

A STUDY OF DROPOUT CHARACTERISTICS AND
SCHOOL-LEVEL EFFECTS ON DROPOUT PREVENTION

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DEDICATION

I dedicate this dissertation with love to my daughter, Shelby Corinne Dorough.
May you always go the distance.

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ABSTRACT

This sequential, three-phase study used quantitative analyses to examine the characteristics of student dropouts and the characteristics of schools successful and unsuccessful in mediating dropouts. Narrative profiles were created to describe types of students and types of dropouts.

Phase I consisted of three parts, each using the student as the unit of analysis. Part One examined the profile of all Louisiana dropouts. Part Two involved the creation of clusters of dropouts and non-dropouts combined. Part Three focused on the creation of dropout clusters.

In Phase II, the percents of potential dropouts were calculated for 301 schools using the dropout characteristics from Phase I. The purpose of this phase was to classify schools into one of nine cells in a 3 x 3 contingency table that crossed three levels of *Percent of Actual Dropouts* with three levels of *Percent of Potential Dropouts*.

In Phase III, a MANOVA was conducted using a 1 x 4 design. The levels of the independent variable were four school categories from the Phase II contingency table: consistently high dropouts schools, consistently low dropouts schools, schools more effective in dropout prevention, and schools less effective dropout prevention.

The cluster analysis results for the non-dropouts and dropouts yielded three clusters: “high achievers,” “average achievers,” and “low achievers.” The cluster analysis for the dropouts also resulted in three clusters: “quiet dropouts,” “typical” dropouts, and “high-achieving pushouts.”

The MANOVA produced overall significant differences among the set of dependent variables (attendance rate, class size, student achievement, suspension rate, teacher certification, and teacher test scores). The planned contrasts results showed that consistently low dropouts schools had significantly higher student achievement than the less effective schools, while the more effective schools had significantly higher attendance rates and student achievement than the consistently high dropouts schools.

These findings have two major implications for dropout prevention. First, dropout prevention programs should have components that reach all types of potential dropouts. Second, more extensive efforts should be made to obtain the reasons individual students drop out. Students who drop out for like reasons could be studied to develop prevention measures for similar students.

CHAPTER 1. DROPOUTS: INDIVIDUALS, SCHOOLS, AND SOCIETY

Introduction

The national dropout statistics make the dropout problem in the United States very evident and very overwhelming. By October 2000, 5 out of every 100 students enrolled in high school in October 1999 had left school without successfully completing a high school program. In terms of the actual number of dropouts, of the 10 million students ages 15 to 24 enrolled in high school during the 1999-2000 school year, one-half million dropped out. These numbers have not changed much in the past few years, and as a result, the hundreds of thousands of dropouts have accumulated to become several million young adults without a high school diploma or its equivalent. In October 2000, 10.9% of the 35 million youth ages 16-24 were dropouts (Kaufman, Alt, & Chapman, 2001).

In the state of Louisiana, the percent of students in grades 9-12 who dropped out during the 2000-2001 school year was 7.8%. In other words, 8 out of every 100 students in Louisiana dropped out of high school during the school year. On the positive side, the state dropout rate has been declining for the past four years, starting at 10.2% in 1997-1998, dropping to 9.4% in 1998-1999 and then to 8.6% in 1999-2000 (Louisiana Department of Education (LDE), 2003a). It should be noted that this decreasing trend in the state dropout rate might reflect closer attention to data collection efforts, since 1997-1998 was the first year dropout data were used in the Louisiana K-8 accountability model and 1999-2000 was the first year dropout data were used in the Louisiana 9-12 accountability model (Franklin & Kochan, 2000-2001).

Outcomes of Dropping Out

For about thirty years, in the United States there has been a pattern of decline in the percentage of young adults who are dropouts, with an average annual decrease of 0.1 percentage points. Despite this decline, the number of dropouts in this country is immense. Not completing high school negatively impacts not only the lives of those who drop out, but also society as a whole. Kronick and Hargis (1998) cite the outcomes of dropping out as high unemployment, a high incidence of health problems, a large demand for welfare assistance, an increase in mental health problems, and higher crime and delinquency rates based on prior research (e.g., Catterall, 1986; Jones, 1977; Lanier, 1986). The large number of dropouts in our nation (in general) and in our state (in particular) makes these dropout consequences widespread. Beauvais, Chavez, Oetting, Deffenbacher, and Cornell (1996) summarize the seriousness of the consequences of dropping out,

...dropping out of school truncates educational and vocational development in ways that dramatically increase the probability of a downward spiral into greater emotional, physical, and economic problems, problems that create additional losses and costs to society and to which some minority groups appear even more vulnerable (p. 292).

Outcomes for the Individual

One consequence of dropping out is the negative economic impact that dropouts experience for the rest of their lives. The differences in wages among college graduates, high school graduates, and high school dropouts are steadily increasing (Grubb, 1997; Murphy & Welch, 1989, as cited in Goldschmidt & Wang, 1999; Murnane, Willet, & Boudett, 1995). Dropping out not only affects earnings, but also whether or not individuals can even obtain employment. In 1997, among individuals age 16 to 24, only 67% of

dropouts were participating in the labor force while 83% of high school graduates were part of the labor force. Of those participating dropouts, the rate of unemployment was 10.4%, as compared with an unemployment rate of 5.1% for high school graduates (U.S. Bureau of Labor Statistics, 1998, as cited in Goldschmidt & Wang).

There are programs designed to give dropouts a second chance (e.g., general education development (GED) diplomas and government-sponsored training programs), which do improve the employment and economic situation of dropouts (Boesel, 1998; Murnane & Tyler, 2000; Murnane et al., 1995), especially for dropouts who left school with weak skills (Murnane et al., 1999). However, research cited in Goldschmidt and Wang (1999) has shown that these programs do not make up for the lack of a high school diploma (Cameron & Heckman, 1993; Heckman, 1994). Fifty years ago, a high school diploma was regarded as a valued asset in the labor market, but today it is just the minimum requirement, a gateway to higher education and training programs which enables individuals to function in today's world of ever-increasing technology. Boesel (1998) used fifty years of research on GED outcomes to study the value of obtaining a GED. Those with GED diplomas had only slightly lower grades in four-year colleges than those with high school diplomas; however, those with GED diplomas were less likely to complete their postsecondary educations. Murnane et al. (1999) found that male dropouts gain the most benefit from a GED diploma if they use it to gain access to postsecondary education or jobs that provide additional training. According to Murnane and Tyler (2000), "...college credits pay off in the labor market" (p.48).

In 1998, approximately 75% of young adults ages 18 to 24 were high school graduates. Almost 10% of young adults in this age group completed high school through an alternate route such as the GED. Over recent years the percent of young adults who are high school graduates has remained constant while the percent of young adults who completed high school through an alternative method has increased. This suggests that the recent emphasis on decreasing dropout rates and raising standards for high school graduation has not had the intended result. Instead of decreasing the number of dropouts while increasing the number of well-prepared high school graduates, there has been an increase in the use of alternative methods of high school completion (Kaufman, Kwon, Klein, & Chapman, 2000).

A second consequence of dropping out is the negative impact on adult psychological functioning (Kaplan, Damphousse, & Kaplan, 1994, 1996). H.B. Kaplan (1980, 1983) suggested three possible explanations for this psychological dysfunction. First, dropping out may cause an individual's self-worth to be lowered because of the negative stigma placed on dropping out by society and because of the loss of opportunities the individual faces. Second, dropping out of school may disrupt the coping mechanisms (e.g., reliance on peers and teachers) that the individual uses to cope with the trying adolescent years. Finally, dropping out forces the individual to face new expectations (e.g., gaining employment and finding a home), which are adult responsibilities for which the individual may not have the maturity to handle. Kaplan, Damphousse, and Kaplan (1996) suggest that the continuous rejection dropouts experienced while in school and from society after they dropped out leads to psychological dysfunction in adulthood. Researchers have explored the negative relationship between dropping out and specific mental health consequences including

rebelliousness and delinquency (Bachman, 1972), self-esteem (Wehlage & Rutter, 1986), and depression (Fine & Rosenberg, 1983).

Another consequence is the relationship between dropping out of school and the development of alcohol abuse and dependence in adulthood that has been shown in research (e.g., Crum, Bucholz, Helzer, & Anthony, 1992; Crum, Ensminger, Ro, & McCord, 1998; Crum, Helzer, & Anthony, 1993; Swaim, Beauvais, Chavez, & Oetting, 1997). Mensch and Kandel (1988) found that dropouts are more likely to use illegal drugs than are graduates. The Crum, Ensminger et al. (1998) study focused on African-American youth and found an association between dropping out, underachievement, and development of alcohol disorders. These researchers suggested some explanations for this association. First, these youth may have a general tendency towards problem behavior and deviance. Research has shown that problem behaviors are linked. Individuals who engage in one type of problem behavior are more likely to display others as well (Ensminger, 1990; Huizinga, Loeber, & Thornberry, 1993; Jessor, 1987). Second, alcohol abuse may be a method for coping with feelings of failure that lead to low self-esteem and depression. Research has shown a relationship between depression and alcohol abuse (Crum & Anthony, 1994). Finally, there may be common traits such as low intelligence, aggressive behavior, poor social bonding, and parental difficulties that lead to both dropping out and drinking problems.

