AN ABSTRACT OF THE THESIS OF

Sandra P. Turnbow for the degree of Doctor of Philosophy in Vocational Education presented on June 29, 1981

Title: The Effectiveness of a Guidance-Based Career Exploratory Program Related to Skilled Trades Occupations for Internal-External Locus of Control Middle School Females

Abstract approved: Redacted for privacy E. Wayne Courtney

The purpose of this study was to investigate the effectiveness of a guidance-based career exploratory program related to skilled trades and technical occupations for internal-external locus of control middle school females in Murray, Kentucky. The problem was to determine the change in career interests resulting from the interaction between a guidance-based exploratory program and the personality trait, locus of control.

The guidance-based career exploratory program was composed of ten one-hour sessions utilizing audio-visual
media related to women in the skilled trades and technical occupations, role-modeling, experiential activities at a vocational school and guidance-based group discussions. The students' locus of control orientation was determined by the Nowicki-Strickland Locus of Control Scale for Children. The change in interests was measured by the scores on the Fine Arts-Mechanical Index, the Basic Interest Area scales (Mechanical/Fixing, Carpentry and Manual/Skilled Trades) and three Occupational scales (Auto Mechanics, Machinist and Truck Driver) of the Career Assessment Inventory.

The study was organized as a pretest/posttest control group design and used the analysis of covariance to statistically analyze the data for the randomly selected samples. It was found that scores on the Fine Arts-Mechanical Index did not change significantly. However, on one specific Basic Interest Area scale, the experimental group showed a significant interest shift toward carpentry. It was concluded that a career exploratory program related to skilled trades and technical occupations did not effect a change in adolescent interests; locus of control level was not associated with a change in interests; and, an interaction did not occur between the treatment and locus of control levels to effect a change in interests.
THE EFFECTIVENESS OF
A GUIDANCE-BASED CAREER EXPLORATORY PROGRAM
RELATED TO SKILLED TRADES OCCUPATIONS
FOR INTERNAL-EXTERNAL LOCUS OF
CONTROL MIDDLE SCHOOL FEMALES

by

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A THESIS
submitted to
Oregon State University

in partial fulfillment of
the requirements for the
degree of
Doctor of Philosophy
Completed June 29, 1981
Commencement June 1982
APPROVED:

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Date thesis is presented ____________________________
June 29, 1981

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ACKNOWLEDGEMENT

This thesis symbolizes an individual commitment to personal and professional growth and change. However, it is the result of a collective commitment of many individuals. Those people I wish to acknowledge.

Thank you, members of my committee, Wayne Courtney, Sylvia Lee, Charles Warnath, Tom Grigsby, Sally Hacker and Gordon Anderson. Each of you contributed to this paper and my professional growth in unique and special ways.

Thank you, Fred Schultz, for seeing potential in me long before I recognized it in myself. Thank you, Carl Lamar, for kindly telling me to get to work and finish the task at hand.

Thank you, my special friends, Mary Jane Littleton and Linda Lewis, for support, both professional and personal, that transcends the parameters of ordinary friendship.

Thank you, my parents, Purdom and Edna Parks, for unlimited love and support and for instilling in me an attitude of perseverance.

Thank you, Charles, with whom growing together did not mean staying together, for support and caring far more than I've been willing to acknowledge.

And last, but not least, I thank Ben, whose birth gave me my first sense of being and, Tom, who has held the lamp to light the way through this most recent quest for a greater potential of being.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Statement of the Problem</td>
<td>2</td>
</tr>
<tr>
<td>Objectives</td>
<td>2</td>
</tr>
<tr>
<td>Need for the Study</td>
<td>3</td>
</tr>
<tr>
<td>Definition of Terms</td>
<td>7</td>
</tr>
<tr>
<td>II. Rationale</td>
<td>10</td>
</tr>
<tr>
<td>Developmental Tasks and Stages in Career Development</td>
<td>11</td>
</tr>
<tr>
<td>Role of Interests in Career Development</td>
<td>15</td>
</tr>
<tr>
<td>Locus of Control</td>
<td>17</td>
</tr>
<tr>
<td>Women in the Skilled Trades</td>
<td>22</td>
</tr>
<tr>
<td>Prevocational Orientation Programs</td>
<td>32</td>
</tr>
<tr>
<td>III. Research Method and Design</td>
<td>37</td>
</tr>
<tr>
<td>The Dependent Variable</td>
<td>37</td>
</tr>
<tr>
<td>The Instruments</td>
<td>37</td>
</tr>
<tr>
<td>The Career Assessment Inventory (CAI)</td>
<td>38</td>
</tr>
<tr>
<td>The Nowicki-Strickland Locus of Control Scale for Children</td>
<td>42</td>
</tr>
<tr>
<td>The Treatment</td>
<td>43</td>
</tr>
<tr>
<td>The Design</td>
<td>45</td>
</tr>
<tr>
<td>The Population and Sample</td>
<td>47</td>
</tr>
<tr>
<td>IV. Analysis of the Data</td>
<td>49</td>
</tr>
<tr>
<td>Findings Relative to the Hypotheses Under Investigation</td>
<td>50</td>
</tr>
<tr>
<td>V. Conclusions and Implications</td>
<td>53</td>
</tr>
<tr>
<td>Restatement of the Problem</td>
<td>53</td>
</tr>
<tr>
<td>The Dependent Variable</td>
<td>54</td>
</tr>
<tr>
<td>Treatment and Locus of Control Levels</td>
<td>54</td>
</tr>
<tr>
<td>The Conclusions</td>
<td>55</td>
</tr>
<tr>
<td>The Implications</td>
<td>56</td>
</tr>
<tr>
<td>Suggestions for Further Study</td>
<td>57</td>
</tr>
<tr>
<td>Bibliography</td>
<td>59</td>
</tr>
<tr>
<td>Appendix A: The Instruments</td>
<td>64</td>
</tr>
<tr>
<td>Appendix B: The Treatment</td>
<td>72</td>
</tr>
<tr>
<td>Appendix C: Tables for the Analysis of Covariance</td>
<td>82</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48</td>
</tr>
<tr>
<td>Sampling Design Matrix</td>
<td>48</td>
</tr>
</tbody>
</table>
THE EFFECTIVENESS OF
A GUIDANCE-BASED CAREER EXPLORATORY PROGRAM
RELATED TO SKILLED TRADES OCCUPATIONS
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CONTROL MIDDLE SCHOOL FEMALES

I. INTRODUCTION

In a male dominated work force, jobs for women have been largely limited to service occupations such as clerks, food service workers and typists. Recent attempts have been made by feminist leaders, through government initiatives and by interested groups to increase job opportunities for females. A direction for these efforts is into fields that traditionally have been viewed as "male occupations." These occupations, termed nontraditional, pioneer or innovative included the professions (medicine, law, engineering), management, skilled trades, technical occupations and other blue-collar jobs.

The skilled trades make up almost half of the nation's work force and have a potential for increasing job opportunities for women who will not seek careers requiring four-year college degrees. The factors repeatedly cited for the failure of women's acceptance into and success in these occupations are lack of academic preparation, pretraining and necessary attitudes. Both intrinsic and extrinsic sociocultural factors have kept
females from developing an awareness of, much less an interest in, these types of occupations. Females should become aware of the wide range of occupations available in the work force during elementary school, explore clusters of occupations in middle/junior high grades and continue their academic and physical preparation during secondary school. Since many directional decisions are made in middle/junior high years which may determine academic tracking during high school, this is a critical point for broadening career aspirations.

Statement of the Problem

The purpose of this study was to investigate the effectiveness of a guidance-based career exploratory program related to skilled trades and technical occupations for internal-external locus of control middle school females. The problem was to determine the change in career interests resulting from the interaction between a guidance-based exploratory program and the personality trait, locus of control.

Objectives

The major objectives for the research encompassed the following:

1. To develop a program for orienting middle school female students to the skilled trades.

2. To implement the treatment exposing the experimental groups to the career exploratory instructional
materials utilized in the study.

3. To determine the status of career interests emerging from each of the samples being considered in the study and to statistically analyze data associated with comparisons of the sample groups.

4. To investigate the interaction between the treatment and locus of control level of the groups.

5. To project implications for instruction of career choices for middle school females.

Need for the Study

Before an infant is born, parents fantasize how the child will look, including its gender. More often than not, they will prefer that the child will be a male (Richardson, 1981). In establishing a psychological set as to the sex of the baby, parents often unconsciously limit or expand the number and kinds of possible activities in which their child will be expected to participate. When the baby is born, the stage is set for the parents and other family members to program the child with a set of expectations that will influence all future decisions made for and by herself/himself.

By the time the child enters school, society will be reinforcing the parental expectations of appropriate behavior for a girl or a boy. In play, girls are nurses and boys are doctors. Girls stay at home to cook and clean; boys go out to work. Readers for young children depict
males in 147 occupations while females are shown in 26 occupations (Women on Words and Images, 1975). Legislation, such as Title IX of the Education Amendments of 1972, has been implemented to change the inequality in schools by monitoring textbooks and curricula. Although some progress has been made, the old textbooks are still in the classroom; the old attitudes still persist with many of the teachers, counselors and administrators. The students continue to dichotomize the world of work into "women's work" and "men's work," (Tittle and Zytowski, 1978) in spite of the fact that more than one-half of their classmates' mothers must work out of economic necessity; others must work two "women's jobs" as the heads of households. The programmed values and attitudes surrounding and within an individual are all possibility-limiting factors that exert forces on a person's interests and decisions, especially vocational interests and decisions.

Tyler (1978) used the term possibility-processing structure to encompass all the concepts relating to ways in which a person controls the selection of perceptions, activities and learning situations. Central to her thinking is that, while there are many common possibility-processing structures among individuals, the likelihood is that not all of the same ones are used by every individual. She suggested that vocational interests compose a structure through which possibilities
may be screened. The present study was designed to examine the feasibility of broadening the possibility thinking of seventh- and eighth-grade girls with regard to vocational interests by providing exploratory experiences. It was organized to determine if a specific personality construct, locus of control, influenced their change in interests.

Interest usually connotes a positive attraction toward an object or activity (Tyler, 1978). Strong (1943) defined vocational interest, not as a single choice but as "the sum total of many interests that bear in any way upon an occupational career" (p. 21). Furthermore, the directions a person's life takes often depend mainly upon efforts to avoid certain situations and failure to consider many feasible alternatives that he or she did not even see (Tyler, 1978).

While heredity may play a part in the development of interests, experience during the growing years is certainly of major significance (Tyler, 1978). Precursors of interest patterns measured in adults, which begin taking shape in the early teens, are seen in young children. Crites (1969) made the distinction between expressed interests and inventoried interests; the first fluctuate considerably, whereas the latter remain more stable with increasing age.

It is generally agreed that interest patterns remain constant once individuals grow into adulthood (Crites,
1969; Tyler, 1974). Tyler (1974) stated that in the majority of cases adolescent interest patterns do not change to a large degree. However, Tyler and Crites agree that if changes do occur, most will occur during adolescence and, in some individuals, to a striking degree.

