior. He also stated:

Attitudes, the end products of the socialization process, significantly influence man's responses to cultural products, to other persons, and to groups of persons. If the attitude of a person toward a given object, or class of objects is known, it can be used in conjunction with situational and other dispositional variables to predict and explain reactions of the person to that class of objects.

Shaw's statement appeared to expand upon what Allport (1935:798) said 30 years earlier:

. . . . attitude is probably the most distinctive and indispensable concept in contemporary American social psychology. No other term appears more frequently in experimental and theoretical literature.

To shed additional light on the concept of attitude, T. M. Newcomb (1964) noted two essential components. First, the notion of attitude had been found indispensable in providing a conceptual span between continuing psychological situations and objects of orientation within an individual's environment. Newcomb said:

To understand the conditions under which attitudes are formed, endure, and change is the equivalent to understanding the conditions of a very great deal of behavior. (Newcomb, 1964:175)

The second component Newcomb noted was the development of a definition which complements the nature of the attitude in question.

Chisman (1976), in agreement with many social psychologists, indicated that the concept of attitude was closely related to the selected definition of attitude. Chisman added: "Psychologists generally defined an attitude as an 'enduring evaluative disposition' toward some object or class of objects." (Chisman, 1976:23)

The term "evaluative disposition" has appeared as a component in the definition of attitude for the past 50 years. However, more recently, the definition has been expanded to include an affective, cognitive, and active component. Krech and Crutchfield (1948) first formulated the notion that an attitude was comprised in part of the affective, cognitive, and active component. Oppenheim (1966:106) in presenting his definition of attitude noted:

Attitudes are reinforced by beliefs (the cognitive component) and often attract strong feelings (the emotional component) that will lead to particular forms of behavior (the action tendency component).

In developing the notion of attitude and the relationship between affect, cognition, and action, Abelson (1972:137) wrote:

The more mainstream social psychological view of attitudes is one which recognizes closely interrelated

affective, cognitive, and active components, and which interests itself deeply with the details of cognitive structure and persuasive communication--that is, with attitude as a mediating construct with a complicated life of its own.

As a refinement to the definitions promoted by Krech and Crutchfield, (1948) and Oppenheim, (1966), Shaw (1967) placed primary concentration on the affective component. His rationale for deriving an affective biased definition facilitated its application to attitude measurement. Shaw (1967:10) defined attitude as a relatively enduring system of affective, evaluative reactions based upon and reflecting the evaluative concepts or beliefs which have been learned about the characteristics of a social object or class of social objects. Consistent with Shaw's position, Fishbein (1975:11) stated:

Indeed, there is widespread agreement that affect is the most essential part of the attitude concept . . . that most of the commonly accepted attitude measurement procedures arrive at a single number designed to index this general evaluation of feelings of favorableness or unfavorableness toward the object in question.

Thurstone's (1931) position was that the notion of attitude may be conceptualized as the intensity of affect for or against some object which can be measured with specially designed assessment instruments. Finally, Fishbein (1975) suggested that the construct attitude should be measured by a procedure which located the subject on a bipolar affective or evaluative dimension.

Attitude Scale Development

L. L. Thurstone has been considered by many social psychologists to be a founder in modern attitude measurement. Thurstone (1928)

proposed that attitudes could be measured by a means of paper and pencil tests or scales. His measurement technique was known as the method of paired-comparisons. Edwards (1957:vii) credited Thurstone with setting the direction for future research and development in attitude scaling. Edwards said:

The impetus given to research involving social attitudes by the writings of L. L. Thurstone in the 1920's has maintained itself for over a quarter of a century. During this time there has been a continued interest upon the part of psychologists, political scientists, sociologists, and educationists in the use of scales for measuring attitudes.

The basic design of the paired-comparisons technique was to have the subject compare attitude statements two at a time while determining which of each pair was more positive or negative. The paired-comparisons scale had one major drawback--the development procedure became increasingly cumbersome as the number of items increased ($n(n-1)/2$). To overcome the drawbacks of the paired-comparisons method, Thurstone developed the method of equal-appearing intervals. Fishbein (1975) suggested that the most popular and most widely used Thurstone scaling procedure was the method of equal-appearing intervals. However, Fishbein continued:

One major criticism of the equal-appearing interval procedure has focused on Thurstone's assumption that the judges' own attitudes did not influence their judgments and thus had no influence on item scale values. Empirical evidence suggested that this assumption appeared to be justified under most conditions. . . .(1975:71)

In agreement with Fishbein, Zimbardo (1977:215) noted one of the practical drawbacks of the Thurstone scale was that its construction became extremely laborious and time consuming.

Partly in response to this criticism and partly to avoid the time and effort spent in obtaining item scale values, Likert suggested an alternative scaling procedure. Likert (1932) developed a comparable measurement technique, which produced an equally reliable scale as compared to the Thurstone method. The developmental stages of the Likert scale required far less time than that of the Thurstone technique. The Likert scale was made up of 20 to 30 or more attitude statements about some psychological object. The individual's attitude score was determined by the sum total of the extent of agreement or disagreement on each item.

Bogardus (1925:299-308) developed an attitude scaling instrument termed the social distance scale. The development of this instrument was an answer to many social psychologists' interests in individuals' attitudes toward other people. The focus of the instrument was on human prejudices. Bogardus hypothesized that the more prejudiced an individual was against a particular group, the greater the social distance the individual maintained between himself and members of that group.

Similar to Bogardus' social distance scale, Guttman (1950) developed a scaling technique called the scalogram. This technique was based on the assumption that one particular, unidimensional trait could be measured using a set of statements ordered along a continuum from "least difficult to accept to most difficult to accept." An individual's attitude was determined by their placement on the continuum. Guttman assumed that the subject would agree with all items on one side of their placement on the continuum and disagree with all items on the other side of their placement on the continuum.

The literature strongly favored the application of Likert's summated ratings scale. Ebel (1972:526) promoted the Likert technique as easier to use in developing an attitude scale over the Thurstone technique. Furthermore, Ebel suggested the reliability and validity factors were equally applicable. Edwards and Kenney (1946:72-3) noted that Likert scales correlated well against Thurstone scales which had helped Likert's scale gain popularity. In Shaw's (1967) book, Scales for the Measurement of Attitudes, he evaluated 176 sample attitude scales. The greatest proportion of measurement techniques was the Likert method. Contemporary studies (Lindgren and Patton, 1958; Woerdehoff and Bentley, 1959; Wenrich and Crowley, 1964; Divita, 1968; Young, 1971; Drake, 1972; Heathman, 1972; Barth, 1974; Crites, 1975; Eley, 1975; Pittman, 1978) involving attitudes of various populations toward vocational/industrial arts/career education have used the Likert technique. Other popular measurement methods such as Thurstone or Guttman have not surfaced in recent searches of the literature concerning attitudes toward vocational/industrial arts and career education. Contemporary research and literature seemed to support the application of the Likert technique in developing an instrument to measure attitudes toward vocational education of secondary school administrators. In addition to its current use, several statistical procedures have been applied to the Likert scale to establish acceptable estimates of reliability and validity.

Test Reliability

Test reliability has been defined as the degree to which a scale yields consistent results when measured a number of times. Tuckman

(1972:136) suggested four empirical methods to test for reliability of an attitude scale: the test-retest method, the equivalent-forms method, the split-halves method, and the Kuder-Richardson method.

The test-retest method involved administering the same attitude scale to a given group twice over a controlled period of time. Then, the correlation between the two sets of scores was calculated. This method had the advantage of using the same set of items, thus eliminating threats to reliability due to differences between scales. Another advantage of the test-retest method was the need for only a single scale; no other forms were needed. Ahmann and Glock (1971:292-4) suggested a suitable time lapse of about two weeks between test applications. This period of time was important to prevent the subjects from remembering test items because of too short an interval and to prevent possible learning which elevates the second test score because of too long an interval. Payne (1968:132) presented an interesting twist to the interpretation of test-retest correlation. He stated:

Some testing experts claim that the test-retest method is an estimate of the reliability not of the instrument but of the examinee. If one holds this view, it must nevertheless be conceded that such information is useful within a specific testing situation. One could not expect, for example, to estimate future behavior if scores on the prediction test did not hold up over time.

The test-retest method has not appeared in the literature as a prevailing estimator of test reliability. Test designers such as Webb and Kobler, (1961); and Lakie, (1964) have successfully applied the test-retest method in estimating reliability. However, the

test-retest method of estimating reliability has not appeared in contemporary attitude scale construction since the 1960's.

A second technique called the equivalent or parallel-form method has had limited application in the estimation of reliability for attitude scales. Hopkins (1981:128-9) noted that the parallel-form or equivalent-forms reliability coefficient once had preferred popularity. According to Shaw (1967), the equivalent-forms method required two equivalent but different scales to calculate a reliability coefficient. The two forms were administered to subjects from one population. The two sets of scores were correlated to estimate the reliability of the two forms. Shaw further noted one particular drawback of the equivalent-forms method--the scale designer must construct two scales instead of one. This involved additional time requirements beyond the design of one scale. The review of research did reveal a few examples of attitude scales with estimates of reliability using the equivalent-forms method. They were: Silvernail (1979); Drinkwater (1960); and Mahler (1953).

Ebel (1972) and Shaw (1967) suggested a more efficient alternative to estimating reliability than depending on the test-retest or equivalent-forms method. The technique described by Ebel and Shaw has been designated the split-halves reliability coefficient. Ebel (1972:412-3) described the split-halves method as:

. . . a single test split into two reasonably equivalent halves. These independent subtests were then used as a source of the two independent scores needed for reliability estimation. One common method of splitting a test has been to score the odd-numbered items and the even-numbered items separately. Then, the correlation between scores on the odd- and even-numbered items is calculated.

A review of contemporary research in attitude scale development suggested an overwhelming application to the split-halves method of estimating reliability. In addition, the statistical procedure used by these attitude scale designers to estimate split-halves reliability was the Pearson product-moment. Kirk (1978:100) acknowledged that Pearson's r has been a widely used index of correlation between two sets of scores.

The split-halves reliability coefficient was the estimate of scale reliability based on two (odd and even) half length scales. To obtain an estimate of the reliability of the entire scale, it was necessary to correct the half-test correlation to the expected full-length value. The Spearman-Brown prophecy formula was applied to the obtained correlation to calculate the reliability of the entire scale. The resulting correlation coefficient was considered an estimate of the degree to which the odd and even halves of the scale are performing their functions consistently. A review of general attitude scales (Rundquist and Sletto, 1936; Ford, 1941; Eysenck and Crown, 1949; Cowen et al, 1958; Wenrich and Crowley, 1964; Drake, 1972; Barth, 1974; Bunting, 1981) revealed an ongoing use of the Spearman-Brown prophecy formula to enhance the reliability coefficient of the split-halves technique.

The fourth and last method of estimating scale reliability reviewed in the literature was the method of internal consistency or the Kuder-Richardson procedure. The Kuder-Richardson formulas K-R 20 and K-R 21 examined the covariance among all the items within an attitude scale rather than in a split-halves method. Bohrnstedt (1970) indicated that a 10-item scale had 126 possible split-halves.

Furthermore, he noted that each split would have produced a different correlation coefficient. There was little possibility of selecting the split that would produce a realistic reliability coefficient. Therefore, Bohrnstedt (1970:86-8) promoted the application of the K-R 20 and 21 formulas over the Pearson r corrected with the Spearman-Brown formula.

Test Validity

Authors and researchers involved with educational tests and measurements uniformly defined validity as that degree to which a test measured what it is supposed to measure. A number of traditional definitions of validity have been cited as illustrations of the common usage of the term:

"In its simplest form, validity is the degree to which the scale measures what it is supposed to measure." (Shaw, 1967:17-18)

"The term validity means the accuracy with which a set of test scores measures what it ought to measure." (Ebel, 1972:435)

"The validity of a test is the degree to which it measures what it is supposed to measure." (Kirk, 1978:108)

In the design of an attitude scale, a greater understanding of validity (beyond simple definitions) was necessary before a scale was assembled and tested. The literature defined four types of validity which applied to most educational tests and measures. These four types of validity were: predictive validity, concurrent validity, content validity and construct validity. The need to estimate one or more types of validity of a particular test or measure depended primarily upon the kind of test or measure in question. Contemporary

affective psychological measurements like attitude scales depended on one or more of three estimates of validity to insure a comprehensive evaluation of the scale. Shaw (1967:17-20) placed greater importance on estimating construct and content validity over predictive or concurrent validity on attitude scales. This lesser emphasis on predictive and concurrent validity was primarily due to the criterion measure needed to estimate validity. Shaw did not suggest that predictive and concurrent validity was not an acceptable estimate but only a difficult method to obtain reliable criterion measures. Callahan (1980:6), in agreement with Shaw, suggested that estimates of construct and content validity were better suited to attitude scales.

In the construction of an attitude scale, a necessary distinction was needed between content validity and the loosely associated face validity. Face validity was the superficial appearance of the scale items. If, in the judgment of experts, the items of the final scale were associated with the psychological object being measured, then the scale had face validity. On the other hand, a scale which had face validity did not insure by any close margin content validity. Popham (1981:102) commented on the unacceptable features of face validity. He said:

. . . . we need to do far more than merely ask experts to judge the match between the test itself and the performance domain about which the test results will be used to make inferences. This type of superficial judgment, regarding whether the test appears, on the face of it, to be relevant for a given purpose, is sometimes referred to as face validity. Face validity is not a "standards"* approved form of

*Popham was referring to the Standards for Educational and Psychological Testing, 1966. See bibliography for a complete citation.

validity and should not, therefore, be employed by measurement people.

Estimates of face validity did not take into consideration the universe of content from which items were selected for a test or scale. If a scale was to have content validity, it was necessary to set the parameters of the psychological object being measured and then to identify the universe of content associated within those parameters.

The accurate identification and comprehensiveness of the universe of content appeared to be the leading contributing factor in insuring attitude scale content and construct validity. Camp (1979:9) outlined a procedure by which a chart-like matrix was constructed to insure a complete listing of the universe of content of the construct being measured. Camp's procedure included a two-phase process.

Phase one included:

1. Define in detail the construct or psychological object to be measured.
2. Divide the construct into its primary strata or components.
3. Subdivide each component of the construct into subcomponents to exhaust the universe of the construct.
4. Submit the entire universe of content to a panel of judges to determine accuracy and completeness.

Camp's second phase included the writing of scale items to represent the construct, randomly selecting a sample of those items for a pilot test, administering the pilot test to a representative sample of the population, and performing an item analysis to create a scale with

the best discriminating items to be used in the final instrument. Camp argued that if the universe of content as outlined in phase one was expansive enough to represent the entire construct being measured, then the eventual scale would have content validity. Camp's procedure was an expanded version of Bohrnstedt's (1970:91-3) model of attitude scale validation.

Bohrnstedt first stratified the psychological object to be measured into its sub-stratum as a guide to systematically diagram the construct. As Bohrnstedt put it: "One simply lays out the most important and obvious meanings or facets of the concept, making as certain as possible that the stratification exhausts the meaning in the domain." Secondly, he wrote scale items to "capture the shades of meaning associated with each stratum and substratum." Thirdly, Bohrnstedt applied a within-cluster correlation and a between-cluster correlation to estimate the degree to which the scale was measuring the same underlying construct. The nature of the correlations between and within scale items supplied evidence of content validity.

Camp (1979), on the other hand, believed that Bohrnstedt's model not only provided a means to estimate content validity, but also construct validity. Camp argued that Bohrnstedt's procedure for insuring content validity and the two-level judging process constituted the degree to which the attitude scale claimed construct validity. The first panel of judges evaluated the accuracy and comprehensiveness of the initial set of scale items evolved from the content listing. The conclusion was, therefore, that if a random selection of scale items was taken from a properly defined and comprehensive universe of content, the resulting scores from that

scale were an accurate reflection of the subjects' attitudinal position on a bi-polar continuum and constituted content and construct validity.

The construct validity of attitude scales has been statistically estimated using techniques such as known-groups and the test-retest. The known-groups technique required the scale to be administered to a sample of known proponents and to non-proponents of the psychological object of interest. The scale had construct validity if the score averages were significantly different. According to Kirk (1978:20), the test statistic most suitable for estimating known-groups construct validity was the two-group independent sample t test and the one-way analysis of variance. A correct rejection of the null hypothesis was evidence of construct validity.