Research has shown that the impact of dropping out is more severe for females than for males. For females, dropping out has had more negative effects on academic achievement, employment, and future educational opportunities (Ekstrom, Goertz, Pollack, & Rock, 1986). Kolstad and Ownings (1986) found that males are more likely to return to

obtain a high school diploma than females. Based on these findings, Fine (1991) concluded, “the dropout decision was relatively final...and almost always devastating for young women” (p. 260). Kaplan, Damphousse, and Kaplan (1996) found a stronger relationship between dropping out of school and psychological dysfunction for females than for males even after controlling for a wide range of demographic and school-related variables.

Research has shown a relationship between dropping out of high school and subsequent teenage motherhood. Mahler (1999) found that after controlling for family variables, school characteristics, and academic performance, this relationship exists for white and Hispanic young women but not African-American young women. In addition, the earlier white and Hispanic females left school, the greater their risk of teenage pregnancy and birth.

Outcomes to Society

The large number of dropouts in this country has serious consequences for our society. First, there are actual monetary costs and losses, many of which stem from the higher unemployment rate for dropouts and their lower wages. It has been estimated that the total loss in lifetime tax associated with dropping out is approximately \$70 billion for a single cohort of eighth graders in the United States (Catterall, 1987, as cited in Goldschmidt & Wang, 1999). Fewer students may be dropping out today than when this estimate was calculated, but this decline is mitigated by the increasing difference in salaries among high school dropouts and high school/college dropouts due to inflation.

A second cost to society is the immense amount of money spent on maintaining prisons, since 82% of prison inmates are dropouts (LeCompte & Dworkin, 1991). In

addition, dropouts make up a disproportionate percentage of inmates on death row (Kaufman, et al., 2000). A third cost to society is the funding needed to implement dropout prevention and job training programs (Goldschmidt & Wang, 1999). A fourth cost to society is that high school dropouts are more likely to need public assistance than are high school graduates who did not go to college. This is partly because female dropouts are more likely to have children at a younger age and to be single parents (Kaufman, et al., 2000).

Relevant Dropout Research

Dropout Prediction

Given the dire consequences of dropping out for both individuals and for society, it is essential to know which factors are linked to an increased risk of dropping out. Recent research has shown that the negative outcomes of dropping out for individuals are related to one another and that their causes and the antecedents of dropping out are intertwined (e.g., Beauvais et al., 1996; Jarjoura, 1993; Upchurch, McCarthy, & Ferguson, 1993). By addressing the precursors of dropping out, not only will students stay in school, but also future problem behaviors can be avoided.

Theory of the High School Dropout/Completion Process

Morrow (1987) described the different ways that dropouts can be defined:

- “pushouts,” undesirable individuals the schools actively try to force out of school;
- “disaffiliated” students who neither bond to school nor to people in it and who do not want to continue to be in contact with the school;
- “educational mortalities,” those who are incapable of completing the program before they age out of it, usually slow students or those in special education;

- “capable dropouts,” individuals who possess the skills for graduation but who are not socialized to school demands or to the value of a diploma; and
- “stopouts,” individuals who leave and typically return within the year” (as cited in Egyed, McIntosh, & Bull, 1998, p.153).

Kronick and Hargis (1998) took the idea of different types of dropouts further to propose a theory of the high school graduation and dropout process. The first type of dropout, and the largest group, is the “quiet dropout.” This type of dropout is defined by low achievement and repeated grade failure with a reaction of stoicism. The second type of dropout is the “low achieving pushout.” This type of dropout is defined by low achievement, chronic grade failure, and behavior problems. These students differ from the “quiet dropouts” because they overtly react to their chronic failure. The third type of dropout, and the smallest group, is the “high achieving pushout.” These students have adequate and even above average academic potential and often display behavior problems. The source of their school failure is circumstances outside of the school, such as motivation problems, family problems, and substance abuse. The final type of dropout, “in-school dropouts,” are not formally considered to be dropouts because they do complete school; however, they drop out of the learning process due to their low academic potential while physically staying in school. To represent the entire student body, a fifth type of student must be included, the high school graduate.

Of these four types of dropouts, one type has been studied repeatedly in research. This “typical” dropout is the “low-achieving pushout.” As summarized by Goldschmidt and Wang (1999), previous research has consistently identified the following factors as indicators of risk for dropping out: “(1) single-parent family, (2) low annual family income,

(3) being held back at least one grade, (4) parents without high school diplomas, (5) having a sibling who dropped out, (6) low achievement, (7) limited English proficiency, (8) working while enrolled in school, and (9) misbehavior” (p. 720)

Are these characteristics descriptive of all dropouts or just the “typical” dropout? Studies that have examined dropouts versus non-dropouts have combined the other three types of dropouts, or “non-typical” dropouts, with the “typical” dropout. A study by the Texas Education Agency (1989) found that two-thirds of dropouts had academic averages of “C” or better. A report by the U.S. Department of Education (1994) on the second national education goal, increasing high school completion rates, states that the majority of dropouts are not those who seem to be the most at risk. This report calls for research on these other types of dropouts, including what personal and school factors influence their decision to drop out.

Two studies have started the investigation into the types of dropouts. Everett, Bass, Steele, and McWilliams (1997) divided rural, low socioeconomic dropouts into smaller and smaller subgroups based on significant differences on various characteristics such as grade point average and extracurricular activity participation. They found that students at different levels of academic achievement, based on grade point average, had unique identifying characteristics related to the dropout decision. Another study by Mahoney and Cairns (1997) found that different types of dropouts exist based on characteristics, such as academic achievement, aggressive behavior, and popularity with peers. The present study sought to further investigate the differences in the types of dropouts, in addition to the types of all students, both dropouts and non-dropouts combined.

Dropout Prevention and Effective School Research

Knowing which students are more likely to drop out should not be a reason to give up on these students. Instead, this knowledge should be used to identify students who need assistance and support. Because of the serious consequences of dropping out, secondary schools in today's society have the responsibility of not only preparing students for the constantly increasing changes in technology but also keeping students in school (e.g., Arnn & Mangieri, 1988, Kaufman, et al., 2000, Levine & Lezotte, 1990, Teddlie & Stringfield, 1989). There is a need for multiple measures of school performance that reflect a broader array of schooling outcomes (e.g., Oakes, 1989; Porter, 1991; Willms, 1992). A school may be labeled "effective" based on student achievement and still not meet the needs of all of its students. Schools that place too much emphasis on achievement alone as a means of being "effective" may alienate their lower achieving students or force them out of school (Wehlage & Rutter, 1986).

With this issue in mind, Kochan, Tashakkori, and Teddlie (1996) conducted a study with two purposes. The first purpose was to test a composite behavioral indicator of effectiveness (a "participation" indicator comprised of student attendance, discipline, and dropouts) measuring the extent to which a school balances its drive for academic excellence while keeping all students actively engaged in school. This indicator would provide an additional perspective to the achievement indicator. The second purpose was to construct an indicator that districts and states could use to readily assess the performance of all schools without conducting intensive site-based research. Data comprising the behavioral indicator are routinely collected at the school level statewide and would pose a minimal reporting

burden on school districts, as recommended by previous research (e.g., Blank, 1993, Oakes, 1989, Office of Educational Research and Improvement, 1988).

In the first phase of the study, two indicators (student achievement and student participation) were constructed for each of three years and then averaged to minimize the likelihood that the schools' outcomes were attributable to data error rather than school effects. A moderate correlation of $+0.65$ was found between the participation and achievement indicators.

In the second phase of the study, schools were classified using three methods of classification: the achievement indicator alone, the participation indicator alone, and the two together. The findings of the second phase of the study indicated that the composite achievement indicator had greater stability over time than did the composite participation indicator. Three possible reasons for this finding were provided. First, changes in school policy, climate, and other factors would affect student participation before student achievement because behavior usually changes quicker than cognitive change can be observed. Second, the data used in calculating the participation indicator was not collected in such a "standardized and closely scrutinized" (Kochan, Tashakkori, & Teddlie, 1996, p. 9) manner, as was the student achievement data. Finally, the participation indicator was based on four grades while the achievement indicator was based only on two.

Given that a school should focus on keeping potential dropouts, what can a school do when the risk factors most related to dropping out such as poverty level and parent's level of education are outside of the control of the school? There are, however, many factors within the control of schools through which these risk factors can be mediated. Conversely, there

are school-level factors that may inhibit the learning of at-risk youth. Wehlage and Rutter (1986) pointed out that students do not see themselves leaving school when they are in the earlier grades. However, most dropouts say they left school because they felt they did not belong there. What happened to change these former students' opinions of school?

Research has shown that there are many similarities between effective schools and successful dropout prevention programs (Fetler, 1989; Pulido, 1991; Texas Education Agency, 1989). The characteristics of schools that have been unsuccessful with holding onto their at-risk youth include the following: "low expectations for success, inconsistent discipline, low teacher involvement and/or accountability, inattention to individual student needs, and a low level of engagement in productive learning activities" (Texas Education Agency, 1989, p. 4). Characteristics of successful dropout reduction programs include these: strong commitment by instructional staff, quality leadership, small class size, and fair and consistent discipline that is clearly communicated (Texas Education Agency, 1989).