Based on the research, adolescence is a critical time in the developmental period to introduce experiential-based intervention programs designed to help individuals differentiate and choose occupational interests (Dunkleberger and Tyler, 1961). Such programs not only serve the purpose of expanding possibility-processing structures such as vocational interests, but also serve to implement the "exclusion process" that Tyler described as a rejection of certain vocational fields. This clearly sets the limits of future possibilities (Crites, 1969). It is as important to be able to identify what one does not want to do, as well as to know what one wants to do.

The personality construct, locus of control, is a critical variable in considering the feasibility of influencing a change or expansion of interests in individuals. Studies have shown that school achievement is related to internal attitudes and that lower-class persons and blacks are more external than middle-class persons and whites (Tyler, 1974). Furthermore, girls who accept traditional sex roles employ a strategy of doing what
others expect of them (Tyler, 1978), thereby showing an external orientation for reaffirmation of appropriate sex-role behavior. Tyler (1974) suggested that this situation may gradually change as women prepare to play a more active role in careers and public service. The present research was designed to seek methods for circumventing the external orientation of females who do not expect to earn a four-year college degree, who are from predominantly blue-collar families and who are often black. Efforts should be made to have them consider other occupational opportunities such as the skilled trades.

Tyler (1974) summed up the need for career exploratory programs in the following statement:

Adolescence is a period of exploration and re-evaluation, and the boy or girl, who uses it to try out various possibilities, activities and lifestyles may be better adjusted and better satisfied after he attains his mature identity than the one who clings to familiar patterns. (p. 156)

**Definition of Terms**

The following terms or phrases are defined as they relate to the present study; other terms or phrases are self-explanatory.

1. **External Locus of Control** - the belief by an individual that consequences may follow certain behaviors but is not contingent upon the behavior and is the result of luck, chance,
fate or under the control of powerful others (Rotter, 1966; Phares, 1976; Lefcourt, 1976).

2. **Guidance-Based Career Exploratory Programs** - an information-intensive, experiential-based career exploratory program utilizing self-evaluation techniques and group interaction.

3. **Interests** - the focus of effortless, active attention which becomes progressively differentiated (Hoppock, 1976); a motivational force that usually connotes a liking for an object or activity but also is influenced by a disliking of objects or activities (Tyler, 1974).

4. **Internal Locus of Control** - the belief by an individual that his or her behavior has a causal relationship with certain consequences (Rotter, 1966; Phares, 1976; Lefcourt, 1976).

5. **Moderate Occupations** - occupations with 30-50 percent females employed (Burlin, 1976).

6. **Nontraditional Occupations** - occupations with fewer than 30 percent females employed; also called innovative and pioneer (Burlin, 1976).

7. **Possibility-Processing Structure** - a conceptual framework within an individual with which he/she controls the selection of perceptions, activities and learning situations (Tyler, 1978).
8. **Traditional Occupations** - occupations with more than 50 percent females employed (Burlin, 1976).

10. **Vocational Interests** - the sum total of many interests that bear in any respect upon an occupational career (Strong, 1943).
II. RATIONALE

During the last decade there has been an increasing number of women entering the work force. Herman (1979), Director of the Women's Bureau of the U. S. Department of Labor, stated that by June 1978 more than 50 percent of all women 16 years and over were working. One result of the rise in women's employment was the emergence of an interest in career development in females. While the bulk of early research either ignored or gave cursory treatment to female career development (Osipow, 1973), many recent studies have been conducted to determine particular patterns unique to women. These studies have taken into account such variables as sex role expectations, child bearing and family responsibilities, education, socioeconomic status and motivations for working (Vetter and Stockburger, 1974). The following review of literature will relate to the developmental tasks and stages associated with career development in early adolescent females; the role of interests in career development; the personality construct, locus of control; women employed in skilled trade jobs; and prevocational programs designed to recruit students into nontraditional vocational programs and careers.
Developmental Tasks and Stages in Career Development

Havighurst (1972) suggested that selecting and preparing for an occupation is one of the most complex and worrisome tasks of middle-class adolescents in America. He went further to state that occupational choice and preparation is a means by which adolescents reach what Erikson calls "achievement of identity." As more women enter the work force, the pressure on adolescent females to make occupational choices increases. Growing numbers of girls find the traditional feminine sex role unattractive and want as much freedom of choice in regard to career and marriage as their male counterparts (Havighurst, 1972). The following career development research provided a basis for the present study relative to vocational interests and choices of females.

An early career development theory, developed by Ginzberg, Ginsburg, Axelrad and Herma (1951), included three periods of development--fantasy, tentative and realistic. The second period, tentative, realized between 11-18 years of age, is further subdivided into four substages--interest stage (11-12 years), capacity stage (13-14), value stage (15-16) and transition stage (17-18). During the transitional period between the first two periods, the individual begins to consider herself/himself as an entity which is both stable and changing. The
capacity stage, which includes the age under study, is characterized by the introduction of realistic elements, such as ability, into vocational considerations. In the Ginzberg schema the recognition of interests would have been realized by age 11 or 12.

The primary criticism of this work relative to the present study is that the population was composed of a group of upper middle class, emotionally stable, college-bound white males from homes with two living parents. In an effort to overcome the male bias, another study was conducted using a sample of ten Barnard College females. Using retrospective materials, the findings paralleled the male study, especially the tentative period, interest and capacity stages (Ginzberg et al., 1951).

Osipow (1973) cited a study by Davis, Hagen and Strouf using the Ginzberg framework in which it was found that sixth-grade girls were more likely to express a greater number of choices representative of the tentative period than boys. Also intelligence and stage of vocational development was positively correlated. The Ginzberg study provided a tentative framework with which to further develop theories of vocational development and the Davis et al. work provided evidence that early adolescent females exhibited readiness to receive and incorporate vocational information into their thinking.
A large volume of research based on developmental stages and expression of self-concept has been conducted by Super and his associates. The research has provided a basis and/or stimulus for further research as well as a basis for career education concepts. His work stemmed from the developmental stages outline by Charlotte Buehler which are growth (0-14 years of age), exploratory (15-24), establishment (25-44), maintenance (45-64) and decline (65 on) (Super, 1964). Super broke down the exploratory stage into three substages, which he named tentative, transition and trial (Super, 1972). The tentative stage is most closely associated with early adolescence. During this stage, starting in late childhood, the individual tentatively questions the matter of vocational concerns. In early adolescence, the stirrings become stronger as the recognition of the importance of decisions grow. While Super's work drew exclusively from male populations, it has carry-over to females in his view of career development as a dynamic process.

Osipow (1973) pointed out another significant factor in the career development of individuals. As young children develop, it is typical to identify with a like-sexed parent or another significant adult. However, Parnell (1978) found evidence that often the daughter of a mother in a nontraditional role will seek a traditional role for herself or the daughter of a
traditional mother will seek a nontraditional role for herself. This identification or lack of identification can set off a chain of events having vocational implications that might not have occurred otherwise (Osipow, 1973). Havighurst (1972) listed agents principally involved in the task of choosing and preparing for an occupation as self, family, school and economy.

Another career development theory relevant to this study was conceptualized by Holland, who categorized occupations according to six different environments: 1) realistic, 2) investigative, 3) social, 4) conventional, 5) enterprising and 6) artistic. He felt that everybody has a developmental hierarchy which impels him/her toward one of these environments (Holland, 1972). Furthermore, an individual expresses his/her personality, which is a function of genetic and environmental factors within one of the six environments. The major implication of this theory is its basis for several career interests inventories, including the Career Assessment Inventory utilized in this study.

The above career development theories have implications for this study in the following ways:

1. One of the most critical stages of career development is during adolescence, thereby, providing an optimum time for counselor intervention (Havighurst, 1972;

2. Females tend to reach vocational maturity earlier than males (Osipow, 1973).

3. Adolescence is a critical time for females to examine influences and values that inhibit or encourage certain career decisions (Havighurst, 1972; Parnell, 1978).

4. Females need to examine critically their changing roles as homemaker and income-earner in order to make choices that will provide them with optimum earnings for time and effort spent on the job. This leads to an examination of the relationship between self-concept and job possibilities outside the realm of traditional female occupations (Havighurst, 1972; Vetter and Stockburger, 1974).

Role of Interests in Career Development

The second body of literature reviewed related to the role of interests in career development. Hoppock (1976) quoted Roe's definition of interests as the focus of effortless active attention, which becomes progressively differentiated. The key to the development of interests arises out of needs which become unconscious motivators depending upon the degree by which they are satisfied. Strong (1943) equated attitudes and interests as "felt," stabilized dispositions resulting from experi-
ence and determining resulting behavior. Interests are learned as a result of reactions to specific things and can be modified by education.

Ginzberg et al. (1951) found in the Barnard study that girls reported early choices (around 11 years) that were almost entirely based on their interests. Tyler (1964) found that distinctive interests in females began to develop prior to age 14. This was confirmed by Astin's (1968) Project Talent data (girls who changed their fields of choice are likely to have shown low interest scores in their original fields).

Omvig and Thomas (1974) studied the relationship between expressed and tested vocational interests of disadvantaged males and females and nondisadvantaged males and females, all ninth graders. Differences were found in 11 areas in disadvantaged females while in only two areas of advantaged females. Some differences were found between high and low ability students. It could be concluded that disadvantaged females are more likely to say they are interested in what others expected of them rather than what they feel.

Osipow (1973) summed up the role of interests in career development in the following way:

Interests play an intimate role in career development theory, but the particular role is not typically stated in an explicit fashion in the theories of career development. Some theorists, like the Ginzberg group, assign
interests a significant role at a particular age period. Others, like Super and Roe, tie interests more directly to occupational behavior. Super's theory views interests as an aspect of the self-concept, whereas in Roe's theory interests derive from psychic energy and lead to one's fundamental orientation toward or away from people. Interests are seen as growing out of individual need hierarchies by the needs theorists; to the trait-factor theorists and Holland, interests are another aspect of the person-occupation questions, something to be assessed but not necessarily analyzed. The social systems and values approaches are likely to view interests as reflections of the forces of society and family. (p. 230-231)

**Locus of Control**

The third body of literature related to the personality construct conceptualized as internal-external locus of control. The concept deals both with situational parameters and individual differences (Rotter, 1975). This concept grew out of the social-learning theory which has four classes of variables: behaviors, expectancies, reinforcements and psychological situations (Rotter, 1966; Phares, 1976). Its basis is the belief by an individual that his or her behavior has a causal relationship with certain consequences (internal locus of control) versus the belief that consequences may follow certain behaviors but is not contingent upon the behavior and is the result of luck, chance, fate or under the control of powerful others (external locus of control) (Rotter, 1966; Phares, 1976; Lefcourt, 1976).
A review of the literature revealed few studies related directly to the influence of locus of control on the career development of middle school females. However, a number of studies that were indirectly related investigated the relationship of locus of control to sex differences, socioeconomic status, intelligence and intellectual achievement responsibility.

