A COMPARISON OF ACADEMICALLY AT-RISK STUDENTS IN
COORDINATED VOCATIONAL ACADEMIC EDUCATION
COOPERATIVE EDUCATION PROGRAMS WITH
NON-VOCATIONAL ACADEMICALLY
AT-RISK STUDENTS

DISSERTATION

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By

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The research problem was to determine the perceived mean self-concept attitudes of academically at-risk students in Coordinated Vocational Academic Education (CVAE) cooperative education programs with at-risk students in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.

The hypotheses formulated for this study included:

1. There is no significant difference in the mean attitude self-concept scores of academically at-risk students in CVAE and in academic programs as measured by the Piers-Harris Children's Self-Concept Scale.

2. There is no significant difference in the retention rates of students in CVAE and of at-risk students in academics.

The Piers-Harris Children's Self-Concept Scale was administered to 122 students in the Abilene Independent School District, Abilene, Texas, who had been identified as being at risk of dropping out of school.
The self-concept scores collected were tested for statistical significance by an analysis of variance. The retention rates of the programs were tested with Chi-square analyses.

The findings of the study include:

1. At-risk students in CVAE and in academics possess equal mean attitude self-concepts with no statistically significant difference found.

2. Male at-risk students in CVAE showed a statistically significant change in self-concept over the twelve-week period.

3. Even though students in CVAE had a higher retention percentage than students in academics, this difference was not statistically significant.

The conclusions drawn from this study were:

1. Even though individual subjects in both groups indicated low self-concepts, the students in both groups generally showed an above-average, positive self-concept.

2. Male students in CVAE improved in self-concept while all other groups decreased slightly.

3. The CVAE cooperative education students in this study tended to have a higher retention rate than the academic at-risk students.
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CHAPTER I

INTRODUCTION

At-risk. Academically disadvantaged. Educationally disadvantaged. Potential dropout. All are terms used to describe secondary students in danger of withdrawing from school before completing the requirements for graduation. Teenagers who attempt to go into the job market without occupational skills face devastating personal consequences and add tremendous social costs to the local community (1; 3; 33).

School dropouts have become a major concern at the state and national levels. In 1985-86, approximately four thousand teenagers across the country dropped out of school every day. In heavily populated urban areas, a secondary student has little better than a 50 percent chance of completing high school (21).

According to a survey conducted by the Texas Education Agency in 1987, one of every three students in Texas will fail to meet the requirements for high school graduation and will leave school (9). This is in contrast to 25 percent across the nation. Hispanic students in Texas and throughout the country face the greatest danger of dropping out, followed by Black teenagers. Even though
Anglo teens are at far less risk than their minority friends, the dropout rate among middle-class whites has steadily increased over the past decade (46). A Chicago report concluded that dropping out is no longer a problem confined to a handful of minority students who could not learn; it is a sign the entire system has failed (13).

Concern over the growing numbers of at-risk students has baffled a few cynics across the country. It was not until 1940 that even half of the American teenagers were graduated from high school. After 1940 completion rates increased steadily until 1970 (5; 38). One view of the problem suggests that America has reached its natural limits in educating her young people. Some educators are thankful they do not have to deal with the problems the at-risk students often present. Others feel the dropouts provide an entire class of unskilled workers and help to raise educational standards for the graduates (25).

There are, however, several reasons to be concerned about the students at risk. First, even though the percentage of dropouts has stabilized nationally in the last decade, the total number of students leaving school has increased due to an increasing population (38). Secondly, disadvantaged minority students compose the majority of teens who drop out of school, perpetuating and increasing the economic and social differences in America (12).
Husen calls these children the "new educational underclass" (19). Demoralizing effects on the individual, astronomical social and financial costs to the community, and a changing, technological job market are three of the major costs when a student moves from being at risk to being a school drop-out (5; 37; 35). These costs affect us all.

When a student at risk decides to leave school, he or she often withdraws to find success (4). The academic setting has provided little or no achievement, so the teenager attempts to enter the job market. This begins a lifetime of personal crises. Research has shown that students who dropout will earn less money than graduates, suffer more unemployment, have more health problems, and be more dissatisfied with their personal lives (21). Research has also shown that teenagers who leave school are more likely to turn to criminal activities as adults (5).

Several studies have attempted to place a dollar value on the costs of students dropping out (48; 5; 25). A North Carolina study estimated that dropouts are going to earn $237 billion less during their lifetimes than will high school graduates, and, among other consequences, state and local governments will collect $71 billion less in taxes (25). Business and industry will spend an additional $40 billion per year to train unskilled employees, and this estimate is expected to increase significantly with the
changing technology (42, p. 61). Unable to find employment, many dropouts will engage in criminal activities and will serve time in prison. Each dropout student in prison will cost taxpayers approximately $25,000 per year (36). Welfare costs, extensive health services, and other social services add additional cost to the dropout problem (13).

Before Sputnik introduced the Space Age, teenagers who dropped out of school could find employment on farms, in steel mills, in coal mines, or on loading docks (22). With industry turning to robotics, with cheaper foreign imports decreasing the demand for domestic products, and with plants closing due to a lagging economy, many unskilled, uneducated workers are heading to the unemployment office (36). Due to the changing technology, industry is hesitant to hire anyone unless he or she can be trained and can be worthy of promotion in the job. Business needs people that can grow and change with the job (46, p. 61). Employers are no longer willing to take a risk on an employee with limited literacy and job skills.

The best way to address the dropout problem is to intervene with the at-risk student while he or she is still in school (48; 26; 8). Since President Johnson's Great Society was initiated in 1963, federal legislation has recognized the value of vocational education in serving the at-risk child (22). The Vocational Education Act of
1963 simply stated that federal funds could be used "to serve students with special needs" (47). When schools failed to respond to the special needs challenge, stronger legislation followed. The 1968 Amendments reserved 25 percent of the basic state grant, plus additional special funding for disadvantaged and handicapped students (40). It was at this time Texas created special vocational training programs for the disadvantaged. Coordinated Vocational Academic Education, or CVAE, programs were funded to meet the needs of students who were disadvantaged "academically, economically, socially, emotionally, or culturally" (45). Special academic classes were offered with the vocational training to assist the special needs student with basic literacy skills.

In connection with the broad educational reforms of 1984, the Texas legislature addressed the problem of the "at-risk student" in House Bill 1010 (17). This act required central education agencies to "develop a program to reduce the rate of students leaving the public school system before completing high school" (9). In addition to providing remedial and support programs for students at risk of dropping out of school, each local district was required to designate one or more at-risk coordinators to coordinate the dropout reduction program of each district.

House Bill 1010 also presented criteria for identifying the student at risk. Any student below twenty-one
years of age is considered at risk if he or she is two or
more years below grade level in reading or math, has failed
at least two high school courses, has failed one or more
sections of the TEAMS test, or is not expected to graduate
within four years of entering the ninth grade (17).

The latest Texas State Plan for Vocational Education
outlines the student eligibility requirements for entry
into CVAE cooperative education. Students entering CVAE
must be one or more years behind academically in three or
more subjects, or have scored below the twenty-fifth per-
centile on any standardized test (46).

Increasing the graduation requirements for high school
graduation has not motivated the student at risk to remain
in school. Higher academic standards have increased the
separation between the students who were already working
in school and the half who were not active participants in
the system (10). No educational system can educate students
who do not stay in school (48).

There is no one magic solution to the at-risk problem.
No one program can answer all the questions concerning the
academically disadvantaged student. According to Tidwell,
alternative programs must be offered students at risk if
schools are to serve the special needs population (48).
Due to the fact that the requirements for entry into CVAE
profile the academically at-risk student, CVAE cooperative
education should be investigated to determine its value as one of the alternative programs for the at-risk student.

Statement of the Problem

The problem of this study is to determine whether academically at-risk students enrolled in special vocational programs for the academically disadvantaged (CVAE) improve in self-concept more than academically at-risk students enrolled in a regular academic curriculum. Improvement will be determined by testing perceived attitudes of self-concept as measured by the Piers-Harris Children's Self-Concept Scale. A secondary problem of the study will be to determine and compare the retention rates of the CVAE at-risk group and the non-CVAE at-risk group.

Purpose of the Study

In order to determine whether academically at-risk students enrolled in CVAE co-op improve more than their non-vocational peers, the objectives of this study will be to:

1. Determine the perceived attitudes of self-concept of academically at-risk students enrolled in Coordinated Vocational Academic Education cooperative programs.

2. Determine the perceived attitudes of self-concept of academically at-risk students enrolled in regular academic programs.
3. Compare the perceived attitudes of self-concept of academically at-risk students enrolled in CVAE cooperative education programs with academically at-risk students in a regular academic program of studies.

4. Determine the retention rate of academically at-risk students in CVAE cooperative education programs.

5. Determine the retention rate of academically at-risk students in regular academic programs.

6. Compare the retention rate of academically at-risk students in CVAE with the retention rate of academically at-risk students enrolled in a regular academic program.

7. Compare the retention rate of at-risk students in the first year of the CVAE cooperative education program with the retention rate of at-risk students in the second year of the CVAE co-op program.

Hypotheses

The following hypotheses were formulated to carry out the purpose of this study:

1. There is no significant difference in the mean attitude self-concept score of academically at-risk students enrolled in CVAE co-op and those enrolled in a regular academic program as measured by the Piers-Harris Children's Self-Concept Scale.

2. There is no significant difference in the mean attitude self-concept score between male and female
academically at-risk students in CVAE co-op and those enrolled in a regular academic program as measured by the Piers-Harris Children's Self-Concept Scale.

3. There is no significant difference in the mean attitude self-concept score between males and females of different age groups of academically at-risk students enrolled in CVAE co-op and those academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.

4. There is no significant difference in the mean attitude self-concept score of academically at-risk students in the first year of CVAE co-op and in second year CVAE co-op students as measured by the Piers-Harris Children's Self-Concept Scale.

5. There is no significant change in the mean attitude self-concept score of academically at-risk students enrolled in CVAE co-op and of academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale over a three-month period utilizing a Solomon four-group design.

6. There is no significant difference in the retention rate of academically at-risk students enrolled in CVAE co-op and of academically at-risk students enrolled in regular academic programs.
7. There is no significant difference in the retention rates of academically at-risk students enrolled in the first year of the CVAE cooperative education program and of academically at-risk students enrolled in the second year of CVAE cooperative education.

Significance of the Study

Designing and implementing programs to encourage the at-risk student to stay in school has become an issue of high priority across the nation. Texas House Bill 1010 mandated school districts across the state to enact specific policies to meet the needs of the high-risk student (17). Not only did this legislation require schools to appoint an "at-risk" coordinator, but districts were directed to investigate and initiate programs to increase the holding power of schools for the potential dropout. Since CVAE cooperative education is a special vocational program for the academically disadvantaged student, CVAE co-op should be investigated to determine its value as one part of a comprehensive program of a school to serve the academically at-risk student.

The significance of this study will be to determine if academically at-risk students are served by being enrolled in a CVAE cooperative education program. If the academically disadvantaged students in CVAE make positive
gains in their self-esteem or have a higher retention rate than at-risk students in academics, then CVAE cooperative education can be considered a valid component of a comprehensive plan to serve students at risk in Texas.

**Definition of Terms**

The following terms will have restricted meanings and are so defined for this study:

*Academically at-risk students* are those students who are at risk of withdrawing from school due to low academic achievement (45).

*At-risk students* are those students who exhibit characteristics of withdrawing from school before completing requirements for a high school diploma. This includes all factors, such as economic reasons, family-related problems, learning disabilities, low academic achievement, and low self-esteem (9; 17).

*Cooperative education* is a form of education in which students are placed in approved training (work) stations in the community. Students receive specialized on-the-job training by a selected adult supervisor or employer and are paid an appropriate wage for the work. Cooperative education students attend one hour of vocational classroom instruction per day in addition to two or three academic courses required for graduation. Students are released
from school during the afternoon hours to report to their respective training stations and receive three credits per year toward high school graduation requirements for the co-op program. A school teacher-coordinator places students in approved training stations, instructs students in the classroom, and documents student progress on the job (29).

CVAE, or Coordinated Vocational Academic Education is the special vocational program for academically at-risk students in Texas (45).

Dropouts will be those students who leave school before completing requirements for a high school diploma and do not enter another educational institution for additional training or education (2).

Piers-Harris Children's Self-Concept Scale is a test designed by Ellen V. Piers and Dale B. Harris to measure the self-concept of students (32).

Regular academic program describes a plan for high school education in which students attend six academic classes per day and do not have a school-supervised work station. This format is not designed to prepare students for an occupation or trade but stresses preparation for post-secondary education.

Self-concept is the view that individuals have of themselves, their abilities, and their own self-worth (32).
Self-esteem is a term used synonymously with self-concept.

Vocational education describes programs which offer preparation for gainful employment in specific occupational areas. In addition to specific job skills in the chosen career, vocational education programs stress attitudes for successful employment and leadership development (29).

De-Limitations

The following de-limitations will apply to this study:

1. The study will include only students enrolled in the Abilene Independent School District in Abilene, Texas during the 1988-1989 school year.

2. The study will be de-limited to students in the Abilene Independent School district who have been properly identified as being academically at risk.

3. The study will be de-limited to students who were sophomores, juniors, or seniors in either of the two district high schools during the spring semester of 1989.

4. This study will be de-limited to students between the ages of sixteen and eighteen, inclusive.

5. This study will be de-limited to students with a signed permission form from a parent or guardian to participate in the study.
6. This study will be de-limited to students who volunteer to complete the Piers-Harris Children's Self-Concept Scale.