There has been some research conducted to examine what impact a school can have on preventing students from dropping out. In 1991, Scheffelin and Emmett conducted the second phase of a study using the classification of continuation high schools developed in phase one of the study conducted in 1986. Continuation high schools provide an education program through which at-risk youth can receive a high school diploma in an environment that seeks to better meet their needs. The continuation high schools in California were classified as "less effective," "mid-effective," and "more effective" based on rankings of a composite outcome variable after controlling for student background variables and certain treatment variables. In phase two of the study, qualitative data were collected for each of the

ten “more effective” schools through interviews and school visits. The characteristics of these schools include the following: a curriculum expanded to include personal and career components; teachers/administrators who believe the students can succeed; students who participate in the programs by their own choice; the wide availability of support services; a high amount of personalized interactions among staff and students; learning that is emphasized over teaching; and funding that is available for smaller class sizes and more equipment and resources.

A recent study conducted by Goldschmidt and Wang (1999) has provided a great deal of insight into both the area of dropout prediction and dropout prevention. They used the National Educational Longitudinal Study (NELS) database to examine (1) the differences and similarities in the dropout risk factors for early and late dropouts, (2) the school-level factors that account for the differences in school-level dropouts between schools after controlling for the characteristics of the student enrollment, (3) if school-level factors can mediate the risk of dropping out, and (4) the impact of early predicted risk on dropping out later in school. The results of their hierarchical logistic regression analyses show that the combinations of risk factors differ for early and late dropouts. The school-level factor studies accounted for approximately two-thirds of the difference in average school dropout rates, but did not do much to mediate the risk factors. Finally, they found that early-predicted risk of dropping out significantly affected the odds of dropping out late.

Despite the large contributions of this Goldschmidt and Wang (1999) study to this area of research, there were some limitations and some areas where further research can be done. One limitation to this study was that the models did not include many of the

previously identified school-level factors that have been shown to be related to effective dropout prevention, due to the limitations of using the variables in the NELS database. The school-level factors included in this study were sector, urbanicity, and percent minority in addition to several aggregated variables (e.g., SES, parent education).

These researchers found that for middle schools, once these student-level and school characteristics were included in the model, the amount of variation in the school dropout rates was insignificant. For high schools, however, they found that the amount of variation left over was significant. This suggests that there may be variables beyond those included in the study that would explain more of the variation in the dropout rates of high schools. Their study did not find any school-level factors that systematically mediated a risk of dropping out. Does this mean there are no such factors, or does this mean that there could be variables beyond those studied which may mediate the risk of dropping out?

The Accountability Movement

Several states, including Louisiana, have implemented accountability models that hold schools accountable for the success of their students. Teddlie, Kochan, and Taylor (2000) provide a history of the accountability movement in Louisiana. An inputs-based school approval process was implemented in 1975 to ensure that schools met state requirements for basic instructional resources. During the late 1970s and 1980s, several initiatives in areas such as teacher education programs, teacher certification, teacher continuing education opportunities, and teacher salaries were put into practice with the goal of improving instruction. Also during this time, another national trend became part of educational reform in Louisiana that being the raising of standards for student performance

to improve educational outcomes. In 1979 the Louisiana Legislature enacted a competency-based education program that included statewide curriculum standards, locally-defined pupil progression plans, and a minimum standards testing program. In 1986 the testing program was replaced by the Louisiana Education Assessment Program (LEAP), which administered both norm-referenced and criterion-referenced tests to Louisiana students in various grades. At that time the Louisiana board of education put into place the most rigorous graduation requirements in the nation requiring Louisiana high school students to pass a graduation examination to receive a high school diploma. In 1987 with the passage of the Children First Act, Louisiana's first school accountability program came into existence. As a result many policies were put into place at that time including creation of a system of three-year, renewable teacher certificates, a school report card system, and a school incentive program to recognize and reward high-performing schools. With the exception of the school report card system, which is now a central part of the current accountability system, many aspects of these policies are no longer in place.

In 1996 the Louisiana School and District Accountability System came into existence. Louisiana's current model combines student achievement and participation (i.e., attendance and non-dropout rates) in its measure of school performance. Many other states do this as well. The accountability model for grades kindergarten through eighth (K-8) was implemented in the fall of 1999. School Performance Scores (SPS) are calculated yearly with a 60% weight given to the state's criterion-referenced test (CRT), a 30% weight given to the state's selected norm-referenced test (NRT), and a 10% weight for attendance and dropout rates. The goal of the model is for all schools to have an SPS of at least 100 after

ten years. Over the ten-year period there are five cycles of growth. At the end of each two-year cycle, schools are evaluated on whether they achieved the amount of growth necessary to remain on target for reaching the 10-year goal.

The accountability model for grades nine through twelve was implemented in the fall of 2001. The basic model is the same as the K-8 model with regard to growth cycles and weights for the four indices. The main difference is the two achievement indices, CRT and NRT, are adjusted for the dropout rate in a school. The premise behind this adjustment is that schools may encourage low-achieving students to drop out in order to avoid lower achievement indices (LDE, 2001b). Although the model does include the dropout rate in the formula for an SPS, the weight given to this index is only 5%. In the future, a graduation rate index will become part of the formula as well.

With the signing of the No Child Left Behind (NCLB) legislation in January 2001, all states were required to implement accountability systems. Louisiana is ahead of many states in that an accountability system has been in place for many years that has had positive results (“Accountability,” 2003; Sentell, 2003). In order to make the current accountability system align with federal requirements, the system in Louisiana will undergo some changes in 2003 such as transitioning to an annual system instead of a system based on two-year growth cycles. In addition, new components will be added to the system, such as the evaluation of subgroup growth and performance.

In addition to the recent implementation of accountability models, many states have raised the standards by which students are assessed. In some states, including Louisiana, students have to meet these high standards to move on to the next grade or to graduate. Do

these increased standards make it more difficult for at-risk youth to complete high school? The research findings in this area are mixed. Some states are finding that with the implementation of accountability models their dropout rates are increasing. In Louisiana, the dropout rate has been decreasing. This may be due to improved data reporting efforts and not indicative of an opposite trend.

Research has shown that sudden increases in academic standards may force students who are already close to failure to give up on school and drop out (McDill, Natriello, & Pallas, 1986). Also, the increased time it requires for these students to succeed under these tougher standards may conflict with other demands for their time, such as working to help meet their families' financial responsibilities. On the other hand, some studies have shown that increases in academic standards make students more likely to pay attention in class and to spend more time on their homework. Attendance has also been shown to improve (Texas Education Agency, 1989). The dropout rates for minorities will need to be closely monitored as the accountability movement progresses to see if schools are working harder to keep these students in school in order to have higher accountability scores and to see if the pressure for higher standards results in forcing these students out of the system.

Overview of this Study

This study had two main purposes. The first purpose of this study was to create profiles of student dropouts with similar characteristics. The second purpose of this study was to examine the school characteristics responsible for mediating the high likelihood of dropping out, as well as the characteristics of schools that increase the likelihood of dropping out.

This study had a sequential design that consisted of three phases. Phase I had both exploratory and confirmatory investigations. The data used were quantitative, and statistical analyses were conducted. Phase II was a strictly confirmatory investigation with quantitative data and analyses. Phase III of this study had a confirmatory purpose. Quantitative data were examined using quantitative analyses. In the first phase, the quantitative data were “qualitized” through the formation of narrative profiles. The use of mixed data analysis strategies in this study gives the study a mixed method design (Tashakkori & Teddlie, 1998; Teddlie & Tashakkori, 2003).

Phase I - Profiling Student Dropouts

In the first phase of the study, cluster analyses were conducted to form profiles of student dropouts and non-dropouts.

Research Question 1

What is the profile of dropouts from Louisiana public schools as a whole?

Hypothesis 1

High school students can be grouped into clusters representing the five profiles of students: “quiet dropouts,” “low-achieving pushouts,” “high-achieving pushouts,” “in-school dropouts,” and “potential high school graduates” as theorized by Kronick and Hargis (1998).

The cluster analyses were run using the following variables: overage status, poverty, student achievement, student misbehavior, limited English proficiency, and student attendance.

Research Question 2

Do profiles of other types of dropouts or potential graduates arise through the cluster analysis?

Research Question 3

What percentage of Louisiana dropouts are “typical” and “non-typical” dropouts, based on the clusters formed through the cluster analysis?

As mentioned previously, the achievement indices in the high school accountability model in Louisiana are adjusted for the dropout rate. Are the majority of Louisiana high school dropouts low achievers? Is this a fair adjustment to make?

Phase II - Classification of Schools

The purpose of this phase was to classify schools into a 3x3 contingency table based on the percentage of potential dropouts and percentage of actual dropouts. Schools that were contained in the four shaded cells in Figure 1.1 (Cell One, Cell Three, Cell Seven, and Cell Nine) were the focus of the third phase of the study.

Hypothesis 2

For some categories (low, medium, and high dropouts) of schools, the percentage of actual dropout rates will be inconsistent with the percentage of potential dropouts predicted for those categories based on the Phase I cluster analysis results.

Classifying Louisiana high schools into this contingency table allowed schools with inconsistencies in the percentage of potential dropouts and the percentage of actual dropouts to be identified. As a result, schools that appeared to be more effective in keeping potential students from dropping were identified. Conversely, schools that were less effective in

keeping potential students from dropping out were identified as well. In other words, by studying these four types of schools, the factors that work to counteract the risk of dropping out can be identified.