Finally, the test-retest technique has been applied to the estimation of construct validity. The sample population was given the attitude scale as a pre-test. The sample subjects were given a stimulus experience such as in-service training or standard classroom teaching on the subject areas related to the psychological object previously measured. When the training or stimulus experience was concluded, the pre-test was administered as a post-test (test-retest). Shaw (1967:266) suggested that if the outcome of the test-retest resulted in a significantly improved group of scores, then there was evidence of construct validity.

A distinction was noted in the literature between test-retest estimates of reliability and test-retest estimates of validity. The primary difference was the period of time permitted to lapse between the test and retest. For estimates of reliability, an interim period

short enough to hold learning to a minimum and long enough to eliminate item recall was necessary if the correlation of the two sets of scores were to be usable. On the other hand, for estimates of validity, learning was expected and the interim period was from weeks to possibly months. The test statistic employed was different for each estimate. For reliability, the Pearson r or KR-20 coefficient was used; and for validity, the two-sample t test of independent samples or analysis of variance (ANOVA) was used.

Scales To Measure Attitudes Toward Vocational Education

This final section of the review of literature and research investigated the predominant scales used in measuring attitudes toward vocational education and a selection of the most recent studies of attitudes toward vocational education of selected populations. As far as this review of literature and research was able to ascertain, virtually all recent studies that measured attitudes toward vocational education of selected populations were limited to the availability of a very few published scales.

The earliest of the scales was the Woerdehoff and Bentley (1959) instrument. The authors held that the viewpoints of secondary administrators influenced the level of effectiveness of vocational education in the secondary school. They wrote:

The educational viewpoints held by school administrators are presumed to be important factors in determining curriculum offerings in the secondary school. Of course, the educational practices in the school system may or may not conform to the educational viewpoints held by the administrator it is reasonable to assume that their viewpoints regarding vocational education contribute most toward the degree of acceptance or rejection of this phase of secondary education and the way in which the program is carried out. (Woerdehoff and Bentley, 1959:297)

The purpose of the study was to measure the viewpoints of school administrators toward vocational education, vocational home economics and trade and industry. But before the purpose of the study was fulfilled, an instrument had to be designed and tested.

The 112-item questionnaire was written by a three-member team and scrutinized by a panel of Purdue University faculty members representing school administration, general secondary education, and vocational education. Revisions to the scale were made as suggested by this panel. Further evidence of reliability and validity were not published in this study. A review of the scale showed evidence of intrinsic or face validity.

In terms of frequency of application, the Wenrich and Crowley (1964) scale known as the "Image of Vocational Education" or IVE has been the instrument of choice by most researchers. The IVE was designed to incorporate the Likert or summated rating scale which has been proven effective in attitude assessment. Furthermore, Wenrich and Crowley designed a scale with a limited number of items (28) that was large enough to insure acceptable reliability and short enough to capture the full attention span of the subjects.

An item pool of 80 attitude statements was written based upon data obtained in interviews with subjects from the population. The initial draft of the scale containing these 80 items was administered to a pilot group for statistical evaluation. The final scale of the 28 most discriminating items was administered to a different sub-group to calculate the reliability coefficient. The reliability coefficient was calculated to be .69 using the split-halves method.

Scale validity was estimated by a panel of qualified judges. The 28 scale items were mixed with 14 additional non-scale items and ranked according to relevance by the panel of judges (N=21). The judges selected the 28 most relevant items from the pool of 42. An analysis was made between the judges' selection and the initial 28 items. Based on this analysis, however, the scale was left in tact with the original set of 28 items. The authors made a claim of intrinsic validity based on these rankings. No other estimates of content or construct validity were made by the authors for this scale.

Additional examples of scales to measure attitudes toward vocational education were hybrids or spin-offs of previously described scales. Young (1971) designed an 80-item scale incorporating the 28-item Wenrich IVE scale. No statistical evidence of reliability and validity was noted in Young's research pertaining to the 80-item scale. Drake (1972) produced a 20-item scale to measure attitudes of educational professionals toward vocational education. Drake selected 20 items from the 80-item Young (1971) scale. A panel of experts evaluated the 20 items as a means of establishing construct validity. Further evidence of construct validity, according to Drake, was the stability of the scores of a test-retest. Scale reliability was estimated using two statistical procedures. The first was the split-halves method yielding a corrected correlation coefficient of .89. The second estimate was the test-retest method with a three week interval which yielded a coefficient of .86.

Barth (1974) designed his own scale to support a study of the attitudes of Illinois public school administrators toward selected issues in career education. The author created a pool of likert-type statements based on a review of the literature. A panel of experts reduced the item pool to the 40 items used in the pilot study. Barth's pilot study involved the addition, deletion, and revision of items to further refine the scale while maintaining a scale size of 40. The final version of the scale was administered to two groups of graduate students with differing perceptions of the construct being measured.

Barth made a claim of construct validity for the scale based on the known-groups technique. The mean and median scores of the group familiar with the construct was higher than the non-familiar group. The author made reference to a computer analysis to calculate construct validity, but no levels of significance were listed in his research.

Scale reliability was calculated by correlating the sum of the odd statements with the sum of the even statements (split-halves correlation). The reliability coefficient of the odd and even halves (corrected with the Spearman-Brown Prophecy Formula) was .79. Barth considered .79 adequate for the purposes of this study.

Studies of Attitudes Toward Vocational Education

There have been approximately six studies conducted within the past 15 years that deal with attitudes toward vocational education. Divita (1968) studied the attitudes toward vocational education in the secondary schools of West Virginia. The need for this study grew

out of a serious manpower problem in West Virginia as a result of erupting changes in industry and technology. State-wide enrollments in occupational education at the secondary level were severely below regional and national averages. Divita accepted the premise that occupational preparation was a function of public education and that the attitudes toward vocational education of secondary education supervisors and boards of education members had a major influence on the eventual implementation of occupational training programs. Therefore, a study of attitudes toward vocational education of secondary supervisors and board members was necessary to determine if this population recognized and accepted the premise that the occupational preparation of youth and adults was a function of public education.

The data related to this study was obtained through a likert-type questionnaire. Divita utilized an instrument originally developed by Woerdehoff and Bentley (1959). The questionnaire was mailed to 537 persons of which 339 or 63 percent responded.

Significant findings were as follows:

1. In spite of the apparent support of vocational education, the respondents indicated that they did not feel present vocational programs were effectively preparing students for today's world of work.
2. The respondents reported that they did not feel their respective counties were providing sufficient variety within vocational education programs to meet the diverse interests, abilities, and needs of students not going to college.

3. There was a lack of sufficient money for support of vocational education in public schools.
4. The respondents felt that most of vocational education was justified in terms of the numbers of persons who had become useful members of society.

Young (1971) studied the attitudes toward vocational education of professional personnel in secondary schools served by selected area vocational-technical centers in Florida. Young suggested a need for educational practitioners to accept vocational education if it was to become an integral part of secondary and post secondary programs.

The problem of this study was concerned with the measurement and comparison of the attitudes toward vocational education of professional personnel employed in public high schools served by area vocational-technical centers.

The data gathering instrument used for attitude measurement consisted of 80 likert-type attitude statements. Responses to the attitude statements were assigned weight values in such a fashion that the respondents who were most favorable toward vocational education received the highest scores. The research sample consisted of 371 public school teachers, administrators, and counselors employed in 20 high schools which were served by selected area vocational-technical centers in Florida.

Significant findings were as follows:

1. Professional personnel in the high schools served by separate area vocational centers and departments of junior colleges designated as area vocational-technical

- centers did not express significantly different attitudes toward high school vocational education.
2. High school administrators and counselors expressed significantly more favorable attitudes toward high school vocational education than did teachers. The attitudes of administrators and counselors were not significantly different.
 3. No significant difference was found between the attitudes of male and female respondents toward high school vocational education.
 4. A significant difference was found among the attitudes toward vocational education expressed by teachers grouped according to selected subject fields in which they taught.

Drake (1972) studied the attitudes of administrators, counselors, faculty members, and students toward vocational education in the state-supported vocational-technical institutes and junior colleges in Alabama. The researcher made note that no studies had been conducted in attitude assessment toward vocational education at the post-secondary level. Furthermore, the researcher believed that without attitude assessment, educators had no empirical evidence to utilize in initiating change that would modify the behavior of persons in the post-secondary institutions to more effectively promote vocational education programs in the junior college curriculums of Alabama. The problem of this study was to measure the attitudes of administrators, counselors, faculty members, and students associated with non-vocational junior colleges of Alabama.

The design of this study consisted of a 20-item likert-type attitude survey administered to 2,938 selected administrators, counselors, faculty members and students in every two-year post-secondary institution in Alabama. Computer assistance was used to calculate analysis of variance and Duncan's New Multiple Range Test to locate differences between the mean scores.

Significant findings were as follows:

1. A significant difference in attitudes toward vocational education of administrators, counselors, and faculty members did exist as a result of time working in non-educational fields.
2. A significant difference in attitudes toward vocational education did exist as a result of race, but only in post-secondary vocational-technical schools.
3. A significant difference in attitudes toward vocational education did exist among students whose fathers completed high school as compared to those students whose fathers did not complete high school.

Heathman (1972) studied the attitudes toward vocational education of New Mexico educational decision makers. The researcher projected a concern that vocational education in New Mexico was not meeting the educational needs of the students attending secondary schools. Furthermore, Heathman suggested that education decision makers in New Mexico had arranged their instructional priorities in non-vocational directions. Therefore, the problem became one of identifying factors which limit the emphasis on vocational education by superintendents,

high school principals, members of boards of education, and state education officials.

The data related to this study was obtained through the use of a 28-item likert-type questionnaire. The instrument used was the Wenrich and Crowley (1964) "Image of Vocational Education." A total of 718 persons participated in the study: 117 high school principals, 89 superintendents, 453 school board members, 20 state officials, and 39 influentials. The initial mailing and two follow-up letters brought the response rate to 80 percent.

Significant findings were as follows:

1. High school principals, superintendents, school board members, state officials, and influentials held positive attitudes toward vocational education.
2. High school principals, superintendents, and state officials tended to demonstrate more favorable attitudes toward vocational education than school board members and influentials.
3. All items which differentiated between attitudes of the various groups emphasized that attitudes of state officials were more positive than those of school board members.
4. No meaningful relationship was found between school district size and attitudes toward vocational education of district educational decision makers.
5. Monies allocated for vocational education programs were not related to attitudes toward vocational education of district educational decision makers.

6. Expenditures for vocational education programs from sources other than state or federal vocational funds were not related to attitudes toward vocational education of district educational decision makers.

Barth (1974) studied the attitudes of Illinois public school administrators toward selected issues in career education. The researcher concluded that if career education was to be successfully implemented in local school systems, principals and superintendents must be supportive of the concepts of career education and willing to invest personal energies in the development of those programs. Therefore, attitudes of these decision makers were important in ascertaining the level of acceptance or rejection of career education within the general education programs of local school systems.

The purpose of this study was to compare the attitudes of public school principals and district superintendents in Illinois toward selected issues in career education. The problem of this study was to relate the attitudes of principals and superintendents to their level of responsibility, expressed level of familiarity with career education, and size of schools or school district.

The sample in this study consisted of 600 randomly selected principals and superintendents from small, medium, and large school districts in Illinois. A likert-type attitude scale was employed to reflect opinions relative to the selected issues in career education. The instrument contained questions formulated to determine each administrator's expressed level of familiarity with career education. A three-way analysis of variance was computed to test a series of null hypotheses. The Scheffe test of multiple

comparisons was computed with the F-ratio at the .05 level of significance.

Significant findings were as follows:

1. Attitudes of administrators were generally positive toward career education regardless of familiarity with career education.
2. Concepts of career education were viewed as very important by those administrators with higher-than-average and average familiarity with career education.
3. Concepts of career education were viewed as generally important by those administrators with lower-than-average familiarity with career education.

Eley (1975) studied the attitudes of Indiana school board members toward vocational education. The purpose of this study was to investigate the attitudes of Indiana school board members toward vocational education and to ascertain whether differences existed between attitudes toward vocational education and selected demographic factors of board members.

The design of this study consisted of a two-part questionnaire administered by mail to 163 randomly selected school board members throughout the State of Indiana. The first portion of the questionnaire requested demographic data about the school board members. The second part of the questionnaire consisted of the Wenrich and Crowley (1964) "Image of Vocational Education Attitude Scale." Approximately 96 percent of the school board members sampled returned their questionnaires.

Significant findings were as follows:

1. The attitudes of school board members toward vocational education were significantly more positive when associated with encouragement of their own children to enroll in vocational courses.
2. The attitudes of school board members toward vocational education were not significantly related to service time as a board member nor to whether or not they were school board chairpersons.
3. The attitudes of boards of education members toward vocational education were not significantly related to their occupational status, age, or past or present involvement in vocational education.
4. The attitudes of school board members toward vocational education were not significantly related to the size of their school districts.
5. The attitudes of school board members toward vocational education were slightly more positive in school districts with a more diversified vocational program.

Summary

The topic areas of concentration that made up Chapter II have provided an understanding and precise guidance in conceiving, designing, and testing an attitude scale. Social psychologists concluded that attitudes were an affective psychological reaction to the multitude of situations men and women encountered in life. Other researchers like Thurstone and Likert designed paper and pencil

scales to capture the intensity of selected attitudes. Their founding efforts established the basic model for designing contemporary attitude scales. Several methods of estimating scale reliability and validity were investigated. The split-halves and Kuder-Richardson reliability coefficients appeared to carry the most respect in the research community. Also, content and construct validity were highly recognized measures of validity. Procedures to insure content and construct validity were explored. A review of research of the most recent scales to measure attitudes toward vocational education was conducted. The review of literature and research confirmed that attitudes were measurable, that acceptable methods of obtaining attitude data have been successfully applied, that measures to estimate reliability and validity existed, and that scales have been designed and applied in the measurement of attitudes toward vocational education of selected populations.

CHAPTER III

Methodology

The problem of this study was to design an instrument to measure the attitudes of secondary school administrators toward vocational education. There were four sub-problems related to the problem.

They were:

1. Define the construct of the psychological object to be measured.
2. Identify and evaluate for relevance and representation the universe of content related to the terms defined in sub-problem one.
3. Design an instrument to measure the attitudes of secondary school administrators toward vocational education.
4. Estimate the reliability and validity of the scale.

Sub-problems one, two, and three were addressed and answered in this chapter. Sub-problem four was addressed and answered in Chapter Four (Analysis of Data and Findings).

Based upon the strength of the data obtained in the Review of Literature (Chapter Two), a logical step-by-step procedure for designing the scale was followed. Several procedural steps were necessary to answer each of the first three sub-problems.

Sub-Problem One: Define the construct of the psychological object to be measured.

STEP 1: As Camp (1979:5) pointed out, a detailed definition encompassing the parameters of the psychological construct must first be identified. The parameters of the construct to be measured for this study were limited to the attitudes toward vocational education in the secondary school associated with the duties of secondary school administrators. According to Bohrnstedt (1970:91-3), this initial step in developing an attitude scale was the one most influencing criteria in shaping the eventual validity of the instrument.

Several definitions of vocational education and secondary administration were reviewed in the literature. The definition selected to describe vocational education in the secondary school was:

A program of education below [baccalaureate level] organized to prepare the learner for entrance into a particular chosen vocation including such divisions as trade and industry, health education, agricultural education, business education, and home economics education. (Good, 1973:513)

And the definition selected to describe secondary administration was:

The process of working with and through others to efficiently accomplish organizational goals, and to accomplish certain objectives--the art and science of "getting things efficiently done." (Sergiovanni, et al, 1980:5)

These definitions set the parameters through which the universe of content was constructed. Without definitive parameters, there was no means to design a valid and reliable attitude instrument.

STEP 2: The focus of this step was to develop a graphic outline for the presentation of the universe of content based upon the parameters set in step one. This graphic presentation took the form of a listing of occupational tasks within secondary vocational administration. The organization of the task list was important to insure an exhaustive presentation of tasks to represent the universe of content.