**Basic Assumptions**

In order to complete the study, the following assumptions will be made:

1. The sample will include all socioeconomic groups of similar proportion as the community.
2. The sample will answer the Piers-Harris Children's Self-Concept Scale honestly and frankly.
3. The sample meets the general state qualifications for placement into the CVAE cooperative education program.
4. The sample meets the state and local criteria for being identified as academically at risk.
5. The common characteristics of at-risk students are normally distributed throughout both at-risk populations involved in the study.
6. The sample was placed into CVAE on a volunteer basis, and placement into CVAE was the decision of each individual subject.
7. The teachers of the CVAE programs are certified vocational instructors and comply with the general state guidelines for the program.
8. The sample had the reading proficiency to complete the Piers-Harris Children's Self-Concept Scale.
 Procedures for Collection of Data

Instrument. The Piers-Harris Children's Self-Concept Scale was developed by Ellen V. Piers and Dale B. Harris to aid in the assessment of self-concept in children and adolescents. Self-concept, as measured by the Piers-Harris, is defined as a "relatively stable set of self-attitudes reflecting both a description and an evaluation of one's own behavior and attributes" (32, p. 1). Because the test focuses on how a child consciously feels about himself or herself, a genuine self-concept is measured without interference of interpretations or value judgments by adults. This instrument has been standardized longitudinally and cross-sectionally for ages eight to eighteen and is constructed on the third-grade reading level.

Subtitled "The Way I Feel About Myself", this scale is an eighty-item, self-report questionnaire which is divided into six subscales. Children are shown simple statements that tell how some people feel about themselves. The respondents are then asked to indicate whether each statement applies to them using "yes" and "no" responses. The scale is not biased according to sex or grade differences, and it can be used with the educationally disadvantaged because it does not correlate unduly with social desirability (32).

When the Piers-Harris Children's Self-Concept Scale was developed, Piers reported reliability coefficients
ranging from .72 to .93. The internal consistency using the Kuder-Richardson Formula 21 was reported to be from .78 to .93. The test-retest reliability was .71 to .96 when the retest intervals were either a few weeks or six months (32). The test has also been validated with other measures of self-concept, like the Lipsitt Children's Self-Concept Scale and the Tennessee Self-Concept Scale (32, p. 55-57).

The Piers-Harris Children's Self-Concept Scale has been used with special populations, including learning disabled students, students with low English proficiency, mixed ethnic groups, and special education students (32, p. 70-72). Containing validity indicators, the test performs validity checks for relevant moderator variables, like age, grade, and ethnic group, and for invalid responses due to random or systematic response biases (32, p. 70).

**Population.** The subjects for this research were students enrolled in the tenth, eleventh, and twelfth grades in the Abilene Independent School District in Abilene, Texas. The two high schools involved were Abilene High School and Cooper High School. All subjects were identified as academically at risk.

The academically at-risk students enrolled in CVAE co-op attended their vocational class one hour per day and
regular academic subjects for two or three hours per day. CVAE co-op students were released from school in the afternoon to receive on-the-job training at an approved training station in the community. Students worked a minimum of fifteen hours per week, an average of twenty to twenty-five hours per week, and received pay for their work.

The academically at-risk students enrolled in regular academic programs attended six regular academic classes per day, left school at 3:30 p.m., and did not have a school-supervised work station.

The subjects ranged from sixteen to eighteen years of age. Gender percentage and ethnicity of the sample approximated the proportions of the community. Since all socioeconomic levels are represented in the community, all levels were represented proportionately in the sample.

Selection of the Sample. Several steps were taken to select the sample for the study.

First, all students enrolled in the CVAE cooperative programs had been identified as being academically at risk as defined by the entry requirements specified by the Texas Education Agency. Before enrolling in CVAE, students must be certified as having failed more than two subjects or in the twenty-fifth percentile on standardized tests. Secondly, the students had a permission letter signed by the parent or guardian. Thirdly, students had the opportunity
to decline participation in the study. Voluntary participation lends validity to the test results. To ensure the anonymity of the individual subjects, student identification numbers were utilized instead of names.

To identify the non-vocational academically at-risk student required additional steps. In order to comply with the mandates of House Bill 1010, the Abilene Independent School District has initiated a system to identify all at-risk students in the district. Special coding indicates the reasons for a student's being classified as "at risk". In addition to academic reasons, limited English ability, special education, handicapped, and economic reasons are listed. The first step was to identify all academically at-risk students in grades ten, eleven, and twelve. The second step was to eliminate all students under sixteen years of age and above eighteen years of age. At-risk students who were enrolled in regular vocational programs were also eliminated from the study. Because the entire at-risk population was used, it was not necessary to select a test sample. To ensure anonymity, student identification numbers were used.

In order to accommodate the selected design of the study, each category was randomly divided into two groups—one group received a pretest and posttest while the other group took the test at the conclusion of the study only.
A table of random numbers was used to place students in the pretest/posttest and posttest only groups.

**Research Design.** The selected design of the study was a Solomon four-group design. The two categories of the study were academically at-risk students in CVAE co-op and non-CVAE academically at-risk students. The non-CVAE academically at-risk students were considered the control group. For the purpose of this study, academically at-risk students in CVAE co-op were considered the experimental group. Placement into the CVAE co-op program constituted treatment not received by the non-CVAE co-op academically at-risk students in the control group. Table I graphically displays the research design of the study.

**TABLE I**

**EXPERIMENTAL DESIGN OF THE STUDY**

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest</th>
<th>Treatment*</th>
<th>Posttest</th>
</tr>
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<tbody>
<tr>
<td>CVAE</td>
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<tr>
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<td>0</td>
<td>X</td>
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<tr>
<td>2</td>
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<td>2</td>
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</table>

*Placement into the CVAE vocational program constituted treatment not received by the control (academic) group.*
The Piers-Harris Children's Self-Concept Scale was administered to the two pretest groups in March of 1989. In May 1989 the Piers-Harris Children's Self-Concept Scale was administered to all subjects in both the control and experimental groups.

By utilizing the Solomon four-group design, the degree of change in both groups can be determined and compared. This design also eliminates the instrument reactivity factor and lends power to the study.

**Procedures for Analysis of Data**

The purpose of this study was to determine if academically at-risk students enrolled in special vocational programs for the academically disadvantaged (CVAE co-op) improve in self-concept more than academically at-risk students enrolled in a regular academic program. Improvement was determined by testing perceived attitudes of self-concept, which was measured by the Piers-Harris Children's Self-Concept Scale. A secondary purpose of the study was to determine and compare the retention rates of the CVAE at-risk group and the non-CVAE at-risk group.

After the posttesting was completed in May, the data from the Piers-Harris were treated statistically for significance of difference between the mean scores of the control and experimental groups. An analysis of variance
was used to test each hypothesis of the study. A probability level of .05 was the level of significance.

At the end of the year, retention rate data collected from school records were subjected to Chi-square tests. The level of significance was set at the .05 level.

Organization for the Remainder of the Study

A review of literature and related studies is given in Chapter II. Chapter III contains an explanation of the methodology, including descriptions of the subjects, the test instrument, and the specific methods used for analyzing the data. An analysis of the data is presented in Chapter IV, and Chapter V outlines the summary, conclusions, and recommendations drawn from the study.
CHAPTER BIBLIOGRAPHY


13. Hahn, Andrew, "Reaching Out to America's Dropouts: What to Do?" Phi Delta Kappan, 68 (December 1987), 256-263.


CHAPTER II

REVIEW OF LITERATURE

Designing and implementing programs to encourage the at-risk student to stay in school has become an issue of high priority across the nation. Even though the percentage of students dropping out of school has not varied significantly in twenty-five years, the actual numbers, due to increasing populations, are increasing daily. In 1985-86 nearly four thousand teenagers dropped out of school every day (48). With communities bearing the economic and social costs of supporting the school dropout, serving the at-risk student has become a social as well as an educational issue. This concern has prompted several studies on the at-risk student and programs to increase the holding power of schools. As one administrator was heard to say, "We are like Noah. We don't need anyone else predicting rain; we need more people building boats."

Before schools can serve the at-risk student, educators must know which students are most likely to be at risk. After drawing a general characteristics profile of typical at-risk students, school systems can analyze the various programs that will be most successful in keeping the at-risk student in the educational environment.
Identification of the At-Risk Student

Legislation has attempted to define the at-risk or academically disadvantaged student. The most recent state legislation, House Bill 1010, defines the at-risk student as any student in grade levels seven through twelve who is under twenty-one years of age and who:

1. Has not been promoted one or more times in grades one through six and continues to be unable to master the essential elements in the seventh or higher grade level;

2. Has mathematics or reading skills that are two or more years below grade level;

3. Has failed at least two courses in one or more semesters and is not expected to graduate within four years of the time the student entered the ninth grade; or

4. Has failed one or more of the reading, writing, or mathematics sections of the most recent TEAMS test beginning with the seventh grade (43).

This description correlates with the target clientele and student eligibility requirements for CVAE. According to the Texas State Plan for Vocational Education, the students served by CVAE should be persons who have academic, socioeconomic, cultural, or other handicaps which prevent them from succeeding in regular programs (90). To be eligible for CVAE, a student must be one or more years behind academically or one or more years below normal achievement
in several academic courses. Specifically, a student must have failed at least three semester courses or must have scored below the twenty-fifth percentile on standardized tests like the TEAMS test (91). When CVAE was organized in 1968, students could qualify in any one of five categories: disadvantaged academically, socially, emotionally, culturally, or economically. These standards were later changed to require academic handicaps of all students entering CVAE (91).

The Texas State Plan for Vocational Education also outlines the characteristics of the disadvantaged student. "Eligible students" usually are low or underachievers, are irregular in attendance, have inadequate communication skills, are disinterested in school, have no personal goals, have normal or above normal potential, and are members of lower socioeconomic levels (91).

Several studies over the past two decades confirm these characteristics as being the profile of the academically disadvantaged or at-risk student.

In her study of students in Scottsdale, Arizona, Erickson indicated the profile of an at-risk student included poor academic skills, discipline problems, poor attendance, being held back in school, no sense of belonging, boredom, and being behind in school for his or her age (24).
Soderberg focused on eleven factors that influence the at-risk student to leave school. Academic achievement, attendance, problems with authorities at school, retention, poor grades, poor academic skills, pregnancy, marriage, work, home economics, and curriculum were identified in several different studies involving school dropouts (87). A 1986 study of students in Chicago found that reading scores correlated inversely with the dropout rates. Students with reading scores in the first stanine had a dropout rate of 68 percent, or two of every three. Conversely, students with reading scores in the sixth stanine reported a dropout rate of 19 percent, or two in ten. The study also concluded that the probability of a student’s dropping out of school steadily decreases as the reading level of the student increases (87). Soderberg’s own research concluded that teachers and administrators have the knowledge necessary to effectively identify potential dropouts, but they lack the confidence and training needed to work with the at-risk student (87).

Dorrell cites several reasons students leave school. Poor grades, lack of interest, behind in grade level, low reading level, and lack of attendance were again indicators of students being at risk. If a student has people in the school that care about him or her as an individual, it becomes more difficult for that student to leave (21).
In their study of at-risk youth, Delbert Elliott and Harwin Voss identified the strongest predictors as being academic failure, school "normlessness" and social isolation, exposure to dropouts in the home, and commitment to peers. Three categories of dropouts were identified: involuntary, educationally handicapped, and capable. Almost two-thirds, or 66 percent, of the students that dropped out of school were capable of completing high school. Most of these students left voluntarily for their various personal reasons. Only 20 percent were forced to leave school by administrative order due to disruptive behavior. One-third of the dropouts, or 32 percent, were educationally handicapped" (67). A list of seventeen characteristics of the at-risk student was compiled utilizing information from the Elliott and Voss study. Among the common indicators were: coming from low-income families; discipline problems in school; high absenteeism; average or below intelligence; low or under achievers academically; reading below grade level; failing grades; and feelings of rejection or not belonging.

A 1983 study by Ekstrom, Goertz, Pollack, and Rock concluded that low academic achievement, as indicated by low test scores and low grades, is one of the strongest predictors of the potential dropout. At-risk students have also
been shown to be dissatisfied with school and to have lower self-esteeems (23, p. 53).

In her book *Keeping Students In School*, Margaret Orr states that at-risk students are "far less likely to be involved in school activities and generally have a poorer opinion of themselves and their ability than their peers" (69, p. 26). Orr also indicates that programs that address these feelings have been shown to be effective in helping the student at risk.

Pittmann suggests that personal and social factors must also be investigated in working with the at-risk student (72). Pittman contends that cultural differences encountered by students when they enter school are the beginning of many problems. These differences tend to make the student withdraw from school-related activities, including doing homework and participating in extracurricular activities. These attitudinal conditions become behaviorally manifested in poor academic work, poor attendance, and increased incidents of disruptive behavior. Schools that want to serve the at-risk student will implement programs that address these negative attitudes toward school. Open and caring teachers who provide individual counseling and who enhance the individual’s self-esteem are vital parts of any program for at-risk students (72).
Calabrese concurs with Pittman's theory concerning cultural influences (14). He states that minority youth are often blamed for their own dilemma when they fail to see school as a key to their future opportunities. Because minorities do not feel a part of the school social structure, alienation from the total school society grows. Outcast from the school culture, these students form their own cultural and social group in which the value of an education is seen as nonexistent (14).

These attitudes toward school are often influenced by parents and are often developed at an early age. Schreiber quotes a study by Dr. Robert Hess to illustrate this theory (82, p. 58). When asked what they tell their children on the first day of school, parents from upper- and middle-class societies said they would tell their child to go to school to learn, that the teacher is a friend who helps, and to ask the teacher for help whenever needed. The lower-income parents said they would tell their child to behave, not get into trouble, and to come right home from school (82, p. 58). This attitude toward school can be the beginning of failure and school alienation.

Outward predictors, like high absenteeism, are easily seen. It is more difficult to assess the psychological characteristics of the student at risk. A few of these qualities which indicate a psychological profile of the
at-risk student have already been addressed. Amos summarizes these characteristics by stating that it is essential that educators realize how the at-risk student perceives the world, and this is done by attempting to understand the student's self-concept (3, p. 11). The way an at-risk student sees himself--his self-esteem--is established through the reward system of those individuals who are important to the student, the community, and the social situations or institutions in which the student participates. Self-concept, then, may determine the way an individual looks, feels, and communicates (3, p. 12).