		Potential Dropouts		
		Low	Medium	High
Actual Dropouts	Low	C1 Low % Potential/ Low % Actual	C2 Medium % Potential/ Low % Actual	C3 High % Potential/ Low % Actual
	Medium	C4 Low % Potential/ Medium % Actual	C5 Medium % Potential/ Medium % Actual	C6 High % Potential/ Medium % Actual
	High	C7 Low % Potential/ High % Actual	C8 Medium % Potential/ High % Actual	C9 High % Potential/ High % Actual

Figure 1.1
School Dropout Prevention Effectiveness Classification Matrix

Phase III – School Dropout Prevention Effectiveness

The purpose of this phase of the study was to examine the characteristics of schools with inconsistencies in the percentages of actual and potential dropouts as identified in the contingency table. Known school-level factors associated with high/low dropouts and successful schools, as suggested by previous research, (i.e., student achievement, teacher test score, teacher certification, average class size, suspension rate, and attendance rate) were examined using a MANOVA statistical analysis.

Hypothesis 3

The profiles of schools in the four cells (C1, C3, C7, and C9) will differ based on the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Sub-Hypothesis 3a

Of the schools predicted to have low dropout rates, schools that are more successful in preventing dropouts (C1 schools) differ from those that are less successful (C7 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Sub-Hypothesis 3b

Of the schools predicted to have high dropout rates, schools that are more successful in preventing dropouts (C3 schools) differ from those that are less successful (C9 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Research Question 4

What characteristics differentiate the four types of schools?

Significance of this Study

What does this study offer to the area of dropouts? The previous research on dropout prediction and prevention is immense and contains a wealth of information in this area. The “risk” factors associated with dropping out have been identified and have been used to

predict the likelihood of dropping out. This study will focus on two new aspects, predicting the different types of dropouts and exploring what schools can do to keep these different types of dropouts in school.

This study will focus on many unresolved issues in this area of research. First, this study seeks to determine if more than one type of dropout exists. Previous studies often focus on characteristics that predict the “typical” dropout and do not take into consideration that all dropouts are not the same. Some studies have started to investigate the different types of dropouts (e.g. Everett et al., 1997; Mahoney & Cairns, 1997). The current study expands this area of research by using an analysis that allows dropout types to form through the statistical analysis and not through pre-specification by the researcher. Also, this study will use actual data for students such as achievement test data and suspension incidents rather than data reported by teachers.

Second, there has been much in-depth analysis of dropout prevention programs, some of which used case studies. Most of these programs, however, are small programs within a few schools, or they are school-wide programs at alternative schools. The focus of this study is to examine the school-level factors of a typical school that successfully holds onto potential dropouts. The dropout prevention research does provide some ideas of where to look.

Finally, there has been little research comparing the percent of predicted dropouts and the actual percent of dropouts. By studying this, one can get a clear picture of the characteristics of schools that are more or less effective in preventing dropouts. In other words, by distinguishing schools based on whether or not they have large percentages of

potential dropouts and on whether or not they have high percentages of actual dropouts, the factors related to mediating the likelihood of dropping out can be studied. The U.S. Department of Education's 1994 report on increasing high school completion states that although we know a great deal about the effects of risk factors, we know little about how schools and society can help students to overcome these barriers.

Key Definitions

The Different Dropout Rates

As described by Kaufman, et al. (2001) the National Center for Education Statistics (NCES) defines three types of dropout rates with each providing a different perspective of the student dropout population.

- Event dropout rates “describe the proportion of students in a given age range who leave school each year without completing a high school program. This annual measure of recent dropout occurrences provides important information about how effective educators are in keeping students enrolled in school” (p. 2).
- Status dropout rates “provide cumulative data on dropouts among all young adults within a specified age range,” (p. 2) typically ages 16 through 24. Status rates are higher than event rates because event rates only include dropouts who were enrolled in school the previous year. Status rates include students who may not have been enrolled in school for several years. Status rates give a picture of how widespread the dropout problem is in the population and give an indication of the amount of further education and training needed to help these dropouts to become active participants in society.
- Cohort dropout rates “measure what happens to a group of students over a period of time. These rates are based on repeated measures of a cohort of students with shared experiences and reveal how many students starting in a specific grade drop out over time” (p. 2). Cohort data are only available when special studies are done to track students over time.

The Definition of a Louisiana Dropout

Louisiana uses an event dropout rate, which reflects the number of students who drop out during a given school year. Identifying dropouts in Louisiana for a given school year involves the use of three years of data: the previous year, the current year, and the following year. A dropout is only counted once in the state in the last school he or she attended (Franklin & Kochan, 2000-2001; Louisiana Department of Education, 2000a).

A dropout is an individual who:

- Was enrolled in school at the end of the previous school year and failed to enroll on or before October 1 of the current year or was enrolled during the current year, exited from school, and failed to enroll in school by October 1 of the following year;
- Has not graduated from high school or completed a state- or district-approved educational program; and
- Does not meet any of the following exclusionary conditions:
 - Transfer to another public school district, private school, out-of-state, a correctional institution, or a state- or district-approved education program;
 - Temporary absence due to expulsion or school-approved illness; or
 - Death (Franklin & Kochan, 2000-2001; Louisiana Department of Education, 2003a).

The dropout count is reported by grade, not by student age. Students who leave school to enlist in the military or to enroll in an adult education program are considered dropouts (Franklin & Kochan, 2000-2001; Louisiana Department of Education 2000a, 2003a).

Limitations

One limitation of this study is that only high schools are included in this study. As mentioned previously, Goldschmidt and Wang (1999) studied the characteristics of early versus late dropouts and even predicted whether or not students would drop out later in

school using their characteristics in middle school. However, these researchers did find that upon controlling for student characteristics and school-level factors, the remaining variation between middle school dropout rates was non-significant. On the other hand, the remaining variation between high school dropout rates was still significant. For this reason, there is justification in further study of only high schools, but it would be useful in the future to implement this study using middle schools as well.

Two other limitations are associated with the timing of this study. Quantitative data on students and schools were used from the 1999-2000 school year and the 2000-2001 school year. These are the most recent years of data available for the purposes of this study. With the implementation of the high school accountability model in the fall of 2001, high schools may have been motivated to implement school improvement practices since the 1999-2000 school year. In addition, Louisiana's High Stakes Testing policy, implemented with the spring 2000 administration of the criterion-referenced test to fourth and eighth graders, resulted in the retention of more students in these two grades than ever before. Many of these retained eighth grade students would have been part of the sample used for this study had they not been retained. These issues have to be kept in mind when examining results.

CHAPTER 2. LITERATURE REVIEW

This literature review is composed of two sections: a review of the dropout literature and a review of the school effectiveness literature. In this study, key issues from these two broad areas of research are combined to explore the characteristics of schools that are more or less effective in keeping students who are at-risk for dropping out.

Overview of Research on Student Dropouts

According to Egyed, McIntosh, & Bull (1998), high school dropouts were discussed in literature as early as 1927. At that time the dropout phenomenon was called “school-leaving” and was considered to be a psychological problem based on interest and attitudes (Fuller, 1927). Beginning in the 1920s, adolescents were viewed as restless and needing the freedom to explore new interests. If schools did not meet these needs, “there was a natural disposition for these students to escape” (Egyed, McIntosh, & Bull, 1998, p. 153).

This review of the literature on student dropouts is based on a typology used by Goldschmidt and Wang (1999). Student variables are grouped by ascriptive, family, student academic characteristics, and psychological and social characteristics. Following the characteristics of the “typical” dropout, the characteristics of nontraditional dropouts are described. School-level variables are grouped into sector, school policy and practice, and impact of teachers as done in previous research (e.g., Bryk & Thum, 1989; Rumberger, 1995). Factors related to dropping out at the macro-level (i.e., community and region), are discussed. Most of the research presented in this review is a combination of information

presented in previous reviews (e.g., LeCompte & Dworkin, 1991; Kronick & Hargis, 1998; Goldschmidt & Wang, 1999).

Student-Level Variables

Ascriptive Characteristics

Gender. In this section, differences in dropout behavior are examined by gender and ethnicity. According to Kaufman, Alt, and Chapman (2001), the National Center for Education Statistics (NCES) revealed that boys drop out of school only slightly more than girls. Where the sexes differ is with regard to their reasons for dropping out. Girls reported that they dropped out to support families twice as often as boys did (Hahn & Danzberger, 1987). Girls were nearly twice as likely as boys to give marriage or pregnancy as a reason for dropping out (Ekstrom, Goertz, Pollack, & Rock, 1986). These researchers also found that over 25% of male dropouts indicated that they chose work over school whereas only 10% of females did so. However, Goldschmidt and Wang (1999) noted that for both middle and high school students, girls were more likely to drop out than boys when risk factors were included in the model. Denson and Schumacker (1996) in a study of the interaction of the timing of dropping out and gender discovered that males are at a greater risk than females for dropping out, especially during the second semester of both the ninth and tenth grades. Females reported family reasons for dropping out second to school-related reasons, while males gave family reasons least of all (Jordan, Lara, & McPartland, 1996).

Ethnicity. Unlike gender, there are differences in overall dropout rates among ethnicity groups. Hispanic students (7.4% in 2000) drop out more than African-Americans (6.1% in 2000), and African-Americans drop out more than Whites (4.1% in 2000)

(Kaufman et al., 2001). The differences in dropout rates among ethnicity groups are not explained by ethnicity alone but by the risk factors associated with belonging to a certain ethnic group. Goldschmidt and Wang (1999) found that after including risk factors in their model, there are no differences in the odds of dropping out for Hispanics and Asians when compared with Whites; however, African-Americans in middle schools were found to be significantly less likely to drop out than Whites. Research has shown that subgroups within the Hispanic ethnicity – Chicanos, Puerto Ricans, Cubans, and other Latino groups in the United States – have socioeconomic and cultural differences that might be related to dropout patterns (Rumberger & Larson, 1994; Valdivieso & Nicolau, 1994). According to the U.S. Census Bureau, the high dropout rate for Hispanic students becomes even more serious when one considers that in a few years, Hispanics will surpass African-Americans as the nation's largest minority group (Headden, 1997).