Chandler and Dugovics (1977) reported a lack of consistent evidence to conclude that there are significant sex differences in locus of control orientation. However, Prawat, Jones and Hampton (1979) found girls to be significantly less external and more achievement oriented than boys. Other studies showed that there is usually a correlation reported between internality and a variety of achievement measures such as mathematics and reading for boys but not for girls (Crandall, Katkovsky and Crandall, 1965; Nowicki and Strickland, 1973). Crandall found that their internal-external locus of control measure predicted best to young girls' (grades three and four) standardized achievement test performance and to those of older boys (grade five). In grades six, eight, ten and twelve achievement test scores were only occasionally related to internal-external locus of control scores. Both the Prawat et al. and Crandall et al. results are consistent with findings of previous studies showing that girls
mature earlier than boys, physically, emotionally and intellectually.

Pressman (1978) found that locus of control accounted for more variance on reading scores in seventh- and eighth-graders than did socioeconomic status even when intelligence was a variable. Rotter (1966) reported on a study he conducted with Battle. With a sample of Negro and white sixth- and eighth-grade students, they found a significant social-class effect when race and intellectual level was controlled. Lower socioeconomic subjects tended to be more external.

As for change in locus of control orientation, it turned out that the preadolescent period was the time of the most marked change rather than the early adolescent period as predicted (Prawat et al., 1979). However, in reviewing a series of studies, Maccoby and Jacklin (1974) found that while sex differences in locus of control did not differ consistently through grade school and high school years, there was a trend in female college-age subjects to be more external.

The following studies were conducted to determine the relationship of internal-external locus of control to career aspirations and career maturity. Burlin (1976) reported on her study in which she found that internal adolescent females were more likely to aspire to innovative occupations (occupations with fewer than 30 percent
women) in both their ideal and real selections than were external females. Externals were more likely to select innovative or moderate occupations (occupations with 30-50 percent women) but switched to traditional occupations (occupations with more than 50 percent females) in their real selections. Overall, adolescent females who participated were more apt to aspire to an innovative occupation in their ideal choices of occupation than in their real choices of occupation. Burlin suggested that the desire to pursue a broader range of occupations is present in young women; however, personal and social forces appear to have limited their beliefs that in real life these occupations could actually be pursued.

In a study to investigate the career maturity, self-concept and locus of control among adolescent females whose occupational aspirations were classified as role innovator, role moderate or role traditional, a trend was found that those choosing innovative occupations had patterns which indicated a higher level of career maturity and a perception of themselves as above average in intelligence than those choosing occupations in other groups (Newman, 1977). The results were similar on the measure of locus of control, but only in the ideal occupational choice (versus "expected" and "realistic" categories).
Another study investigated relationships between career maturity and locus of control, between social desirability scores and sex, and among grade level, sex, social desirability scores, and locus of control scores as they related to career maturity scores in eighth graders. It was found that females as well as males with low social desirability scores and internal locus of control scores had significantly higher career maturity scores (Wilton, 1978). Wilton felt that the social desirability factor apparently played a mediating role on levels of career maturity for students with internal locus of control scores. He noted the relative lack of consistent findings in previous research concerning the relationship between career maturity and locus of control.

In selecting locus of control as a variable for study of its effect on the career development of adolescent females, it is necessary to note some of the problems and misconceptions described by Rotter (1975). In conceptualizing locus of control, it is necessary to take into account reinforcement as a separate variable; to realize that the more specific a situation, the less likely one can generalize expectancy for internal versus external control and to avoid imposing a "good guy-bad guy" dichotomous value orientation. Rotter (1975) further summarized by noting that "the I-E scale is subject, as are all personality measures, to the conditions of testing
and the known or suspected purposes or nature of the examinee" (p. 67); that there is a question of unidimensionality versus multidimensionality; and that in interpreting locus of control scores, there is no clear meaning of externality.

**Women in the Skilled Trades**

The fourth body of literature relevant to this study related to the feasibility of females considering jobs that traditionally have been viewed as male occupations. In spite of the fact that more than one-half of all females between the ages of 18 and 64 are working ("A Woman's Guide," 1978), it appears that females are still actively encouraged to plan for a life of dependency ("Working Women," 1979). Women made up 79 percent of all clerical workers in 1977 but only five percent of all craft workers; 62 percent of service workers but only 43 percent of professional and technical workers; and 62 percent of retail sales workers but only 22 percent of non-farm managers and administrators ("Twenty Facts," 1978). The fields where there is a high concentration of women tend to be low paying and provide for limited opportunity for advancement ("The Earning Gap," 1976; "A Woman's Guide," 1978).

Historically, women have been working in skilled crafts in America since early Colonial times ("A Woman's Guide," 1978). Not only were women employed in what are
now considered traditional female occupations such as sewing, spinning and weaving, but were trained by husbands or brothers in crafts such as printing, saw and grist milling and furniture building. Participation by women in skilled craftwork took place primarily before the Industrial Revolution. Occupations became closely linked to wages and sex roles after paid work became separated from the home environment and large numbers of women officially entered the labor force.

Again during both World Wars, women worked at almost every kind of job available to keep industry going while the nation's "manpower" was overseas ("A Woman's Guide," 1978). During World War II, 6.7 million women entered the labor force, with about 2.9 million working in the crafts and as operatives and nonfarm laborers. In 1977, of the 12 million skilled blue-collar workers, only slightly over a half million were women. Recently, affirmative action standards and promotion of equality of opportunity has made it a requirement for federally funded firms to attempt to induct more women into the skilled trades.

One avenue into the skilled trades is through the apprenticeship system. To qualify for an opening, an applicant must follow two steps: 1) satisfy all education, age, aptitude and health requirements (and any specific requirements) and 2) pass an oral interview ("A Woman's Guide," 1978). Generally, apprenticeship program sponsors
look for people who have the mechanical and mental abilities to master the techniques and technology of a trade. This is determined by aptitude tests, school diplomas, age requirements (16 to 18 year minimum), occupationally essential physical requirements, interviews, school grades and previous work experience. Requirements may vary from trade to trade, program to program and plan to plan. For example, the electricians and tool and die makers require that applicants have passed certain high school courses in mathematics and science. Other programs have set the minimum educational level as low as sixth grade. Regardless of the level of education required, apprentices need a firm ground in reading, writing and mathematics—all basic to the skilled trades.

Reasons often given for the failure of women to enter skilled trades and technical occupations, including apprenticeship programs, is the lack of intellectual and physical ability, lack of experience with tools, lack of mathematical background, lack of career dedication and lack of desire to work in environments that are often noisy and dirty. Studies have been completed to determine possible inherent sex differences. Some of these might limit a female's success in skilled trade occupations. Maccoby (1966) and others have reached the following conclusions
relative to sex differences in a variety of areas. They are as follows:

1. **General intelligence.** In early childhood and the primary grades, girls score better on intelligence tests but boys catch up and overtake in later childhood and adolescence (Maccoby, 1966; Kelly, Schofield, Saraga, Omerod and Harding, 1975).

2. **Verbal ability.** Girls exceed boys in most aspects of verbal performance, including tests of grammar, spelling and work fluency (Maccoby, 1966). However, girls are not better at vocabulary, verbal comprehension or verbal reasoning (Kelly et al., 1975).

3. **Number ability.** During grade school there is no sex difference in arithmetical computation; however, prior to high school entrance, boys begin to forge ahead on tests of arithmetical reasoning (Maccoby, 1966).

4. **Spatial and analytical ability.** Boys and girls do not differ in spatial tasks until early school years when boys do consistently better (Maccoby, 1966). Spatial tests generally involve the ability to manipulate mentally two-dimensional or three-dimensional figures (Maccoby, 1966). Analytical ability has to do with the ability to respond to one aspect of a stimulus situation without being greatly influenced by the background or field in which it is presented. Consistently, boys are able to score higher than girls on tests of "field independence" requiring analytical ability (Maccoby, 1966).
5. **Physical factors and motor functions.** From infancy on, boys are stronger and better in speed and coordination of gross bodily movements (Kelly et al., 1975). In addition, certain sex hormones trigger the development of a larger proportion of muscle to body weight than in females. However, girls perform better on tests of manual dexterity.

To summarize, girls score lower than boys on standardized tests measuring general intelligence, abstract verbal and mathematical reasoning and spatial and analytical skills. Ability in each of these areas is necessary for success in many skilled occupations. The final step in the initial screening process for apprenticeship programs is the oral interview which requires skill from many of these categories.

In a paper discussing reasons why young women do not participate in science education, Saraga (Kelly et al., 1975) pointed out the fallacy of relying on measures of central tendency in determining how well females do in comparison to males on tests pertaining to the areas mentioned and specifically mathematical reasoning. While boys may do better than girls on the average, there is a large area of overlap in which many girls reach or exceed the median score for boys. The implications here are that there are girls in any group who have mathematical and scientific ability and should be encouraged to develop
these abilities for future use in whatever occupations they choose.

In addition to proper intellectual functioning, lack of physical requirements for skilled trade occupations is often cited as reason to keep women out of these jobs. As stated earlier, the average male is larger and physically stronger than the average female. Because of past experience, males often know how to make better use of body mechanics than do females. However, due to increased mechanization, the need for great physical strength has been minimized in most of these occupations.

Another significant gap in women's preparation for skilled crafts is unfamiliarity with tools, work procedures, terminology and job duties associated with skilled trade jobs ("A Woman's Guide," 1978). While this lack of experience appears to be the easiest to deal with, it provides the clue for the most complicated aspect of preparing young women to participate in apprenticeship programs (or other nontraditional jobs)—that is, the psychological, sociological and cultural determinants that have kept young women from acquiring these skills in the first place.

Saraga (Kelly et al., 1975) dealt with this issue briefly in her paper "Boys and Girls: Are There Any Differences in Ability?". She said that recent psycholo-
gical work relates to inherent differences in ability between boys and girls on the one hand and to the social factors contributing to those differences on the other. This has "developed into a rather naive and sterile 'nature versus nurture' argument" (p. 42). Saraga cited a study which proposed that differences result from a biological basis as a remote but necessary consequence of female and male reproductive roles. Their approach neglected or underemphasized social factors contributing to development. The social factor theorists limited their discussions to external factors, such as differential treatment of the sexes by parents, or inequalities of opportunity. Saraga said it is also important to take account of the individual's "internalization" of social expectations as part of her or his role identity. Deviation from the stereotype role can cause the individual great conflict. She pointed out that humans are biological organisms whose development all takes place in a social environment.