A search of the literature was undertaken to identify an accepted listing of educational administration categories. Most publications had organized lists of duties and responsibilities of administrators that were very similar, so one particular publication was selected as a reference to the task categories selected for this study. The publication selected was: Educational Administration Abstracts of Texas A and M University. (1984) Tasks of administration as outlined in each quarterly publication were:

TASKS OF ADMINISTRATION

1. Curriculum and Instruction
2. Finance and Business Management
3. Legal Responsibilities
4. Student Personnel
5. Community Relations
6. Educational Services and Facilities
7. Staff and Personnel Development
8. State, Federal, and Foundation Programs

The universe of content was identified as those individually identified, vocationally-related administrative tasks categorized

within each of the eight major task categories. In order for these individual tasks to qualify as a member of the universe of content, the task had to:

1. be relevant to the role of a vocational administrator, and
2. reinforce the goals of vocational education.

If each task were relevant to the role of a vocational administrator and reinforced the goals of vocational education, then it was reasonable to assume that the item was part of the overall universe of content.

The completed universe of content contained those administrative tasks within each of the eight major task categories. The actual number of items comprising the universe was determined in step three.

Sub-Problem Two: Identify and evaluate for relevance and representation the universe of content related to the terms defined in sub-problem one.

STEP 3: Once the psychological construct was defined and the content outline framed, the process of identifying the sub-stratum or individual tasks within the eight constructs was necessary. The universe of content listing for this study was consistent with the model presented by Bohrnstedt (1970) and the expanded matrix version by Camp (1979).

The objective of this step was to identify the occupational tasks of a vocational administrator. Each task, once identified, was placed as a sub-stratum under one of the eight identified major task categories. Edwards (1957:10) suggested several means of collecting sub-stratum items pertaining to the universe of content. He wrote:

The first step in the construction of an attitude scale is to obtain items that will represent, in a particular test, the universe of interest. We may be able to write some of these statements ourselves. Additional statements can be obtained from newspaper editorials and magazine articles dealing with the psychological object or from books written about the object. Still other statements may be obtained by asking individuals to write short descriptions of their feelings about the psychological object.

Several sources were investigated to obtain task items specific to the role of a vocational administrator. The primary data source used to identify content items was the Liske and Frederickson (1981) vocational administration assessment study, the Pautler (1981:67-9) study of the principles of vocational education and the Montgomery County Public Schools of Maryland (1983:8-10) identification of administrative tasks within vocational education. Secondary sources included many of those suggested by Edwards (1957). These included items taken from professional association newsletters, publications, and interviews with working professionals in vocational administration. A total of 96 task items were identified from the above-mentioned sources. More specifically, each of the eight primary task construct areas contained 12 related items. This provided an even balance between each task construct.

At this point, the 96 task items were added to the content outline prepared in Step 2 and can be found in Appendix A. According to Bohrnstedt (1970) and Camp (1979), an organized chart or listing of tasks related to the attitude object presented to a panel of qualified judges for evaluation would insure the eventual instrument would have content validity. Therefore, the necessary modifications

were made and a content evaluation form was prepared using the list of tasks to permit evaluation by a panel of judges. (See Appendix B)

STEP 4: A group of randomly selected vocational administrators was recruited to evaluate the list of 96 administrative tasks as prepared in Step 3. Camp (1979:7-8) promoted the use of judges in his instrument design research. He said: "Submit the stratification to a panel of judges to determine whether it accurately delineates the construct to be measured."

Juries were employed for this purpose in the design of previous attitude scales reviewed in the literature. Wenrich and Crowley (1964) included 21 judges in their study to measure attitudes toward vocational education. Barth (1974:25) involved "several" jurors in his study of the attitudes toward career education of public school administrators. Coletta and Gable (1975:416) requested 44 judges in their re-validation study of the Barth instrument, but received 23 actual participating responses. A search of the literature did not determine a "suggested" size by number of judges. A faculty member of the University of Maryland, Department of Educational Measurement and Statistics recommended a jury size of 10 "independent jurors." Furthermore, the faculty member noted that jury size was not the critical factor. The critical factor was the degree of independent agreement of the jury. With this recommendation, 10 to 15 jury members were selected to evaluate the universe of content.

A pool of 15 potential jury members were randomly selected from the membership directory of the National Council of Local Administrators of Vocational Education and Practical Arts Education, (1983). It was assumed that these members were knowledgeable about

vocational education and vocational administration and generalized to the population of vocational administrators.

A letter was sent to each of the 15 selected members requesting their participation as a judge in this study. (See Appendix C) A self-addressed, postage-paid postcard was included with the letter as a means of indicating their willingness to participate as a judge. Of the 15 letters of request that were sent, 10 favorable responses were returned. The 10 judges were mailed a cover letter (See Appendix D) and a copy of the content evaluation form with instructions to evaluate each of the 96 vocational administration tasks within the 8 major task categories. A sub-stratum task was considered to be a member of the universe of content if the judges agreed on the following criteria:

1. The task item listed was relevant to the role of a vocational administrator.
2. The task item listed reinforced the goals of vocational education.

Once the 10 evaluation forms were returned, an analysis was done to identify those items that would remain in the universe of content and those that would be deleted. Each item was evaluated for consistency of agreement between the judges. Of the 96 items evaluated, 96 were retained. At the bottom of the last page of the content evaluation form, each judge was asked to agree or disagree with the following statement: "The content listed above appears to be exhaustive and, therefore, constitutes a universe of content from which an attitude scale can be constructed." There was unanimous agreement with this statement among all 10 participating judges. It

was possible at this juncture to begin the steps necessary to assemble the actual attitude instrument.

Sub-Problem Three: Design an instrument to measure the attitudes of secondary school administrators toward vocational education.

STEP 5: Based on the literature search pertaining to scale format as found in Chapter Two, a decision was made to incorporate the summated rating scale method designed by Likert (1932). The scale had several outstanding qualities which made it most attractive. The most outstanding quality was its ability to obtain significantly high reliability coefficients with a scale length of 20 to 30 attitude statements.

Other researchers have supported Likert's claim of high reliability coefficients with a limited number of attitude statements. Hall (1934) reported high reliability coefficients using the Likert scales with fewer statements. One 10-item scale had a reliability coefficient of .91 to .93 and a 7-item scale had a reliability coefficient of .77 to .87. Murphy and Likert (1937:48) reported reliability coefficients for their 24-item Internationalism Scale ranging from .81 to .90. Wenrich and Crowley (1964:159-62) in the design of their instrument, chose 28 items primarily to obtain a high reliability coefficient. They were, however, also concerned about maintaining consistent concentration of the subject throughout the duration of the testing session. They felt a 28-item scale was short enough to hold the subject's attention from beginning to end. More recently, Seiler and Hough (1970:171) commented on the

relationship between scale size and reliability. They said: "... 20 or 25 items are usually enough to produce a reliability coefficient of .90 or more."

It was, therefore, decided to limit the Likert-type summated rating scale for this study to 24 items. The reasoning was threefold. One, a 24-item scale had the potential to produce high reliability coefficients. Two, the scale was short enough to hold the attention of the test subjects. Three, the universe of content for this study contained 8 subscales with 3 items in each subscale or a total of 24 items. Therefore, the final instrument was a 24-item Likert-type summated rating attitude scale.

STEP 6: Camp (1979:8) suggested that once the universe of content had been identified, then the actual attitude statements could be written. Furthermore, he suggested the instrument be drafted incorporating double the intended number of attitude statements. Later through item analysis, the instrument would be reduced to its intended length.

In general, Camp's suggestion was followed for this step. First, 50 universe of content tasks were randomly selected from the pool of 96. A breakdown of the 8 administrative categories with the number of items within each category is presented in Table 1.

An attitude statement was written for each specific task randomly selected from the 96-item universe of content. In creating the attitude statements, a criteria was followed as summarized by Edwards (1957) and endorsed by Thurstone and Chave (1929), Wang (1932), Likert (1932), Bird (1940), and Edwards and Kilpatrick (1948). These suggestions were:

TABLE 1

TASK ITEMS RANDOMLY SELECTED WITHIN EACH ADMINISTRATIVE CATEGORY

CATEGORY NUMBER	CATEGORY NAME	TASK* NUMBER	TOTAL ITEMS PER CATEGORY
1	Curriculum and Instruction	4, 5, 6, 7, 8, 9, 10	7
2	Finance and Business Management	13, 16, 20, 22	4
3	Legal Responsibilities	26, 28, 30, 32, 33, 35	6
4	Student Personnel	37, 38, 39, 40, 44, 45, 46, 47	8
5	Community Relations	51, 52, 53, 54, 55, 57, 58	7
6	Staff and Personnel Development	61, 63, 64, 66, 69, 70, 71	7
7	Educational Services and Facilities	73, 74, 75, 76, 79, 81	6
8	State, Federal, and Foundation Programs	85, 87, 88, 90, 95	5

*See Appendix A for related tasks.

1. Avoid statements that refer to the past rather than to the present.
2. Avoid statements that are factual or capable of being interpreted as factual.
3. Avoid statements that may be interpreted in more than one way.
4. Avoid statements that are irrelevant to the psychological object under consideration.

5. Avoid statements that are likely to be endorsed by almost everyone or by almost no one.
6. Select statements that are believed to cover the entire range of the affective scale of interest.
7. Keep the language of the statements simple, clear, and direct.
8. Statements should be short, rarely exceeding 20 words.
9. Each statement should contain only one complete thought.
10. Statements containing universals such as "all, always, none, and never" often introduce ambiguity and should be avoided.
11. Avoid the use of words that may not be understood by those who are to be given the completed scale.
12. Avoid the use of double negatives. (Edwards, 1957:14)

In addition to the above suggestions, an effort was made to write 25 statements positively oriented toward vocational education and 25 statements negatively oriented toward vocational education. This procedure reduced the possibility of the subject becoming sensitized to answering at only one end of the response continuum.

Once the 50 attitude statements were written, they were submitted to a panel of three university professors for evaluation. Their areas of expertise were vocational education, secondary administration, and educational statistics and measurement. The items were revised several times in an effort to clearly represent the universe of content. In addition to evaluating the statements, the 3-member panel made 2 additional recommendations for preparing the instrument for field testing. The first recommendation was the

addition of selected demographic questions to the 50 attitude statements. The demographic data provided two valuable pieces of information:

1. a description of the subject's professional background and experience, and
2. data for statistical analysis.

The second recommendation was to pilot test the instrument. The pilot test was used to identify any problem statements not identified previously and to allow for a practice run of the mailing and return mailing procedures. The recommended population for this pilot testing was the same as the population used in the later field testing. The number of participants selected for the pilot was limited to 15 secondary vocational administrators and 15 non-vocational secondary administrators. The population for the pilot testing was randomly selected from the published directories of 5 geographically similar states. These participating states were:

1. Delaware (1984)
2. Maryland (1984)
3. Pennsylvania (1984)
4. Virginia (1984)
5. West Virginia (1984)

Each of the 30 participants received a mailed correspondence containing a cover letter, a copy of the attitude scale, and a stamped return envelope. The cover letter explained the specifics of the study and extended an invitation to participate in the research. (See Appendix E.) The attitude scale was coded to identify those subjects who did not respond.

Of the 15 vocational letters sent, 9 were returned on the first mailing. The first and only follow-up mailing netted an additional 3 responses for a sum total of 12 responses. Of the 15 non-vocational letters sent, 6 were returned on the first mailing. A first and second follow-up netted an additional 5 responses for a sum total of 11 responses.

A non-computer assisted analysis was performed on the 23 returned instruments. Each instrument was scored and placed in rank order of highest score to lowest score. The high 25 percent and the low 25 percent were selected for individual item analysis. The high group was comprised entirely of vocational administrators and the low group was comprised entirely of non-vocational administrators. An item by item mean was calculated separately for each group. It was assumed that the mean item score for the high group would be greater than the mean item score for the low group. Of the 50 items, 4 items were negative discriminators. These 4 items were re-written in an effort to produce a discriminating effect. Table 2 lists each negative discriminating statement as presented in the pilot testing and the re-written version that appeared in the field testing version. An example of the 50 item modified attitude scale is placed in Appendix F.

STEP 7: The pilot testing performed in Step 6 provided strong evidence that the two known groups of administrators had measurably different attitudes toward vocational education. The conclusions drawn in Step 6 suggested that continued large-scale testing would provide similar results. Therefore, the process of conducting the field study was begun.

TABLE 2
ATTITUDE STATEMENTS RE-WRITTEN AS A RESULT OF PILOT TESTING

ITEM	PILOT TEST	STATEMENT
6	Before	I feel vocational education does little to merit media attention.
6	After	I feel vocational education can do little to merit media attention.
11	Before	I feel vocational education equipment and facility usage by adult education programs should be limited to occupational training courses.
11	After	I feel vocational education equipment and facility usage by adult education programs should not be limited to occupational training courses.
27	Before	I feel vocational education funds should be dispensed by the in-school administrator.
27	After	I feel vocational education funds should be dispensed by a vocational administrator.
35	Before	I feel vocational education should encourage enrollment of handicapped students.
35	After	I feel vocational education is genuinely interested in increasing handicapped enrollments.

The field testing for this study consisted of four sub-steps. First, the population was selected; second, the instrument was prepared for mailing; third, the instrument was mailed and retrieved; and last, a follow-up was undertaken to solicit unreturned instruments.

The population for the field testing portion of this study consisted of 100 vocational and 100 non-vocational subjects. The vocational group consisted of principals of vocational-technical

centers providing specifically vocationally-related training. On the other hand, the non-vocational group consisted of 100 principals of non-vocational high schools. These non-vocational high schools were more generally known as academic high schools.

Consistent with pilot testing in Step 6, the population was randomly selected from the official state public school directories of Delaware, Maryland, Pennsylvania, Virginia, and West Virginia. The decision to select 100 subjects from each group was made based on the judgments and recommendations of the three-member research panel mentioned earlier. A further review of literature was done to support the panel's recommendation. Shaw (1967) reviewed 175 attitude scales in his book, *SCALES FOR THE MEASUREMENT OF ATTITUDES*. The size of the populations were often near the 100-200 size. In addition, Wenrich and Crowley (1964) used 246 subjects in the construction of their scale, "Image of Vocational Education." The logistics of the selection of subjects for this study are found in Table 3.

TABLE 3

LISTING OF SUBJECTS IN EACH GROUP AND THE NUMBER
AND PERCENTAGES OF SUBJECTS IN EACH STATE BY GROUP

<u>State</u>	<u>Total</u>	<u>VOCATIONAL</u>		<u>Total</u>	<u>NON-VOCATIONAL</u>	
		<u>Selected</u>	<u>Percent</u>		<u>Selected</u>	<u>Percent</u>
Delaware	26	9	34.6	81	6	7.4
Maryland	26	9	34.6	167	13	7.7
Pennsylvania	100	35	35.0	525	40	7.6
Virginia	53	19	35.8	255	20	7.8
W. Virginia	<u>81</u>	<u>28</u>	<u>34.5</u>	<u>269</u>	<u>21</u>	<u>7.8</u>
TOTAL	286	100	34.9	1,297	100	7.7

The 50-item attitude instrument was prepared for mailing to the 200 selected subjects. The actual instrument required two pages to accommodate the 50 statements and 7 demographic questions. To save paper and reduce mailing weight, the instrument was placed on 2 sides of one sheet of paper. As in the pilot study, each subject received a cover letter (See Appendix E), the scale (See Appendix F), and a stamped, return envelope. The stamped, self-addressed envelope was provided to encourage the subject to return the completed scale. Each instrument had a code number placed at the base of page 2. The code provided identification of the subject without an actual name appearing on the instrument. A file card was typed for each subject cataloged by code number. The object of the code file was to identify by name and address those subjects who failed to respond to the first mailing.

One week elapsed between the first mailing and the return of the first response. An additional two weeks was allowed to accumulate the returned scales. A follow-up request including a sample of the original cover letter, an attitude instrument and a stamped, self-addressed envelope was then mailed to all subjects who failed to respond to the initial mailing. A sample of the follow-up request letter is located in Appendix G. The follow-up instruments were not coded to remove any problem of subject anonymity. A second follow-up mailing was not anticipated. A summary of mailed responses for each group is found in Table 4.