Family Characteristics

Social capital. As done in previous reviews of dropout research (e.g., Lichter, Cornwell, & Eggebeen, 1993; Teachman, Paasch, & Carver, 1996), in this literature review family characteristics are divided into social, financial, and human capital factors. Social factors related to dropping out include quality of parent relations with the school, the family structure, and the quality of mother-child relationships. Farmer & Payne (1992) indicate that students from families with poor relations with the school, lack of parental involvement, and single-parent homes are more likely to drop out.

These researchers also state that students from single-parent homes have parents with less time and resources to devote to their children's education (Goldschmidt & Wang, 1999).

“In general, families’ ability to invest in the education of their children is limited by their economic and human capital resources” (Driscoll, 1999, p.858). Garneir & Stein (1998) found a significant association between positive mother-child relationships early in childhood and not dropping out. Possible explanations for this association include protective effects of the mother-child relationship contributing to social competence and school engagement. The transmission and internalizing of positive values is better facilitated through good mother-child relationships. Younge, Oetting, and Deffenbacher (1996) found a relationship between dropout status and mother hostility and rejection of their sons. Elliott, Huizinga, and Ageton (1985) found that children who are strongly attached to their families are more likely to develop a stronger respect for conventional institutions such as school. Teachman, Paasch, and Carver (1997) found that general measures of social capital (attending a Catholic school, family structure) and more specific measures of social capital (parent-child and parent-school interactions) are related to dropping out of high school. They also found that social capital interacts with the financial and human capital of parents to determine whether students will remain in school.

Financial capital. Financial factors include family income. Single-parent families are more likely to live in poverty. The poverty rate among single-parent families is about 50% (LeCompte & Dworkin, 1991). Almost 20% of dropouts come from families on welfare or from those receiving Aid to Families with Dependent Children (Hahn & Danzberger, 1987). Orthner and Randolph (1999) found that dropout rates have increased over the past decade for children from families on public assistance. They also found that consistency in parental employment and transitions off welfare are associated with lower

dropout rates. Children who live in poverty are more likely to drop out (Goldschmidt & Wang, 1999). Adolescents in low-income families are twice as likely to drop out as adolescents in middle-income families, and five times as likely as adolescents in high-income families (Kaufman et al., 2001).

Human capital. These factors include parental education and proficiency in English for immigrant groups. According to the human capital theory (Becker, 1991, as cited in Orthner & Randolph, 1999) children model the skills and competencies of their parents and they base their expectations for their own success on the successes of their parents. Goldschmidt (1997) found that a student whose father dropped out is 1.4 times as likely to drop out as a student whose father completed at least high school. As cited in Driscoll (1999) research has demonstrated that, particularly among Hispanics, parental human capital and English proficiency increase with generation (e.g., Hernandez and Darke, 1998; Kao, 1998; Jensen and Chitose, 1994; Rumbaut, 1997).

Rumberger (1983, 1987) found a connection between socioeconomic status and dropping out of school, with students from lower socioeconomic (SES) families being disproportionately represented among dropouts. Jordan, Lara, and McPartland (1996) supported this finding when they found that 82% of early dropouts in the National Educational Longitudinal Study 1988 data belonged to families below the mean SES, a composite of several items including family income, parents' education, and parents' occupation. Lichter, Cornwell, and Eggebeen (1993) found that in rural areas, poverty matters more with regard to dropout rates than family structure.

Student Academic Characteristics

This section examines student characteristics that are related to dropping out – retention, academic achievement, student attendance, disciplinary problems, language difficulty, and student mobility. These student characteristics are often interrelated. A recent meta-analysis conducted by Rush & Vitale (1995) found that family income and parental support are less important than academic achievement, age, or retention in predicting dropouts.

Retention. Since the 1960s, researchers have identified a relationship between retention and dropping out (e.g. Schreiber, 1964; Kaplan & Luck, 1977). According to Mann (1986), students who are held back in the same grade, or retained, at least once are 45% more likely to drop out. Students who are held back for two grades are 90% more likely to drop out. Researchers have consistently found that retention is the most powerful predictor of dropping out at the individual level (Denson & Schumacker, 1996; Rumberger, 1995). Goldschmidt & Wang (1999) found that being held back is the most important factor for early dropouts in particular. In 1992, Barnes showed that 90% of 17-year-old African-American male dropouts were below their age-appropriate grade level, and 78% of this group dropped out in the ninth grade (as cited in Goldschmidt & Wang). Denson and Schumacker (1996) found that for retained students the highest risk periods were the end of each school year. They explained this finding by stating, “Perhaps as these students approach the end of a school year, facing the possibility of being retained once again, they choose to drop out rather than experience the failure” (p.22). In addition, these researchers discovered that the subgroup of overage students had the highest risk of dropping out, above

any gender, ethnicity, English proficiency status, or special education status subgroup. As cited in Friedenber (1999), not only does retention fail to produce learning benefits (Shepard & Smith, 1989), it has been shown to actually contribute to the dropout problem (Natriello, Pallas, McDill, McPartland, & Royster, 1986). Roderick (1994) found that repeating a grade from kindergarten to sixth grade was associated with a large increase in the odds of dropping out even after controlling for students' background and post-retention grades and attendance.

Academic achievement. The majority of dropouts have low academic performance. Dropouts usually score in the bottom quintile (Cameron & Heckman, 1993, as cited in Goldschmidt & Wang, 1999). Poor grades have a differing impact on dropout status depending upon the student's ethnicity group. Low grades are twice as important in explaining White and Hispanic dropout status than African-American dropout status (Ekstrom et al., 1986). Griffin & Heidorn (1996) noted that failure on a minimum competency test provided a statistically significant increase in the likelihood of dropping out only for students who typically do well academically. Students who have low academic performance on a regular basis and minority students did not demonstrate an increased likelihood of dropping out as a result of failing a minimum competency test.

Attendance. Kronick and Hargis (1998) summarize the findings regarding the relationship between school attendance and dropping out. School attendance has been determined to be a good predictor of dropping out. Non-attendance in elementary school is moderately correlated with non-attendance in high school and eventually dropping out. A child who regularly attended school in the early grades and begins to miss in high school is

very different from the child who had excessive absences from the beginning. The latter child is more likely to be involved in drugs and alcohol.

Suspensions and expulsions. Students with disciplinary problems are more likely to drop out. A study of African-American dropouts in one state showed that approximately 80% of African-American dropouts had been suspended (Barnes, 1992, as cited in Goldschmidt & Wang, 1999). Goldschmidt and Wang discovered that the most important factor for late dropouts is misbehaving, which includes out-of-school suspension. African-American males and Hispanic males dropped out because their schools lacked the capacity and resources to handle their disruptive conduct. Suspensions/expulsions send a strong message that a student's behavior is unacceptable and has no place in school (Wheelock & Dorman, 1988). Students who are disciplined frequently over time begin to have trouble distinguishing between their behavior and their core identity. Because they continually get the message that their behavior has no place in school, they begin to feel they have no place in school. Jordan et al. (1996) found that African-American males gave frequent suspensions as a reason for dropping out second to feeling alienated from school, with African-American males giving suspensions as a reason more than any other race by gender group.

Limited English proficiency. Research has shown that one of the reasons students drop out is due to language difficulty, another factor linked to ethnicity group membership. Twenty-five percent of Hispanic dropouts are two years behind in English-language proficiency by the eighth grade (Hahn & Danzberger, 1987). Limited English proficient (LEP) students in Dallas, Texas, were found to be at a greater risk for dropping out

throughout high school than students who were considered to be English proficient (Denson & Schumacker, 1996).

Student mobility. Rumberger and Larson (1998) discuss the literature in the area of student mobility as it is related to dropping out of school. Studies have shown that large numbers of students change schools (e.g., Smith, 1995, Indicator 46; U.S. General Accounting Office, 1994). In a national study, Lee and Burkam (1992) found that 40 percent of the reasons high school students gave for transferring schools were not related to moving. Research has shown that student mobility is detrimental to students (e.g., Astone & McLanahan, 1994; Education Week, 1993; Smith, 1995, Indicator 46; U.S. General Accounting Office, 1994) and to schools (Lash & Kirkpatrick, 1990). Research has shown that the impact of student mobility on dropping out of school exists even after controlling for the influence of family background (e.g., Astone & McLanahan, 1994; McMillen, Kaufman, & Klein, 1997; Rumberger, 1995). Rumberger and Larson (1998) found that measures of social and academic engagement (i.e., low grades, misbehavior, high absenteeism) predicted whether students changed schools and whether students dropped out.

Psychological Variables

Locus of control. Kronick and Hargis (1998) stated that most research shows that dropouts report external as opposed to internal locus of control. The research in locus of control began with the work of Rotter (1966). He defined a control orientation as the extent to which an individual perceives that an event occurs due to one's own actions (internal locus of control) or due to luck or chance (external locus of control). Peng, Lee, Wang, and Walberg (1992) found that locus of control was a significant predictor of academic success.