Maccoby (1966) suggested the following direct effects of sex-typed interests:

Perhaps the explanation for the difference we have noted is very simple: members of each sex are encouraged in, and become interested in and proficient at, the kinds of tasks that are most relevant to the roles they fill currently or are expected to fill in the future. According to this
view, boys in high school forge ahead in math because they and their parents and teachers know they may become engineers or scientists; on the other hand, girls know that they are unlikely to need math in the occupations they will take up when they leave school. And adult women, most of whom become housewives or work at jobs that do not make many intellectual demands, decline in measures of "total intelligence" because such tests call upon skills that are not being used by adult women as extensively as they are used by adult men. (p. 40)

In order for young women to gain the necessary educational experience, they often have to assert themselves against parental and school influences that give them messages that girls do not participate in activities or courses in which tools and mathematical concepts are used. Schools are bound by Title IX of the Educational Amendment Acts of 1972, which prohibits sex discrimination in education. However, young women have to overcome counselor and teacher bias that inhibit entrance into courses such as auto mechanics and electronics. Pietrofesa and Scholossberg (1970) concluded that counselors display less bias against female counselees entering a female occupation than toward females entering a so-called "masculine occupation" and that female counselors display as much bias against females as their male counselor counterparts. Furthermore, content analysis of bias statements indicate that major stress is placed upon the masculinity of the occupation.
In a Kentucky study on sex-fair vocational education, it was found that only four percent females were enrolled in trades and industry courses (Richardson, Davis and Ehresman, 1979). The three major barriers found through a written survey were as follows:

1. Teachers, nontraditional students and traditional students believed comparisons were being made by vocational teachers between performance skills of male and female students.

2. Nontraditional and traditional students believed nontraditional vocational enrollees were uncomfortable in class.

3. Parents of traditional students felt some vocational courses were more appropriate for one sex than the other. (p. 60)

Further conclusions were reached by a personal interview phrase. While identified barriers pertained to the comparison of performance skills of male and female students and lack of comfort in classes by nontraditional vocational enrollees, it was found that over 75 percent of the nontraditional and traditional student interviewees indicated their vocational teachers treated males and females equally. It was revealed by a large majority of nontraditional enrollees that counselors provided no encouragement toward their enrollment in a nontraditional vocational class. Both traditional and nontraditional interviewees stated that the following persons were the most important or influential upon their choices of vocational course: 1) the student, herself/himself; 2) their
mothers; 3) a vocational teacher; and 4) their fathers (Richardson et al., 1979). Indications were that females desiring courses that would help prepare them for nontraditional occupations must overcome both real and imaginary barriers in order to enter, much less succeed, in those courses.

Another argument leveled at females wanting to enter nontraditional career roles is lack of career dedication. In a study by Nagley (1971), it was found that of a group of women who were all involved in "out-of-home vocational activity," those in nontraditional careers seemed more career committed than those in traditional careers. They were also better able to integrate their career and home roles.

Women's interest in and availability for skilled trades jobs are often questioned. A common comment made by employers is that they would be willing to hire a woman if there was one available—women are not interested in these occupations. The U. S. Department of Labor ("A Woman's Guide," 1978) cited three examples of women moving into skilled craft work whenever the setting of goals and timetables for women required the employer to recruit and hire them. In the city of Seattle, a twelve percent goal for women in city-financed construction projects was met so easily that it was expected that the goal would be raised to 15 percent in 1978. The number of blue-collar women in Ingalls shipyard in Pascagoula,
Mississippi, increased from 89 in 1971 to 2,128 in 1977 after the setting of a 20 percent goal. In San Francisco, 4,000 women applied for placement through the Women in Apprenticeship Program; however, only 450 were placed in blue-collar construction jobs or apprenticeship training. These examples provide evidence of the interest and availability of women in these kinds of occupations.

The evidence and ideas presented provide a background to some of the reasons that young women have not been prepared to enter certain occupational groups. There appear to be inherent sex differences in certain areas of development. However, it has not been proven these differences exist to the extent that it would bar women from participating in the skilled trades.

**Prevocational Orientation Programs**

The final body of literature relevant to the present study pertained to prevocational orientation programs previously implemented. There is relatively little evidence in the literature of tested/applied strategies for assisting junior high students in making decisions with regard to nontraditional vocational programs and careers (Vetter, Sechler, Lowry and Canora, 1979). Vetter stated that recruitment strategies at the prevocational level should concentrate on developing a readiness in students to consider these careers. She further clarified the
meaning of recruitment in the following way:

Recruitment of students for nontraditional vocational education programs should not be inferred to mean using pressure tactics to gain numbers or to mean enticing students into decisions contrary to their interests, values and abilities. Rather, the emphasis behind recruitment is organized, concerned involvement in communicating to girls and boys/men and women a better understanding of themselves and existing nontraditional career options. (p. 63)

Verheydin-Hilliard (Vetter et al., 1979) suggested four general recruitment approaches based on three basic sex equity needs: to inform, to develop student programs and to provide inservice for teachers and counselors. She specified the four general recruitment approaches as follows:

1. Inform parents, students and community members of the reasons for students to consider new career alternatives.

2. Inform counselors at junior high schools and other schools that feed into vocational schools of nontraditional training options for students.

3. Present programs at feeder schools to help students to feel welcome in non-traditional programs and to understand their possible long-range advantages.

4. Hold workshops to help vocational education teachers learn how to encourage students with nontraditional career interests. (p. 63)

Vetter et al., (1979) cited three programs that have targeted the middle/junior high school population. They were the New Pioneers Project in North Carolina, Project EVE in Texas and Women in the Work Force in Ohio.
In the New Pioneers Project it was found that prevocational students were already studying 15 career clusters by utilizing hands-on experiences. The Project included additional information on statistics on working women and lifetime planning. No significant change was found in participation since students were already involved in cluster exploration.

The purpose of Project EVE (Equal Vocational Education) was to develop a high school recruitment model for Texas sophomore women. However, one component was tested with mixed classes at the seventh-, eighth- and ninth-grade levels. The program consisted of an 80-minute classroom presentation, including a slide-tape presentation, All About EVE, and a student handbook utilizing games, case studies, women's occupational information/labor force data and a recruitment brochure. It was found that all junior high presentations were very successful and that prevocational students seemed to enjoy the presentations more than high school women did (Vetter et al., 1979).

Verheydin-Hilliard (1978) described Project Open Door, the purpose of which was to design, test and disseminate a portable module free of sex stereotyping for vocational educators and others to use with junior high school students in prevocational exploration. Gains on attitudinal issues measured by pre-/posttesting were positive but not statistically significant.
In the 1972 Ohio study, Vetter and Sethney (Vetter et al., 1979) proposed that an effective, relatively short instructional unit might prove useful in addressing student needs in the areas of knowledge, attitudes and planning capabilities with respect to the world of work. The program was tested with 100 seventh-, eight- and ninth-grade girls. It compared the effectiveness of discreet recruitment content with prevocational women enrolled in home economics. Results showed a significant change in knowledge at all three levels; a significant change in attitude in seventh-grade girls toward acceptance of employment after marriage and more acceptance of challenge of employment; and almost no significant change away from traditional occupational options. Vetter's final conclusion with regard to the effectiveness of the program was that "perhaps one intervention cannot guarantee change" (p. 99).

In summary, prevocational recruitment should be viewed as an exploration process over time to insure students the time necessary to gain self and career awareness. However, Vetter states that these research projects testing strategies "clearly show that prevocational youth want to explore, in a sufficiently protected environment, a range of ideas and values" (p. 96). She goes on,

This exploration serves early adolescents almost as a buffer to help discern pros and cons of all that tradition, socialization and peer/familial
pressure, for good or ill, do indeed pose on them. (p. 96)

The ultimate purpose of the present project is to seek to assist early adolescent females in expanding their awareness of occupational fields that have traditionally been viewed as male domains. Then translate this awareness into the realm of interests so that they may consider these occupations as job possibilities. Finally, assess themselves as individuals in relationship to these possibilities.
III. RESEARCH METHOD AND DESIGN

The major problem of this study was to determine the change in career interests resulting from the interaction between a guidance-based career exploratory program and the personality construct, locus of control. The research methodology peculiar to resolving the issue of the presence of an interaction effect has its basis in the analysis of covariance. The pretest-posttest control group design for the study required that randomized sampling be conducted in order to produce inferential qualities from the results (Campbell and Stanley, 1963). The following sections speak to the details of the research procedure.

The Dependent Variable

The dependent variable for this study was the students' adjusted scores on the Career Assessment Inventory. The Fine Arts-Mechanical Index was utilized as the primary score for analysis. However, selected Basic Interest Area scales and selected Occupational scales were used to determine fine distinctions relative to specific occupations.

The Instruments

Two instruments were utilized in this study. The Career Assessment Inventory (see Appendix A) was used to
determine the subjects' interest orientation relative to preferences for creative and social service occupations versus preferences for mechanical activities and for skilled trades and technical occupations (Johansson and Johansson, 1978). The Norwicki-Strickland Locus of Control Scale for Children (Appendix A) was used to measure the subjects' internal-external locus of control orientation.

The Career Assessment Inventory (CAI)

A criterion measure was sought that would indicate student preferences for occupations that tend to be identified as typically feminine occupations versus typically masculine occupations. In addition, it needed to be limited to occupations that require less than a four-year college degree and to specifically include the skilled trades and technical occupations. The CAI met each of these criteria.

Description. The CAI is a 305-item interest inventory standardized at the sixth-grade reading level and intended for use by individuals eighth-grade and over. It was developed for those who seek immediate career entry or plan to attend a post-secondary institution such as community college or vocational-technical school. The CAI is organized around Holland's six occupational themes and is subdivided into basic interest area scales and occupational scales. It renders an overall score that indicates a
strong preference for creative and social service occupations, (a typically feminine orientation) on one end of the continuum versus a strong preference for mechanical activities, skilled trades and technical occupations (a typically masculine orientation) on the other end of the continuum (Fine-Arts-Mechanical Index) (Johansson and Johansson, 1978).

**Norming.** A Composite Reference Sample (750 males, 750 females) was used to norm the Fine Arts-Mechanical Index, the six (6) Theme scales and the twenty-two (22) Basic Interest Area scales (Johansson, 1976). Because of the disproportionate distribution of males and females in a vocational-technical sample (234 females, 632 males), the Composite Reference Sample was considered to be more representative of females and males in various occupations. In the norming process, the means and standard deviations were used to convert raw scores to standard scores. This procedure fixed the standard score mean for the composite sample at 50 and the standard deviation at 10 for each scale. Even though the average score for individuals in the Composite Reference Sample is 50 on each scale, there are some fairly large differences between sexes. For example, a score of 56 on the Realistic scale assumes more meaning and importance if the score is for a female rather than for a male (Johansson, 1976). Still, the available norms permitted that scores be considered as equidistant interval data.
Validity and Reliability. Content, construct and concurrent validities were investigated for the six (6) Theme scales and the Basic Interest Area scales. Concurrent and construct validities were developed for the Occupational scales. By employing statistical procedures and cross-validation samples, high content validity was found for the first two scales.