TABLE 4
NUMBER OF ADMINISTRATORS RESPONDING TO FIELD TESTING

	VOCATIONAL	NON-VOCATIONAL
Number of subjects who received a mailed attitude instrument	100	100
Number of instruments returned:		
first mailing	80	75
follow-up mailing	13	15
Total instruments returned	93	90
Percent of instruments returned	93	90
**Total number of instruments not useable	8	29
Total number of instruments useable	85	61
Percent of useable returned instruments	85	61

*An instrument was considered unuseable if the subject: reworded any statement; failed to respond to any statement; and/or in the case of a non-vocational administrator, if he/she was a vocational administrator at any time during the history of their career.

Summary

Chapter III described the procedures used to design and to field test an instrument to measure the attitudes of secondary school administrators toward vocational education. The parameters to the scale were defined. Based on these parameters and definitions, a list of 96 vocational administrative tasks were identified and presented to a jury of 10 vocational administrators for evaluation. In the jurors' opinions, the tasks appeared exhaustive and constituted a universe of content. From the list of 96 vocational administrative tasks 50 content tasks were randomly selected to be written into attitude statements. These statements were pilot tested on a small sample from the population of secondary administrators.

The pilot testing resulted in a modified, 50-item attitude scale. The modified edition of the instrument was field tested on 100 vocational administrators and 100 non-vocational administrators. The chapter concluded with a summary table that described the mailing response rate to the field testing.

CHAPTER IV

Analysis of Data and Findings

The analysis of data and findings for this chapter was divided into five sections. First, individual item scores (50 items) for all 146 subjects were prepared for item analysis. The item analysis process was designed to identify the 24 best discriminating items for the final attitude instrument. These 24 items were then used in all subsequent analysis of reliability and validity.

Section two addressed the statistical estimation of reliability. The Kuder-Richardson formula number 20 was used to estimate the reliability of the 24-item scale.

The third section of this chapter dealt with the question of scale validity. Two claims of validity were estimated for the scale designed in this study. The first claim was a subjective estimate of content validity. The second claim was a statistical estimate of construct validity.

The fourth section of this chapter was an analysis of the demographic data collected in the field testing of the instrument. The primary purpose for including demographic questions was to properly identify the population. The secondary purpose was to investigate the relationship between selected demographics and attitude score.

The final section of this chapter was an analysis of test scores to identify a subject's performance attitude. The frequency

distribution and individual test scores were incorporated into the identification of a subject's position within a three category bi-polar attitude continuum.

Item Analysis (Introduction)

By definition, item analysis is "a technique for determining which items to retain in one's scale." Generally, items are retained which correlate well with other items within the scale. Logically, therefore, items which correlate well with each other correlate well with the total score. Scale designers typically select items from the pool which correlate highest with the total score.

Techniques for determining which items to retain in one's scale were limited to the calculation of item values or correlational methods. Edwards (1957:155) believed the correlational method was a simpler procedure than the item t values, especially in the summated-rating scale. Other attitude scale designers such as Shaw (1967), Bohrnstedt (1970), and Camp (1979) also endorsed the correlational method of item selection.

In this study, a correlational method was used to select the final 24 items from the 50-item pool. To recall from Chapter 3 of this study, 96 administrative tasks were identified and evaluated by a panel of judges. Of the 96 tasks, 50 were randomly selected to become attitude statements. The 50-item attitude instrument was pilot and field tested. The results of the field testing were addressed in this chapter. A detailed accounting of the item analysis procedure for this study has been prepared in the following paragraphs.

Item Response Identification

Columns 4-54: These 50 columns contained the individual item responses reported from the attitude scale. A response was coded with a 1, 2, 3, 4, or 5. A 5 indicated the most favorable expected response and a 1 indicated the least favorable expected response. A total score of 250 (50×5) indicated the highest possible score obtainable which also implied a most positive attitude toward vocational education.

Demographic Identification

Columns 56-62: Seven demographic questions appeared on the attitude instrument.* Each question was answered by selecting one of several possible responses. The responses within a question were coded A - D. When coding the data cards, a response A was transferred to the data card as a 1 and a response D was transferred to the data card as a 4.

Item Analysis Procedure

An item analysis of the 146 subject scores was computed with the assistance of the Univac 1100 computer. The program selected to perform the item analysis was titled "Sumscore." The Sumscore (Johnson, 1978) program was the product of the Department of Measurement and Statistics at the University of Maryland at College Park. Features of the Sumscore program related to item analysis were:

*The demographic questions which appeared in the pilot and field test have been included in Appendix F.

- A. mean and standard deviation of items within the eight subscales.
- B. mean and standard deviation of all items within the total scale.
- C. correlation coefficient of each item within the eight subscales.
- D. correlation coefficient of each item within the total scale.

Details of the item analysis performed on the data for this study have been placed in Table 6. All 50 items were arranged in rank order to facilitate ease in interpreting the table. Correlation coefficients indicated in the table were item to total (50 items). Mean score values reflected a position on a 5-point scale.

The criteria for selecting the 24 best attitude statements was two fold. First and most important was the identification of the 24 out of 50 best discriminating items. The item analysis portion of the Sumscore program statistically identified the best discriminating items. Items identified by the Sumscore item analysis are placed by rank order in Table 6.

It was intended that the final 24-item instrument have a balanced 3-item 8-subscale combination. A tabulation of the 24 highest discriminating items and their associated subscale locations presented a problem to the 3-item 8-subscale intent. A summary of the subscale location of the 24 highest discriminating items is found in Table 7.

Subscales 1, 2, 6, and 8 contained the ideal three items. Subscales 4 and 5 contained one more than the ideal three items.

TABLE 6
ITEM ANALYSIS OF THE 50-ITEM FIELD TESTED INSTRUMENT
RANKED BY LEVEL OF DISCRIMINATION

Rank Order	Item Number	Correlation	Mean	Std. Dev.	Sub-Scale	Rank Order	Item Number	Correlation	Mean	Std. Dev.	Sub-Scale
1	4	.808	4.075	1.021	8	26	16	.485	3.856	.936	7
2	15	.768	3.945	1.127	2	27	21	.479	3.582	.971	1
3	39	.752	3.986	.876	4	27	32	.479	3.932	.991	7
4	19	.712	3.705	1.118	2	29	6	.472	4.534	.674	5
5	38	.707	4.356	.728	4	30	9	.465	3.733	.796	8
6	30	.679	4.082	.880	5	31	43	.462	3.911	.979	6
7	40	.663	4.267	.695	1	32	10	.457	4.082	.947	4
8	34	.660	4.404	.746	1	33	2	.453	3.438	1.188	6
9	29	.659	4.281	.680	4	34	41	.449	4.445	.673	3
10	47	.639	4.315	.834	1	35	20	.442	4.363	.701	3
11	48	.635	4.055	.956	4	36	26	.439	4.603	.503	1
12	46	.622	4.103	.825	8	37	13	.438	3.658	.887	1
12	8	.622	3.849	1.178	7	38	17	.437	3.747	.878	8
14	44	.619	3.658	1.113	6	39	22	.429	4.014	.662	5
15	33	.587	4.630	.630	8	40	24	.406	4.267	.878	7
16	49	.572	4.240	.788	6	40	1	.406	4.589	.545	4
17	45	.571	4.438	.619	7	42	18	.404	4.082	.918	6
18	23	.562	3.767	1.047	6	43	50	.402	4.404	.832	7
19	12	.552	4.432	.758	3	44	25	.370	4.068	.873	3
20	28	.543	4.527	.694	3	45	52	.365	3.630	1.165	4
21	7	.540	3.459	1.021	5	46	35	.362	3.425	.964	3
22	27	.532	4.103	.866	2	47	36	.306	3.644	1.052	5
23	31	.521	4.212	.778	5	47	5	.306	3.918	.940	4
24	14	.520	4.000	.828	5	49	3	.117	3.418	.949	1
25	37	.507	4.336	.870	6	50	11	.008	2.322	1.000	2

Subscales 3 and 7 contained one less than the ideal three items. The second task at hand in identifying the 24 best scale items was to decide which two items to delete from subscales 4 and 5 and to decide which two items to add from the item pool to subscales 3 and 7.

There appeared to be no jeopardy in the selection of items to be removed from subscales 4 and 5. The decision was made by a subjective analysis of the overall make-up of the statements in each subscale. Based on this analysis, items 38 and 7 were removed from subscales 4 and 5 respectively.

TABLE 7
SUBSCALE LOCATION OF THE 24 HIGHEST DISCRIMINATING ITEMS

SUBSCALE NUMBER	ITEM NUMBER*
1	34, 40, 47
2	15, 19, 27
3	12, 28
4	29, 38, 39, 48
5	7, 14, 30, 31
6	23, 43, 44
7	8, 45
8	4, 33, 46

*See Appendix F for related attitude statements.

There remained, of course, the final task of selecting two additional items from the pool of statements to bring subscales 3 and 7 to the ideal size of three items each. A decision was made to select the highest correlating item for subscales 3 and 7 from the remaining pool of items in Table 6. Therefore, item 16, holding rank order position 26, was selected to fill the vacancy in subscale 7. Looking further, item 41, holding rank order position 34, was available to complete subscale 3. However, item 20, holding rank

order position 35, also fell into subscale 3. Their item correlations were nearly identical (item 41, .449; item 20, .442) which posed the potential for selecting one over the other. After evaluating the merits of each item, it was decided to include item 20 to complete subscale 3. A final summary of items within each subscale is found in Table 8.

TABLE 8
SUBSCALE LOCATION AND 24 ITEMS SELECTED
FOR THE FINAL ATTITUDE INSTRUMENT

SUBSCALE NUMBER	ITEM NUMBER*
1	34, 40, 47
2	15, 19, 27
3	12, 20, 28
4	29, 39, 48
5	14, 30, 31
6	23, 43, 44
7	8, 16, 45
8	4, 33, 46

*See Appendix F for related attitude statements.

The process of item analysis in this study was consistent with accepted procedures found in the literature and research. Contemporary computer applications for calculating item analysis were incorporated into this segment of the study. The resulting 24-item pool of attitude statements was primarily a result of the item analysis process.

Estimate of Reliability

Shaw (1967) defined reliability as the degree to which a scale yields consistent results when measured a number of times.

Bohrnstedt (1970) more specifically defined reliability as a

correlation between two parallel measures. Of the variety of parallel measures designed to estimate scale reliability, the Kuder-Richardson formula number 20 was repeatedly identified in the review of literature. Therefore, the K-R 20 procedure was adopted to estimate the reliability of the attitude scale designed in this study.

A computer program was selected which incorporated the K-R 20 procedure. The program selected to perform this analysis was the Sumscore (Johnson, 1978) program. Selected features of this program were used to perform the analysis of data for this study. Specific features of the Sumscore program relevant to the estimation of reliability were:

- A. correlation coefficient of each item within the total scale.
- B. correlation coefficient of each item within each subscale.
- C. reliability coefficient of each subscale.
- D. reliability coefficient of the total scale.

Even though the process of item analysis identified the 24 best items for the final scale, an informative investigation was made to identify the reliability coefficient of the 50-item field tested scale. The purpose of this investigation was to observe changes in the reliability coefficient from the 50-item scale to the 24-item scale.

The mean, standard deviation, and reliability coefficient of the 50-item scale is found in Table 9.

TABLE 9
MEAN, STANDARD DEVIATION, AND RELIABILITY COEFFICIENT
OF THE 50-ITEM FIELD TESTED SCALE

Number of items	50
Mean score (146 subjects)	200.89*
Standard deviation	22.096
Reliability coefficient	.938

*Maximum score obtainable: 250

The 50-item field tested scale produced an excellent reliability coefficient. This coefficient included two items (3 and 11) with poor item to total correlation. (See Table 6). Therefore, an additional analysis was performed on the field tested scale minus items 3 and 11. The effects of removing two poorly written attitude statements from the 50-item scale is found in Table 10. As expected, the removal of poorly written items enhanced the reliability coefficient of the scale.

TABLE 10
MEAN, STANDARD DEVIATION, AND RELIABILITY COEFFICIENT
OF THE 50-ITEM FIELD TESTED SCALE MINUS ITEMS 3 AND 11

Number of items	48
Mean score (146 subjects)	195.151*
Standard deviation	22.023
Reliability coefficient	.942

*Maximum score obtainable: 240

The intended size of the final scale was 24 items. The item analysis process performed on the 50-item field tested scale identified the best items to retain in the final scale. Therefore, a final Sumscore analysis for reliability was performed on the 24 items identified in Table 8.

A detailed accounting of the item analysis is found Tables 11 through 19. Data relevant to the eight subscales is found in Tables 11 through 18. Data relevant to the total scale is found Table 19. Within each of these nine tables, the following information was included:

- A. Scale identification
- B. Mean score of the three items within each subscale.
- C. Standard deviation of the three items within each subscale.
- D. Reliability coefficient of each subscale.
- E. Item statistics within each subscale.
- F. Mean score of all 24 items within the total scale. (Table 19).
- G. Standard deviation of all 24 items within the total scale (Table 19).
- H. Item statistics of the total scale (Table 19).
- I. Reliability coefficient of the total scale. (Table 19).

The analysis of the data presented in Tables 11 through 19 required an understanding of what was an acceptable reliability coefficient for the instrument designed in this study. A review of literature and research was done to identify an acceptable range of reliability coefficients from which decisions could be made.

Several authors of texts dealing with educational achievement have commented on the topic of acceptable reliability coefficients. Ahman and Glock (1971:303) noted that, under certain conditions, measurements with reliability coefficients of .50 have been used. But generally, they noted that standardized measures range about .85

TABLE 11
SUBSCALE 1: CURRICULUM

Item numbers within subscale: 34 40 47			
<u>Subscale Statistics</u>			
Mean		12.986	
Standard deviation		1.809	
Reliability coefficient		.705	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 34	.786	4.404	.746
Item 40	.771	4.267	.695
Item 47	.825	4.315	.834

TABLE 12
SUBSCALE 2: FINANCE

Item numbers within subscale: 15 19 27			
<u>Subscale Statistics</u>			
Mean		11.753	
Standard deviation		2.539	
Reliability coefficient		.739	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 15	.897	3.945	1.127
Item 19	.836	3.705	1.118
Item 27	.685	4.103	.866

TABLE 13
SUBSCALE 3: LEGAL

Item numbers within subscale: 12 20 28			
<u>Subscale Statistics</u>			
Mean		13.322	
Standard deviation		1.638	
Reliability coefficient		.635	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 12	.837	4.432	.758
Item 20	.650	4.363	.701
Item 28	.790	4.527	.694

TABLE 14
SUBSCALE 4: STUDENT PERSONNEL

Item numbers within subscale: 29 39 48			
<u>Subscale Statistics</u>			
Mean		12.322	
Standard deviation		2.054	
Reliability coefficient		.738	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 29	.784	4.281	.680
Item 39	.840	3.986	.876
Item 48	.821	4.055	.956

TABLE 15
SUBSCALE 5: COMMUNITY RELATIONS

Item numbers within subscale: 14 30 31			
<u>Subscale Statistics</u>			
Mean		12.295	
Standard deviation		1.877	
Reliability coefficient		.621	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 14	.697	4.000	.828
Item 30	.802	4.082	.880
Item 31	.764	4.212	.778

TABLE 16
SUBSCALE 6: STAFF DEVELOPMENT

Item numbers within subscale: 23 43 44			
<u>Subscale Statistics</u>			
Mean		11.336	
Standard deviation		2.306	
Reliability coefficient		.571	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 23	.693	3.767	1.047
Item 43	.745	3.911	.979
Item 44	.765	3.658	1.113

TABLE 17
SUBSCALE 7: EDUCATIONAL SERVICES

Item numbers within subscale: 8 16 45			
<u>Subscale Statistics</u>			
Mean		12.144	
Standard deviation		2.087	
Reliability coefficient		.588	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 8	.839	3.849	1.178
Item 16	.764	3.856	.936
Item 45	.619	4.438	.619

TABLE 18
SUBSCALE 8: STATE, FEDERAL, AND FOUNDATION PROGRAMS

Item numbers within subscale: 4 33 46			
<u>Subscale Statistics</u>			
Mean		12.479	
Standard deviation		1.768	
Reliability coefficient		.596	
<u>Item Statistics</u>			
	Item to Subscale Correlation	Mean	Standard Deviation
Item 4	.746	3.747	.898
Item 33	.761	4.630	.630
Item 46	.750	4.103	.825

TABLE 19
SUBSCALE 9: TOTAL SCALE (24 ITEMS)

Item numbers within subscale:													
4	8	12	14	15	16	19	20	23	27	28	29	30	
31	33	34	39	40	43	44	45	46	47	48			
<u>Subscale Statistics</u>													
Mean										98.637			
Standard deviation										12.802			
Reliability coefficient										.925			
<u>Item Statistics</u>													
Item to Total Scale Correlation													
Item 4:	.442	Item 23:	.565	Item 39:	.766	Item 8:	.659	Item 27:	.489	Item 40:	.683	Item 12:	.573
Item 14:	.522	Item 28:	.566	Item 43:	.483	Item 15:	.795	Item 29:	.681	Item 44:	.630	Item 16:	.567
Item 19:	.725	Item 30:	.678	Item 45:	.542	Item 20:	.443	Item 31:	.527	Item 46:	.669	Item 27:	.489
		Item 33:	.647	Item 47:	.663			Item 34:	.678	Item 48:	.694		

or higher. Tuckman (1972:165) suggested the reliability coefficient should be greater than .70 to insure valid results. Popham (1981:134-135) more specifically stated that stability coefficients (test-retest) should range between .80 and .90 and equivalence coefficients (split-halves) should range between .80 and .90 but often got as high as .95. Lastly, authors Micheels and Karnes (1950:477) suggested an instrument have a reliability coefficient of .90 or above.