School experiences greatly influence a student's self-concept. When a student consistently encounters negative feedback from poor academic performance, the child becomes frustrated and humiliated (30). The internal expectations of the student will become one of failure, and the student then ceases to try at all. This begins the vicious cycle of low interest and motivation which results in low academic achievement and in a greatly diminishing, demoralizing self-concept (3, p. 15; 79).

When attempting to change self-concepts, Hawk begins with two propositions: that the self is difficult to change; and when change does occur, it is very gradual (38). If a teacher intends to help the at-risk child, that teacher must first try to see the student as the child sees himself
or herself. Acceptance is the key word in improving an individual's concept of self. In a school setting, a child learns feelings of adequacy and competence by performing successfully on tasks that are appropriate to his level of competence (38).

Even though many emotional, psychological, and educational characteristics can be cited to identify the academically at-risk student, two of the more prominent factors—low academic achievement and low self-esteem—will be the primary focus of this study.

**Self-Esteem and Academic Achievement**

Various studies have found a correlation between self-esteem and academic achievement (47; 49; 84). Brookover and Patterson discovered that self-report measures of a student's concept of self as an achiever are just as potent in predicting school achievement as measures of school aptitude (12). Much of the apparent failure of at-risk students is derived directly from self-perceptions and control expectancy (63, p. 82).

Other studies have shown the lack of reality in the level of aspirations set by students subjected to constant failure experiences. Failure begets more failure in a vicious cycle of increasing frustration and of decreasing self-respect (63, p. 83).
Lackey discovered that students with poor academic self-concepts tended to remain unsuccessful in academic school work (50). Walker found that students with high self-concepts are much less affected by failure and are willing to try again when they fail than students with low self-concepts. Students with low self-concepts accept failure as permanent (96). Self-concept also affects the establishment of an individual's academic standard. Fryans stated that students with high academic self-concepts set high standards for themselves while low academic self-concept students set low standards for personal fulfillment (27).

Gadzella and Fournet report that differences in academic performances, whether high or low, have been found to be significantly related to different personality characteristics and behavior, such as self-perceptions, self-confidence, and past performances (28). Alexander stated that the key to the success or failure of a student lies in that student's self-perceptions and how others, like teachers and administrators, interpret his performances (2). When a student believes himself to be a failure, he develops an anxiety which retards his academic performance (28). The study conducted by Gadzella and Fournet concurs with previous studies that a student's self-perceptions are related to the level of academic performance. The study
also showed that the self-concept of the low achievers started high and decreased significantly as a series of trials were encountered throughout the semester (28).

In a California study by Kagan, characteristics of at-risk students were analyzed to determine the consistent correlation between each characteristic and academic under-achievement (47). Low self-esteem, lack of family support, dislike for school, and a sense of low self-effectance were included in the research. When a student feels a sense of power in terms of affecting his or her own life, a higher self-concept results. The term commonly used for this sense of power is "locus of control," which is defined as a "generalized expectancy for internal versus external control of reinforcements" (47). Internal control describes the belief that a certain event is contingent upon the individual's own behavior or upon a relatively permanent characteristic such as ability. Conversely, external control is the belief that an event or circumstance is caused by factors beyond the individual's control. The connection between what a student believes concerning the cause of academic achievement is evident. If a student believes his academic success is contingent upon his own behavior, that student will succeed. However, if a student feels that external factors control his academic performance, then
that student will adopt an apathetic attitude toward school and see himself as merely a "pawn" of the system (47).

In a study conducted in Israel, Abraham Yogev contends that the self-esteem of students in specific types of urban communities may influence the educational expectations of the students (102). When a child is isolated from the mainstream society of a culture, that child feels alienated and unimportant. When the child enters school, the child's acceptance of himself or herself as a worthwhile individual is reflected in a low self-esteem. The student does not feel he or she can be successful in school and, therefore, sets low personal academic standards (102).

Shavelson and Bolus tested some of the critical assumptions involving self-esteem (84). Even though research has found a positive correlation of about .30 between self-esteem and academic achievement, theorists disagree on the causal predominance of the two factors. Scheirer and Kraut disagreed that changes in self-concept automatically caused changes in academic achievement. The authors, however, did offer an explanation which is consistent with findings of other studies that do support the theory. Scheirer and Kraut feel that:

An alternative view is that motivation for academic learning comes from the reinforcement of one's social environment for specific learned skills. . . . In this view, self-concept change is likely to be an outcome of
increased achievement with accompanying social approval, rather than an intervening variable necessary for achievement to occur." (84).

One of the findings of the Shavelson and Bolus study indicated that there is a causal predominance of self-concept over achievement. Due to the size and nature of the study, however, the authors advocated only a tentative generalization of the results. Further studies with larger samples and more diverse populations were suggested (84).

Successful Programs for At-Risk Students

There is a fine line between a student's being at risk of dropping out and actually being a dropout. The reason a child voluntarily withdraws from the school system is as unique as the individual student. Morgan estimates that 51 percent of the males that leave school do so because of school-related reasons. Only 21 percent leave for economic reasons, while 5 percent withdraw due to family problems (65). By determining what programs are successful, school districts can intervene with at-risk students and prevent their crossing the line and becoming dropouts. Knowing what works, however, requires knowing what was done (the interventions applied), to whom, and with what results (58).

In his study of successful prevention programs, Weber found three features common to all: general organization,
staffing, and instruction (98). Successful programs take place in non-traditional educational environments and function somewhat autonomously; they have a low teacher-pupil ratio; they focus on the whole student; and they combine remedial basic skills, parental involvement, counseling, supportive services, work experience or job placement, and training in vocational skills (98). Teachers of the programs had to be committed to the goals of the program and to the needs of the at-risk student. Instructors also have to be willing to establish a rather demanding relationship with the students. In these successful programs, approximately half of the instruction time is spent on remediation which focuses on basic skills, a quarter on meeting students' personal needs, and another quarter on work-related needs (98). Motivational techniques, like building strong bonds between students and between the students and the teacher, exist in every facet of the program and usually involve individualized instruction to some degree (98). Weber also points out that these attributes of successful preventive programs vary greatly from the typical high school programs. The degree to which the regular academic program serves the needs of the child who is at risk must be highly questioned.

In addressing the at-risk situation, the Philadelphia school system also found common features of successful
programs (41). Small class size, vigorous interaction with the community and parents, a committed staff, emphasis on the affective domain, and the use of highly personalized teaching methods once again were prominent in assisting the student at risk (41).

Smith reported on a national conference concerning exemplary programs for the disadvantaged (86, p. 23). Even though some data presented in relation to a few programs were considered distorted and virtually invalid, several projects were singled out as having excellent results in educating the at-risk student. Special programs in Virginia, New York City, New Jersey, and Philadelphia offered grounds for optimism in developing and replicating effective programs (86, p. 24). Like other studies, these programs contained three major activities: job training; intensive, individualized instruction in basic skills; and a social learning and/or attitudinal change program, usually group counseling or human relations training (86, p. 24).

In surveying different programs in Texas that served the student at-risk, Brechtel identified four areas in which specific changes were made: special academic classes; vocational courses; financial assistance; and study centers (62, p. 72). The special academic classes provided new curriculum for students below grade level. Financial assistance helped fifteen- and sixteen-year-olds through the
Extension of Texas Aid for Dependent Children. Special study centers offered individualized counseling and tutoring to students and encouraged parental involvement. Vocational courses which presented the student with paid on-the-job training proved to be popular with the academically disadvantaged students.

A recent issue of Phi Delta Kappan (December 1987) was devoted entirely to the at-risk situation. Andrew Hahn identified ten conditions that indicate a student's being at risk (34). Listed in the ten were: behind in grade level, poor academic performance, dislike of school, undiagnosed learning disabilities, and the attractiveness of work. Even though the long-term employment prospects of a dropout are minimal, Hahn points out that the world of work offers attractive inducements for the teenager having problems in school (34). Studies have shown that, regardless of how poorly children have done in school, they are strongly motivated to succeed in the world of work. However, these at-risk students have unrealistic wage expectations or lack information concerning job-search skills and the requirements for entry-level employment (34). Having identified the conditions that influence the at-risk student, Hahn suggests that developing programs that respond to these issues should keep the disadvantaged student in school.
Vocational Education Programs and At-Risk Students

James Weber compared the characteristics of the exemplary program for at-risk students with the characteristics of the typical vocational program (98). The study concluded that the typical vocational classroom offers a number of educational experiences for at-risk students that are similar to those used in the prevention programs. Vocational programs had lower pupil-teacher ratios, had more individualized instruction, had more active roles for the students, had less absenteeism, and had a regular means of recognizing student performance and achievement. Vocational teachers spent more time counseling students on a personal basis and felt they had more authority than academic teachers.

A study conducted by the National Center for Research in Vocational Education compared instructional approaches utilized in vocational classroom with approaches used in non-vocational classes (100). The observations were collected in 893 secondary classrooms and questionnaires completed by 2,251 teachers in 120 high schools across 24 states. The differences observed in vocational and non-vocational classrooms lend weight to the theory that vocational classrooms are more student-centered, more activity-based, and more individualized than other classrooms. These are three essential qualities of programs that assist the at-risk student (98). The findings of this study document
the special role of high school vocational programs for students who learn best through a hands-on, practical application of knowledge. These programs also are aimed at developing students' problem-solving abilities and enhancing their self-esteem (98).

Higher Standards and At-Risk Students

In an attempt to achieve academic excellence, many states have implemented rigid educational reforms (37). Unfortunately, these higher standards have resulted in increased graduation requirements, longer school days, longer school years, and stricter academic policies. The indirect result of these reforms is an increased rate of students who leave school (30). Simply adding more of the same type of courses does not meet the needs of the student who is already hovering on the borderline of leaving school. Adding better courses that challenge students of all levels but offer a reasonable chance of success and that draw upon a variety of student interests should be considered (37). These better courses must draw out student potential that would otherwise remain untapped. It is futile for a principal to burden a teacher with a course outline that both know is badly matched to the abilities and interests of the students involved.

Glasser confirms the theory that higher standards and increased coursework are not the answer when dealing with
the at-risk student (30). At least half of all students are making little or no effort to learn because they feel that school does not satisfy their basic needs. Making school harder only increases the separation between the half who are already working and the half who are not (30).

Attempting to raise academic standards while dealing with students at risk may seem like an exercise in futility. As Harkins states:

The call to excellence in education requires more than the implementation of new course requirements. Real excellence requires educators to search for ways to reduce the number of students who drop out even as they implement state-mandated programs. This may sound like an impossible task. It is difficult enough to implement new course requirements; and it is even more difficult to work out practical responses to the dropout problem (30).

A report published by the Association for Supervision and Curriculum Development defended vocational education programs as one answer to the at-risk group (26). If increased emphasis on core subjects causes vocational programs to be scaled down or even eliminated, the effects will be most negative for the "third quartile" students, or 24 percent of the student population most likely to enter the work force immediately upon leaving school (26). The same report states that other fatalities of the limited access vocational trend will be the at-risk students. Programs which integrate basic skills with job skills development in a meaningful way is often the deciding
factor that encourages the at-risk student to stay in school (30).

By 1986 thirty-five of the fifty states had passed legislation to increase requirements for high school graduation (58). Twenty-nine states had funded programs for the gifted and talented; no states had passed a program to support the students who were even more at risk from the new standards (58).

Since "more of the same" curriculum does not entice the at-risk student to complete high school, school systems must explore alternative programs that serve the academically disadvantaged. Courses that improve basic skills, provide individual attention by caring teachers, give instruction in basic job skills, and supply a means for success have proved to be successful in dealing with students at risk. CVAE cooperative education meets all these criteria and should be investigated as a possible viable program to meet the needs of the at-risk student.

Related Studies

A review of literature yielded several studies which combined various types of vocational programs to serve the at-risk population. Studies from Australia, Israel, and Great Britain document a worldwide effort of utilizing vocational education as one solution to the dropout situation (51; 103; 102).
A California study in 1987 analyzed a special academy organized for at-risk students (19). In the fall of 1985, ten academies were established by the State of California and were designed to provide academically disadvantaged students incentives to graduate and to obtain marketable skills. Each academy combined academic and technical education in a school-within-a-school environment. These ten academies were patterned after the Peninsula Academies that had been in operation in a local district for four years. This report, written after the first year of operation of the statewide academies, presented favorable results from the projects. The conclusions of the evaluating committee included: (1) the academy concept can produce gains in attendance, grades, and earned credits of at-risk high school students; (2) the dropout rate decreased; and (3) at-risk students in the academy improved their self-esteem and their attitude toward school (19).

A follow-up evaluation of the academies was conducted in 1987 and evaluated the 1986-87 school year (20). This particular report defined an academy as having four components: students with academic potential who are at-risk of dropping out; a school-within-a-school administrative structure for grades ten through twelve; technical courses to provide students with job skills; and support from local business. The second evaluation concluded that:
(1) students on the academy campuses showed improvements in attitude and school performance; (2) developing effective programs to serve at-risk students is difficult; (3) positive gains were not limited to socially and economically congenial settings; and (4) academic records of the at-risk students improved, but the attendance and retention rates did not (20). These findings, the report added, were in general agreement with the first evaluation.