Construct validity for the Theme scales was found to be high and positive, the r values ranging in the .80's, when the CAI was correlated with similar scales on the Strong-Campbell Interest Inventory and the Vocational Preference Inventory where r values ranged from .60 to .76. Similar results occurred for the Basic Interest Area scales when correlated with like-named scales on the SCII (r values in the high .70's to low .80's) and the Minnesota Vocational Interest Inventory (r values ranging from .45 to mid-.80's on scales relevant to the present study). Construct validity for the Occupational scales as correlated to the SCII were generally moderately high (r values in the .60's and .70's) with a few isolated extremely low scores (Johansson and Johansson, 1978). Concurrent validation utilized students from vocational-technical programs and adult populations in a wide variety of careers. Based on the assumptions of Holland's model (Johansson and Johansson, 1978), mean scores for both groups indicated adequate concurrent validity on each of the three types of scales: Theme, Basic Interest Area and Occupational.
Three groups of individuals were used to determine the test-retest reliability of the various scales of the CAI. One group, a miscellaneous sample of employed adults (45 females, 32 males) was administered the CAI twice, one week apart. A second group, a miscellaneous sample of employed adults (37 females, 31 males) was given the CAI twice, two weeks apart. The CAI was administered two times to a third group, a sample of students attending a vocational-technical institute (16 females, 9 males), with the testing being extended over a thirty-day period of time. The test-retest correlations for the two adult female groups and the male-female combined vocational-technical sample on the Fine Arts-Mechanical Index were .88, .92 and .96, respectively. On both the Theme scales and the Basic Interest Area scales, all scores were in the low .90's. Likewise, on the 89 Occupational scales, the test-retest reliability coefficients for each of the three groups (one-week females, two-week females and combined male/female vocational-technical students) fell in the low .90's, the high .80's and the middle .80's, respectively. Generally, the test-retest reliability of all three subscales was relatively high and showed considerable stability over time (Johansson and Johansson, 1978). The existing validity and reliability indicators were considered to represent acceptable levels for using the CAI for the present study.

Administration and Scoring. The CAI can be admin-
istered in either a group or an individual situation. For younger students, it is helpful to read aloud the printed instructions. Generally, the CAI can be completed in approximately 30 minutes. Response alternatives for each of the 305 items is a five-point Likert scale ranging from "Like Very Much" to "Dislike Very Much."

**The Nowicki-Strickland Locus of Control Scale for Children**

The Nowicki-Strickland Locus of Control Scale for Children is a 40-item scale that describes reinforcement situations across interpersonal and motivational areas such as affiliation, achievement and dependency (Nowicki and Strickland, 1973). This instrument was chosen over other measures for children because it had a lower reading level (approximately fifth grade) and construct validity established as measured by relationships with achievement, intelligence, socioeconomic class and parental education. Due to the nature of the study with regard to occupational orientation, this range of factors needed to be considered rather than the relationship of locus of control to achievement measures only. Scores on this scale were used to ascertain locus of control levels for one of the independent variables.

Reliability coefficients of internal consistencies were estimated by the split-half method and corrected by the Spearman-Brown formula. For grades 6, 7, 8, \( r = .68 \). Nowicki and Strickland (1973) found these reliabilities
satisfactory because the test is additive, the items were not comparable and the split-half reliabilities tend to underestimate the true internal consistency of the scale. Test-retest reliabilities sampled six weeks apart were .66 for the seventh grade.

Construct validity was found to be significant when correlated to other measures of locus of control. For seventh grades, $r=.51$, $p<.01$, when correlated with the Intellectual Achievement Responsibility Scale and $r=.41$, $p < .05$, when correlated with the Bailer-Cromwell.

**The Treatment**

The treatment for the study was an information-intensive, guidance-based exploratory program composed of ten (10) sessions (See Appendix B). The design of this program was based upon the one developed by Vetter and Sethney (Vetter et al., 1979) in 1972 to address student needs in the areas of knowledge, attitudes and planning capabilities with respect to the world of work. The Vetter-Sethney model was an eight-ten hour instructional unit on women in the work force; it provided empirical data comparing the effectiveness of discreet recruitment content with prevocational women enrolled in home economics.

Other components of the present program were founded in a study by Burlin (1976) and suggestions by Verheydin-Hilliard (Vetter et al., 1979). Burlin suggested the importance of role modeling in encouraging women to enter male
intensive occupations. Verheydin-Hilliard suggested recruitment approaches which included providing information about reasons for students to consider new career alternatives and presentation of programs at feeder schools to help students feel welcome to nontraditional programs.

The present study was designed to determine if a change in interests would occur with increased information about a specific occupational group, exposure to role models and vocational programs and increased self-awareness. With these factors in mind, a guidance-based career exploratory program was developed using the following components:

1. Audio-visual media related to women in skilled trades and technical occupations.

2. A field trip to a vocational school including participatory activities.

3. Role-modeling by women employed in nontraditional occupations.

4. Group discussion pertaining to reasons women should consider nontraditional occupations and to student self-awareness relative to those occupations.

The program was field-tested with an eighth-grade class in a middle school setting. The results of the field testing produced an adequate operational procedure for use in the present study.
The Design

The design for the study utilized an aptitude-treatment interaction (ATI) model, the goal of which is to determine interactions between alternative treatments and personological variables (Bracht, 1970). In this case, the treatment was the guidance-based career exploratory program and the personological variable was locus of control. For purposes of the present research, an interaction is said to be present when a situation has one effect on one kind of person and a different effect on another (Cronbach and Snow, 1977). The goal of research on ATI is to locate significant disordinal interactions between alternative treatments and personological variables. Then, develop alternative instructional programs (Bracht, 1970).

In seeking answers to these issues, the study considered the retention or rejection of the following null hypotheses:

$H_1$ There is no significant difference in the change of interests in the experimental group as compared to the control group.

$H_2$ There is no significant difference in the change of interests for locus of control levels.

$H_3$ There is no significant interaction effect between the groups and locus of control levels.

The basic statistical tool utilized in this study
was the two-way analysis of covariance. Courtney and Sedgwick (1974) explained analysis of covariance as a statistic which combines analysis of variance and regression to handle situations where the researcher cannot completely control all of the variables in a study. It is a procedure for testing the significant differences between means of final experimental data by taking into account and adjusting for initial differences in the data.

The two-way arrangement for analysis of covariance (ANOCOVA) utilized the pretest score as the covariant. The mathematical model used for analyzing the data is detailed below (Neter, 1974):

\[
Y_{ijk} = \mu + \alpha_i + \beta_j + (\alpha\beta)_{ij} + \alpha(X_{ijk} - \bar{X}) + \epsilon_{ijk}
\]

where,

- \(\mu\) is an unknown constant
- \(\alpha_i\) is the differential effect associated with groups
- \(\beta_j\) is the differential effect associated with locus of control
- \((\alpha\beta)_{ij}\) is the differential effect associated with interaction
- \(\alpha(X_{ijk} - \bar{X})\) is the adjustment of the posttest measures, and
- \(\epsilon_{ijk}\) is the residual effect, which is independent and normally distributed with a mean of zero and a variance of \(\sigma^2\).
The Population and Sample

The population for this study consisted of seventh- and eighth-grade girls at Murray Middle School in Murray, Kentucky. The students represented a wide range of ability levels and socioeconomic backgrounds. Heavy emphasis is placed on college attendance; therefore, students had little exposure to blue-collar occupations in the curriculum.

All students were given the Nowicki-Strickland Locus of Control Scale for Children. The mean score of the population was consistent with the norming group. Since specific scores have not been designated as internal or external scores, the scores of all students were placed on a frequency table. The lower one third of the scores were arbitrarily designated as internal (03 to 10), the middle third were designated as internal-external (11 to 15) and the higher one-third were designated as external scores (16 to 24).

Due to scheduling constraints within the school, approximately one-half of the students were available for administration of the treatment. These students were identified as the experimental group; the other half were designated as the control group. Stratified random selection within these groups, according to locus of control orientation, was conducted using a Table of Random Numbers.
The sampling design matrix representing a two-way arrangement is shown in Table 1.

### Table 1
Sampling Design Matrix

<table>
<thead>
<tr>
<th>Locus of Control Levels</th>
<th>Groups</th>
<th></th>
<th></th>
<th>Σ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
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<td></td>
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<td>Internal</td>
<td>n = 15</td>
<td>n = 19</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Internal External</td>
<td>n = 18</td>
<td>n = 17</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>External</td>
<td>n = 19</td>
<td>n = 14</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Σ=</td>
<td>n = 52</td>
<td>n = 50</td>
<td>102</td>
<td></td>
</tr>
</tbody>
</table>

The sample size of at least 14 individuals per cell provided for a power level of .80 with an effect size of .55. These levels were considered to be adequate in terms of providing valid inferential information. Criteria associated with a power level of .80 assures the probability of committing a Type I (alpha) error not more than 20 percent of the time (Cohen, 1969).
IV. ANALYSIS OF THE DATA

The purpose of this research was to determine whether a change in student interests would occur relative to the interaction between a guidance-based career exploratory program related to skilled trades occupations and the personality trait, locus of control. A stratified sample was randomly drawn from groups of seventh- and eighth-grade female students enrolled at Murray Middle School. Student interests were measured by the Career Assessment Inventory administered as a pretest and posttest (six weeks apart). The students' locus of control orientation was determined by scores on the Nowicki-Strickland Locus of Control Scale for Children.

The primary dependent variable was the students' adjusted scores on the Fine Arts-Mechanical Index of the CAI. Selected Basic Interest Area scales and Occupational scales were used to ascertain changes that occurred in specific occupations or occupational areas. Based on the treatment subject matter content, the following scales were selected as subsidiary dependent measures: Basic Interest Area scales - Mechanical/Fixing, Carpentry and Manual/Skilled Trades; Occupational scales - Auto Mechanic, Machinist and Truck Driver.
The statistical tool utilized in the research was Analysis of Covariance (ANOCOVA). The .05 alpha level was used as the criterion for retaining or rejecting the null hypotheses. For purposes of decision-making, if the computed values were less than the tabular values, the null hypothesis was retained. Conversely, when the computed value was equal to or greater than the tabular value, the null hypotheses was rejected.

The hypotheses tested in the study were as follows:

- **H₁**: There is no significant difference in the change of interests in the experimental group as compared to the control group.
- **H₂**: There is no significant difference in the change of interests for locus of control levels.
- **H₃**: There is no significant interaction effect between the groups and locus of control levels.

The hypothesis testing was conducted on each of seven (7) dependent measures associated with the research.

**Findings Relative to the Hypotheses Under Investigation***

- **H₁** - There is no significant difference in the change of interests in the experimental group as compared to the control group.

  On the Fine Arts-Mechanical Index, which provided an overall measure of the students' interest orientation

*See Appendix C for ANOCOVA Tables.*
relative to typically feminine/masculine occupations, the mean score differences were not found to be significant when the treatment group was compared to the control group. The same result was found on the Mechanical/Fixing and Manual/Skilled Trades scores of the Basic Interest Area scales and on the Auto Mechanic, Machinist and Truck Driver scores of the Occupational scales. Thus, the null hypothesis was retained on each of these variables. However, the Carpentry score of the Basic Interest Area scale was found to be statistically significant at the .05 level. Therefore, the null hypothesis was rejected. The experimental group means were determined to be greater than that for the control group.

$H_2$ - There is no significant difference in the change of interest for locus of control levels.

Upon comparing the scores among the locus of control levels, no significant differences were found on either the Fine Arts-Mechanical Index or on any of the six (6) subscales. Therefore, the null hypothesis was retained on each of the seven scales.

$H_3$ - There is no significant interaction effect between the groups and locus of control levels.