Reliability coefficients have been estimated for numerous attitude measures. Shaw (1967) evaluated 176 attitude scales that

included estimations of reliability. The published reliability coefficients for these scales ranged from .54 to .97 with a mean of approximately .80 to .90. Of the scales presented in Shaw's book, none measured attitudes toward vocational education. However, in recent years, three scales have been designed to measure attitudes toward vocational education with published reliability coefficients. Wenrich and Crowley's (1964) scale had a coefficient of .69. Barth's (1974) scale had a coefficient of .79 and Young's (1971) scale had a coefficient of .87.

The literature placed great importance on high reliability coefficients if meaningful measures were to be produced. No author suggested that reliability coefficients should or could be 1.00. However, they did suggest that ideal reliability coefficients should range between .85 to .95. The research, on the other hand, presented a slightly different picture. The reliability coefficient of Shaw's 176 scales was closer to .85. The three scales measuring attitudes toward vocational education were approximately .79. It was concluded that a reliability coefficient of .85 or higher for this study would constitute a sound and substantiated claim for reliability.

The 24-item final attitude scale was comprised of eight 3-item subscales. Tables 11 through 18 presented reliability coefficients for each subscale. These coefficients ranged from .571 to .739 with an arithmetic mean of .649. It was never intended that the subscales would independently stand as a reliable measure of attitudes. Acceptable reliability coefficients have been difficult to obtain with 10 or less statements (Edwards, 1957:161). However, as 3-item scales, their reliability coefficients appeared adequate. Table 19

presented a collective picture of the total 24-item scale. The resulting coefficient for the total scale was .925. This reliability coefficient of .925 was slightly inflated due to the correlational method of item selection. To obtain a more realistic reliability coefficient for the 24-item test, the Spearman-Brown Prophecy Formula was used to "correct" the full length 50-item field tested scale to a .48 length test. The reliability coefficient of the 50-item scale (K-R 20 procedure) was .938. The resulting reliability coefficient of the 50-item scale corrected to 24 items was .88. The reliability coefficients were very respectable and within the "ideal" range.

Based on the results of the Sumscore analysis, a claim of scale reliability was made on the attitude instrument designed in this study.

Estimate of Validity

Shaw (1967:17) defined validity as "the degree to which the scale measures what it is supposed to measure." Bohrnstedt (1970:91) defined validity as the "degree to which an instrument measures the construct which is under investigation. The investigation of validity in the review of literature chapter of this study noted several types of validity. Of these types, content and construct validity were identified as relevant to attitude scale construction. To this end, a total of two estimates of validity were made on the scale constructed in this study. These estimates of validity were:

Content validity:

1. Subjective judgments of a selected group of jurors who evaluated the 96-task universe of content.

Construct validity:

2. Statistical calculation of the two-group T (known groups technique).

Content Validity

Thorndike (1971:444) defined content validity as "showing how well the content of the test samples the class of situations or subject matter about which conclusions are to be drawn." Thorndike's definition was one of a general nature, not intended to address any specific method of measurement. Regardless of the source, definitions of content validity have tended to be similar. Shaw (1967:18) who wrote exclusively about attitude measurement, defined content validity in the following way:

"Content validity is evaluated by determining the degree to which the items of the scale sample the content of the attitude domain, i.e., the degree to which the content of the attitude scale corresponds to the content of the attitude system."

Camp (1979:2-4) stated that an attitude scale constructed by first identifying a related universe of content could result in a claim of content validity. Camp outlined a procedure which was closely adapted for this study. Details of this procedure were addressed in Chapter 3, steps 1 through 4.

To review from Chapter 3, the parameters of the construct to be measured were first identified and limited to the attitudes associated with the duties of secondary vocational education administrators. A search of the literature revealed what appeared to be a complete listing of job related tasks of a vocational administrator. These tasks (96 total) were re-written in chart form

and mailed to a jury of vocational administrators. The jury of vocational administrators made a conclusive decision that the 96 tasks constituted a universe of content. Fifty tasks were randomly selected from the 96 tasks for the purpose of writing related attitude statements. These statements constituted the 50-item pilot scale which later became the 24-item final scale.

It was important to follow a procedure as summarized above to substantiate a claim of content validity. Camp (1979) and Bohrnstedt (1970) both concluded that if an attitude scale was written based on an objectively identified universe of content, then a claim of content validity was in order. Therefore, a claim of content validity was made on the attitude scale designed in this study.

Construct Validity

According to Ahmann and Glock (1971:269), a construct was a characteristic assumed to exist to account for some aspect of human behavior. The Standards for Educational and Psychological Tests (1974) defined a construct as:

An idea developed or "Constructed" as a work of informed scientific imagination; that is, it is a theoretical idea developed to explain and to organize some aspects of existing knowledge . . . (Popham, 1981:113)

The American Psychological Association (1966) defined construct validity as:

Construct validity is evaluated by investigating what qualities a test measures, that is, by determining the degree to which certain explanatory concepts or constructs account for performance on the test . . . that studies of construct validity are done to validate the theory underlying the scale, score, or test constructed. The researcher validates his scale by investigating whether it confirms or denies the hypothesis predicted from a theory which is based on the constructs. (Bohrnstedt, 1970:94)

Shaw (1967), Ghiselli (1964), and Cronbach and Meehl (1955) agreed that construct validity was evaluated by demonstrating that certain explanatory constructs accounted to some degree for performance on the attitude scale.

The most widely applied procedure to estimate construct validity of an attitude scale has been the known-groups technique. This technique tested the theoretical constructs of the scale and its ability to separate different groups with different scores.

The Two-Sample t Test of independent samples was used to estimate the known-groups construct validity for the scale designed in this study. All statistical applications to estimate the construct validity of this scale were obtained through the use of the University of California BMDP3D (1982) computer program and executed on the University of Maryland's Univac 1100 computer.

Data used in the calculation of the t statistic were the individual test scores of the 2-groups on the 24-item scale. The 146 subject scores are placed in Table 20. In addition, a frequency polygon of test scores for the 146 subjects responding to the 24-item scale was placed in Table 21.

Before the data were treated with the BMDP3D program, the following null and alternate hypothesis statements were formulated:

Statement of the null hypothesis: the population mean of the non-vocational group less the population mean of the vocational group was equal to zero.

Statement of the alternate hypothesis: the population mean of the non-vocational group less the population mean of the vocational group was not equal to zero.

TABLE 20

SCORES BY SUBJECT NUMBER USED IN THE TWO-SAMPLE T TEST
AND THE ONE-WAY ANALYSIS OF VARIANCE

Non-Vocational Group:

1 - 89	12 - 92	22 - 74	32 - 94	42 - 85	52 - 102
2 - 101	13 - 91	23 - 87	33 - 88	43 - 99	53 - 83
3 - 79	14 - 81	24 - 82	34 - 83	44 - 81	54 - 85
4 - 80	15 - 38	25 - 78	35 - 96	45 - 97	55 - 90
5 - 93	16 - 92	26 - 96	36 - 89	46 - 106	56 - 88
6 - 88	17 - 96	27 - 77	37 - 87	47 - 98	57 - 68
7 - 91	18 - 87	28 - 94	38 - 95	48 - 85	58 - 95
8 - 105	19 - 89	29 - 100	39 - 76	49 - 98	59 - 91
9 - 68	20 - 74	30 - 84	40 - 95	50 - 96	60 - 94
10 - 86	21 - 74	31 - 98	41 - 85	51 - 81	61 - 91
11 - 104					

n = 61

Mean Score = 89.4426

Standard Deviation = 10.7153

Vocational Group:

1 - 116	16 - 115	30 - 90	44 - 118	58 - 109	72 - 96
2 - 101	17 - 111	31 - 95	45 - 105	59 - 113	73 - 114
3 - 115	18 - 103	32 - 106	46 - 113	60 - 102	74 - 101
4 - 96	19 - 95	33 - 96	47 - 118	61 - 119	75 - 105
5 - 94	20 - 102	34 - 107	48 - 95	62 - 105	76 - 114
6 - 98	21 - 106	35 - 111	49 - 113	63 - 106	77 - 111
7 - 105	22 - 104	36 - 98	50 - 109	64 - 114	78 - 118
8 - 98	23 - 104	37 - 112	51 - 110	65 - 108	79 - 103
9 - 113	24 - 103	38 - 98	52 - 108	66 - 118	80 - 87
10 - 109	25 - 95	39 - 104	53 - 104	67 - 97	81 - 91
11 - 94	26 - 113	40 - 108	54 - 106	68 - 108	82 - 115
12 - 99	27 - 118	41 - 115	55 - 110	69 - 103	83 - 100
13 - 110	28 - 101	42 - 108	56 - 107	70 - 115	84 - 106
14 - 110	29 - 107	43 - 116	57 - 118	71 - 114	85 - 109
15 - 98					

n = 85

Mean Score = 108.1647

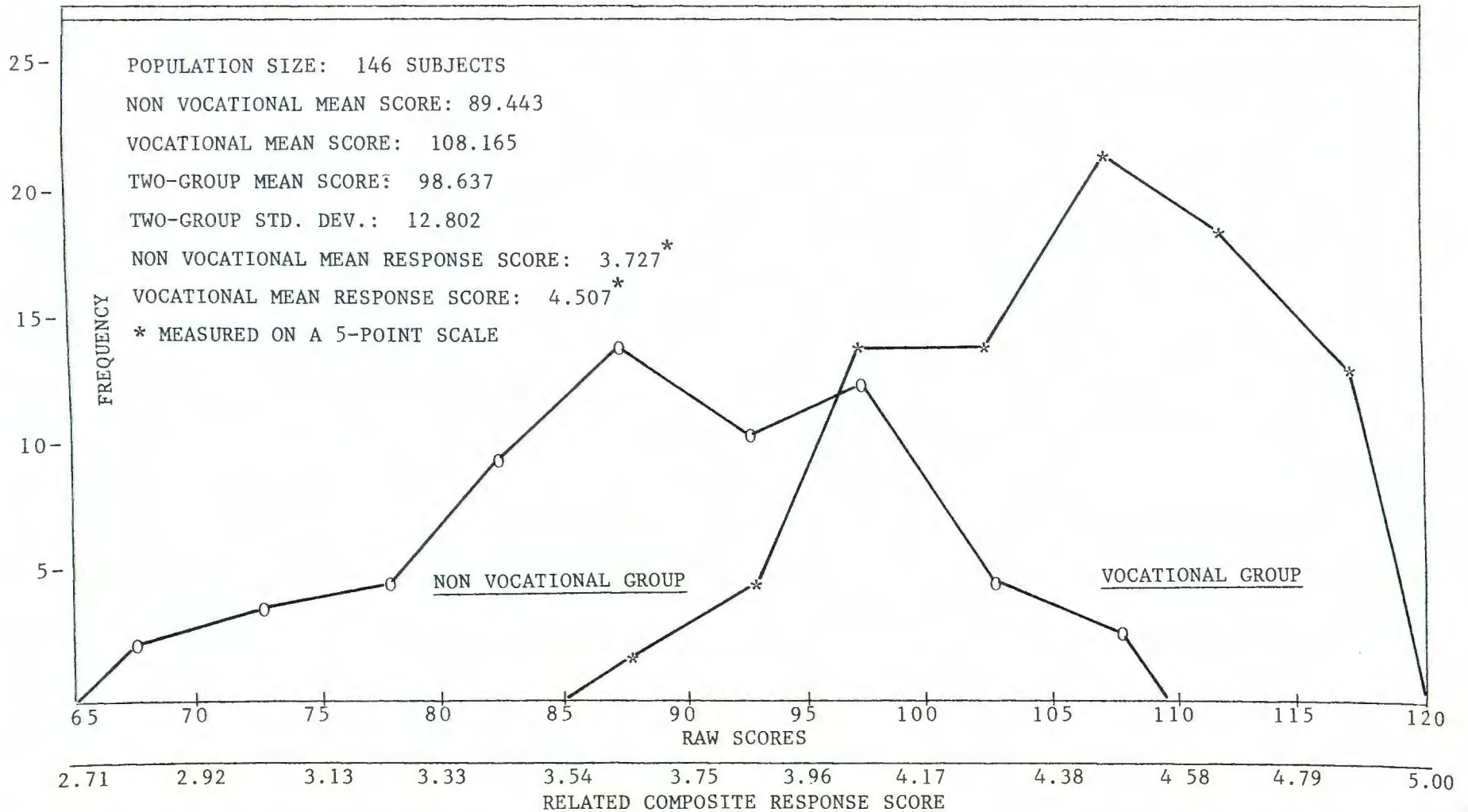
Standard Deviation = 7.5622

A decision rule was decided prior to the calculation of the t statistic. The decision rule for this test was as follows:

Reject the null (H_0) at the .05 level of significance with 144 degrees of freedom if t falls beyond -1.645, 144; otherwise, retain the null.

TABLE 21

FREQUENCY POLYGON OF SCORES
(24-ITEM SCALE)



The value of t as computed with the BMDP3D program was -12.38 . This value fell well within the critical region and the null was rejected. With a t value of -12.38 , significant statistical evidence existed to substantiate a claim of known-groups construct validity.

Demographic Analysis

Seven demographic questions were included in the 50-item pilot attitude scale. These questions were:

1. Indicate your highest university degree status.
 - A. Bachelor's
 - B. Master's
 - C. Ph.D./Ed.D.
2. Have you ever been a classroom teacher?
 - A. Yes
 - B. No
3. Select the area that best describes subject(s) you taught.
 - A. English/History/Math/Science
 - B. Industrial/Vocational/Business/Home Econ.
 - C. Aesthetic Education
 - D. Other
4. How many years were you a classroom teacher?
 - A. 1 to 10 years
 - B. 11 to 15 years
 - C. 16 to 20 years
 - D. 21 or more years
5. Are you now or have you ever been a secondary administrator?
 - A. Yes
 - B. No
6. If you answered "Yes" to question 5, does this indicate administrative experiences in vocational administration?
 - A. Yes
 - B. No
7. If applicable, how many years of experience have you had in vocational administration?

- A. 1 to 5
- B. 6 to 10
- C. 11 to 15
- D. 16 or more

The primary intention of having demographic questions was to insure the proper identification of the population. The instrument designed in this study was directed toward secondary administrators. Question number 5 determined whether the respondent was qualified to be a member of the population. Question number 6 identified the specific grouping within the population. These two questions were the most important items in the demographics. To be a qualified subject in the vocational administrators' grouping, the respondent must have answered "yes" to question number 5 and "yes" to question number 6. To be a qualified subject in the non-vocational grouping, the respondent must have answered "yes" to question number 5 and "no" to question number 6. Approximately 18 non-vocational high school principals answered "yes" to question number 5 and "yes" to question number 6. This implied that at one time these non-vocational principals were vocational administrators. These subjects were disqualified from data analysis.