In Chicago, where 43 percent of freshmen entering high school do not graduate, a special program was conducted with freshmen and vocational education classes. All freshmen were placed in a vocational program for a minimum of one year. At the end of the experimental year, the dropout rate of the school had been reduced from 24 percent annually to 6 percent. Even though vocational education is no panacea for the dropout rate, the report concluded, vocational training can be helpful to at-risk students. In order to be successful, programs must be combined with support services, must give students new opportunities for success, must increase a student's self-confidence and enhance self-esteem, and must be representative of real-life situations. Integration of math and communication skills was also seen as an essential part of the vocational education curriculum (4).
Another Chicago study concerning academically disadvantaged students gave similar results. The Chicago schools, in conjunction with the State Office of Vocational and Technical Education, created a support services team for disadvantaged students in vocational education. These students were given a variety of programs and services to help them succeed in school. Of the students who received assistance through the program in its five years of operation, only 2 percent had dropped out of high school (4).

An eight-week program in Louisiana involving eighty at-risk teenagers also proved successful. The program had three components: academic remediation, vocational training, and individualized counseling. Students received instruction in math and language arts as well as on-the-job training for twenty hours per week. The counseling program consisted of twenty-four one-hour sessions throughout the program. All eighty subjects involved in the study returned to high school following the program and were still enrolled at the time of the follow-up evaluation. Statistically significant improvement, as measured by the California Achievement Test, was made by the students in both math and language arts. Average gains of 57.2 percent in math computation, 51.6 percent in math concepts, 17.7 percent in reading comprehension, and 44.5 percent in spelling were
recorded. On a six-point scale, the overall work behavior of the participants increased 3.72, or 59.5 percent (101).

James Weber of the National Center for Research in Vocational Education synthesized existing data on the characteristics of actual and potential school dropouts. Weber also identified strategies and techniques used in vocational programs to remedy basic skill deficiencies in these at-risk youth. School performance, job proficiency data, standardized test scores, and existing studies were used to determine the basic skill needs of the student at risk. The average performance of at-risk students on standardized basic skill tests is near the 25th percentile. The performance of at-risk students in reading and math were equally poor. However, when potential and actual school dropouts were afforded the opportunity to participate in vocationally oriented programs that have an integrated basic skills component, the students scores on basic skills measures increased substantially. The study also called for earlier identification of students at risk, for increased use of individualized instruction or materials, and for further research on the benefits and problems of innovative, flexible vocational programs (100).

In a recent survey in Texas, questionnaires concerning CVAE in grades nine through twelve were sent to thirteen groups (11). Vocational administrators, superintendents,
principals, counselors, CVAE teachers, former CVAE students, parents of former CVAE students, and employers of CVAE students were a few of the people involved in the study. The study attempted to answer some of the concerns involving CVAE programs in Texas, and valuable information was obtained as a result.

The CVAE survey found that:

1. Less than 7 percent of students in CVAE failed to meet the criteria for being academically disadvantaged.

2. The dropout rate for CVAE students was 18 percent, compared to an estimated 39 percent for the target population.

3. CVAE students were receiving adequate vocational training.

4. Improvement could be made in providing additional basic skills development to at-risk students in CVAE.

5. Most at-risk coordinators across the state see CVAE as a tool in their districts' comprehensive plans to serve the at-risk student.

6. Because CVAE students in most districts take regular academic courses with no support services, students continue to fail required courses.

7. CVAE vocational classes are not enough of an intervention with the at-risk student; CVAE must be part of a larger, more comprehensive program (11).
Chapter Summary

Research has shown that several factors influence a teenager's decision to leave school and that no one program can meet the needs of all students who are at risk. Two of the most common characteristics of the student at risk are low academic achievement and low self esteem. In order to serve the needs of the academically disadvantaged student, schools have to recognize these factors and design alternative programs. Programs that have proven to be successful have exhibited several common characteristics, including academic remediation, vocational training, individual attention, and recognition programs. Academic remediation helps increase academic achievement. Vocational training provides an opportunity for job training in which immediate rewards are realized from paid wages. The self-esteem of a student is increased as he or she feels success in school and on the job. Mediocre programs of any type, however, will only produce mediocre results.

The CVAE cooperative education format contains natural elements for success in dealing with students at risk. Vocational training is provided to students by supervising employers in paying, part-time positions. Students realize immediate rewards from the wages received. Even though specialized academic instruction is no longer a funded part of the CVAE format, many teacher-coordinators offer tutoring
and academic assistance in correlation with the CVAE class experience. Since the classes are kept small, the student has an opportunity to receive individual attention and counseling from the teacher-coordinator. A special avenue for recognition and success is seen through participation in the youth leadership organization, the Vocational Opportunities Clubs of Texas, which is part of the training provided in CVAE. By combining individual attention with paid on-the-job training and a specific program for recognition (VOCT), the academically at-risk student is presented the opportunity to achieve success within the academic environment.
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70. Peck, Nancy, and Jay Smink, Components for Successful Planning and Implementation of Dropout Prevention Programs, National Center for Research in Vocational Education, Ohio State University, Columbus, Ohio, n.d.


CHAPTER III

METHODOLOGY

This chapter contains a description of the methodology incorporated in this study. In addition to reviewing the control and experimental groups, a description of the test instrument and a summary of the procedures used for collecting the data are presented. The design of this research was a Solomon four-group design (1, p. 237-239) tested with a one-way analysis of variance (5, p. 272-341). A Chi-square analysis was conducted to compare the retention rates of the two educational programs. The study was conducted within the Abilene Independent School District in Abilene, Texas, during the spring semester of the 1988-1989 school year.

Subjects

The subjects for this research were students enrolled in the tenth, eleventh, and twelfth grades in the Abilene Independent School District in Abilene, Texas. Abilene, located two hundred miles west of Dallas in West Central Texas, has a population of approximately 100,000 people. In addition to a United States military base, Abilene contains three church-related colleges. The schools involved in the study were Abilene High School and Cooper High School.
All subjects were identified as being academically at risk, according to the definition set by the Texas Education Agency and House Bill 1010.

The subjects ranged in age from sixteen to eighteen years. The ethnicity of the samples approximated the proportions within the community. Since all socioeconomic levels are represented in the community, all levels were represented proportionately in the samples. Because all subjects of the study were identified as at-risk, it is assumed that all the characteristics of at-risk students were evenly distributed throughout both the control and experimental groups.

The control group of the study consisted of students identified as at-risk who were enrolled in an academic program of six classes each day. The experimental group involved students identified as at-risk who were enrolled in the Coordinated Vocational Academic Education cooperative education vocational program. Table II displays the demographics according to gender and age of the two groups.
Table II shows that 122 students volunteered to participate in the research, 48 students in academic programs and 74 students in CVAE. This sample represents 44 percent of the 276 identified at-risk students remaining in school in May.

While the academic at-risk group had few students above the age of seventeen, the CVAE at-risk group had few students under seventeen. Students in CVAE cooperative education are required to be sixteen years old before entering the program in September. As a result, most CVAE students become seventeen during the course of the school year. Conversely, few students in the academic at-risk group were over seventeen due to the fact that most students at risk find alternative

<table>
<thead>
<tr>
<th>Group</th>
<th>Gender</th>
<th>Age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>16</td>
</tr>
<tr>
<td>Academic</td>
<td>32</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>At-Risk</td>
<td>41</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>CVAE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>73</td>
<td>49</td>
<td>29</td>
</tr>
</tbody>
</table>

| TABLE II     |
| DEMOGRAPHICS STUDIED ACCORDING TO EDUCATIONAL PROGRAM |

<table>
<thead>
<tr>
<th>Group</th>
<th>Gender</th>
<th>Age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>16</td>
</tr>
<tr>
<td>Academic</td>
<td>32</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>At-Risk</td>
<td>41</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>CVAE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>73</td>
<td>49</td>
<td>29</td>
</tr>
</tbody>
</table>
forms of education by their eleventh or twelfth grade years. By this time these students have remedied their at-risk status, have entered regular vocational programs, have entered CVAE programs, or have left the educational system altogether.

The following Table III displays the demographics of students in the first year of CVAE and students in the second year of CVAE cooperative education.

**TABLE III**

DEMOGRAPHICS STUDIED ACCORDING TO FIRST AND SECOND YEARS OF CVAE

<table>
<thead>
<tr>
<th>Group</th>
<th>Gender</th>
<th>Age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>CVAE I</td>
<td>33</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>CVAE II</td>
<td>8</td>
<td>0*</td>
<td>9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>41</td>
<td>8</td>
<td>29</td>
</tr>
</tbody>
</table>

*All vocational students are required to be 16 before being admitted to the cooperative program.

Students in the CVAE cooperative education programs attended four classes each day, including one class period of CVAE instruction, and were employed in approved training stations approximately three hours each day. Students in
the academic programs attended four to six regular mainstreamed classes each school day.

All the subjects involved with the study participated on a voluntary basis. Because the CVAE teachers assisted with the administration of the tests, the students in CVAE took more of a personal interest in the study than did the students in the regular programs.

Several guidelines were imposed in the selection of the subjects for the research. First, all students involved were identified by the Abilene Independent School District as being at risk according to Texas Education Agency regulations. Secondly, students participating in the CVAE programs did so on a voluntary basis and met the entry requirements as set by the Texas Education Agency. Thirdly, all students willingly accepted to participate in the study. Finally, all students involved with the research had signed permission forms from their parents or guardians.

Control Group

For the purpose of this study, the academically at-risk students enrolled in regular academic programs of the Abilene Independent School District were considered the control group. These students attended mainstream academic classes each day which were considered general educational classes. Even though several students of the control group were enrolled in remedial academic courses, many had chosen
to remain in the academic mainstream and to pursue a college preparatory program.

**Experimental Group**

The students enrolled in the CVAE cooperative education programs of the Abilene Independent School District were considered the experimental group. Students in CVAE co-op were required to be below grade level in school, were at least sixteen years of age, and were employed in approved occupations. As members of the CVAE co-op program, these students attended three mainstream academic classes and one CVAE class each day. CVAE co-op students were placed in approved training stations which provided paid, on-the-job instruction under the supervision of certified employers. Like their academically at-risk peers, CVAE students were enrolled in remedial academic classes and in regular mainstream courses, according to individual needs and abilities. Even though participation in the CVAE cooperative education program fulfilled elective credits, students were also required to meet the academic requirements for high school graduation. Placement into the CVAE cooperative education program constituted the treatment not received by the control group.

**Description of the Test Instrument**

The instrument employed for this research was the Piers-Harris Children's Self-Concept Scale. This scale was
developed by Ellen V. Piers and Dale B. Harris to aid in the assessment of self-concept in children and adolescents. Self-concept, as measured by the Piers-Harris, is defined as "a relatively stable set of self-attitudes reflecting both a description and an evaluation of one's own behavior and attributes" (6, p. 1). Because the test focuses on how a child consciously feels about himself or herself, a genuine self-concept is measured without interference of interpretations or value judgments by adults. This instrument has been standardized longitudinally and cross-sectionally for ages eight to eighteen and is constructed on the third-grade reading level.

The test is subtitled "The Way I Feel About Myself" and is an eighty-item, self-report questionnaire which is divided into six subscales. These cluster scales are: (1) Behavior, (2) Intellectual and School Status, (3) Physical Appearance and Attributes, (4) Anxiety, (5) Popularity, and (6) Happiness and Satisfaction. Children are shown simple statements that tell how some people feel about themselves. The respondents are then asked to indicate whether each statement applies to them using dichotomous "yes" and "no" responses. The scale is not biased according to sex or grade differences and can be used with the educationally disadvantaged because it does not correlate unduly with social desirability (6).
When the Piers-Harris Children's Self-Concept Scale was developed in 1969, Piers reported reliability coefficients ranging from .72 to .93. The internal consistency using the Kuder-Richardson Formula 21 was reported to be from .76 to .93. The test-retest reliability was .71 to .96 when the retest intervals were either a few weeks or six months (32).

Studies concerning the reliability of the Piers-Harris scale have been conducted with a variety of populations. Throughout the various testing situations, the internal consistency of the scale has remained relatively high. Alpha coefficients of .90 to .91 have been reported by male and female populations, and reliabilities of .88 to .93 have been recorded for males and females using Kuder-Richardson Formula 20. High internal-consistency measures have been found with special populations, including the American Indians (Lefly, 1974), Mexican-Americans (Henggeler and Tavormina, 1979), learning disabled students (Smith and Rogers, 1976; Stewart, Crump, and McLean, 1979), mixed ethnic groups (Platten and Williams, 1979, 1981) and British school children in Northern England (Metcalf, 1981).

In studies made of the concurrent validity of the Piers-Harris Children's Self-Concept Scale, correlations from nonsignificant to .68 (p < 0.01) were found. Mayer (1965) found a correlation of .68 (p < 0.01) with the Lipsitt
Children's Self-Concept Scale using a sample of special education students, twelve to sixteen years of age. Yonker, Blixt, and Dinero (1974) found a correlation of .51 ($p < .01$) for males and .61 ($p < 0.01$) for females in grade ten with the Tennessee Self-Concept Scale. Piers (6, p. 56) found correlations ranging from .06 to .41 ($p < 0.01$) on rating corresponding studies of peers and teachers. Cox (1986) conducted a similar study and obtained correlations of .43 ($p < 0.01$) for teacher rating and peer ratings of .31 ($p < 0.01$) of socially effective behavior (6, p. 57).

The Piers-Harris Children's Self-Concept Scale has a special section for Validity Considerations. The entire set of validity indicators is scanned to determine if any apply. Two types of validity checks are considered: threats to validity associated with relevant moderator variables (age, grade, ethnic group, etc); and invalid responses due to random or systematic response biases (6, p. 70).

The Piers-Harris Children's Self-Concept Scale contains several positive attributes which made it appropriate for this study. The third-grade reading level of the instrument made it easy for the academically at-risk students to read and understand. Each statement of the scale deals with only one aspect of the self-concept, which enhances individual interpretation and diminishes personal frustration of the respondents. The dichotomous "yes" and "no" responses are
quickly and easily ascertained. The test has been validated for use with academically disadvantaged or academically at-risk students. Since the test instrument had to be given within the school day, the brief administration time was not only convenient but necessary.

Procedures for Collection of Data

Several steps were taken in the selection of the sample and in the collection of the data for the study.