Self-perception. Kronick and Hargis (1998) point out that it is commonly accepted that dropouts have lower self-concepts than graduates do, at least before they drop out. House (1999) found that self-beliefs were significant predictors of school withdrawal. Research has revealed that for some dropouts, self-concept increases after dropping out, especially if the environment outside of school provides more opportunities for status attainment than does school. This concept of “strain theory” was named by Merton (1957), who explains that “deviant behavior acts as a result of the malintegration of cultural ends and societal means” (Kronick & Hargis, 1998, p. 71).

As cited by Whaley and Smyer (1998), inner-city, poor African-American adolescents view academic performance as less relevant to their global self-esteem than their middle-class counterparts do (e.g., Hare, 1981, 1985; Jordan, 1981; Mboya, 1986). These youth invest more of their self-esteem in peer-related activities (Hare, 1985). Another area these youth may invest their self-esteem is job competence. A major reason African-American youth give for dropping out is that they have to work (Tidwell, 1988).

As cited by House (1999), some research suggests self-perceptions may be mediating factors between risk factors for dropping out and whether or not students stay in school. Finn and Rock (1997) found that students with low grades who persist in high school show higher levels of self-esteem. Vallerand, Fortier, & Guay (1997) found that dropouts showed a lack of self-determined motivation when compared to students who persisted in school. Numerous studies have found a significant relationship between academic self-concept and subsequent grade performance (e.g., House, 1993a, 1997; Marsh & Yeung, 1997; Mboya, 1986; Vrugt, 1994). Self-concept and achievement expectancies have predicted the school

persistence of minority students (e.g., Brown & Robinson Kurpius, 1997; Fuertes, Sedlack, & Liu, 1994; Lin, LaCounte, & Eder, 1988; Pavel & Padilla, 1993; Trippi & Stewart, 1989).

Feelings of alienation and cultural mistrust. Whaley and Smyer (1998) discussed the research that has been in this area. Feelings of alienation from school are negatively correlated with grade point average (GPA) and level of involvement in social activities for all students and positively correlated with behavioral maladjustment for African-American students only (Moyer and Motta, 1982). Cultural mistrust among African-Americans can be attributed to a long history of racism and oppression. Education and training environments foster this mistrust among this group of students (Terrell & Terrell, 1981). Smyer (1991) found that cultural mistrust was correlated with global self-worth and perceived job competence. Why does job competence have such a large impact? According to Wilson (1980), work provides an opportunity to assume adult roles. The perspective that schooling does not improve one's chances of gaining employment in an "unjust society" may motivate African-American students to drop out (Wolfstetter-Kausch & Gaier, 1981).

Whaley and Smyer (1998) noted that perceptions of competence in job domain and social acceptance by peers were significant predictors of self-worth. Alienation from school strengthened the association while cultural mistrust weakened the association. When controlling for cultural mistrust, the positive correlation between alienation and global self-worth was eliminated, suggesting that for African-American students' alienation from school may be part of cultural alienation not shared by White students. Behavioral conduct/morality and social acceptance by peers were determined to be significant negative predictors of self-discrepancy. Alienation from school and cultural mistrust did not affect

this relationship. Because job competence perception was so significant, dropout prevention programs should include an employment component. Counseling programs are needed to deal with alienation, cultural mistrust, and conduct problems. Peer counseling and group counseling would be useful with this group.

Expectations for the future. Rumberger (1995) found that students' low expectations for their educational futures are associated with early high school dropout (Driscoll, 1999). The typical high school dropout is expected to finish high school and attend a junior college, while the typical high school graduate expects to complete two to four years of college (Ekstrom et al., 1986, as cited in Driscoll, 1999). Worrell (1996) found that variables related to expectations of success in the future act as protective factors against dropping out.

Social Variables

Influence of peer groups. There can be peer pressure to drop out, especially in the Hispanic community (Headden, 1997). Ellenbogen & Chamberland (1997) noted that students at-risk for dropping out had more friends who were dropouts and working and fewer friends who were in school and of the same-sex. As discussed by Kronick and Hargis (1998), research has shown that a student may be more likely to drop out if he/she associates with other potential dropouts. Elliott and Voss (1974) state that youths that associate with other at-risk youths have a higher probability of dropping out due to the differential association factor. Sutherland (1947) described the differential association factor as the way in which criminal behavior is learned as the normative behavior in small, intimate groups. As a result of this phenomenon, group counseling for potential dropouts may not be a good idea (Kronick & Hargis, 1998).

Drugs and alcohol. Callison (1994) reports that two-thirds of substance abusers are dropouts (as cited in Friedenberg, 1999). Research has shown that alcohol disorders and heavy drinking lead to dropping out of school for adolescents (Williams & Wynder, 1993). Based on psychological and sociological literature that has shown that failure to meet social goals leads to behavioral problems such as drinking (e.g., Jaijoura, 1993, Jessor & Jessor, 1977), Crum, Ensminger, Ro, & McCord (1998) suggest that failure to meet educational goals within society leads to problem behaviors such as alcohol abuse. Students who do poorly in school may use alcohol and other substances to cover their feelings of depression, anxiety, and inadequacy and/or to increase their social acceptability within peer groups. Ellickson, Bui, Bell, and McGuigan (1998) through logistic regression found that cigarette use during seventh grade predicts dropping out of high school even after controlling for demographics, family structure, academic orientation, early deviance, and school environment for Asians, African-Americans, and Whites, but not for Hispanics. For Hispanics, early marijuana use predicts dropping out of school.

Pregnancy. Research has shown that adolescent childbearing has no effect on dropping out of high school when underlying socioeconomic factors are taken into account (Olsen & Farkas, 1988; Ribar, 1992; Upchurch, McCarthy, & Ferguson, 1993).

Ethnicity Differences in Dropout Rate – Revisited

Why are there such large differences in the dropout rates among ethnic groups? One reason, as mentioned previously, is certain risk factors of dropping out may be linked to ethnicity status. As stated by Jordan et al., (1996), “If we consider the cultural context of different race-ethnic groups in the United States, there is reason to expect that the dropout

process may be experienced differently by different people” (pp. 64-65). African-American adolescents are three times more likely than Whites to come from single-parent households, to live in poverty, or to have parents who did not earn high school diplomas (NCES, 1998, as cited in Goldschmidt & Wang, 1999). According to the National Council of La Raza (1990), Hispanics are 2.5 times more likely than Whites to have two or more risk factors for dropping out (as cited in Friedenber, 1999). African-American and Hispanic families are more likely to suffer from ineffective education and to be economically disadvantaged (Natriello, McDill, & Pallas, 1990). Students from these two ethnic groups and those from poor families are more likely to have problems in school, to be retained early in their school career, and to fall behind as they grow harder (Roderick, 1993). As the achievement gaps between poor and affluent and minority and White groups expand over time, they will ultimately result in big differences in the dropout rate in the high school grades (Jordan et al., 1996).

Ethnic groups that have immigrated to the United States, such as many Hispanic ethnic groups, are particularly at-risk for dropping out due to factors related to being from immigrant families, which have limited economic and human capital resources (including English proficiency). In addition, the different histories and characteristics of Hispanic subgroups in the United States have led to different average economic levels among these groups. For example, Cuban immigrants in the 1960s were generally educated, middle class, and of European descent. In contrast as cited in Driscoll (1999), Mexican immigrants who entered the United States illegally did not feel as welcome, had lower educational backgrounds, and had fewer job skills (Portes & McLeod, 1996; Velez, 1989. Driscoll

(1999) found that a generation factor is associated with the overall likelihood of dropping out of high school and the timing of dropping out. Also, if first and second generation students had the same socioeconomic characteristics as third generation students, their dropout rates would be lower than third generation students. “High educational expectations, family income, and past academic performance protect against high school dropout among Hispanics” (Driscoll, 1999, p. 857).

A third reason for the differences in dropout rates among ethnic groups is that different groups place different emphasis on completing high school. Some traditional Hispanic families do not feel their female children need to complete high school to fulfill their future roles as wives and mothers (Valdivieso & Nicolau, 1994). Hispanic families of Mexican decent come from a weak academic tradition (i.e. remote schools that are overcrowded and limited to the primary grades), and as a result, they do not demand as much from American schools as other ethnic groups do (Headden, 1997). For Hispanics, high parental aspirations appear to be related to the academic success of their children (Kao, 1998; Kao & Tienda, 1995, as cited in Driscoll, 1999). Driscoll also cites research showing that cultural values towards education and behaviors that promote academic success are stronger and more common among foreign-born parents than among native-born parents (e.g., Hirschman & Wong, 1986; Lee and Rong, 1988; Schneider & Lee, 1990). Some inner-city African-American students may question the value of attaining a high school diploma when they see the high levels of unemployment even with higher levels of education attainment and the amount of income that can be obtained through underground means in their neighborhoods (Ogbu, 1985; 1990).

A fourth reason for the differences in dropout rates among ethnic groups is the linguistic differences among these ethnic groups and the typical middle-class teachers in many of our schools (Alexander, Entwisle, & Thompson, 1987). This can lead to students who get into trouble because their teachers misinterpret responses that were not intended to be “disruptive or insolent.” Hispanic students who have limited English proficiency may incorrectly be labeled as slow learners or low ability students (Valdivieso & Nicolau, 1994).