The secondary intention of having demographic questions was to determine if certain demographics had an effect on attitude score. Question number 1 determined the subject's education; question number 2 determined if the subject had ever taught; question number 3 identified the subject area taught; question number 4 determined how many years were spent in the classroom; and question number 7 identified the number of years of experience in vocational

administration. Each question was analyzed in detail--where necessary, analysis was done with the assistance of the computer.

Question number 1 requested educational background data of each subject. This question was analyzed at two levels. First, the education of the vocational, non-vocational, and collective groups were investigated. Second, an analysis of variance (ANOVA) identified the relationship between education and score. Table 22 summarizes the education of the groups both separately and collectively. The analysis of this table showed no significant differences between the vocational and non-vocational groups in the percentages of bachelor, master, or doctoral degrees. Approximately 85 percent of all administrators held a master's degree. A lesser percentage, approximately 10 percent, of all administrators held a doctorate. A very small percentage, approximately 4 percent, of all administrators held only a bachelor's degree.

TABLE 22
SUMMARY OF EDUCATIONAL BACKGROUND OF THE
VOCATIONAL AND NON-VOCATIONAL POPULATIONS

		EDUCATION		
		Bachelor	Master	Doctorate
VOCATIONAL GROUP	Number	2	75	8
	Percentage	2.35	88.24	9.41
NON-VOCATIONAL GROUP	Number	4	49	8
	Percentage	6.56	80.33	13.11
BOTH GROUPS	Number	6	124	16
	Percentage	4.11	84.93	10.96

In addition to summarizing the educational background of the population, an analysis of variance (ANOVA) was performed on the data from demographic question number 1. The ANOVA investigated the statistical relationship between education and attitude score. The computation of the ANOVA was performed with the aid of the BMDP1V (1982) computer program. The educational level and attitude score for each subject in both groups were analyzed to determine if a relationship existed between education and score. Before the data were treated with the BMDP1V program, the following null and alternate hypothesis statements were formulated:

Statement of the null hypothesis: The mean scores of the bachelor's, master's, and doctorate groups are equal.

Statement of the alternate hypothesis: The mean scores of the bachelor's, master's, and doctorate groups are not equal.

The decision rule for rejecting the null hypothesis was:

Reject the null hypothesis (H_0) at the .95 level of significance with 2 and 143 degrees of freedom if F falls beyond 3.06; otherwise, retain the null.

The value of F (.7259) was located well within the region of retention. The null was not rejected and there was no evidence that education at any level influenced an administrator's attitude toward vocational education.

Question number 2 requested information on whether the administrator had ever been a classroom teacher. Virtually all 146 subjects reported that they had, at one time time, been in the classroom. No further analysis was performed on this question.

Question number 3 asked the administrator what subject area he/she taught when in the classroom. An analysis of variance (ANOVA)

identified the statistical relationship between subject area and score. Because subject areas were closely related to one administrative group or the other, it was hypothesized that the differences in subject area means would be significant. The BMDP1V ANOVA program was used to analyze the data. Before the data were treated with the BMDP1V program, the following null and alternate hypothesis statements were formulated:

Statement of the null hypothesis: The means of the academic, vocational, aesthetic, and other group are equal.

Statement of the alternate hypothesis: The means of the academic, vocational, aesthetic, and other group are not equal.

The decision rule for rejecting the null hypothesis was:

Reject the null hypothesis (H_0) at the .95 level of significance with 3 and 142 degrees of freedom if F falls beyond 2.67; otherwise, retain the null.

The value of F (13.3618) was located well within the critical region of rejection. The null hypothesis was rejected. The conclusion was that administrators who were academic teachers had significantly lower attitude scores than administrators who were non-academic teachers. The review of demographic data revealed that all non-vocational administrators were academic-related teachers.

Question number 4 asked the administrator how many years they spent as a classroom teacher. This question was intended to gain information in two areas. The first was to obtain a numerical summary of the number of years spent in the classroom of the 146 administrators. The second was an analysis of whether classroom experience had any effect on attitude score. Years of experience in the classroom of both groups is summarized in Table 23.

TABLE 23
CLASSROOM EXPERIENCE

EXPERIENCE IN YEARS	GROUP NAME	NUMBER PER GROUP	PERCENTAGE
1-10 years	Vocational Group	54	63.52
	Non-Vocational Group	41	67.21
	Both Groups	95	65.07
11-15 years	Vocational Group	20	23.53
	Non-Vocational Group	14	22.95
	Both Groups	34	23.29
16-20 years	Vocational Group	7	8.24
	Non-Vocational Group	6	9.84
	Both Groups	13	8.90
21 or more yrs.	Vocational Group	4	4.71
	Non-Vocational Group	0	0.00
	Both Groups	4	2.74
Average Number of Years Spent in the Classroom			
	Vocational Group	12.47 years	
	Non-Vocational Group	12.13 years	
	Both Groups	12.33 years	

The data displayed in Table 23 indicates that approximately 63 to 67 percent of the administrators in both groups spent 10 or less years in the classroom. Approximately 23 percent of the administrators in both groups spent 11 to 15 years in the classroom. The third and fourth categories (16-20 years and 21 or more years experience) contained less than 12 percent of the administrators in both groups. The relationship of years of experience between both groups regardless of category was very similar. This suggested that vocational and non-vocational teachers spend approximately the same amount of time in the classroom before entering administration.

The second area of investigation of question number 4 was an analysis of attitude scores of the 146 administrators. To perform this analysis, the BMDPIV analysis of variance (ANOVA) program was used. The program compared the mean scores within the four experience categories.

Before the data were treated by the BMDPIV program, the following null and alternate hypothesis statements were formulated:

Statement of the null hypothesis: The mean attitude scores within each experience category are equal.

Statement of the alternate hypothesis: The mean attitude scores within each experience category are not equal.

The decision rule for rejecting the null hypothesis was:

Reject the null hypothesis (H_0) at the .95 level of significance with 3 and 142 degrees of freedom if F falls beyond 2.67; otherwise, retain the null.

The value of F (.7996) was located well within the region of retention. The null was not rejected and there was no evidence that years of experience in the classroom influenced attitudes toward vocational education.

Questions 5 and 6 were intended to classify each subject within the population. If the subject answered "yes" to question number 5, then he/she qualified to be in the population. Question number 6 more specifically identified the subject as a vocational or a non-vocational administrator. The non-vocational subjects were all academic high school principals. However, in a few cases, principals of academic high schools were at one time vocational administrators. These persons were disqualified as subjects in the non-vocational group. No analysis was performed on questions 5 and 6.

The last demographic question (number 7) asked the vocational administrator how many years he/she had in vocational administration. In addition to calculating the average number of years of experience, an analysis of variance (ANOVA) was performed on the scores in each experience category. The analysis determined whether a vocational administrator's experience in administration had any effect on attitude score.

Before the data were treated, the following null and alternate hypothesis statements were formulated:

Statement of the null hypothesis: The mean attitude scores within each vocational administration experience category are equal.

Statement of the alternate hypothesis: The mean attitude scores within each vocational administration experience category are not equal.

The decision rule for rejecting the null hypothesis was:

Reject the null hypothesis (H_0) at the .95 level of significance with 3 and 81 degrees of freedom if F falls beyond 2.73; otherwise, retain the null.

The calculated value of F (.4197) was located well within the region of retention. The null was not rejected and there was no evidence that years of experience as a vocational administrator influenced attitudes toward vocational education.

Seven demographic questions were included in the 50-item pilot scale. These questions were designed to identify selected details about the population. Statistical analysis was performed on selected questions to determine if they should be included in the final 24-item scale.

Question 3 (subject area taught) and the combination of questions 5 and 6 (administrative data) were statistically significant in predicting attitude scores. Questions 1 (university degrees earned), 4 (years of experience in the classroom), and 7 (years of experience as a vocational administrator) were statistically insignificant in predicting attitude scores. Question 2 (experience as a classroom teacher) was insignificant since all subjects taught school in their careers.

It was necessary to include at least two demographic questions to insure the proper identification of the population for the scale designed in this study. These were:

Question 5: Are you now or have you ever been a secondary administrator?

Question 6: . . . does this indicate administrative experience in vocational education?

Subjects answering "no" to question number 5 were not a member of the intended population and were eliminated from the analysis. Question number 6 was necessary to insure the proper sub-grouping within the population.

To conclude, three demographic questions were selected from the original seven to be included in the final scale. These questions were:

1. Select the area that best describes the subject(s) you taught.
 - A. English/History/Math/Science
 - B. Industrial/Vocational/Business/Home Econ./Agriculture
 - C. Aesthetic Education
 - D. Other

2. Are you now or have you ever been a secondary administrator?
 - A. Yes
 - B. No
3. If you answered "yes" to question number 5, does this indicate experiences in vocational administration?
 - A. Yes
 - B. No

Interpretation of Scores

An effort was made to classify each subject score in a category of positive or negative tendency to perform favorable toward vocational education. Individual subject scores (Table 20) and the frequency polygon of scores (Table 21) were used to calculate and establish realistic performance attitude cutpoints. Three performance attitude categories were chosen to classify the scores obtained in this study. These categories were:

1. A very positive performance attitude.
2. A positive performance attitude.
3. A less than positive performance attitude.

It was noticed that certain statistical relationships existed between the frequency distribution of scores of the 2-groups, the individual group means and the combined 2-group mean. Two cutpoints were selected based on these relationships.

Cutpoint number 1 was positioned between category number 1 and 2. This cutpoint separated those subjects with very positive performance attitudes and those with positive performance attitudes. The positioning of this cutpoint was selected based on the

relationship between the highest score obtained in the non-vocational group and the mean, mode, and median vocational group scores.

The mean vocational group score was approximately 108. Similarly, the vocational group median and mode scores were between 105 and 110. Approximately half of all vocational group scores were above 105-110. The highest score obtained in the non-vocational group was 106. Since approximately half of all vocational scores were greater than 105-110 and no non-vocational scores were greater than 106; cutpoint number one was positioned at score value 107. Therefore, a score of 107 or greater constituted a very positive performance attitude.

Cutpoint number 2 was positioned between category number 2 and 3. This cutpoint separated those subjects with positive performance attitude and those with a less than positive performance attitude. The positioning of this cutpoint was selected based on the relationship between the 2-group mean (98.6) and the 2-group mode (96.7). Approximately 16.34 percent of non-vocational scores were located above the 2-group mean and approximately 15.29 percent of the vocational scores were located below the 2-group mean. This location within the distribution of scores appeared to be the logical cutpoint for determining the minimum positive performance attitude. Therefore, scores above 96 and below 107 constituted a positive performance attitude. A score below 97 constituted a less than positive performance attitude.

Table 24 summarizes the distribution of scores within the three attitude categories. It was noted that no non-vocational subjects obtained a very positive performance attitude score. Furthermore,

18.03 percent of the non-vocational subjects obtained a positive performance attitude score. Collectively, 18.03 percent of the non-vocational subjects obtained scores within the first and second attitude categories. Comparatively, 85.88 percent of the vocational group obtained scores within the same two categories. Exactly 81.97 percent of the non-vocational group and 14.12 percent of the vocational group received scores in the less than positive performance attitude category.

The distribution of scores within the three attitude categories appeared to reasonably separate the vocational and non-vocational administrators into their respective attitude groups. It was concluded that the positioning of the cutpoints and the resulting three attitude categories realistically separated the subjects in this study.

TABLE 24
DISTRIBUTION OF SCORES WITHIN ATTITUDE CATEGORIES

Attitude Category	Non-Vocational		Vocational	
	Frequency	Percentage	Frequency	Percentage
1 Very Positive Performance Attitude	0	0	43	50.59
2 Positive Performance Attitude	11	18.03	30	35.29
3 Less than Positive Performance Attitude	50	81.97	12	14.12

Summary

The analysis of data in this chapter began with an item analysis of the 50-item field tested attitude scale. By reviewing accepted

summated rating scale design procedures, a scale size of 24 items was selected. A correlational method was used to select the final 24 items from the 50-item pool. Contemporary computer applications were incorporated into the selection of the 24 items. The final 24-item scale was comprised of eight 3-item subscales.

Reliability for the 24-item scale was estimated with the Kuder-Richardson formula number 20. The reliability coefficient for the scale designed in this study was .925. (Corrected to .88.) Based on the calculated reliability coefficient, a claim of scale reliability was made.

Two claims of validity were estimated in this study. A claim of content validity was made based on the subjective judgments of a selected group of jurors who evaluated the 96-task universe of content. A claim of construct validity was made based on a two-group $T_{.05, 144}$ value of -12.38.

Seven demographic questions were also included in the 50-item field tested scale. These questions were analyzed before their inclusion in the 24-item final scale. Several demographic questions were evaluated to determine if certain demographics had an effect on attitude score. Of the six questions evaluated by an analysis of variance (ANOVA) three were significant and, therefore, retained. At the conclusion of Chapter 4 a 24-item attitude scale with significant estimates of reliability and validity emerged. An example of the 24-item final scale with demographics was placed in Appendix H.

An analysis of the distribution of scores of the 2-group was made for the purpose of classifying each subject in one of three attitude categories. A subject with a score of 107 or greater was considered

to have a very positive performance attitude. A subject with a score of 97 to and including 106 was considered to have a positive performance attitude. Lastly, a subject with a score of 96 or less was considered to have a less than positive performance attitude.

CHAPTER V

Summary, Conclusions, and Recommendations

This chapter is presented in three sections: Summary, Conclusions, and Recommendations. The summary includes an introduction, a restatement of the problem, and a restatement of the purpose of the study. In addition, the first section also includes a summary of the procedure and an analysis of data and findings. The conclusions, based upon the results, are presented in the second section of this chapter. The final section contains suggested recommendations for further research related to this study.

Summary

Introduction

Within the past 75 years, vocational education has become established as a viable entity within the educational framework of the American secondary school system and an accepted element of the total educational curriculum in public secondary schools. However, even with an established instructional foundation, the vocational needs of many of today's youth have not been met.

Many secondary programs cater primarily to students with university aspirations. Feirer (1978) noted that most secondary programs were deficient in vocational offerings. He also indicated that most students leave high school with "absolutely no salable

skills." In general, there has been insufficient vocational training opportunities for secondary students.

To compound the problems of inadequate vocational training opportunities, the United States will probably experience an economic upsurge in the mid 1980's. This will further strain the ability of secondary vocational education programs to meet the needs of its students. The level of support for vocational education by secondary school decision makers may well determine whether vocational education will overcome the current and anticipated obstacles to meet the growing demand for vocational training opportunities.

Researchers such as Divita, Heathman, and Barth suggested that the attitude of secondary school administrators played a significant role in the success of vocational programs. They believed that vocational programs benefited when administered by those with positive attitudes toward vocational education. These and other researchers conducted studies of attitudes toward vocational education of selected populations in an attempt to identify avenues to improve vocational training. In each case, instruments or scales were incorporated in the measurement of the attitudes toward vocational education. The scales used in these studies were designed over 20 years ago. They did not, of course, incorporate contemporary issues relevant to vocational education of the 1980's. If a researcher in the 1980's wanted to measure the attitudes toward vocational education of secondary administrators in an attempt to identify avenues to improve vocational education, then a new attitude scale needed to be developed.

The objective of this study was to produce an instrument that measured the attitudes toward vocational education of secondary administrators. Additionally, this instrument incorporated contemporary issues and utilized established concepts in scale design methodologies to insure reliability and validity.

Statement of the Problem

The problem of this study was to design a valid and reliable instrument to measure the attitudes of secondary school administrators toward vocational education. Sub-problems related to the completion of this instrument were:

1. Define the construct of the psychological object to be measured.
2. Identify and evaluate for relevance and representation the universe of content related to the terms defined in sub-problem one.
3. Design an instrument to measure the attitudes of secondary school administrators toward vocational education.
4. Estimate the reliability and validity of the scale.

Statement of the Purpose

The purpose of this study was to design a valid and reliable instrument for use in the assessment of the attitudes of secondary school administrators toward vocational education.