According to state mandate, academically at-risk students in the tenth, eleventh, and twelfth grades were identified by the Abilene Independent School District. Students under the age of sixteen or above the age of eighteen were eliminated from the study. Students enrolled in regular vocational programs, such as Industrial Cooperative Training or Auto Mechanics Laboratory, were eliminated from the study. A table of random numbers was used to divide the remaining students into two equal subgroups.

Since all students in CVAE co-op have been identified as being at risk and are at least sixteen years of age, only CVAE students above eighteen years old were eliminated from the study. A table of random numbers was used to divide the remaining students into two equal subgroups. Table IV displays the data pertaining to the four groups of the Solomon four-group research design.
TABLE IV

SUBJECTS TAKING PRE- AND POST-ADMINISTRATIONS OF THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE BY AGE AND GENDER

<table>
<thead>
<tr>
<th>Group</th>
<th>Gender</th>
<th>Age</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre/Posttest</td>
<td>21</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Posttest Only</td>
<td>11</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>GROUP TOTAL</td>
<td>32</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>CVAE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre/Posttest</td>
<td>24</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>Posttest Only</td>
<td>17</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>GROUP TOTAL</td>
<td>41</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>TOTAL</td>
<td>73</td>
<td>29</td>
<td>50</td>
</tr>
</tbody>
</table>

The Pierson-Harris Children's Self-Concept Scale was administered to one subgroup of each at-risk category during the second week of March 1989. Twelve weeks later during the third week of May 1989, the test was given to the students in all four groups of the sample.

In an attempt to encourage as many at-risk students as possible to participate in the study, a letter was sent to
each student identified. This letter explained the purpose of the research and asked for the voluntary participation of each student. Since the CVAE teachers were involved with the study, more of the students in the CVAE program felt a personal connection with the research and agreed to complete the test instrument. On the other hand, however, students in the regular academic program displayed an apprehension toward "testing" which is typical of the student who has not found success in the academic setting. As a result of this feeling, many at-risk students in the regular academic programs declined participation in the study.

The Fiers-Harris Children's Self-Concept Scale was administered to the subjects in small groups of ten to twenty-five students. At least two administrators were present during all testing periods, and identical instructions were read to all groups.

In order to test the students in regular academic programs, arrangements were made with the school administrations to schedule suitable test dates utilizing "Activity" and "Advisory" periods of each school. These are twenty-minute periods following the second class period of a special bell schedule and are utilized for school activities, like class meetings and pep rallies, and for completing school forms, like class schedules and enrollment cards. Special testing is a common use for this time.
Since personality testing is now considered part of the vocational assessment required for vocational students, CVAE co-op students were given the Piers-Harris in conjunction with the CVAE program. Students were assured that their participation in the study, whether they accepted or declined participation, would in no way affect their status in the CVAE program.

The same instructions for administering the Piers-Harris Children’s Self-Concept Scale were given all test administrators, and the same directions for completing the scale were read to all subjects. This was necessary to make the individual interpretations of the students as universal as possible.

When the subjects reported to the test site, the directions for the Piers-Harris Children’s Self-Concept Scale were read. Students were asked to give their sex, age, and grade on the front of the answer sheet. To assure anonymity and to encourage honest responses, subjects were asked to substitute their school identification numbers for their names. When the test monitors were satisfied the information on the front of the answer sheets had been completed satisfactorily, they orally read the printed instructions on the answer sheets to the test subjects. This process was replicated as closely as possible in the
administrations to all the groups in an attempt to standardize the test situations.

To gather information for the retention rates of the two educational programs, additional steps were required. A special information sheet was prepared to collect data on the students leaving school during the second semester. The CVAE teachers provided information for the students in the CVAE programs who left school. School records provided the information for students in regular academics who were not enrolled in school at the conclusion of the study. The final list was compared with the list of identified at-risk students provided for the study in February.

Methods for Analyzing the Data

Three types of statistical analyses were used to test the data collected from the two administrations of the Piers-Harris Children's Self-Concept Scale. Analysis of variance, analysis of covariance, and Chi-squares were used to test for statistical significance at the 0.05 level.

Hypothesis 1: There is no significant difference in mean attitude self-concept score of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in a regular academic program as measured by the Piers-Harris Children's Self-Concept Scale. This hypothesis was analyzed with three
one-way analyses of variance, comparing different groups
with each analysis. All the at-risk students in CVAE co-op
were compared with the at-risk students in regular
academics. The males in each group were compared with the
at-risk male students in the alternate at-risk group. The
female students of both at-risk groups were also compared.

Hypothesis 2: There is no significant difference in
the mean attitude self-concept score between male and female
academically at-risk students in CVAE cooperative education
and male and female academically at-risk students in a
regular academic program as measured by the Piers-Harris
Children's Self-Concept Scale. This hypothesis was also
analyzed with three one-way analyses of variance. At-risk
male students in regular academics were compared with at-
risk males in CVAE cooperative education. At-risk female
students in regular academics were compared with at-risk
females enrolled in CVAE co-op. Males and females of the
same educational program were also compared utilizing a
one-way analysis of variance.

Hypothesis 3: There is no significant difference in
the mean attitude self-concept score between males and
females of different age groups of academically at-risk
students enrolled in CVAE cooperative education and aca-
demically at-risk students enrolled in regular academic
programs as measured by the Piers-Harris Children's Self-
Concept Scale. A total of seventeen one-way analysis of variance tables were created to compare the different groups of this hypothesis. Two analysis of variance tables were created to compare the three age groups in each of the two at-risk groups. Three analysis of variance tables were created to compare students of the same age in the two groups of at-risk programs. In order to compare students of the same age and gender in the two educational programs, six analysis of variance tables were presented. Six analysis of variance tables were also drawn to compare the male and female students of the same age and educational program.

Hypothesis 4: There is no significant difference in the mean attitude self-concept score of academically at-risk students in the first year of CVAE cooperative education and in second-year CVAE cooperative education students as measured by the Piers-Harris Children's Self-Concept Scale. A simple one-way analysis of variance table was created to compare the mean scores of first-year CVAE students with the mean scores of second-year CVAE students.

Hypothesis 5: There is no significant change in the mean attitude self-concept score of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale over a three-month period utilizing a
Solomon four-group design. Using the data collected from the two pretest and posttest groups, three analysis of covariance tables were drawn to compare the change in mean scores. One analysis of covariance compared the change in self-concept of the students in CVAE with the change in self-concept of the at-risk students in regular academic programs. Another analysis of covariance compared the self-concept change of the at-risk males in the two types of educational programs. A third analysis of covariance compared the self-concept change of the female at-risk students in the two programs. Four one-way analysis of variance tables were created to compare the pretest and posttest means of males and females in the two at-risk groups. An analysis of variance was conducted between the pretest-posttest group and the posttest only group.

**Hypothesis 6:** There is no significant difference in the retention rates of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in regular academic programs. Due to the difference in the size of the two populations, a Chi-square analysis was conducted to compare the retention rates of the two educational programs. A Chi-square analysis is used to determine the significance of difference between proportions (5, p. 211).
Hypothesis 1: There is no significant difference in the retention rates of academically at-risk students in the first year of CVAE co-op and students in the second year of CVAE co-op. To accommodate the difference in the size of the populations, a Chi-square analysis was conducted to compare the retention rates of students in the first and second years of the CVAE cooperative education program.

Summary

This chapter contained a detailed description of the methodology used to collect and analyze the data of the study. Academically at-risk students in regular academic programs and academically at-risk students in the CVAE cooperative education programs were given the Piers-Harris Children's Self-Concept Scale and the mean attitude self-concept scores of the different groups were compared. Using one-way analysis of variance and analysis of covariance, the mean self-concept scores of the various groups were treated statistically in order to determine the significant differences within and between the groups involved in the study. A Chi-square analysis was conducted comparing the number of students remaining in school with the number of students withdrawing from school in the two educational programs. A similar Chi-square analysis was conducted to compare the retention rates of students in the two levels of the CVAE
cooperative education program. Chapter IV presents a detailed analysis of the data collected as a result of this study.
CHAPTER BIBLIOGRAPHY


CHAPTER IV

ANALYSIS OF THE DATA

The following chapter presents an analysis of the data obtained from administering the Piers-Harris Children's Self-Concept Scale to academically at-risk students enrolled in regular academic programs and in the Coordinated Vocational Academic Education (CVAE) cooperative education programs. The information was obtained from two administrations of the test instrument during the spring semester of 1989 over a twelve-week period of March through May. All the subjects of the study were students in the Abilene Independent School District who had been identified as being at risk as defined by the Texas Education Agency and Texas House Bill 1010 (11).

Restatement of the Null Hypotheses

For the purpose of the study, the following null hypotheses were formulated.

1. There is no significant difference in the mean attitude self-concept score of academically at-risk students enrolled in CVAE cooperative education and those enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.
2. There is no significant difference in the mean attitude self-concept score between male and female academically at-risk students in CVAE cooperative education and those enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.

3. There is no significant difference in the mean self-concept score between males and females of different age groups of academically at-risk students enrolled in CVAE cooperative education and those academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.

4. There is no significant difference in the mean attitude self-concept score of academically at-risk students in the first year of CVAE cooperative education and in second-year CVAE cooperative education students as measured by the Piers-Harris Children's Self-Concept Scale.

5. There is no significant change in the mean attitude self-concept score of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale over a three-month period utilizing the Solomon four-group design.

6. There is no significant difference in the retention rate of academically at-risk students enrolled in CVAE
cooperative education and of academically at-risk students enrolled in regular academic programs.

7. There is no significant difference in the retention rate of academically at-risk students in the first year of CVAE cooperative education and academically at-risk students in the second year of CVAE cooperative education.

Analysis of the Data

The data gathered from the two administrations of the Piers-Harris Children's Self-Concept Scale were statistically analyzed using an analysis of variance (ANOVA) and a Chi-square. All analyses were conducted according to hypothesis. The data collected during the May 1989 administration of the Piers-Harris Children's Self-Concept Scale were utilized to compare the mean scores of the two academically at-risk groups involved in the study. An analysis of variance and a Scheffe multiple range test were employed to test for significance. All scores reported reflect adjusted means for unbalanced sample cells. Analyses of the data were conducted according to hypothesis. The following presents the results of analysis.

Hypothesis 1: There is no significant difference in the mean attitude self-concept score of academically at-risk students enrolled in CVAE cooperative education and those enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.
Table V displays the data gathered to test this hypothesis.

### TABLE V

**PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE MEAN ATTITUDE SCORES OF ACADEMICALLY AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAMS**

<table>
<thead>
<tr>
<th>Program</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic At-Risk</td>
<td>48</td>
<td>57.31</td>
<td>10.927</td>
<td>1.579</td>
<td>25-81</td>
</tr>
<tr>
<td>CVAE At-Risk</td>
<td>74</td>
<td>56.28</td>
<td>11.982</td>
<td>1.393</td>
<td>34-81</td>
</tr>
<tr>
<td>TOTAL</td>
<td>122</td>
<td>56.69</td>
<td>11.543</td>
<td>1.045</td>
<td>25-81</td>
</tr>
</tbody>
</table>

As presented in Table V, the at-risk students enrolled in the CVAE program had a slightly lower mean score (56.28) than at-risk students enrolled in the regular academic program (57.31). However, the range of scores of the academic at-risk students (25-81) was greater than the at-risk students in CVAE (34-81). Students in both groups scored 81, the highest possible score.

A low self-esteem is a common characteristic of academically at-risk students. Ekstrom concluded that at-risk students have also shown to be unhappy in the school setting.
and to have a lower self-esteem (8, p. 53). Orr also found that students at risk of dropping out have a lower opinion of themselves than their peers (17, p. 26). This is supported by James who found CVAE students had a lower self-concept than students in regular programs (12, p. 76).

To test for significance of difference between the two groups of academically at-risk students, the data were analyzed using an analysis of variance. Table VI presents the results of the analysis.

TABLE VI

ANALYSIS OF VARIANCE FOR PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE MEAN ATTITUDE SCORES OF AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Variance Estimate</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>30.811</td>
<td>1</td>
<td>30.811</td>
<td>.230</td>
<td>.638</td>
</tr>
<tr>
<td>Within Groups</td>
<td>16093.351</td>
<td>120</td>
<td>134.111</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>16124.162</td>
<td>121</td>
<td>133.258</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The analysis of variance reported in Table VI indicates that there was not a significant difference in mean attitude self-concept scores of at-risk students in CVAE cooperative
education and in regular academic programs. With an E-ratio of .230 and \( p = 0.638 \), the mean scores of the two at-risk groups failed to reflect a significant difference at the .05 level \( (p > .05) \).

**Hypothesis 2:** There is no significant difference in the mean self-concept score between male and female academically at-risk students in CVAE cooperative education and those enrolled in a regular academic program as measured by the Pierr-Harris Children's Self-Concept Scale.

Several studies have attempted to determine the effect of gender upon self-concept. Even though there is evidence to indicate there are sex differences in self-concept, these differences are specific in nature (19, p. 72). While males report less anxiety and more behavioral problems, females responded more to personality characteristics.

Table VII compares the mean attitude self-concept scores of male at-risk students in the academic program and in the CVAE cooperative education program.
### TABLE VII

**MEAN ATTITUDE SCORES OF MALE AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAMS AS MEASURED BY THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE**

<table>
<thead>
<tr>
<th>Program</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic At-Risk</td>
<td>32</td>
<td>56.59</td>
<td>10.261</td>
<td>1.814</td>
<td>25-79</td>
</tr>
<tr>
<td>CVAE At-Risk</td>
<td>41</td>
<td>58.44</td>
<td>13.147</td>
<td>1.816</td>
<td>36-81</td>
</tr>
<tr>
<td>TOTAL</td>
<td>73</td>
<td>57.63</td>
<td>11.013</td>
<td>1.290</td>
<td>25-81</td>
</tr>
</tbody>
</table>

Table VII shows that male students in the CVAE cooperative education program had a higher mean self-concept score (58.44) and a higher range (36-81) than male at-risk students in academic programs who scored a mean self-concept score of 56.59 and a range of 25-79.