For purposes of this study, $H_3$ was considered to be the principal hypothesis. It was determined that on the Fine Arts-Mechanical Index and for each of the six (6) subscales, there were no significant interactions between
the treatment and locus of control levels. Therefore, the null hypothesis was retained on all seven (7) measures.
V. CONCLUSIONS AND IMPLICATIONS

An increasing number of women enter the work force out of economic need. Efforts have been made to encourage females to seek occupations that were formerly considered male occupations. There are many internal and external factors that inhibit free entrance for women into these occupations. The present study examines the effect of an individual characteristic that could influence a person's decision to enter a nontraditional vocational education program and/or occupation.

Restatement of the Problem

The purpose of this study was to investigate the effectiveness of a guidance-based career exploratory program related to skilled trades and technical occupations for internal-external locus of control middle school females. The problem was to determine the change in career interests resulting from the interaction between a guidance-based exploratory program and the personality trait, locus of control.
The Dependent Variable

The primary dependent variable was the adjusted post-test score on the Fine Arts-Mechanical Index of the Career Assessment Inventory. Subsidiary dependent variables included six (6) subscale scores selected from the Basic Interest Area and Occupational sections of the CAI.

Treatment and Locus of Control Levels

The guidance-based career exploratory program developed as the treatment for this study employed the following components:

1. Audio-visual media related to women in skilled trades and technical occupations.

2. A field trip to a vocational school including participatory activities.

3. Role-modeling by women employed in nontraditional occupations.

4. Group discussion pertaining to reasons women should consider nontraditional occupations and to student self-awareness relative to those occupations.

The students' locus of control orientation was determined by utilizing the Nowicki-Strickland Locus of Control Scale for Children. The mean scores for the students in the sample were consistent with the mean scores of the norming group. The lower one-third of the scores were designated as internal scores, the middle one-
third were considered internal-external scores and the higher one-third were designated external scores.

The Conclusions

Based on the results of the analysis, there was little evidence that the treatment had a significant effect on the students' occupational interests. One exception was discerned; the mean scores on one of the Basic Interest Area scales indicated a significant positive change toward an interest in carpentry for the experimental group.

The results of the analysis of differences among locus of control levels revealed that changes in student interests were not significant. Therefore, a student's locus of control level is not significantly associated with interests relative to skilled trades and technical occupations.

Likewise, interaction between the treatment and locus of control levels showed no significant differences. The primary purpose of this study was to determine if an internal or external locus of control orientation would interact with the treatment to effect the students' change in interests. Based on the results of this research, it can be concluded that locus of control level interacting with the treatment does not influence a change in students' measured interests. The results and conclusions for this study are consistent with the findings of Tyler (1974) and
Crites (1969), who found that, in general, measured interests do not change significantly in most individuals once they reach adolescence.

The Implications

While significant changes did not occur in student measured interests, except on the Carpentry scale, implications can be drawn from the review of past research and the conclusions of this study. The following implications contribute to the development of guidance programs relative to career exploration in specific occupational areas such as the skilled trades and technical occupations:

1. As supported by this study and past research, interests do not change significantly in most adolescents. However, as Strong (1943) suggested, interests can be modified by a re-education process. Guidance-based exploratory programs in many occupational areas, including the skilled trades and technical occupations, can assist female students to clarify occupational interests.

2. Because most interest formation occurs prior to adolescence (Ginzberg, 1951; Crites, 1969), career exploratory guidance programs in pre-school and primary grades are more likely to be effective in influencing interests than middle/junior high school programs.

3. Presently, students, parents, counselors and teachers have fairly specific ideas about appropriate
education courses and consequent occupations for women (Richardson et al., 1979). However, with changing sex-role expectations and occupational structures, more women will assume a wider variety of occupational roles (Tyler, 1974).

4. While significant changes in measured interests did not occur during the treatment period, the impact on future occupational choices resulting, in part, from the treatment experiences, is unknown. Career development is a dynamic process resulting from a complex of factors.

5. Certain occupations in the skilled trade group may be more compatible with socially accepted interests of women than others.

Suggestions for Further Study

The following studies are suggested to provide further insights into the developmental process of women's occupational interests.

1. A study to compare differences in measured occupational interests of students from blue-collar families with those from non-blue-collar families. An aspect of the study would be to determine locus of control orientation as a correlative of typically feminine/masculine occupational orientation.

2. A longitudinal study to determine the effects of a prevocational career exploratory program related to skilled trades and technical occupations on high school course decisions and post-secondary occupational
choices. Include in this research a component to determine if locus of control orientation influences decisions.

3. A study to determine occupations from the skilled trades and technical group most compatible with measured women's interests.

4. A study to determine the effects of a career exploratory program related to the skilled trades and technical occupations for internal-external locus of control females with immediate financial responsibilities.

5. A study designed to measure attitudinal changes toward women's employment in skilled trade and technical occupations for both males and females.
BIBLIOGRAPHY


Vetter, L. and Stockburger, D. W. Career patterns of a national sample of women (Research and Development Series No. 95). Columbus, Ohio: Center for Vocational Education, The Ohio State University, 1974.


APPENDIX A

The Instruments
CAREER ASSESSMENT INVENTORY
By Charles B. Johansson

NAME GRID
direCTIONS
Print your name in the boxes. Print your last
name first, as many
letters as possible.
Then print as much
of your first name as
possible, and middle
initial. Then blacken
the circle below each
box that has the same
letter as the box. Blacken
the blank circle for
spaces. Use a black
lead pencil only.

MARKING INSTRUCTIONS
1. Please fill in your name and, if required, identification number on this form. Follow
the instructions carefully.
2. Use any soft, black lead pencil. Make a heavy dark mark.
3. If you make a mistake, or change your mind, please erase carefully and thoroughly.
4. This inventory will be processed by automatic equipment. To avoid errors, please
keep it free from wrinkles and stray marks.
5. Please try to answer each question. Work quickly; first impressions usually give the
best results with this inventory.

This is an inventory to measure your vocational interests and not a test of your abilities.
By comparing your answers with satisfied workers in various occupations, it is possible
to determine whether you would like certain occupations or not.

The following pages list various activities, school subjects, and occupations, and you are
asked to show your preferences for each. Your answers will be used to help find work
and career areas that will be satisfying to you.

Copyright 1973, 1975, 1979. All rights reserved.
1974 National Computer Systems. NCS Trans-Optic F4790.1088
PART I

ACTIVITIES

Many activities are listed below. For each of them show your interest.

Blacken in the circle labeled "I" if you like the activity very much.

Blacken in the circle labeled "I" if you like it a little or you like it somewhat.

Blacken in the circle labeled "I" if you are indifferent or undecided or neutral.

Blacken in the circle labeled "D" if you dislike it somewhat.

Blacken in the circle labeled "D" if you dislike it very much.

Show your interest for each type of activity. Just think about whether you would like it or dislike it, even though you may not have the training. Work fast. Make a heavy black mark for each item.

1. 〇 〇 〇 〇 Work with small hand tools
2. 〇 〇 〇 〇 Repair electrical wiring
3. 〇 〇 〇 〇 Work long hours
4. 〇 〇 〇 〇 Drive on long journeys
5. 〇 〇 〇 〇 Fix things around the house
6. 〇 〇 〇 〇 Work in the kitchen
7. 〇 〇 〇 〇 Do office work such as typing or filing
8. 〇 〇 〇 〇 Work in a hospital setting
9. 〇 〇 〇 〇 Operate a drill press
10. 〇 〇 〇 〇 Sell adding machines
11. 〇 〇 〇 〇 Write a novel
12. 〇 〇 〇 〇 Repair broken furniture
13. 〇 〇 〇 〇 Set type for a publication
14. 〇 〇 〇 〇 Plan meals
15. 〇 〇 〇 〇 Discuss politics
16. 〇 〇 〇 〇 Try new cooking recipes
17. 〇 〇 〇 〇 Sell clothes in a department store
18. 〇 〇 〇 〇 Type letters
19. 〇 〇 〇 〇 Change oil in an automobile
20. 〇 〇 〇 〇 Add numbers to get a total
21. 〇 〇 〇 〇 Repair electrical appliances
22. 〇 〇 〇 〇 Bake a cake
23. 〇 〇 〇 〇 Operate a printing press
24. 〇 〇 〇 〇 Go to a symphony/musical concert
25. 〇 〇 〇 〇 Study first aid
26. 〇 〇 〇 〇 Fix a broken radio
27. 〇 〇 〇 〇 Take care of a pet
28. 〇 〇 〇 〇 Work in a hardware store
29. 〇 〇 〇 〇 Sell life insurance
30. 〇 〇 〇 〇 Adjust a carburetor
31. 〇 〇 〇 〇 Take pictures with a camera
32. 〇 〇 〇 〇 Teach children to read
33. 〇 〇 〇 〇 Plant your own garden
34. 〇 〇 〇 〇 Draw graphs and charts
35. 〇 〇 〇 〇 Interview people for a job
36. 〇 〇 〇 〇 Help campaign for a politician
37. 〇 〇 〇 〇 Repair adding machines
38. 〇 〇 〇 〇 Sell merchandise by traveling from place to place
39. 〇 〇 〇 〇 Wait on tables in a restaurant
40. 〇 〇 〇 〇 Make things out of wood
41. 〇 〇 〇 〇 Direct a children's play
42. 〇 〇 〇 〇 Wash and wax floors
43. 〇 〇 〇 〇 Sort mail in a post office
44. 〇 〇 〇 〇 Drill in a military company
45. 〇 〇 〇 〇 Read science fiction stories
46. 〇 〇 〇 〇 Take photographs of wildlife
47. 〇 〇 〇 〇 Operate office machines (typewriters, adding machines)
48. 〇 〇 〇 〇 Play chess
49. 〇 〇 〇 〇 Repair antiques
50. 〇 〇 〇 〇 Keep a budget
51. 〇 〇 〇 〇 Do crossword puzzles
52. 〇 〇 〇 〇 Take care of children
53. 〇 〇 〇 〇 Make new friends
54. 〇 〇 〇 〇 Fix a clogged sink
55. 〇 〇 〇 〇 Plan a social affair for a religious group
56. 〇 〇 〇 〇 Entertain people in your home
57. 〇 〇 〇 〇 Work a cash register
58. 〇 〇 〇 〇 Tell stories to children
59. 〇 〇 〇 〇 Work at a desk
60. 〇 〇 〇 〇 Read popular mechanics magazines
61. 〇 〇 〇 〇 Grow flowers
62. 〇 〇 〇 〇 Travel to new places
63. 〇 〇 〇 〇 Grow flowers
64. 〇 〇 〇 〇 Give directions to a visitor who is lost
65. 〇 〇 〇 〇 Prepare dinner for guests
66. 〇 〇 〇 〇 Visit art galleries
67. 〇 〇 〇 〇 Play a musical instrument
68. 〇 〇 〇 〇 Plan the repainting of a room
69. 〇 〇 〇 〇 Work with a group on a project
70. 〇 〇 〇 〇 Prepare advertisements for a social event
71. 〇 〇 〇 〇 Do babysitting
72. 〇 〇 〇 〇 Be a guide for visitors
73. 〇 〇 〇 〇 Fix broken toys
74. 〇 〇 〇 〇 Work in an office
75. 〇 〇 〇 〇 Work out-of-doors
76. 〇 〇 〇 〇 Improve the health of others
77. 〇 〇 〇 〇 Attend a fashion show
78. 〇 〇 〇 〇 Pay attention to the latest hair styling
| 79 | Study Woodworking | 116 | Study road maps for best way to travel |
| 80 | Study Agriculture | 117 | Keep up-to-date on current events |
| 81 | Study Algebra | 118 | Plan a program to prevent forest fires |
| 82 | Study American Government | 119 | Teach swimming |
| 83 | Study Arithmetic | 120 | Make flight reservations for airplane passengers |
| 84 | Study Art | 121 | Prepare foods for special diets |
| 85 | Study Astronomy (stars and planets) | 122 | Inspect hospital equipment for cleanliness |
| 86 | Study Biology (plants and animals) | 123 | Study about people in different countries of the world |
| 87 | Study Bookkeeping | 124 | Make your own clothes from a pattern |
| 88 | Study Carpentry | 125 | Style hair |
| 89 | Study Chemistry | 126 | Coach a high school sports team |
| 90 | Study Creative Writing | 127 | Trim dead branches from a tree |
| 91 | Study Debates | 128 | File books in a library |
| 92 | Study Drafting | 129 | Inspect factory product for defects |
| 93 | Study Ecology | 130 | Make a rug from yarn |
| 94 | Study English Composition | 131 | Plant trees for a new forest |
| 95 | Study English | 132 | Fix a doorbell |
| 96 | Study Foreign Languages (Spanish, French, German) | 133 | Build a radio from a kit |
| 97 | Study Foreign Languages (French, German) | 134 | Make leather goods |
| 98 | Study General Business Methods | 135 | March in a band |
| 99 | Study General Science | 136 | Make leather goods from a pattern |
| 100 | Study General Science | 137 | Make leather goods from a pattern |
| 101 | Study Geography | 138 | Help people at the scene of an accident |
| 102 | Study Geometry | 139 | Make leather goods from a pattern |
| 103 | Study History | 140 | Work on the design of a new product |
| 104 | Study Health | 141 | Pick up pictures to hang on a wall |
| 105 | Study Health and Safety | 142 | Direct traffic |
| 106 | Study Highway Traffic | 143 | Help a child with a spelling lesson |
| 107 | Study Industrial Arts | 144 | Work on the advertisement of a new product |
| 108 | Study Industrial Arts | 145 | Write poetry |
| 109 | Study Industrial Arts | 146 | Give tickets for overtime parking |
| 110 | Study Industrial Arts | 147 | Make pottery |
| 111 | Study Industrial Arts | 148 | Find uses for old objects |
| 112 | Study Industrial Arts | 149 | Inspect old objects for security purposes |
| 113 | Study Industrial Arts | 150 | Repair electrical power lines that are down |
| 114 | Study Industrial Arts | 151 | Go to an auction |
| 115 | Study Industrial Arts | 152 | Repair damage to an automobile body |
| 116 | Study Industrial Arts | 153 | Arrange flowers for a display |
| 117 | Study Industrial Arts | 154 | Walk through woods to find interesting plants |
| 118 | Study Industrial Arts | 155 | Greet visitors from out-of-town |
| 119 | Study Industrial Arts | 156 | Make alterations (changes) on clothes |