Finally, poor and minority students are more likely to be influenced by pull factors that interfere with their attendance and academic progress such as needing to care for family members or hold down a job. According to Ekstrom et al. (1987) poverty backgrounds place considerable strain on both adolescents and their families that can hinder school performance and lead to dropping out (Jordan et al., 1996). Jordan et al. found that African-American females gave family-related reasons for dropping out more than Hispanic and White females. They also found that Hispanic and White males gave job-related reasons for dropping out second to school-related reasons.

Characteristics of Nontraditional Dropouts

LeCompte and Goebel (1987) said that there is cumulative evidence that there are two types of dropouts: the young dropout and the middle-class, high-achieving, majority youth who drops out. The later group is reported to have “socioemotional problems, including drug use, pregnancy, and intolerable family conditions, that make continuation in school difficult” (LeCompte & Goebel, 1987, p. 263, as cited in Franklin, 1992). Franklin summarized the research that had examined the characteristics of middle-class dropouts. These youth had been depicted as having serious behavior disorders, family dysfunction,

psychiatric disturbances, family patterns of substance and child abuse, and family breakup (e.g., Bolecek & Kilpatrick, 1982; Dulcan, 1986; Franklin, McNeil, & Wright, 1990, 1991; Franklin & Streeter, 1992; Hahn, Danzberger, & Lefkowitz, 1987; Harris, 1983; LeCompte & Goebel, 1987; Levine & Greer, 1984; Lichter, Rapien, Seibert, & Skalansky, 1962; Mahan & Johnston, 1983; Marockie & Jones, 1987; McElligatt, 1986; McNeil & Franklin, 1988; Wehlage & Smith, 1986; West & Prinz, 1987; Yungman & Hegar, 1986). In a study of 102 middle-class dropouts, Franklin found that these adolescents had a variety of disorders, most prominently substance abuse disorders, conduct disorders, and adjustment disorders. Many of these youths had experienced physical abuse, sexual abuse, and chronic family dysfunction. Parental substance abuse, family conflict, and family patterns of overachievement were frequent.

School-Level Variables

For all gender and ethnicity groups, school-related factors (alienation from school, safety, and suspension) are the most cited reasons for dropping out, with White students giving these reasons more than the Hispanic and African-Americans (Jordan et al., 1996). For this reason, characteristics of schools with higher dropout rates need to be investigated.

Sector

Sector refers to secular or non-secular schools (Goldschmidt & Wang, 1999). Students in non-secular schools are significantly less likely to drop out. Even after controlling for the student composition of the schools, the mean dropout rate in Catholic schools is lower than in public schools (Bryk & Thum, 1989; Krautmann, 1995; Rumberger, 1995; Sander & Krautmann, 1995).

Several reasons for this difference in dropouts have been postulated. One reason is that religious schools have much more control over their students' course-taking patterns (Bryk & Thum, 1989). In 1997, Hoffer found that increasing graduation requirements does not increase the likelihood that students will drop out (as cited in Goldschmidt & Wang, 1999). A second reason is that Catholic schools are often located in neighborhoods with above average social capital, specifically regarding religious ties to the community (Teachman et al., 1996).

School Policy and Practice

School climate. One variable among the school policies and practices variables is the perceived discipline climate. Schools have lower dropout rates when students perceive the discipline climate to be fair (Rumberger, 1995; Wehlage & Rutter, 1986). Bryk and Thum (1989) found that students whose schools had more orderly environments had lower probabilities of dropping out (McNeal, 1997). Brouillette (1999) found that for inner-city dropouts, their decisions to leave high school had often been the result of the level of violence both in and around their former schools. Paredes (1993) found that a positive school climate was related to lower dropout rates.

Extracurricular activities. Research has shown that the amount of involvement in extracurricular high school activities has a negative relationship with dropout rates, as discussed by Kronick and Hargis (1998). Participating in such activities provides potential dropouts with motivation to come to school. Mahoney and Cairns (1997) found that the school dropout rate among at-risk students was much lower for students who had previously participated in extracurricular activities when compared to those who did not participate.

However, there was only a modest relationship between extracurricular participation and dropping out among students who were higher performing in middle school. McMillan and Reed (1994) summarize the research in this area (e.g., Geary, 1988; Coburn & Nelson, 1989; Werner, 1984). Most students who do not drop out despite risk factors in their lives are involved in at least one extracurricular activity. These activities not only give these students a sense of belonging to the school environment, but also introduce them to students with similar circumstances providing a network of support.

Vocational programs. Weber (1988) found that the dropout rate for vocational students is significantly lower than that for general students, but significantly greater than the rate for academic students. Friedenber (1999) summarized the many studies that have shown a positive relationship between participating in vocational/technology education and staying in school. Students who participate in these courses are more motivated because they are able to learn academic skills in a more applied setting, while learning skills that may be used to gain employment in the future. Berryman (1980) found that most high school dropouts were taking courses from the general curriculum. In addition, she noted that vocational students have a more positive attitude toward school, clear goals, and a general satisfaction with life. Mertens, Seitz, and Cox (1982) found that the more vocational education at-risk students had, the less likely they were to drop out. Azcoitia and Viso (1987) also discovered that students enrolled in vocational programs were less likely to drop out than students enrolled in the traditional program. In a review of the dropout prevention programs reported in the ERIC system, Hamilton (1987) stated that every successful program included some type of occupational training component.

Despite the obvious benefit of vocational programs, most schools do not offer such programs until the eleventh grade. In addition, it has been documented repeatedly that LEP students are often excluded from these programs when these students could greatly benefit from them (e.g., Council of Chief State School Officers, 1987; Friedenber, 1987; Fleischman, Willette, Hanberry, & Hopstock, 1988; Fleischman & Willette, 1988; Woodruff, 1991). Arum (1998) conducted a study of how educational policy affects the relationship between vocational education participation and dropping out of high school. He found that states that have more resources invested in vocational programs have an increased likelihood of students graduating from high school. Conversely, states with low investments in vocational programs have students with higher odds of dropping out. Despite the benefits of a vocational program to potential dropouts, Pittman (1991) found that increasing the number of vocational course offerings was not effective in retaining dropouts. Perhaps having a vocational program is useful, but when there are too many choices, the student body becomes fractured into isolated groups (Alspaugh, 1998).

Transition to high school. Many students make the decision to drop out of school after they make the transition to high school. In a study by Hertzog and Morgan (1999), it was discovered that high schools that use three or more transition practices have lower dropout rates than high schools with two or fewer transition practices. This finding was the same for males and females. Of the schools with two or fewer practices, the transition practices utilized were traditional activities with little input from the students (e.g. registration activities and tours of the high school campus). The study noted many transition strategies that were found to be useful, such as transition teams, an advisory/mentoring

program, and high school teachers teaching in the middle school for a day. Alspaugh (1998) found that the older students are when they make the transition to high school, the more likely they will drop out.

School finance. Koshal, Koshal, and Marino (1995) revealed an association between higher expenditures per pupil and lower dropout rates and a relationship between attendance and family structure. Loeb and Page (2000) discovered a relationship between teacher salaries and dropout rates although this relationship had not been found in previous research. These researchers took into account non-pecuniary job attributes and alternative wage opportunities. They estimated that raising teacher salaries by 10% reduces school dropout rates by 3% to 4%.

School size. Research has shown that smaller schools tend to have lower dropout rates than larger schools (United States General Accounting Office, 2002). Merritt (1983) found that large schools had higher dropout rates than small schools. Pittman and Haughwout (1987) found that high school size impacts the dropout rate. These researchers propose that large student bodies result in a negative school climate and hinder students' abilities to related to the school. Bryk and Thum (1989) found that smaller school size is a moderating variable that facilitates a social environment conducive to faculty and student engagement. Franklin and Crone (1992) in a study of Louisiana schools found a strong negative correlation between dropout rate and school size.

Pupil-Teacher Ratio. Research has shown that pupil-teacher ratios are one method of reducing the incidences of dropouts (Carranza, 1975; Natriello, Pallas, & McDill, 1986). Fitzpatrick and Yoels (1992) found that pupil-teacher ratios were significant predictors of

dropout rates at the state level. According to McNeal (1997) larger pupil-teacher ratios may increase a student's likelihood of dropping out by decreasing the number of interactions between students and teachers. Schools with larger ratios may make it difficult for at-risk students to seek help. McNeal (1997) found that the pupil/teacher ratio at a school significantly affects a student's likelihood of dropping out.

Impact of Teachers

As cited by McMillan and Reed (1994), three qualitative studies found that students who persisted in school despite the odds mentioned that school staff had taken an interest in them and saw their successes as important (Coburn & Nelson, 1989; Geary, 1988; McMillan & Reed, 1993). These studies found that interpersonal relations and professional competence were important to at-risk students.

Lunenburg (2000) cited several researchers who have found that high-achieving and low-achieving students are treated differently by their teachers (e.g., Good, 1987, 1996; Lehr & Harris, 1991; Lunenburg, 1995; Lunenburg & Irby, 1999; Lunenburg & Ornstein, 2000; McCombs, Whisler, & Erlandson, 1997). This differential treatment includes being called on less often, receiving more criticism for failure, and facing lower expectations. According to Acheson and Gall (1998), at-risk students sense their teachers' lower regard for their personal worth in their classrooms, they eventually believe this is true, and they live up to these low expectations.

The U.S. Department of Education (1994) provides a synopsis of the research on teachers' impacts on student persistence in school. One study found that dropouts are less likely to believe their teachers were interested in them. Another study found that when

school staff share values, experience common activities and social interaction patterns, and embrace an attitude of caring, the school had a lower dropout rate.