Using an analysis of variance, Table VIII compares the mean scores of at-risk male students in academic programs and in CVAE cooperative education.
Even though at-risk male students in CVAE had a higher mean attitude self-concept score than their male peers in regular academic programs, this was not statistically significant ($p = 0.488$) at the .05 level.

The mean self-concept scores of the at-risk female students in the two programs were also compared. Table IX presents these findings.
The information in Table IX shows that female at-risk students in regular academic programs had a higher mean attitude self-concept score (58.75) than the female at-risk students in CVAE cooperative education (53.606). The girls enrolled in academics also had a higher range (38-81) than did the girls in CVAE co-op (34-81).

The difference in mean attitude self-concept scores (5.144) suggests a possible significance. An analysis of variance, presented in Table X, tested for this possible significant difference.
TABLE X

ANALYSIS OF VARIANCE FOR MEAN ATTITUDE SCORES OF AT-RISK FEMALE STUDENTS IN ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION AS MEASURED BY THE PIESS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Variance Estimate</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>285.121</td>
<td>1</td>
<td>285.121</td>
<td>1.93</td>
<td>.168</td>
</tr>
<tr>
<td>Within Groups</td>
<td>6944.879</td>
<td>47</td>
<td>147.763</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>7230.000</td>
<td>48</td>
<td>150.625</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Even though the female at-risk students in CVAE had a lower mean attitude self-concept score than female at-risk students in regular academic programs, the data reported in Table X indicates that this difference is not statistically significant (p = 0.168). Neither the at-risk males nor the at-risk females in the CVAE cooperative education programs showed a significant difference at the .05 level (p > .05) in perceived self-concept mean scores than the academically at-risk male and female students in academic programs. However, there is a trend toward significant difference in the female at-risk students (p = 0.168) and in the male students at-risk (p = 0.488).
A comparison of males and females in the same program was also conducted. Table XI presents the results of this comparison.

**TABLE XI**

PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE MEAN ATTITUDE SCORES OF AT-RISK MALES AND AT-RISK FEMALES IN ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION

<table>
<thead>
<tr>
<th>Program</th>
<th>Mean Score (Males)</th>
<th>Mean Score (Females)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>56.594</td>
<td>58.750</td>
<td>0.549</td>
</tr>
<tr>
<td>CVAE</td>
<td>58.439</td>
<td>53.606</td>
<td>0.071</td>
</tr>
</tbody>
</table>

The data presented in Table XI shows that there is no significant difference in the mean attitude self-concept scores between at-risk male students and at-risk female students in either the academic program \( p = 0.549 \) or the CVAE cooperative education program \( p = 0.071 \). Consistent with the findings of James, there is a trend toward significant difference between males and females in the CVAE cooperative education program (12, p. 79). This also supports the findings of Piers and others who found no significant gender differences in overall self concept (19, p. 72). Neither group showed a statistically significant difference at the 0.05 level \( p > .05 \).
The findings reported in Tables V through Table XI show that there is no significant difference in the mean attitude self-concept scores between at-risk male students and at-risk female students in academic programs or in CVAE cooperative education program. None of the comparisons reported a significant difference at the 0.05 level.

**Hypothesis 3:** There is no significant difference in the mean attitude self-concept score between males and females of different age groups of academically at-risk students enrolled in CVAE cooperative education and those academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.

Conflicting theories exist concerning age and self-concept. It is generally accepted that self-concept increases with age (19, p. 70). However, Lackey found that the continued failure in school lowered the self-concept of the student at risk (14). Table XII compares the mean scores of different ages in the two at-risk groups of the study.
<table>
<thead>
<tr>
<th>Program</th>
<th>18 Yr. Olds</th>
<th>17 Yr. Olds</th>
<th>16 Yr. Olds</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>56.167</td>
<td>55.762</td>
<td>59.190</td>
<td>0.590</td>
</tr>
<tr>
<td>CVAE</td>
<td>58.810</td>
<td>54.414</td>
<td>51.375</td>
<td>0.166</td>
</tr>
<tr>
<td>Difference</td>
<td>2.643</td>
<td>1.348</td>
<td>7.815</td>
<td></td>
</tr>
<tr>
<td>p</td>
<td>0.610</td>
<td>0.686</td>
<td>0.102</td>
<td></td>
</tr>
</tbody>
</table>

The data presented in Table XII indicates that sixteen-year-old at-risk students in academic programs have the highest self-concept score (59.19) of any group tested while sixteen-year-old students in CVAE cooperative education have the lowest self-concept score (51.375) of any group tested. However, seventeen-year-old at-risk students in CVAE cooperative education (54.414) scored only slightly lower (1.349) than their peers in academic programs (55.7619). This difference proved to be the least significant (p = 0.686) of any age group. Eighteen-year-old students in CVAE cooperative education scored higher (58.811) than their peers in regular academic programs (56.167), but this difference
(2.643) was not statistically significant ($p = 0.610$) at the 0.05 level.

The results of the different age groups of students at risk parallel the differing theories concerning age and self-concept. At-risk students in regular academic programs decreased slightly in self-concept scores, which supports the theory that continued failure in school decreases self-esteem (14). This difference was not statistically significant ($p = 0.59$) at the 0.05 level. Students at risk in the CVAE cooperative education program increased from 51.38 at sixteen years old to 58.81 at eighteen years old. This difference (7.434) approaches significance ($p = 0.156$) at the 0.05 level. No significant difference was found between or within any groups tested.

Table XIII compares the mean attitude self-concept scores of males and females of different age groups.
TABLE XIII

A COMPARISON OF MEAN ATTITUDE SELF-CONCEPT SCORES OF AT-RISK MALES AND FEMALES OF DIFFERENT AGE GROUPS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAM AS MEASURED BY THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE

<table>
<thead>
<tr>
<th>Program</th>
<th>18 M</th>
<th>18 F</th>
<th>17 M</th>
<th>17 F</th>
<th>16 M</th>
<th>16 F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic At-Risk</td>
<td>56.75</td>
<td>55.00</td>
<td>57.07</td>
<td>53.14</td>
<td>56.07</td>
<td>65.43</td>
</tr>
<tr>
<td>CVAE At-Risk</td>
<td>62.54</td>
<td>53.33</td>
<td>52.63</td>
<td>56.62</td>
<td>59.33</td>
<td>46.60</td>
</tr>
<tr>
<td>Difference</td>
<td>5.79</td>
<td>1.67</td>
<td>4.44</td>
<td>3.48</td>
<td>3.26</td>
<td>18.83</td>
</tr>
<tr>
<td>t</td>
<td>0.345</td>
<td>0.824</td>
<td>0.280</td>
<td>0.516</td>
<td>0.652</td>
<td>0.005*</td>
</tr>
</tbody>
</table>

*Statistically significant at the 0.05 level.

The data presented in Table XIII indicates that sixteen-year-old girls in academics (65.43) and eighteen-year-old boys in CVAE cooperative education (62.54) have the highest mean self-concept scores of any groups tested. While the mean attitude scores of at-risk female students of different ages in academics decreased (10.43), the mean attitude scores of at-risk males of different ages in academics remained fairly constant.
Only one group showed to be statistically different at
the 0.05 level ($p < .05$). While the sixteen-year-old female
at-risk students in academic programs had the highest mean
score (65.43) of any group, their counterparts in CVAE co-op
had the lowest mean score (46.60) of any group. This proved
to be more than statistically significant at the 0.05 level
($p < .05$) with $p = 0.005$. No other group indicated a statisti-
cally significant difference.

When male and female at-risk students of the same age
and educational program were compared, only one group showed
a significant difference. Table XIV presents this data.

**TABLE XIV**

**A COMPARISON OF MEAN ATTITUDE SELF-CONCEPT SCORES
AS MEASURED BY THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT
SCALE OF AT-RISK MALE AND FEMALE STUDENTS OF DIFFERENT
AGE GROUPS IN THE SAME EDUCATIONAL PROGRAM**

<table>
<thead>
<tr>
<th>Age By Program</th>
<th>Male</th>
<th>Female</th>
<th>Difference</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 years</td>
<td>56.75</td>
<td>55.00</td>
<td>1.75</td>
<td>0.835</td>
</tr>
<tr>
<td>17 years</td>
<td>57.07</td>
<td>53.14</td>
<td>3.93</td>
<td>0.456</td>
</tr>
<tr>
<td>16 years</td>
<td>56.07</td>
<td>65.43</td>
<td>9.36</td>
<td>0.070**</td>
</tr>
<tr>
<td>CVAE Co-op</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 years</td>
<td>62.55</td>
<td>53.33</td>
<td>9.22</td>
<td>0.015*</td>
</tr>
<tr>
<td>17 years</td>
<td>52.63</td>
<td>56.62</td>
<td>3.99</td>
<td>0.347</td>
</tr>
<tr>
<td>16 years</td>
<td>59.33</td>
<td>46.60</td>
<td>8.74</td>
<td>0.118**</td>
</tr>
</tbody>
</table>

*Significant at the 0.05 level.
**Approaching significance at the 0.05 level.
Although two groups approach significant difference, the only groups to be significantly different at the 0.05 level ($p < .05$) are the eighteen-year-olds in CVAE co-op. Males in this group have a higher mean score (62.55) than females (53.33) of the same age and educational program. The difference of these groups is more than significant at the 0.05 level with $p = 0.015$. Two other groups—sixteen-year-olds in academic programs and sixteen-year-olds in CVAE—approach significance with $p$-values of 0.070 and 0.118, respectively. No other groups of males and females of the same age and educational program indicated a statistically significant difference at the 0.05 level ($p > .05$).

**Hypothesis 4:** There is no significant difference in the mean attitude self-concept score of academically at-risk students in the first year of CVAE cooperative education and in second year CVAE cooperative education students as measured by the Piers-Harris Children's Self-Concept Scale.

An analysis of variance was used to determine the significance of difference in mean attitude self-concept score of students in different years of the CVAE cooperative education program. The Texas Education Administrative Code specifies CVAE cooperative education as a two-year program. Even though some tenth-grade students are enrolled in the program, most students entering the program are classified
as either juniors (eleventh graders) or seniors (twelfth graders). Table XV shows these comparisons.

**TABLE XV**

**COMPARISONS OF MEAN ATTITUDE SELF-CONCEPT SCORES OF AT-RISK STUDENTS IN FIRST YEAR AND SECOND YEAR CVAE COOPERATIVE EDUCATION PROGRAMS AS MEASURED BY THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE**

<table>
<thead>
<tr>
<th>Program</th>
<th>Number</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVAE I</td>
<td>60</td>
<td>57.02</td>
<td>11.54</td>
<td>0.593</td>
<td>34-81</td>
</tr>
<tr>
<td>CVAE II</td>
<td>14</td>
<td>54.50</td>
<td>15.44</td>
<td>2.001</td>
<td>33-81</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>74</strong></td>
<td><strong>56.54</strong></td>
<td><strong>12.29</strong></td>
<td><strong>0.742</strong></td>
<td><strong>33-81</strong></td>
</tr>
</tbody>
</table>

Students in the first year of CVAE co-op showed a mean attitude self-concept score of 57.02 with a range of 34 to 81. Students in the second year of CVAE cooperative education had a lower mean attitude self-concept score (54.50) with an almost identical range. An analysis of variance was used to determine the statistical significance of the mean scores of students in the two levels of CVAE cooperative education. Table XVI presents this analysis.
TABLE XVI

ANALYSIS OF VARIANCE OF PIERS-HARRIS CHILDREN’S SELF-CONCEPT SCALE MEAN ATTITUDE SCORES OF AT-RISK STUDENTS IN TWO LEVELS OF CVAE COOPERATIVE EDUCATION

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Variance Estimate</th>
<th>E</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>71.895</td>
<td>1</td>
<td>71.895</td>
<td>0.473</td>
<td>0.501</td>
</tr>
<tr>
<td>Within Groups</td>
<td>16093.351</td>
<td>72</td>
<td>152.062</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>11020.378</td>
<td>73</td>
<td>150.964</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to the results of the data presented in Table XVI above, there is no significant difference in mean attitude self-concept scores of students in the first year of CVAE cooperative education and students in the second year of the CVAE co-op program. With the level of significance set at the 0.05 level, the difference in the two groups is less than statistically significant with $p = 0.501$ ($p > .05$).

**Hypothesis 5:** There is no significant change in the mean attitude self-concept score of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children’s Self-Concept Scale over a three-month period utilizing a Solomon four-group design.
A total of 73 at-risk students volunteered to participate in the pretest and posttest group. The first administration of the Piers-Harris Children's Self-Concept Scale was conducted during the second week of March 1989. Table XVII summarizes the results of the pretest.

**TABLE XVII**

**SUMMARY OF DATA COLLECTED IN PRETEST ADMINISTRATION OF PIER-S HARRIS CHILDREN'S SELF-CONCEPT SCALE TO AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAMS**

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic At-Risk</td>
<td>31</td>
<td>59.77</td>
<td>10.75</td>
<td>1.93</td>
<td>31-77</td>
</tr>
<tr>
<td>CVAE At-Risk</td>
<td>42</td>
<td>56.67</td>
<td>11.46</td>
<td>1.77</td>
<td>34-77</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>73</td>
<td>57.99</td>
<td>11.20</td>
<td>1.31</td>
<td>31-77</td>
</tr>
</tbody>
</table>

As indicated in Table XVII, students in CVAE cooperative education had a lower mean attitude self-concept score (56.67) than at-risk students in regular academic programs (59.77).

Table XVIII presents a summary of the data collected from the posttest, which was administered in the third week.
of May 1989. There was a period of twelve weeks between the two administrations of the test instrument.