Procedure

A review of related research and literature was conducted to identify a procedure for the development of a valid and reliable

instrument for use in the assessment of the attitudes of secondary school administrators toward vocational education. This review was divided into five sections:

1. Nature of Attitudes
2. Attitude Scale Development
3. Test Reliability
4. Test Validity
5. Studies of Attitudes Toward Vocational Education

A seven-step procedure was incorporated to address sub-problems 1 through 3. First, the parameters of the psychological construct to be measured were defined. A definition of vocational education and a definition of secondary administration were selected. A universe of content was identified and charted based on the relationship between the role of a secondary administrator and the goals of vocational education. The result was a universe of content containing 96 occupational tasks of a vocational administrator.

A jury of vocational administrators were invited to evaluate the 96-item universe of content. The jurors were asked to evaluate each task with regard to the following criteria:

1. The task item listed was relevant to the role of a vocational administrator.
2. The task item reinforced the goals of vocational education.

The Likert summated rating scale procedure was selected as the method to measure the attitudes of secondary school administrators toward vocational education. Fifty task items were randomly selected from the 96-task universe of content. A related attitude statement

was written for each task. The resulting 50-item scale was pilot tested on a small sampling of the intended population of secondary administrators. Several scale items were re-written because of poor discrimination.

A revised 50-item attitude scale was mailed to 100 secondary principals and 100 secondary vocational-technical center principals. Approximately 90 percent of the non-vocational principals and 93 percent of the vocational principals responded to the initial and follow-up mailings. The attitude scale data from the 146 subjects was coded onto computer data cards and prepared for statistical analysis.

Analysis of Data and Findings

Based on an item analysis of the 50-item pilot scale, 24 items were selected for the final scale. These 24 items were used in all estimates of reliability and validity contained in this study.

A computer program incorporating the Kuder-Richardson formula number 20 was selected to estimate the reliability of the final scale. A reliability coefficient of .938 (corrected to .88) was computed resulting in a claim of scale reliability.

A total of two claims of validity were estimated for the 24-item scale designed in this study. A claim of content validity was made based on the subjective judgments of the selected group of jurors who evaluated the 96-task universe of content. A statistical claim of construct validity was made based on the calculation of the known-groups 2-group T statistic.

In addition to the 24 attitude statements, 3 demographic questions were included in the final scale. These and four additional questions appeared on the 50-item field tested scale. Of the seven demographic questions, three were statistically relevant and were retained in the final scale. The final reliable and valid attitude scale was comprised of 24 attitude statements and 3 demographic questions.

Conclusions

The following conclusions were made on the basis of the findings of this study.

1. The 24-item scale designed in this study has unidimensionality as demonstrated by the correlational application of item selection.
2. The 24-item scale designed in this study has a significantly high level of internal consistency as demonstrated by the coefficient alpha.
3. The 24-item scale designed in this study demonstrates significantly high reliability estimated by the K-R 20 coefficient of equivalence.
4. The 24-item scale designed in this study has content validity based on the random selection of items from a 96-item universe of content judged exhaustive by a jury of experts.
5. The 24-item scale designed in this study has construct validity as demonstrated by the 2-group t, known-groups technique.

6. There was no significant relationship between attitude scores and attained level of university education of the administrators who responded to the attitude scale designed in this study.
7. All administrators who responded to the attitude scale designed in this study were previously classroom teachers.
8. There was a significant relationship between attitude scores and subject area taught of the administrators who responded to the attitude scale designed in this study.
9. There was no significant relationship between attitude scores and years as a classroom teacher of the administrators who responded to the attitude scale designed in this study.
10. There was no significant relationship between attitude scores and years of experience as a vocational administrator of the vocational administrator who responded to the attitude scale designed in this study.
11. The 24-item scale designed in this study appears to be able to measure latent favorable administrative performance toward vocational education.

Recommendations

From the general conclusions presented, recommendations related to the scale designed in this study were made. These recommendations were:

1. Research should be conducted using the scale designed in this study for the purpose of replicating the estimates of reliability and validity.
2. Research to measure the attitudes of secondary school administrators toward vocational education should be conducted utilizing the scale designed in this study.
3. Research should be conducted to re-validate the reliability and validity of the scale designed in this study incorporating alternate statistical procedures.
4. Research should be conducted to determine if selected demographics beyond those used in this study influence attitude scores.

APPENDIX A

UNIVERSE OF CONTENT TASK LISTING

CURRICULUM AND INSTRUCTION

1. Updating and upgrading existing vocational programs.
2. Managing the logistics of implementing new vocational instruction.
3. Developing relevant vocational education goals.
4. Forecasting future curriculum needs in vocational education.
5. Integrating handicapped and other special needs programs into the total vocational curriculum.
6. Insuring sex equity in the instructional curriculum.
7. Interpreting the impact of changing industrial technology on curricular offerings.
8. Integrating on-the-job training and other cooperative experience programs into the total vocational curriculum.
9. Developing infusion strategies to relate vocational education to general education.
10. Articulating secondary and post-secondary vocational instruction.
11. Integrating computer instruction into vocational programs.
12. Evaluating existing vocational curriculum.

FINANCE AND BUSINESS MANAGEMENT

13. Locating sources of funding.
14. Preparing reports on vocational programs.
15. Analyzing the expense of operating vocational programs.
16. Developing apportionment procedures with adult education.
17. Developing financial policy.

18. Planning short- and long-term equipment and tool needs.
19. Writing proposals, contracts, and requests for bids.
20. Screening and selecting new equipment.
21. Appraising requests from teachers for materials and equipment.
22. Dispensing funds to secondary school vocational programs.
23. Processing the purchase of new equipment.
24. Preparing capital improvement budgets.

LEGAL RESPONSIBILITIES

25. Interpreting and implementing federal, state, and local handicapped legislation.
26. Promoting vocational legislation.
27. Administering policies for mainstreaming special needs students in vocational programs.
28. Interpreting sex equity legislation.
29. Implementing guidance services for vocational students.
30. Interpreting and implementing federal, state, and local work legislation.
31. Advising teachers and staff on legal matters.
32. Developing and maintaining regulations to control sex stereotyping of vocational students.
33. Understanding and protecting the legal rights of handicapped students.
34. Interpreting child labor laws.
35. Interpreting and overseeing facility safety code regulations.
36. Responding to infractions of the negotiated union contract.

STUDENT PERSONNEL

37. Providing work experience programs for students.
38. Establishing minimum skill requirements for exit level students.

39. Providing job placement services for students.
40. Developing and implementing youth leadership programs.
41. Providing career and post-secondary education information services to students.
42. Initiating and implementing grading and reporting procedures.
43. Coordinating transportation service for students to vocational center(s).
44. Promoting positive student work attitudes.
45. Initiating student follow-up studies.
46. Implementing policies to minimize student dropout.
47. Promoting student recruitment in vocational education.
48. Conferring with students regarding infractions of discipline and school shop safety regulations.

COMMUNITY RELATIONS

49. Evaluating community feedback concerning vocational programs.
50. Promoting positive community relations.
51. Preparing press releases.
52. Planning awards programs.
53. Initiating and coordinating advisory committee meetings.
54. Conferring with business and labor groups.
55. Participating in community organizations.
56. Authorizing and organizing student involvement in community activities.
57. Promoting curriculum offerings to meet local community workforce needs.
58. Meeting formally and informally with parents and students.
59. Maintaining professional relationships with other school districts.
60. Receiving and responding to recommendations from community groups.

STAFF AND PERSONNEL DEVELOPMENT

61. Evaluating and hiring vocational instructional staff.
62. Identifying strengths and weaknesses of staff.
63. Planning and implementing in-service training for staff.
64. Evaluating and processing applications for promotion and transfer.
65. Organizing and conducting staff meetings.
66. Participating in interviews.
67. Preparing job descriptions of staff.
68. Administering disciplinary policies and procedures.
69. Reviewing the credentials of staff candidates.
70. Determining staffing requirements.
71. Identifying staff stress.
72. Developing staff training programs to address new and advanced technologies.

EDUCATIONAL SERVICES AND FACILITIES

73. Administering financial aid programs.
74. Developing facility usage schedules.
75. Initiating and supervising guidance and testing services.
76. Integrating adult education programs into the overall educational program.
77. Identifying supplemental, off-campus instructional facilities.
78. Supervising end-of-year shop and laboratory clean-up.
79. Representing the school to visitors in an official capacity.
80. Preparing facilities and equipment specifications.
81. Organizing and overseeing effective custodial maintenance of the facility.
82. Scheduling and supervising periodic fire safety drills.

83. Developing architectural designs for new facilities.
84. Supervising requests for facility maintenance and repair.

STATE, FEDERAL, AND FOUNDATION PROGRAMS

85. Implementing sex equity in vocational education.
86. Participating in national, state, and local educational associations.
87. Interpreting vocational education legislation.
88. Implementing handicapped legislation.
89. Preparing student follow-up reports for state and local agencies.
90. Preparing proposals for new programs.
91. Preparing budgets for funded programs.
92. Implementing federal, state, and local programs of financial assistance to economically-disadvantaged students.
93. Identifying various funding sources for vocational education.
94. Utilizing federal, state, and local resources for aiding vocational education.
95. Identifying relevant scholarship and post-secondary assistance programs.
96. Preparing student recommendations to state and local scholarship, post-secondary, and financial assistance organizations.

APPENDIX B

EVALUATION FORM

UNIVERSE OF CONTENT TO MEASURE THE ATTITUDES OF
SECONDARY SCHOOL ADMINISTRATORS TOWARD VOCATIONAL EDUCATIONDirections for Evaluating the Universe of Content

The proposed tasks that make up the universe of content and constitute the psychological construct of the attitude to be measured are listed below. The individual tasks are arranged within eight major task categories. You will be asked to respond to two statements about each task. The statements are:

- A. The task listed is relevant to the role of a vocational administrator.
- B. The task listed reinforces the goals of vocational education.

STATEMENT A: (circle either "yes" or "no")
The task listed is relevant to the role of a vocational administrator

STATEMENT B: (circle either "yes" or "no")
The task listed reinforces the goals of vocational education

CURRICULUM AND INSTRUCTION

1. Updating and upgrading existing vocational programs.	yes	no	yes	no
2. Managing the logistics of implementing new vocational instruction.	yes	no	yes	no
3. Developing relevant vocational education goals.	yes	no	yes	no
4. Forecasting future curriculum needs in vocational education.	yes	no	yes	no
5. Integrating handicapped and other special needs programs into the total vocational curriculum.	yes	no	yes	no
6. Insuring sex equity in the instructional curriculum.	yes	no	yes	no
7. Interpreting the impact of changing industrial technology on curricular offerings.	yes	no	yes	no

STATEMENT A: (circle either "yes" or "no")
The task listed is relevant to the role of a vocational administrator

STATEMENT B: (circle either "yes" or "no")
The task listed reinforces the goals of vocational education

8. Integrating on-the-job training and other cooperative experience programs into the total vocational curriculum.	yes	no	yes	no
9. Developing infusion strategies to relate vocational education to general education.	yes	no	yes	no
10. Articulating secondary and post-secondary vocational instruction.	yes	no	yes	no
11. Integrating computer instruction into vocational programs.	yes	no	yes	no
12. Evaluating existing vocational curriculum.	yes	no	yes	no
FINANCE AND BUSINESS MANAGEMENT				
13. Locating sources of funding.	yes	no	yes	no
14. Preparing reports on vocational programs.	yes	no	yes	no
15. Analyzing the expense of operating vocational programs.	yes	no	yes	no
16. Developing apportionment procedures with adult education.	yes	no	yes	no
17. Developing financial policy.	yes	no	yes	no
18. Planning short- and long-term equipment and tool needs.	yes	no	yes	no
19. Writing proposals, contracts, and requests for bids.	yes	no	yes	no
20. Screening and selecting new equipment.	yes	no	yes	no
21. Appraising requests from teachers for materials and equipment.	yes	no	yes	no
22. Dispensing funds to secondary school vocational programs.	yes	no	yes	no
23. Processing the purchase of new equipment.	yes	no	yes	no
24. Preparing capital improvement budgets.	yes	no	yes	no

STATEMENT A: (circle either "yes" or "no")
The task listed is relevant to the role of a vocational administrator

STATEMENT B: (circle either "yes" or "no")
The task listed reinforces the goals of vocational education

LEGAL RESPONSIBILITIES

- | | | | | |
|--|-----|----|-----|----|
| 25. Interpreting and implementing federal, state, and local handicapped legislation. | yes | no | yes | no |
| 26. Promoting vocational legislation. | yes | no | yes | no |
| 27. Administering policies for mainstreaming special needs students in vocational programs. | yes | no | yes | no |
| 28. Interpreting sex equity legislation. | yes | no | yes | no |
| 29. Implementing guidance services for vocational students. | yes | no | yes | no |
| 30. Interpreting and implementing federal, state, and local work legislation. | yes | no | yes | no |
| 31. Advising teachers and staff on legal matters. | yes | no | yes | no |
| 32. Developing and maintaining regulations to control sex stereotyping of vocational students. | yes | no | yes | no |
| 33. Understanding and protecting the legal rights of handicapped students. | yes | no | yes | no |
| 34. Interpreting child labor laws. | yes | no | yes | no |
| 35. Interpreting and overseeing facility safety code regulations. | yes | no | yes | no |
| 36. Responding to infractions of the negotiated union contract. | yes | no | yes | no |

STUDENT PERSONNEL

- | | | | | |
|--|-----|----|-----|----|
| 37. Providing work experience programs for students. | yes | no | yes | no |
| 38. Establishing minimum skill requirements for exit level students. | yes | no | yes | no |
| 39. Providing job placement services for students. | yes | no | yes | no |

STATEMENT A: (circle either "yes" or "no")

The task listed is relevant to the role of a vocational administrator

STATEMENT B: (circle either "yes" or "no")

The task listed reinforces the goals of vocational education

40. Developing and implementing youth leadership programs.	yes	no	yes	no
41. Providing career and post-secondary education information services to students.	yes	no	yes	no
42. Initiating and implementing grading and reporting procedures.	yes	no	yes	no
43. Coordinating transportation service for students to vocational center(s).	yes	no	yes	no
44. Promoting positive student work attitudes.	yes	no	yes	no
45. Initiating student follow-up studies.	yes	no	yes	no
46. Implementing policies to minimize student dropout.	yes	no	yes	no
47. Promoting student recruitment in vocational education.	yes	no	yes	no
48. Conferring with students regarding infractions of discipline and school shop safety regulations.	yes	no	yes	no
COMMUNITY RELATIONS				
49. Evaluating community feedback concerning vocational programs.	yes	no	yes	no
50. Promoting positive community relations.	yes	no	yes	no
51. Preparing press releases.	yes	no	yes	no
52. Planning awards programs.	yes	no	yes	no
53. Initiating and coordinating advisory committee meetings.	yes	no	yes	no
54. Conferring with business and labor groups.	yes	no	yes	no
55. Participating in community organizations.	yes	no	yes	no
56. Authorizing and organizing student involvement in community activities.	yes	no	yes	no

STATEMENT A: (circle either "yes" or "no")
The task listed is relevant to the role of a vocational administrator

STATEMENT B: (circle either "yes" or "no")
The task listed reinforces the goals of vocational education

57. Promoting curriculum offerings to meet local community workforce needs.	yes	no	yes	no
58. Meeting formally and informally with parents and students.	yes	no	yes	no
59. Maintaining professional relationships with other school districts.	yes	no	yes	no
60. Receiving and responding to recommendations from community groups.	yes	no	yes	no
STAFF AND PERSONNEL DEVELOPMENT				
61. Evaluating and hiring vocational instructional staff.	yes	no	yes	no
62. Identifying strengths and weaknesses of staff.	yes	no	yes	no
63. Planning and implementing in-service training for staff.	yes	no	yes	no
64. Evaluating and processing applications for promotion and transfer.	yes	no	yes	no
65. Organizing and conducting staff meetings.	yes	no	yes	no
66. Participating in interviews.	yes	no	yes	no
67. Preparing job descriptions of staff.	yes	no	yes	no
68. Administering disciplinary policies and procedures.	yes	no	yes	no
69. Reviewing the credentials of staff candidates.	yes	no	yes	no
70. Determining staffing requirements.	yes	no	yes	no
71. Identifying staff stress.	yes	no	yes	no
72. Developing staff training programs to address new and advanced technologies.	yes	no	yes	no