Part II - SCHOOL SUBJECTS

As you did in Part I, show your interest in these school subjects, even though you may not have studied them.

152 | Study Agriculture |
153 | Study Algebra |
154 | Study American Government |
156 | Study Arithmetic |
156 | Study Art |
157 | Study Astronomy (stars and planets) |
158 | Study Biology (plants and animals) |
159 | Study Bookkeeping |
160 | Study Carpentry |
161 | Study Chemistry |
162 | Study Creative Writing |
163 | Study Debate |
164 | Study Drafting |
165 | Study Ecology |
166 | Study Electronics |
167 | Study English Composition |
168 | Study Foreign Languages (Spanish, French, German) |
169 | Study General Business Methods |
170 | Study General Math |
171 | Study General Science |
172 | Study Geology (rocks and fossils) |
173 | Study Geometry |
174 | Study Health |
175 | Study History |
176 | Study Home Economics |
177 | Study Industrial Arts |
178 | Study Literature |
179 | Study Mechanical Drawing |
180 | Study Metal Working |
181 | Study Music |
182 | Study Office Practices |
183 | Study Pennmanship |
184 | Study Photography |
185 | Study Physical Education |
186 | Study Physics |
187 | Study Poetry |
188 | Study Printing |
189 | Study Religion |
190 | Study Social Studies |
191 | Study Speech |
192 | Study Typing |
193 | Study Woodworking |
194 | Study Woodworking |
<table>
<thead>
<tr>
<th>Occupation</th>
<th>Part III - OCCUPATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>195. Be an Actor/Actress</td>
<td>For each occupation listed below, show whether or not you would like that kind of work. Do not think about the salary, or whether you would be good at the job, but whether you would like or dislike that type of work</td>
</tr>
<tr>
<td>196. Be an Airline Steward/Stewardess</td>
<td>197. Be an Apartment Manager</td>
</tr>
<tr>
<td>198. Be an Architect</td>
<td>199. Be an Art Dealer</td>
</tr>
<tr>
<td>200. Be an Auto Racer</td>
<td>201. Be a Bank Cashier</td>
</tr>
<tr>
<td>202. Be a Bartender</td>
<td>203. Be a Barber</td>
</tr>
<tr>
<td>204. Be a Bill Collector</td>
<td>205. Be a Biologist</td>
</tr>
<tr>
<td>206. Be a Bookkeeper</td>
<td>207. Be a Bricklayer</td>
</tr>
<tr>
<td>208. Be a Bus Driver</td>
<td>209. Be a Barber</td>
</tr>
<tr>
<td>210. Be a Cabinet Maker</td>
<td>211. Be a Camp Counselor</td>
</tr>
<tr>
<td>212. Be a Carpenter</td>
<td>213. Be a Cartoonist</td>
</tr>
<tr>
<td>214. Be a Cattle Rancher</td>
<td>215. Be a Cement Mason (smoothes fresh concrete)</td>
</tr>
<tr>
<td>216. Be a Check-out Clerk in a Store</td>
<td>217. Be a Director of Religious Choir</td>
</tr>
<tr>
<td>218. Be a Circus Performer</td>
<td>219. Be a Comedian</td>
</tr>
<tr>
<td>220. Be a Computer Operator</td>
<td>221. Be a Construction Worker</td>
</tr>
<tr>
<td>222. Be a Cook in a Restaurant</td>
<td>223. Be a Courtroom Reporter</td>
</tr>
<tr>
<td>224. Be a Delivery Truck Driver</td>
<td>225. Be a Dog Trainer</td>
</tr>
<tr>
<td>226. Be a Driving Instructor</td>
<td>227. Be an Electrician</td>
</tr>
<tr>
<td>228. Be an Elementary School Teacher</td>
<td>229. Be a Farmer</td>
</tr>
<tr>
<td>230. Be a Fashion Designer</td>
<td>231. Be a Fashion Model</td>
</tr>
<tr>
<td>232. Be a Filing Clerk</td>
<td>233. Be a Firefighter</td>
</tr>
<tr>
<td>234. Be a Fish and Game Warden</td>
<td>235. Be a Florist</td>
</tr>
<tr>
<td>236. Be a Wildlife Manager</td>
<td>237. Be a Forest Ranger</td>
</tr>
<tr>
<td>238. Be a Funeral Director</td>
<td>239. Be a Gas Station Attendant</td>
</tr>
<tr>
<td>240. Be a Hair Stylist</td>
<td>241. Be a Heavy Equipment Operator (bulldozer, crane, earth mover)</td>
</tr>
<tr>
<td>242. Be a High School Counselor</td>
<td>243. Be a High School Teacher</td>
</tr>
<tr>
<td>244. Be a Hospital Orderly</td>
<td>245. Be a Hospital Records Clerk</td>
</tr>
<tr>
<td>246. Be a Hotel Manager</td>
<td>247. Be a House Painter</td>
</tr>
<tr>
<td>248. Be a Telephone Operator</td>
<td>249. Be an Interior Decorator</td>
</tr>
<tr>
<td>250. Be a Janitor/Jarrestress</td>
<td>251. Be a Jeweler</td>
</tr>
<tr>
<td>252. Be a Labor Union Leader</td>
<td>253. Be a Stenographer (takes shorthand)</td>
</tr>
<tr>
<td>254. Be a Legal Secretary</td>
<td>255. Be a Library Clerk</td>
</tr>
<tr>
<td>256. Be a Logger (lumberjack)</td>
<td>257. Be a Magician</td>
</tr>
<tr>
<td>258. Be a Mail Carrier</td>
<td>259. Be a Manager of a Pet Shop</td>
</tr>
<tr>
<td>260. Be a Marriage Counselor</td>
<td>261. Be a Mechanic</td>
</tr>
<tr>
<td>262. Be a Medical Technician</td>
<td>263. Be a Military Officer</td>
</tr>
<tr>
<td>264. Be a Minister, Priest, or Religious Leader</td>
<td>265. Be a Missionary/Religious Ambassador</td>
</tr>
<tr>
<td>266. Be a Movie Projector Operator</td>
<td>267. Be a Musician</td>
</tr>
<tr>
<td>268. Be a Newspaper Reporter</td>
<td>269. Be a Nurse</td>
</tr>
<tr>
<td>270. Be a Nursery School Helper</td>
<td>271. Be a Nurse’s Aide</td>
</tr>
<tr>
<td>272. Be a Photographer</td>
<td>273. Be a Playground Director</td>
</tr>
<tr>
<td>274. Be a Plumber</td>
<td>275. Be a Police Officer</td>
</tr>
<tr>
<td>276. Be a Post Office Clerk</td>
<td>277. Be a Printer</td>
</tr>
<tr>
<td>278. Be a Private Detective</td>
<td>279. Be a Private Secretary</td>
</tr>
<tr>
<td>280. Be a Radio/TV Announcer</td>
<td>281. Be a Railroad Engineer</td>
</tr>
<tr>
<td>282. Be a Real Estate Salesperson</td>
<td>283. Be a Receptionist in an Office</td>
</tr>
<tr>
<td>284. Be a Recreation Leader</td>
<td>285. Be a Restaurant Cook</td>
</tr>
<tr>
<td>286. Be a Scout Troop Leader</td>
<td>287. Be a Sculptor</td>
</tr>
<tr>
<td>288. Be a Security Guard</td>
<td>289. Be a Sheet Metal Worker</td>
</tr>
<tr>
<td>290. Be a Short Order Cook</td>
<td>291. Be a Social Worker</td>
</tr>
<tr>
<td>292. Be a Stage Manager</td>
<td>293. Be a Stenographer (takes shorthand)</td>
</tr>
<tr>
<td>294. Be a Stock Room Clerk</td>
<td>295. Be a Supervisor</td>
</tr>
<tr>
<td>296. Be a Taxicab Driver</td>
<td>297. Be a Teacher’s Aide</td>
</tr>
<tr>
<td>298. Be a Ticket Agent</td>
<td>299. Be a Tour Guide</td>
</tr>
<tr>
<td>300. Be a Travel Bureau Agent</td>
<td>301. Be a Truck Driver</td>
</tr>
<tr>
<td>302. Be a Water/Waitress</td>
<td>303. Be a Weelder</td>
</tr>
<tr>
<td>304. Be a Veterinarian Assistant</td>
<td>305. Be a Zoo Attendant</td>
</tr>
<tr>
<td>306. Be a Zoo Attendant</td>
<td>FOR PROCESSING</td>
</tr>
<tr>
<td>307. Be a Zoo Attendant</td>
<td>Return to’h</td>
</tr>
<tr>
<td>308. Be a Zoo Attendant</td>
<td>NATIONAL COMPUTER SYSTEMS</td>
</tr>
<tr>
<td>309. Be a Zoo Attendant</td>
<td>4401 West 76th Street</td>
</tr>
<tr>
<td>310. Be a Zoo Attendant</td>
<td>Minneapolis, Minnesota 55435</td>
</tr>
<tr>
<td>311. Be a Zoo Attendant</td>
<td></td>
</tr>
</tbody>
</table>
Stephen Nowicki, Jr., and Bonnie R. Strickland

Nowicki-Strickland Locus of Control

Circle "Y" for Yes or "N" for No on each of the following forty items.