**TABLE XVIII**

**SUMMARY OF DATA COLLECTED IN POSTTEST ADMINISTRATION OF PIER-S-HARRIS CHILDREN’S SELF-CONCEPT SCALE TO AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAMS**

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Mean Score</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic At-Risk</td>
<td>31</td>
<td>58.55</td>
<td>10.86</td>
<td>1.95</td>
<td>25-81</td>
</tr>
<tr>
<td>CVAE At-Risk</td>
<td>42</td>
<td>58.57</td>
<td>13.26</td>
<td>2.05</td>
<td>33-81</td>
</tr>
<tr>
<td>TOTAL</td>
<td>73</td>
<td>58.56</td>
<td>12.21</td>
<td>1.43</td>
<td>12-81</td>
</tr>
</tbody>
</table>

Table XIX presents a summary of the changes in the two groups.
TABLE XIX

SUMMARY OF DIFFERENCE IN PRETEST AND POSTTEST MEAN SCORES OF THE PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE ADMINISTERED TO AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE CO-OP

<table>
<thead>
<tr>
<th>Group</th>
<th>Pretest Mean</th>
<th>Posttest Mean</th>
<th>Mean Difference</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>59.77</td>
<td>58.55</td>
<td>-1.22</td>
<td>0.661</td>
</tr>
<tr>
<td>At-Risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVAE</td>
<td>56.67</td>
<td>58.57</td>
<td>+1.90</td>
<td>0.490</td>
</tr>
<tr>
<td>At-Risk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Even though the at-risk students in regular programs had a higher mean score (59.77) on the pretest than at-risk students in CVAE cooperative education (56.67), the mean scores on the posttest were almost identical--58.57 for at-risk students in CVAE and 58.55 for at-risk students in regular academic programs. Neither group showed a statistically significant change at the 0.05 level ($p > .05$).

An analysis of covariance was conducted to determine the significance of change in the two groups. Table XX details the results of the analysis.
TABLE XX
ANALYSIS OF COVARIANCE OF PIERS-HARRIS CHILDREN'S SELF-CONCEPT SCALE MEAN ATTITUDE SCORES OF ACADEMICALLY AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAMS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>( \bar{F} )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate (Pretest)</td>
<td>4016.309</td>
<td>1</td>
<td>4016.309</td>
<td>41.801</td>
<td>0.000</td>
</tr>
<tr>
<td>Main Effects (Group)</td>
<td>78.344</td>
<td>1</td>
<td>78.344</td>
<td>0.815</td>
<td>0.373</td>
</tr>
<tr>
<td>Residual</td>
<td>6725.668</td>
<td>70</td>
<td>96.081</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>10820.321</td>
<td>72</td>
<td>150.282</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The data reported in Table XX shows that the significance for \( \bar{F} \) of the main effects (at-risk groups) of the analysis of covariance to be 0.373. This is not a significant difference at the 0.05 level of statistical significance (\( p >.05 \)).

Table XXI displays a summary of the pretest and post-test mean scores of academically at-risk males and females in regular academic programs and in CVAE cooperative education programs.
<table>
<thead>
<tr>
<th>Group By Gender</th>
<th>Pretest Mean</th>
<th>Posttest Mean</th>
<th>Mean Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>59.19</td>
<td>57.76</td>
<td>-1.43</td>
</tr>
<tr>
<td>CVAE Co-op</td>
<td>58.04</td>
<td>62.33</td>
<td>+4.29</td>
</tr>
<tr>
<td>Females</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic</td>
<td>61.00</td>
<td>60.20</td>
<td>-0.80</td>
</tr>
<tr>
<td>CVAE Co-op</td>
<td>54.83</td>
<td>53.56</td>
<td>-1.27</td>
</tr>
</tbody>
</table>

Two analyses of covariance were conducted to determine the significance of the change in the two groups. Table XXII presents the data for at-risk males, and Table XXIII details the data for at-risk females.
TABLE XXII
ANALYSIS OF COVARIANCE OF PIERS-HARRIS CHILDREN’S SELF-CONCEPT SCALE MEAN ATTITUDE SCORES OF AT-RISK MALE STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAMS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Squares</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate (Pretest)</td>
<td>2223.267</td>
<td>1</td>
<td>2223.267</td>
<td>28.280</td>
<td>0.000</td>
</tr>
<tr>
<td>Main Effects (Program)</td>
<td>311.268</td>
<td>1</td>
<td>311.268</td>
<td>3.959</td>
<td>0.050</td>
</tr>
<tr>
<td>Residual</td>
<td>3301.876</td>
<td>42</td>
<td>78.616</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>5836.411</td>
<td>44</td>
<td>132.646</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE XXIII
ANALYSIS OF COVARIANCE OF PIERS-HARRIS CHILDREN’S SELF-CONCEPT SCALE MEAN ATTITUDE SCORES OF AT-RISK FEMALE STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION PROGRAMS

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>DF</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariate (Pretest)</td>
<td>1444.599</td>
<td>1</td>
<td>1444.599</td>
<td>12.286</td>
<td>0.000</td>
</tr>
<tr>
<td>Main Effects (Program)</td>
<td>30.178</td>
<td>1</td>
<td>30.178</td>
<td>.257</td>
<td>0.622</td>
</tr>
<tr>
<td>Residual</td>
<td>2939.446</td>
<td>25</td>
<td>117.578</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>4414.223</td>
<td>27</td>
<td>163.490</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table XXIII indicates that the significance for $E$ of the main effects of the analysis of covariance for female at-risk students in regular academic programs and in CVAE cooperative education to be 0.622. This is not statistically significant at the 0.05 level ($p > .05$).

Table XXII, however, shows that the significance for $E$ of the main effects of the analysis of covariance for at-risk male students in CVAE cooperative education and in regular academic programs to be 0.050. This is statistically significant at the 0.05 level as set by the study ($p < .05$).

An analysis of variance was conducted between the pretest-posttest group and the posttest only group. No statistically significant difference was found at the 0.05 level ($p > .05$).

**Hypothesis $H$:** There is no significant difference in the retention rate of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in regular academic programs. Because of the difference in the size of the two populations, a Chi-square analysis was conducted to compare the retention rates of the two programs.

Table XXIV displays the data necessary to conduct the Chi-square analysis.
TABLE XXIV

SUMMARY OF DATA FOR RETENTION COMPARISONS OF ACADEMICALLY AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION

<table>
<thead>
<tr>
<th>Group</th>
<th>Total</th>
<th>Remained In School</th>
<th>Withdrew From School</th>
<th>Retention Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic</td>
<td>211</td>
<td>175</td>
<td>36</td>
<td>82.94%</td>
</tr>
<tr>
<td>CVAE</td>
<td>113</td>
<td>101</td>
<td>12</td>
<td>89.38%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>324</td>
<td>276</td>
<td>48</td>
<td>85.19%</td>
</tr>
</tbody>
</table>

Table XXV presents the Chi-square analysis of the retention rates of academically at-risk students in the two educational programs.

TABLE XXV

CHI-SQUARE ANALYSIS OF RETENTION RATES OF ACADEMICALLY AT-RISK STUDENTS IN REGULAR ACADEMIC PROGRAMS AND IN CVAE COOPERATIVE EDUCATION

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CVAE Co-op</th>
<th>Academic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students Remained</td>
<td>101</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td>31.17%</td>
<td>54.01%</td>
</tr>
<tr>
<td>Students Withdrew</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>3.70%</td>
<td>11.11%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>113</td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>34.88%</td>
<td>65.12%</td>
</tr>
</tbody>
</table>

Chi-Square = 2.420 \[ \varphi = 0.1156 \]
As shown in Table XXV, with DF = 1 and N = 324, Chi-square is equal to 2.420. While this approaches statistical significance at the 0.05 level ($p = .1156$), there is no significant difference in the retention rates of at-risk students in CVAE cooperative education and at-risk students in regular academic programs.

Hypothesis I: There is no significant difference in the retention rates of academically at-risk students in the first year of CVAE co-op and students in the second year of CVAE co-op. A Chi-square analysis was conducted to compare the retention rates of the two years of CVAE.

Table XXVI provides a summary of the data used to compare the retention rates of students in the first and second years of CVAE cooperative education.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Remained In School</th>
<th>Withdrew From School</th>
<th>Retention Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVAE I</td>
<td>95</td>
<td>83</td>
<td>12</td>
<td>87.37%</td>
</tr>
<tr>
<td>CVAE II</td>
<td>18</td>
<td>18</td>
<td>0</td>
<td>100.00%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>113</td>
<td>101</td>
<td>12</td>
<td>89.38%</td>
</tr>
</tbody>
</table>
Table XXVII presents the Chi-square analysis of the retention rates of students in the first year of CVAE cooperative education and students in the second year of CVAE cooperative education.

**TABLE XXVII**

**CHI-SQUARE ANALYSIS OF RETENTION RATES OF AT-RISK STUDENTS IN THE FIRST YEAR OF CVAE CO-OP AND IN THE SECOND YEAR OF CVAE CO-OP**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CVAE I</th>
<th>CVAE II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students Remained</td>
<td>83</td>
<td>18</td>
</tr>
<tr>
<td>73.45%</td>
<td>15.93%</td>
<td>73.45%</td>
</tr>
<tr>
<td>Students Withdrew</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>10.62%</td>
<td>0.00%</td>
<td>10.62%</td>
</tr>
</tbody>
</table>

Chi-square = 2.544  
*p = 0.1066*

As shown in Table XXVII, all the CVAE students who decided to leave school were first year CVAE co-op students. With Chi-square = 2.544 and *p = 0.1066* approaching significance, no statistical significance can be found at the 0.05 level. There is no significant difference in the retention rates of students in the first year of CVAE and at-risk students in the second year of CVAE.
BIBLIOGRAPHY


CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This chapter summarizes the background of the study, describes the purposes and procedures, and reviews related studies. Findings of the study are presented, conclusions are drawn from the findings, and recommendations are proposed.

Background

Throughout the twentieth century, educational trends and issues have mirrored society. The unique questions and concerns of any era are paralleled in the educational theories and philosophies of the time. This is especially true in the field of vocational education where federal legislation has sometimes encouraged and other times mandated social changes through vocational education legislation. From the beginning vocational education has been viewed as a part of solving social problems.

At the beginning of the century, America was an agrarian society. When most families were living on self-supporting farms, the Smith-Hughes Act of 1917 provided funding for agriculture and homemaking education. As time passed, more
young people were leaving the farms and gravitating toward urban areas. Federal legislation favored trade and industrial education to meet the expanding needs of industry. Consumer skills were also encouraged as the nation’s economy began to emerge from the Great Depression.

The booming post-World War II era brought a sense of peace and tranquility to America; the country was lulled to sleep by its own prosperity. During this time, however, society was changing. More and more households were becoming two-income families in order to meet the basic necessities of life. More and more women found themselves alone, the head of the family, with children to support. In the large urban areas low-income housing had become known as “slums” and “ghettos,” and crime rates in these areas skyrocketed. These concerns were evident in school systems throughout the country when the dropout rate hit 25 percent.

Understanding the need for drastic measures, Congress enacted the Vocational Education Act of 1964. For the first time funds were provided for programs to meet the "special needs" population--handicapped and disadvantaged. When schools failed to respond, stronger legislation was enacted in 1968 as part of the Vocational Education Act Amendments. Meeting the needs of disadvantaged students was no longer a request; it was a requirement. Coordinated Vocational
Academic Education (CVAE) was initiated to meet the needs of disadvantaged students in Texas.

In 1968 over two hundred CVAE programs were started in Texas to serve the disadvantaged. Students who were disadvantaged academically, economically, socially, emotionally, or culturally qualified for CVAE. Special academic classes were provided with the vocational training to assist the special needs student.

During the 1980's educational reform has been the concern of both federal and state legislation. Fearing that American students were falling further and further behind children in other countries, state after state initiated academic reforms, like the 1984 Texas House Bill 72. As standardized test scores increased slightly, however, the dropout rates increased drastically. Along with the nation, thousands of students were becoming at risk.

With more students across the state failing to meet the requirements for high school graduation, the Texas legislature enacted House Bill 1010 which deals primarily with the at-risk student. In addition to criteria for identifying at-risk students, this legislation requires all school districts to determine and to implement programs which will keep the at-risk student in school.

Since academic underachievement is often linked to personal characteristics, schools must provide programs
which address all the problems of the at-risk student. Academic remediation should be offered to increase scholas-
tic aptitude. Individual counseling should be offered to assist with personal and social problems. Vehicles which provide various opportunities for success should be offered to build a sense of self-worth and self-esteem in the student at risk.

Because they contain the necessary elements for dealing with the at-risk student, vocational education programs have proven to be a critical ingredient in the school's ability to hold young people in the system. It is logical, therefore, to believe that special programs like CVAE cooperative education should be considered as a possible viable component of a comprehensive program for academically at-risk students.

**Purpose**

The purpose of this study was to compare the perceived self-concept attitude of academically at-risk students in regular academic programs with the perceived self-concept attitude of academically at-risk students in Coordinated Vocational Academic Education cooperative education programs as measured by the *Piers-Harris Children's Self-Concept Scale*. In order to accomplish this purpose, the following hypotheses were formulated:
1. There is no significant difference in the mean attitude self-concept score of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in a regular academic program as measured by the Piers-Harris Children's Self-Concept Scale.

2. There is no significant difference in the mean attitude self-concept score between male and female academically at-risk students in CVAE cooperative education and male and female academically at-risk students enrolled in a regular academic program as measured by the Piers-Harris Children's Self-Concept Scale.

3. There is no significant difference in the mean attitude self-concept score between males and females of different age groups of academically at-risk students enrolled in CVAE cooperative education and those academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale.

4. There is no significant difference in the mean attitude self-concept score of academically at-risk students in the first year of CVAE cooperative education and students in the second year of CVAE cooperative education as measured by the Piers-Harris Children's Self-Concept Scale.