STATEMENT A: (circle either "yes" or "no")
The task listed is relevant to the role of a vocational administrator

STATEMENT B: (circle either "yes" or "no")
The task listed reinforces the goals of vocational education

EDUCATIONAL SERVICES AND FACILITIES

- | | yes | no | yes | no |
|--|-----|----|-----|----|
| 73. Administering financial aid programs. | | | | |
| 74. Developing facility usage schedules. | | | | |
| 75. Initiating and supervising guidance and testing services. | | | | |
| 76. Integrating adult education programs into the overall educational program. | | | | |
| 77. Identifying supplemental, off-campus instructional facilities. | | | | |
| 78. Supervising end-of-year shop and laboratory clean-up. | | | | |
| 79. Representing the school to visitors in an official capacity. | | | | |
| 80. Preparing facilities and equipment specifications. | | | | |
| 81. Organizing and overseeing effective custodial maintenance of the facility. | | | | |
| 82. Scheduling and supervising periodic fire safety drills. | | | | |
| 83. Developing architectural designs for new facilities. | | | | |
| 84. Supervising requests for facility maintenance and repair. | | | | |

STATE, FEDERAL, AND FOUNDATION PROGRAMS

- | | | | | |
|---|-----|----|-----|----|
| 85. Implementing sex equity in vocational education. | yes | no | yes | no |
| 86. Participating in national, state, and local educational associations. | yes | no | yes | no |
| 87. Interpreting vocational education legislation. | yes | no | yes | no |

STATEMENT A: (circle either "yes" or "no")

The task listed is relevant to the role of a vocational administrator

STATEMENT B: (circle either "yes" or "no")

The task listed reinforces the goals of vocational education

88. Implementing handicapped legislation.	yes	no	yes	no
89. Preparing student follow-up reports for state and local agencies.	yes	no	yes	no
90. Preparing proposals for new programs.	yes	no	yes	no
91. Preparing budgets for funded programs.	yes	no	yes	no
92. Implementing federal, state, and local programs of financial assistance to economically-disadvantaged students.	yes	no	yes	no
93. Identifying various funding sources for vocational education.	yes	no	yes	no
94. Utilizing federal, state, and local resources for aiding vocational education.	yes	no	yes	no
95. Identifying relevant scholarship and post-secondary assistance programs.	yes	no	yes	no
96. Preparing student recommendations to state and local scholarship, post-secondary, and financial assistance organizations.	yes	no	yes	no

Universe of Content Statement

The content listed above appears to be exhaustive and, therefore, constitutes a universe of content from which an attitude scale can be constructed.

yes no

Signature

APPENDIX C

June 1, 1983

Dear NCLA Colleague:

I am a Vocational Education teacher in the State of Maryland currently on academic leave to pursue a program of study at the University of Maryland, which will lead to a Doctor of Education Degree in Vocational Administration. The problem of my dissertation is to design a scale which measures the attitudes of secondary school administrators toward vocational education.

The design methodology of my attitude scale requires professional persons like yourself to serve as content validation judges during the initial stages of scale development. I will be sending you a listing of 96 vocational administration tasks. Your roll as a judge involves evaluating the 96 tasks for representation of a universe of content from which an attitude scale can be constructed.

Your participation in the study will be the key to my being able to make claims of content and construct validity on the final version of the scale. Please return the enclosed postal card to let me know if you can or cannot take part in my study. If you accept, the content evaluation form should be mailed to you within six weeks.

Thank you very much for any assistance you can provide. I look forward to hearing from you soon.

Very sincerely yours,

James A. Burns

APPENDIX D

July 30, 1983

Dear NCLA Colleague:

A few months ago I sent a letter to you asking if you would participate as a judge in the development of my attitude scale. Your response was positive, and now I am ready to proceed with the judging process.

In brief, my dissertation centers on the design of an attitude scale. The scale will measure the attitudes of secondary school administrators toward vocational education. However, before the scale can be designed, I must identify the universe of content related to secondary administrators in vocational education. My review of related research and literature has produced a listing of tasks which I believe to be relevant to the role of secondary administrators and which supports the goals of vocational education. Since I am but one person, I need others like yourself to agree with my position. If you do, then I have a solid foundation on which to build my attitude scale and to base a legitimate claim of content validity.

I have enclosed an evaluation form with space for comment on the reverse side of each page and a self-addressed, postage-paid envelope. I hope you can find time to participate in this step of my dissertation and to return the evaluation form with your comments and/or suggestions to me sometime around August 15, 1983. If revisions are in order, I will modify the content universe and mail the revised listing of tasks to you for further evaluation.

Thank you for your most appreciated assistance.

Very sincerely yours,

James A. Burns

Enclosures (2)

APPENDIX E

LETTER SENT IN PILOT AND FIELD TEST

Dear Colleague:

I am a vocational education teacher in the State of Maryland working on a doctorate in vocational administration at the University of Maryland at College Park. I have developed an instrument to measure the attitudes of secondary school administrators toward vocational education. Presently, I am in the process of validating the 50-item attitude scale that I have enclosed with this letter.

Through an elaborate random-selection process, I am respectfully requesting your participation in my dissertation. I sincerely hope you will accept this invitation to participate in this final and most critical portion of my doctoral studies.

At the conclusion of this instrument, you will find several demographic items specific to your professional background. These items will be used in the validation process of the instrument. Please understand that no linkages will be made between your name and your instrument responses or my results.

I will thank you in advance for giving of your precious time and talents to participate in my dissertation research in the hope that your response to my request will be a positive one and will make possible the achievement of a lifetime goal of mine.

Very sincerely yours,

James Allan Burns

APPENDIX F

ATTITUDES OF SECONDARY SCHOOL ADMINISTRATORS
TOWARD VOCATIONAL EDUCATION

DIRECTIONS: Please circle the response which corresponds most closely to your feelings about each item on the face and reverse sides of this page. If your feelings are in strong agreement with a given statement, circle SA = Strongly Agree. If your feelings are only in agreement, circle A = Agree. If you have no feelings either positive or negative, circle NF = No Feelings. If your feelings are in disagreement, circle D = Disagree. Or, if your feelings are in strong disagreement with a statement, circle SD = Strongly Disagree.

Do not spend too much time on any particular item. There are no correct or incorrect answers. If your feelings fall between two choices, select the closer one. Please answer each and every item.

START HERE:

- | | |
|---|--------------|
| 1. I feel vocational education should train students for entry-level employment. | SA A NF D SD |
| 2. I feel most vocational education teachers lack the intellectual refinement found in many academic teachers. | SA A NF D SD |
| 3. I feel vocational education encourages non-traditional enrollment in its programs. | SA A NF D SD |
| 4. I feel vocational education can successfully address the occupational training needs of handicapped students. | SA A NF D SD |
| 5. I feel vocational education should encourage students to participate in school-sponsored employment as a means of occupational training. | SA A NF D SD |
| 6. I feel vocational education can do little to merit media attention. | SA A NF D SD |
| 7. I feel vocational education should be an agenda item at all PTA-type meetings. | SA A NF D SD |
| 8. I feel vocational education receives a disproportionately large share of the total educational budget. | SA A NF D SD |
| 9. I feel vocational education has a positive impact on sex equity within the work force. | SA A NF D SD |

10. I feel vocational education has an obligation to provide job placement services to vocational education graduates. SA A NF D SD
11. I feel vocational education equipment and facility usage by adult education programs should not be limited to occupational training courses. SA A NF D SD
12. I feel vocational education has little to offer most female students. SA A NF D SD
13. I feel vocational educators are perceptive of future curricular needs. SA A NF D SD
14. I feel vocational education values the services provided by advisory groups. SA A NF D SD
15. I feel vocational education should receive increased financial assistance from federal, state, and local governments. SA A NF D SD
16. I feel vocational education courses should receive special consideration with regard to achieving and maintaining small teacher-pupil ratios. SA A NF D SD
17. I feel vocational education receives too much support from federal, state, and local legislation. SA A NF D SD
18. I feel vocational education personnel should be interviewed and selected by trained personnel specialists rather than vocational administrators. SA A NF D SD
19. I feel vocational education offerings should be reduced when there is a decline in educational funds. SA A NF D SD
20. I feel vocational cooperative work experience programs provide a valuable educational experience. SA A NF D SD
21. I feel vocational education does not meet the unique training needs of the handicapped student. SA A NF D SD
22. I feel vocational education creates a favorable impression with business and labor groups. SA A NF D SD
23. I feel vocational education teachers do not make outstanding educational administrators. SA A NF D SD
24. I feel vocational education students do not require the specialized guidance services of a trained vocational guidance counselor. SA A NF D SD
25. I feel vocational education would lose much of its effectiveness without legislated funding. SA A NF D SD

26. I feel vocational education should reflect the changing industrial technologies in its curriculum. SA A NF D SD
27. I feel vocational education funds should be dispensed by a vocational administrator. SA A NF D SD
28. I feel vocational education is not really intended for female students. SA A NF D SD
29. I feel vocational education stimulates positive work attitudes. SA A NF D SD
30. I feel vocational education has a positive impact on local economic growth. SA A NF D SD
31. I feel vocational education achievements are of little interest to the community. SA A NF D SD
32. I feel secondary vocational education cannot adequately address the occupational training needs of adults. SA A NF D SD
33. I feel vocational education should be phased out of the curriculum at the secondary level. SA A NF D SD
34. I feel vocational education should eliminate co-operative work experience programs as part of its curricular offerings. SA A NF D SD
35. I feel vocational education is genuinely interested in increasing handicapped enrollments. SA A NF D SD
36. I feel vocational education curriculum offerings should be determined by student enrollments rather than community work force needs. SA A NF D SD
37. I feel vocational education should require its teachers to have vocational experience in their subject area as a prerequisite to employment. SA A NF D SD
38. I feel vocational education provides long-term benefits for its graduates. SA A NF D SD
39. I feel vocational education encourages its students to become leaders in their occupation and community. SA A NF D SD
40. I feel vocational education provides relevance to general education. SA A NF D SD
41. I feel vocational education programs present an undue safety risk to students. SA A NF D SD

42. I feel vocational education is the logical alternative for a student who is doing poorly in an academic program. SA A NF D SD
43. I feel vocational education quality suffers because many of its teachers are not university graduates. SA A NF D SD
44. I feel vocational education course offerings can be reduced without affecting the quality of the total school program. SA A NF D SD
45. I feel vocational education needs to encourage public awareness of its programs. SA A NF D SD
46. I feel vocational education discourages students from aspiring toward higher education. SA A NF D SD
47. I feel vocational education should be postponed until after high school graduation. SA A NF D SD
48. I feel vocational education does not really benefit most academic students. SA A NF D SD
49. I feel vocational education is easier to teach than most other subject areas. SA A NF D SD
50. I feel vocational education should not require its students to participate in daily and end-of-year clean-up activities as part of their educational programs. SA A NF D SD

DEMOGRAPHIC DATA: Please complete the following demographic questions related to your professional background. These data will be incorporated in the validation of the instrument.

1. Indicate your highest university degree status.
 - A. ☐ Bachelor's or equivalent; B. ☐ Master's or equivalent;
 - C. ☐ Ph.D./Ed.D.
2. Have you ever been a classroom teacher?
 - A. ☐ YES; B. ☐ NO
3. Select the area that best describes the subject(s) you taught.
 - A. ☐ English/History/Math/Science
 - B. ☐ Industrial/Vocational/Business/Home Econ.
 - C. ☐ Aesthetic Education
 - D. ☐ Other (please specify) _____

4. How many years were you a classroom teacher?
- A. 1 to 10 years
 - B. 11 to 15 years
 - C. 16 to 20 years
 - D. 21 or more years
5. Are you now or have you ever been a secondary administrator?
- A. YES; B. NO
6. If you answered "YES" to Question 5, does this indicate administrative experiences in vocational education?
- A. YES; B. NO
7. If applicable, how many years of experience have you had in vocational education?
- A. 1 to 5 years
 - B. 6 to 10 years
 - C. 11 to 15 years
 - D. 16 or more years

APPENDIX G

FOLLOWUP LETTER TO ADMINISTRATORS

Dear Colleague:

Approximately three weeks ago, I mailed to you an attitude questionnaire which is part of my doctoral research. Many participants have returned the questionnaire, but not enough to apply statistical analysis to the collected data. I am again appealing to you to participate in this project.

I have enclosed a copy of the original cover letter, another questionnaire, and a stamped, self-addressed envelope. If you choose not to participate, please return the blank questionnaire.

I thank you again and hope to hear from you soon.

Very sincerely yours,

James Allan Burns

Enclosures

APPENDIX H

ATTITUDES OF SECONDARY SCHOOL ADMINISTRATORS
TOWARD VOCATIONAL EDUCATION

by James A. Burns
Copyright, 1985

DIRECTIONS: Please circle the response which corresponds most closely to your feelings about each item on the face and reverse sides of this page. If your feelings are in strong agreement with a given statement, circle SA = Strongly Agree. If your feelings are only in agreement, circle A = Agree. If you have no feelings either positive or negative, circle NF = No Feelings. If your feelings are in disagreement, circle D = Disagree. Or, if your feelings are in strong disagreement with a statement, circle SD = Strongly Disagree.

Do not spend too much time on any particular item. There are no correct or incorrect answers. If your feelings fall between two choices, select the closer one. Please answer each and every item.

START HERE:

- | | |
|--|--------------|
| 1. I feel vocational education can successfully address the occupational training needs of handicapped students. | SA A NF D SD |
| 2. I feel vocational education receives a disproportionately large share of the total educational budget. | SA A NF D SD |
| 3. I feel vocational education has little to offer most female students. | SA A NF D SD |
| 4. I feel vocational education values the services provided by advisory groups. | SA A NF D SD |
| 5. I feel vocational education should receive increased financial assistance from federal, state, and local governments. | SA A NF D SD |
| 6. I feel vocational education courses should receive special consideration with regard to achieving and maintaining small teacher-pupil ratios. | SA A NF D SD |
| 7. I feel vocational education offerings should be reduced when there is a decline in educational funds. | SA A NF D SD |
| 8. I feel vocational cooperative work experience programs provide a valuable educational experience. | SA A NF D SD |

- | | |
|--|--------------|
| 9. I feel vocational education teachers do not make outstanding educational administrators. | SA A NF D SD |
| 10. I feel vocational education funds should be dispensed by a vocational administrator. | SA A NF D SD |
| 11. I feel vocational education is not really intended for female students. | SA A NF D SD |
| 12. I feel vocational education stimulates positive work attitudes. | SA A NF D SD |
| 13. I feel vocational education has a positive impact on local economic growth. | SA A NF D SD |
| 14. I feel vocational education achievements are of little interest to the community. | SA A NF D SD |
| 15. I feel vocational education should be phased out of the curriculum at the secondary level. | SA A NF D SD |
| 16. I feel vocational education should eliminate cooperative work experience programs as part of its curricular offerings. | SA A NF D SD |
| 17. I feel vocational education encourages its students to become leaders in their occupation and community. | SA A NF D SD |
| 18. I feel vocational education provides relevance to general education. | SA A NF D SD |
| 19. I feel vocational education quality suffers because many of its teachers are not university graduates. | SA A NF D SD |
| 20. I feel vocational education course offerings can be reduced without affecting the quality of the total school program. | SA A NF D SD |
| 21. I feel vocational education needs to encourage public awareness of its programs. | SA A NF D SD |
| 22. I feel vocational education discourages students from aspiring toward higher education. | SA A NF D SD |
| 23. I feel vocational education should be postponed until after high school graduation. | SA A NF D SD |
| 24. I feel vocational education does not really benefit most academic students. | SA A NF D SD |

DEMOGRAPHIC DATA: Please complete the following demographic questions related to your professional background. These data will be incorporated in the validation of the instrument.

1. Select the area that best describes the subject(s) you taught.

- A. ☐ English/History/Math/Science
- B. ☐ Industrial/Vocational/Business/Home Econ./Agriculture
- C. ☐ Aesthetic Education
- D. ☐ Other (please specify) _____

2. Are you now or have you ever been a secondary administrator?

- A. ☐ YES; B. ☐ NO

3. If you answered "YES" to Question 2, does this indicate administrative experiences in vocational education?

- A. ☐ YES; B. ☐ NO

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