1. Do you believe that most problems will solve themselves if you just don't fool with them?
   Y  N

2. Do you believe that you can stop yourself from catching a cold?
   Y  N

3. Are some people just born lucky?
   Y  N

4. Most of the time do you feel that getting good grades means a great deal to you?
   Y  N

5. Are you often blamed for things that just aren't your fault?
   Y  N

6. Do you believe that if somebody studies hard enough he or she can pass any subject?
   Y  N

7. Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?
   Y  N

8. Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do?
   Y  N

9. Do you feel that most of the time parents listen to what their children have to say?
   Y  N

10. Do you believe that wishing can make good things happen?
    Y  N

11. When you get punished does it usually seem its for no good reason at all?
    Y  N

12. Most of the time do you find it hard to change a friend's (mind) opinion?
    Y  N

13. Do you think that cheering more than luck helps a team to win?
    Y  N

14. Do you feel that it's nearly impossible to change your parent's mind about anything?
    Y  N

15. Do you believe that your parents should allow you to make most of your own decisions?
    Y  N

16. Do you feel that when you do something wrong there's very little you can do to make it right?
    Y  N
17. Do you believe that most people are just born good sports?

18. Are most of the other people your age stronger than you are?

19. Do you feel that one of the best ways to handle most problems is just not to think about them?

20. Do you feel that you have a lot of choice in deciding who your friends are?

21. If you find a four leaf clover do you believe that it might bring you good luck?

22. Do you often feel that whether you do your homework has much to do with what kind of grades you get?

23. Do you feel that when a person your age decides to hit you, there's little you can do to stop him or her?

24. Have you ever had a good luck charm?

25. Do you believe that whether or not people like you depends on how you act?

26. Will your parents usually help you if you ask them to?

27. Have you felt that when people were mean to you it was usually for no reason at all?

28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?

29. Do you believe that when bad things are going to happen they just are going to happen no matter what you try to do to stop him or her?

30. Do you think that people can get their own way if they just keep trying?

31. Most of the time do you find it useless to try to get your own way at home?

32. Do you feel that when good things happen they happen because of hard work?

33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?

34. Do you feel that it's easy to get friends to do what you want them to?
35. Do you usually feel that you have little to say about what you get to eat at home?

36. Do you feel that when someone doesn't like you there's little you can do about it?

37. Do you usually feel that it's almost useless to try in school because most other people are just plain smarter than you are?

38. Are you the kind of person who believes that planning ahead makes things turn out better?

39. Most of the time, do you feel that you have little to say about what your family decides to do?

40. Do you think it's better to be smart than to be lucky?
APPENDIX B

The Treatment
February 25, 1981

Dear Parent:

As a part of a research project to be conducted at Murray Middle School, __________ has been selected to participate in a career-exploratory program for one period a day for two weeks. This program includes films, field trips, resource persons and class discussions. As a participating member of the exploratory program, __________ will be given the opportunity to gain information about the skilled trade and technical occupations and to discuss these occupations as a possible future career choice. This program will not detract from the student's regular academic class time.

Any questions about the project can be answered by contacting me at Murray Middle School before March 18, 1981. If you are willing to allow __________ to participate in the program, including one field trip, please sign below. You may withdraw consent at anytime during the program in the event you desire to do so.

Sincerely yours,

Sandra Turnbow
Researcher

---------------------------------- DETACH HERE ----------------------------------

__________________________ has my permission to participate in the career exploratory program (including one field trip) to be conducted at Murray Middle School between March 16 and March 27.

Signed: ________________________  
(parent or guardian)
Career Exploratory Program Related to the Skilled Trades and Technical Occupations

Course Outline

I. Skilled Trades and Technical Occupations

A. Definition and Description
   1. Work with hands
   2. Work with tools
   3. Work with machines
   4. Constructs, repairs or transports things
   5. Paid by the hour

B. Examples
   1. Machinist
   2. Welder
   3. Appliance repair person
   4. Carpenter
   5. Auto mechanic

II. Reasons Why Women Enter Skilled-Trade Jobs

A. Better pay than traditional women's jobs.

B. Many women are heads of households and must support families

C. Likes the work (i.e., doing things with hands, figuring out how things work

D. Finds the job a challenge; wants to be a craftsman

III. Barriers to Women Entering the Skilled Trades

A. Real Barriers
   1. Lack of training
   2. Lack of physical preparation
   3. Prejudice (not hired because of being female)

B. Imagined Barriers
   1. Fear of not being able to do "men's jobs"
   2. Men fearing that women will take their jobs
   3. Women not being able to adjust to men's typical on-the-job behavior (i.e. language, humor, etc.)
IV. Kinds of Training

A. Vocational-Technical Schools

B. Apprenticeship Systems

C. On-the-Job Training

V. Self Evaluation in Relationship to Skilled Trade and Technical Jobs

A. Personal Characteristics Needed
   1. Assertiveness
   2. Physical, mental and emotional strength
   3. Self-confidence
   4. Belief in self
   5. Interest in job
Student Learning Activities

1. Introduction including:
   a. Opinion Survey - an instrument used to stimulate student thinking in regard to sex role differences in the home and workplace
   b. Discussion of response to statements

   a. Divide students into eight groups
   b. Assign each group a question to answer from the film
   c. Have each lead the discussion in regard to their question.

3. Video Tape: T.N.T. (Try Non-Traditional) - a video tape designed in Kentucky depicting students in male-intensive training programs from the Jefferson Vocational-Technical School (Kentucky Department of Education, 1980). Class discussion centered around training programs required to enter skilled-trade jobs
   a. Vocational-technical program
   b. On-the-job training
   c. Apprenticeship program

4. Resource Panel - Stock manager* at local plant-- had worked three years as truck driver, as trailer spotter in plant, towmotor operator, fork-lift operator and materials manager

   Supervisors* of Maintenance Department at Murray State University

   *All women

   a. Have students prepare questions to be asked before panel
   b. Present resource persons
   c. Question and answer period
5. Visit to Local Vocational School

a. Have students select one of the following programs:
   1) auto mechanics
   2) auto body
   3) large appliance repair
   4) carpentry

b. Provide guidesheet for student's use during visit

c. Follow-up discussion

d. Self-evaluation in relationship to skilled-trades for each student.
OPINION SURVEY

TRUE OR FALSE

1. Boys are smarter than girls.
2. Girls should clean house.
3. Some jobs, like airline pilot, should only be done by men.
4. Boys are better at sports.
5. Women can solve problems better than men.
6. A woman needs a man to take care of her.
7. Women should not be allowed to do men's jobs.
8. Men should not be allowed to do women's jobs.
9. Men are more successful than women.
10. Men should be paid more for working than women are paid.
11. Men are better doctors than women.
12. Women are better secretaries than men.
13. Boys should not cry.
14. Girls do not need to be strong.
15. Boys need an education more than girls.
16. A woman's place is in the home.
17. The father should be the boss in the family.
18. A woman should not be the boss of a man.
19. Girls are better typists.
20. Men work harder than women.
21. Mothers should do what fathers tell them to do.
22. Boys are better at math.
23. Women talk a lot more than men.
24. Men can figure things out better than women.
25. Girls are better at art and music.
Questions for the Film
Why Not a Woman?

1. List five different jobs you saw in the film.
   dock hand, carpenter, machinist, metal worker, welder,
   bus driver, appliance repair person, truck driver,
   heavy equipment operator, electrician, etc.

2. Describe the physical environment in most of the work situations -- i.e., noise, cleanliness.

3. What kind of characteristics would a woman need to go into a non-traditional job -- physical, emotional, mental, etc.?

4. What reasons did the women give for going into blue-collar jobs?
   good money, learning trade, supporting family, like the job, challenge

5. What were the feelings and attitudes of the women in blue-collar jobs -- i.e., feelings toward themselves, their employers, their families?

6. What were the feelings and attitudes of the male employers and teachers toward the women workers? Do you think their attitudes and feelings were consistent with what they were saying?

7. Look for three real reasons that a woman might not be able to go into the skilled trades.
   lack of skills, lack of physical preparation, not given opportunity/chance

8. Look for three imagined reasons a woman might not be able to go into the skilled trades.
   expected to be treated special, men worry that they will lose jobs to women, fear they can't do job
MURRAY AREA VOCATIONAL SCHOOL

Guide Sheet for Field Trip

Your Name ________________  Class Visited ______

1. Describe the environment (i.e. the sounds, odors, what you see, etc.)

2. List five pieces of equipment or tools you see.

3. List two skills the students are learning in this case.

4. Describe the attitude of the students in the class toward you.

5. What is one thing you like about the class?

6. What is one thing you dislike about the class?

7. Would you ever enroll in the class you visited?

8. Write a statement from one person in each of the other three classes. (The statement should describe their thoughts or feelings about the class they attended.)
APPENDIX C

Tables for the
Analysis of Covariance
## Analysis of Covariance Table*

**Fine Arts-Mechanical Index**

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*Values within this table reflect adjusted measures for the post tests.
### Analysis of Covariance Table*

**Basic Interest Area Scale**  
**Mechanical/Fixing**

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## Analysis of Covariance Table

### Basic Interest Area Scale

#### Carpentry

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Analysis of Covariance Table*

Basic Interest Area Scale
Manual/Skilled Trades

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### Analysis of Covariance Table*

**Basic Interest Area Scale**  
**Auto Mechanic**

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### Analysis of Covariance Table*

**Occupational Scale**

**Machinist**

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Analysis of Covariance Table*

Occupational Scale
Truck Driver

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