5. There is no significant change in the mean attitude self-concept scores of academically at-risk students enrolled
in CVAE cooperative education and of academically at-risk students enrolled in regular academic programs as measured by the Piers-Harris Children's Self-Concept Scale over a three-month period utilizing a Solomon four-group design.

6. There is no significant difference in the retention rates of academically at-risk students enrolled in CVAE cooperative education and of academically at-risk students enrolled in regular academic programs.

7. There is no significant difference in the retention rates of academically at-risk students in the first year of CVAE cooperative education and academically at-risk students in the second year of CVAE cooperative education.

**Review of Literature**

The review of pertinent literature and related studies contained in Chapter II of this study confirms that the significantly increasing number of dropouts has become a social, economic, and educational issue. In addressing the dropout problem, schools have studied the characteristics of students who have left the educational system in order to draw a characteristics profile of the typical at-risk student. Using this profile to identify the potential dropout, schools can design programs that will be successful in keeping the at-risk student in school.

Even though several qualities are evident in the at-risk student, two of the most common characteristics seem
correlated—low academic achievement and low self-concept. School experiences greatly influence a student's self-esteem. As a child continues in school and academic failure, the entire educational process becomes a negative experience which destroys the individual's feeling of self-worth.

Several studies have investigated self-esteem in conjunction with academic achievement. While students succeeding in school had a positive self-concept, students with a failing record had a negative self-image. Students with poor academic self-concepts tended to remain unsuccessful in school. Students with low self-concepts also accepted failure as a permanent condition and set low academic goals for themselves.

Programs which successfully deal with at-risk students have addressed these two major problems. In addition to academic remediation, effective programs provide personal counseling, individual instruction, human relations education, and job training. A low teacher-student ratio is important to the at-risk student in furnishing the necessary link to the educational process and in encouraging a feeling of importance.

Higher academic requirements have increased the rate of students leaving school. Stricter academic policies and higher standards have pushed the borderline at-risk students into the growing dropout population. Increasing academic
standards in school should mean more than adding courses to serve the self-motivating, academically successful student. Real reforms should offer equal chance for success to all students, regardless of abilities or past performance.

Coordinated Vocational Academic Education (CVAE) cooperative education contains the elements to successfully serve the student at risk. Academic instruction in the classroom, job training in actual paid work experiences, smaller classes for individual attention, and increased student participation in the educational process make the CVAE cooperative education program attractive to the at-risk student. If the program can enhance the self-esteem of the student by providing avenues for success, the at-risk student will be encouraged to stay in the school environment.

The final section of Chapter II of this study describes programs which have utilized various formats of vocational education to increase the self-concept of students, to serve the student at risk, and to decrease the dropout population.

**Procedures**

Chapter III of the study described the procedures used to compare the two groups of academically at-risk students in the Abilene Independent School District. The two at-risk groups compared were at-risk students enrolled in a regular
program of six academic classes per day and at-risk students enrolled in a special vocational program (CVAE cooperative education). All the students in the study had been identified as being "at risk" (of dropping out of school) as defined by House Bill 1010. With participation in the study being voluntary, 122 students (or 44 percent of the total population) completed the self-concept survey. The Piers-Harris Children's Self-Concept Scale was used to gather information concerning the self-concept attitudes of the at-risk student groups.

Data were collected from all the volunteer subjects in both types of educational programs. A table of random numbers was incorporated to place students of both groups into a pretest and posttest group and a posttest only group. Means, standard deviations, and p values were used to present the results obtained from two administrations of the Piers-Harris Children's Self-Concept Scale. Tables were drawn comparing the mean attitude self-concept scores of at-risk students enrolled in regular academic programs and the mean attitude self-concept scores of at-risk students in the CVAE cooperative education programs. These self-concept scores were analyzed statistically by analysis of variance and analysis of covariance.

The retention rates of at-risk students in both types of educational programs were compared as well as the
retention rates of at-risk students in the first and second years of CVAE cooperative education. All non-vocational at-risk students were identified in January 1989. Using school records and information collected from the school counselors, this list was reviewed in May 1989 to determine which students had remained in school during the spring semester. Since all students entering CVAE cooperative education have to be classified as at-risk, the number of students enrolled in the program in January was compared to the number enrolled in May. Information gathered from the CVAE teachers provided necessary data on the CVAE cooperative education students, including the reasons for leaving. A Chi-square analysis was conducted to compare the retention rate of the at-risk students in academic programs with the retention rate of students in CVAE cooperative education. A Chi-square analysis was also conducted to compare the retention rates of at-risk students in the first and second years of CVAE cooperative education. Tables were constructed to display the data obtained from statistical analyses.

Findings

Using the hypotheses as guidelines, the following were the findings of this study.

1. Both groups of at-risk students scored in the high-average range on the Piers-Harris Children's Self-Concept Scale. Even though the mean score of the at-risk students
in regular academics was one point higher than at-risk students in CVAE, this difference was not statistically significant. The null hypothesis was retained.

2. The male and female at-risk students in CVAE cooperative education had a lower mean score on the test instrument than male and female at-risk students in regular academic programs. When tested statistically, however, no significant difference was found in the at-risk males or at-risk females of the two educational programs. The null hypothesis was retained.

3. When comparing the at-risk students by age, varied results were obtained. While sixteen-year-old and seventeen-year-old students in regular academics had a slightly higher mean score than their peers in CVAE co-op, the eighteen-year-old students in CVAE co-op had a slightly higher mean score than at-risk students in academics. When comparing students of the same age and gender, no groups were significantly different except sixteen-year-old females. Sixteen-year-old girls in regular academics had a statistically significant higher self-concept score than sixteen-year-old girls in CVAE cooperative education. When male and female at-risk students of the same age and gender were compared, only eighteen-year-old students in CVAE co-op showed a statistically significant difference with male students having a higher self-concept score than females. No difference was
found in the self-concept scores of different age groups of at-risk students in regular academics and at-risk students in CVAE cooperative education. The null hypothesis was retained.

4. When students in the first year of the CVAE cooperative education program were compared with students in the second year of CVAE co-op, both groups scored in the high-average range on the Piers-Harris Children's Self-Concept Scale. Even though second-year students scored lower on the instrument than students in the first year, this difference was not statistically significant. The null hypothesis was retained.

5. At-risk students in regular academics showed a slight decrease in self-concept scores on the Piers-Harris Children's Self-Concept Scale over the three-month period of the study. At the same time, at-risk students in CVAE co-op showed a slight increase in self-concept scores on the test instrument. When the changes in males and females of the two groups were compared, however, male students in CVAE co-op showed a significant change over male students in regular academics. Neither at-risk group showed a statistically significant change in self-concept scores. The null hypothesis was retained.

6. At-risk students in CVAE cooperative education showed an 89.38% retention rate during the spring semester
of the study. At-risk students in regular academic programs maintained an 82.94% retention rate during the same time period. Even though students in CVAE co-op had a higher retention rate, this difference was not statistically significant. The null hypothesis was retained.

7. Students in the second year of the CVAE cooperative education program maintained a perfect 100.0% retention rate during the semester of the study. First-year CVAE co-op students maintained an 87.37% retention rate. This difference was not statistically significant. The null hypothesis was retained.

Conclusions

Based on the findings of the study, the following conclusions were drawn.

1. Even though some students in both at-risk groups indicated low self-concepts, the students in both groups generally showed an above-average, positive self-concept. The highest levels of self-concept were shown by younger female students in regular academics and by older male students in CVAE cooperative education. The self-concept of at-risk students in both groups was virtually identical.

2. Male students in CVAE co-op who participated in the study seemed to improve in self-concept more than any group tested. While all other groups remained fairly constant, CVAE co-op males registered a significant change.
3. For students involved in the study, CVAE cooperative education seems to serve as an incentive to keep students in school. This is especially true if an at-risk student is enrolled in the second year of the program.

4. At-risk students in regular academic programs who participated in the study tended to decrease in self-concept and have a lower retention rate than the participating at-risk students in the CVAE cooperative education program.

Recommendations

According to the results of this study and review of related literature, the following recommendations are presented concerning academically at-risk students.

1. CVAE cooperative education should be considered a viable part of a comprehensive program to serve the academically at-risk student population.

2. CVAE cooperative education programs should include a strong emphasis on improving the basic skills of at-risk students. This preferably would include academic classes, such as CVAE English, which concentrate on remedial skills.

3. A longitudinal study should be conducted to determine the changes in self-concept of at-risk students over a two- or three-year period. Since changes in self-concept are slow, significant changes can only be detected over long periods of time.
4. The requirements for entry into CVAE cooperative education programs should be expanded to include more of the at-risk population. Under the current standards, a student can be classified as being at-risk and will not qualify for the CVAE cooperative education program.

5. A clearer, more concise definition of "at risk" should be formulated for use in the public schools.

6. A more efficient follow-up system should be initiated in schools. Under the current plan it is difficult to determine whether a student has "dropped out" of the educational process or has transferred to another school setting. This method should be standardized throughout the state.

7. A study should be conducted comparing at-risk students in the cooperative education programs with at-risk students in the laboratory experience programs. An effort should be made to determine the value and effect of paid employment upon academically at-risk students.

8. The list of approved training stations available to CVAE cooperative education students should be expanded to include training in broader career fields with better opportunities for advancement. CVAE co-op students should be encouraged to advance as far as they can in the career field of their choice and should not be limited in their vocational training by their academic performance.
PERMISSION LETTER TO PARENTS

Dear Parents:

Your child has been randomly selected to participate in a special study being conducted in the Abilene Independent School System. The purpose of this study is to evaluate existing programs and to investigate alternative plans for students. Specifically, vocational education programs will be compared to regular academic programs.

Students currently enrolled in the Coordinated Vocational Academic Education programs at both Abilene and Cooper High Schools will participate in the study as well as students in the regular academic curriculum. Each student participating in the study will be given the Piers-Harris Children's Self-Concept Scale to determine how the student feels about himself/herself. The scale is a questionnaire which asks simple questions that can be answered with either a "yes" or a "no" response. To ensure anonymity of the results, student identification numbers will be used instead of student names. The purpose of the study is to determine the feelings of different groups of students and in no way will the results of individual students be used.

Your decision whether or not to allow your child to participate in the study will not affect his/her standing at the school or in the CVAE program. At the conclusion of the study, a summary of group results will be made available to all interested parents. If you have any questions or desire further information, please call me at (XXX) XXX-XXXX.

Thank you for your cooperation and support.

Sincerely,

Virginia L. Mosier

THIS STUDY HAS BEEN REVIEWED BY THE ABILENE INDEPENDENT SCHOOL DISTRICT AND BY A COMMITTEE OF THE UNIVERSITY OF NORTH TEXAS FOR THE PROTECTION OF HUMAN SUBJECTS.

I give permission for my child _________________ to participate in this project.

I decline permission for my child _________________ to participate in this project.

Signature of Parent/Guardian
Dear (Abilene/Cooper) High School Student:

You have been selected to participate in a special study being conducted in the Abilene Independent School District. This study will give information which will be helpful in planning programs to meet the needs of all students in Abilene. To do this, we need input from students in the Abilene schools, and we need your help.

On ____day, (March/May) ___, 1989, you will be released from Activity Period to go to ______. At this time you will be asked to complete a questionnaire that asks basic "yes" and "no" questions. The survey will take approximately ten minutes, and you will be able to return to your regular class at the end of the Activity Period.

The purpose of this survey is to find out how groups of students feel about themselves. No individual results will be available. This is a survey, not a test.

If you are willing to participate in this project, report to _____, on ____day, (March/May) ___, 1989, during the regular Activity Period. Participation in the study is voluntary, but we hope you will take the time to give us this valuable information. Only (number) students from (Abilene/Cooper) High School were selected, so this makes your contribution that much more important.

If you have any questions, please call me at XXX-XXXX. We hope to see you on ___day. Thank you for your cooperation and contributions to this project.

Sincerely,

Virginia Mosier

vm
DIRECTIONS FOR ADMINISTERING THE SELF-CONCEPT SCALE

We will use manually-scorable answer sheets, so you may use a pen or pencil. If you do not have one, raise your hand and one will be given you. Do not write your name on the answer sheet. In the place for the "Name" on the left side, write your school student identification number. Complete the other blanks—grade, age, and sex—as they appear on the sheet. You will have two or three minutes to complete the top section of the answer sheet. If you have any questions, raise your hand and one of the monitors will answer them for you. Do not go on. (Wait a few minutes until all students have completed the information part of the answer sheet.)

On the front of the test are printed instructions. Read these silently as I read them aloud.

Here are a set of statements that tell how some people feel about themselves. Read each statement and decide whether or not it describes the way you feel about yourself. If it is true or mostly true for you, circle the word "yes" next to the statement. If it is false or mostly false for you, circle the word "no." Answer every question, even if some are hard to decide. Do not circle both "yes" and "no" for the same statement.

Remember that there are no right or wrong answers. Only you can tell us how you feel about yourself, so we hope you will mark the way you really feel inside.

Please remember to be truthful in answering the statement. The important thing is to answer how you really feel about yourself—not how you think you should feel about yourself. If you have any questions, raise your hand and one of the monitors will come around and answer them for you. Does anyone have any questions now? (Answer any questions the students might have.)

If there are no more questions, you may turn to the inside of the test and begin to mark the statements.

Thank you for helping with this project.
The following information will be collected on students who were identified at the beginning of the study but were not in school when the posttest was administered in May:

Student ID Number: ________________________________

School:  
- Abilene High
- Cooper High

Student Group:  
- CVAE I
- CVAE II
- Academic

Age:  
- 16
- 17
- 18

Sex:  
- Male
- Female

Date of Withdrawal: ________________________________

Reason for Withdrawal: ________________________________

If Transferring, Name of School to be Entered: ________________________________

Comments of Counselor or CVAE Coordinator:
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