Felter (2001) found that teacher education and experience influence dropout rates. The smaller the proportion of inexperienced, new teachers at a school, the lower the dropout rate. The smaller the percent of teachers with only a Bachelor's degree, the lower the dropout rate. These relationships hold even after controlling for poverty, school size, and urban location. Years of experience and years of education were less associated with the dropout rate as were the previous two variables.

Macro-Level Variables

Community

In addition to the impact of a students' family poverty level, the poverty of the neighborhood also affects dropouts. In urban schools that have less than twenty percent of students from poverty households, the dropout rate is 13%; however, in schools with more than fifty percent of students from poverty households, the dropout rate is 30% (Hahn & Danzberger, 1987). Vartanian and Gleason (1999) found that neighborhood conditions directly affect the educational inclination of students relative to race. The neighborhoods in which students live affects boys more than girls, possibly because girls are more likely to have stricter curfews (Ensminger, Lamkin, & Jacobson, 1996). Rural populations may place less emphasis on completing high school as needed for adulthood (DeYoung, 1994, as cited by Jordan et al., 1996).

Region

In 2000 dropout rates were higher in the South and West than in the Midwest and Northeast regions (United States General Accounting Office, 2002). When student risk factors are held constant, students attending public schools in the South or West are more likely to drop out than those students attending schools in the Northeast and Midwest (Ekstrom, Goertz, Pollack, & Rock, 1986; Fitzpatrick & Yoels, 1992; Rumberger, 1983).

Overview of School Effectiveness Research

Reynolds, Teddlie, Creemers, Scheerens, & Townsend (2000) organize the school effectiveness literature into four overlapping stages with three strands of school effectiveness research (SER) emerging from these four stages. The three strands of school effectiveness are as follows:

- School Effects Research - “studies of the scientific properties of school effects evolving from input-output studies to current research utilizing multilevel models;”
- Effective Schools Research - “research concerned with the processes of effective schooling, evolving from case studies of outlier schools through to contemporary studies merging qualitative and quantitative methods in the simultaneous study of classrooms and schools;”
- School Improvement Research - “examining the processes whereby schools can be changed utilizing increasingly sophisticated models that have gone beyond simple applications of school effectiveness knowledge to sophisticated ‘multiple level’ models” (Reynolds et al., 2000, p.3).

The four stages of school effectiveness research in the USA are listed below with a short description:

- Stage 1 (from mid-1960s to early 1970s) - “involved the initial input-output paradigm, which focused upon the potential impact of school human and physical resources upon outcomes;”

- Stage 2 (from early to late 1970s) - “saw the beginning of what were commonly called the ‘effective schools’ studies, which added a wide range of school processes for study and additionally looked at a much wider range of school outcomes than the input-output studies in Stage 1;”
- Stage 3 (from the late 1970s to the mid-1980s) - “saw the focus of SER shift towards the attempted incorporation of the effective schools ‘correlates’ into schools through the generation of various school improvement programs;”
- Stage 4 (from the late 1980s to the present day) - “has involved the introduction of context factors and of more sophisticated methodologies” (Reynolds, et al., 2000, p. 4).

The review of the literature in this study utilizes this same method of organizing this vast area of research. In addition, the majority of the research presented in this study is based on various reviews included in Reynolds, et al. (2000).

Stage 1: The Original Input-Output Paradigm

The studies conducted during this stage were economically driven with a focus on the impact of inputs, such as school resource variables and student background, on output, which was limited to student achievement. School effectiveness research had its beginnings with the Coleman Report. In 1964, James Coleman and several other researchers were commissioned by the U.S. Office of Education to carry out an examination of educational opportunity, in particular whether all racial groups received an equal opportunity for schooling in the USA. Students in minority groups had previously been found to have lower achievement scores and educational attainment than white students. During the desegregation era in U.S. history, the cause of this achievement gap became the center of controversy. Did the gap exist due to genetic and cultural differences or to the quality and amount of opportunities provided?

Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, and York (1966) administered questionnaires to 570,000 students and over 60,000 teachers and administrators. The regression analyses used mixed levels of data analysis (Teddlie, Reynolds, & Sammons, 2000). Smith (1972) discusses seven of the most significant findings of Coleman et al. First, family background was found to be very strongly correlated with school achievement. Second, the relation of family background to achievement remains throughout the years in school. A third finding was that family background explained such a significant amount of the school-to-school variation that there was little variation left to be accounted for by school variables. Fourth, only a small amount of variance was accounted for by variations in school facilities and curriculum. Even though no school variables accounted for a significant amount of variance, teacher characteristics accounted for more than any other variable. A sixth finding was that the social composition of the student body was more strongly related to school achievement than any school factor. A final finding was that attitudes are strongly associated with achievement and are influenced slightly by variation in school characteristics.

There were two conclusions that were drawn from the report, which were controversial. The first conclusion was that, in general, African-American students appeared to have school facilities that were just as adequate as those of white students in most areas of the country including the South. This was the complete opposite of the desegregation argument, which was that African-American students were not provided with the same educational opportunities as white students in the form of quality of staff, school buildings, equipment, libraries, and per capita expenditure (Armor, 1972; Smith, 1972).

One criticism of the study, which may explain why no difference was found, was that school characteristics were not adequately measured. The question was whether students from both groups (African-Americans and Whites) were exposed to the same school characteristics. It is difficult to answer this question with regard to the Coleman et al. study because of the limitation of the questionnaire method and because of the loss of information that could have been collected from the nonresponding schools. Another problem is the particular school outcome variable that was used. Opportunities for students from the two ethnicity groups may not differ when verbal achievement is used as the outcome, which Coleman et al. used; however, differences in opportunities may have been found if some other outcome variable had been used (e.g., Armor, 1972; Madaus, Kellaghan, Rakow, & King, 1979; Smith, 1972).

The second controversial conclusion was that once family background effects are considered, school characteristics had very little relation to achievement for both African-American and White students. This suggested that the racial gap in educational achievement could not be lessened through improvement in school characteristics alone. The criticism of the report that stems from this conclusion involves problems with data analysis procedures, measurement, and variable selection. Some of these data analysis problems include controlling for family background before examining school characteristics and overlooking school assignment and student self-selection practices (e.g., Armor, 1972; Smith, 1972). The input variables selected in the study were related to school resources but were not strongly related to student achievement. This suggests that perhaps there are other school factors that may account for more of the variance in student achievement. Reviewers (e.g. Averch,

Carroll, Donaldson, Kiesling, & Pincus, 1971; Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Miller, 1983) have noted that the studies conducted during this stage of SER did not include adequate measures of school climate and other classroom/school process variables. The exclusion of these variables resulted in the lack of variance accounted for by school factors. Despite these criticisms, Coleman et al. did find that the school factors used in their study accounted for 5 to 9 percent of the variance in student achievement (e.g., Daly, 1991; Teddlie, Reynolds, & Sammons, 2000).

Some people accepted the findings of the Coleman et al. study uncritically, some rejected the findings, and others tried to find out why these unexpected findings occurred (e.g. Hanushek & Kain, 1972; Jencks, 1972; Mosteller & Moynihan, 1972; Smith, 1972). Mayeske, Wisler, Beaton, Weinfield, Cohen, Okada, Proshek, and Taber (1972) conducted a reanalysis to further examine the Coleman findings. These researchers reordered the entry of the variables and found that 37% of the variance in achievement was between schools, but a great deal of the variance was shared by student background and school variables (Teddlie, Reynolds, & Sammons, 2000).

Even though the conclusions drawn from the Coleman et al. findings are disputed, this study was very significant to school effectiveness research because it brought up both policy-related and methodological issues that provided the impetus for school effectiveness research. Today, the major findings of the Coleman et al. study are widely accepted by the educational research community (Teddlie, Reynolds, & Sammons, 2000).

Also within this stage of SER, studies were conducted under the sociological framework and were referred to as the “status-attainment literature” (e.g. Hauser, 1971;

Hauser, Sewell, & Alwin, 1976). These studies were conducted in high schools in the USA. The first conclusion drawn from these studies was that the variance between schools was within the 15 to 30 percent range and was based on mean socioeconomic status (SES) differences. The second conclusion was that only 1-2% of the variance in student achievement was accounted for by schools after controlling for the impact of the aggregate SES of the student body (Reynolds, et al., 2000).

Stage 2: The Introduction of Process Variables and Additional Outcome Variables into SER

The research conducted during this stage of SER was sparked by the Coleman Report conclusion that suggested that all racial groups were receiving equal educational opportunities. The researchers of this era were convinced that this finding was wrong and set out to demonstrate the opposite (e.g., Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1979; Edmonds, 1979; Klitgaard & Hall, 1974; Weber, 1971). The tone that existed among the research of this era was “advocacy for the poor.” The earlier studies of this stage centered around urban, elementary schools with the idea that success stories in these schools would refute the claim that schools made no difference. For example, Weber (1971) conducted an important set of case studies in effective, low-SES schools during this stage of SER. He used these extensive case studies to examine the processes occurring in schools (e.g. strong leadership, high expectations, positive atmosphere, and monitoring student progress) (Reynolds, et al., 2000).

There were three methodological advancements that occurred during the second stage of SER. First, more sensitive measures of classroom input were developed. In order for this

to occur, student-level data had to be linked to the specific teachers who taught the students. This methodological advancement was important for two reasons. First, the importance of teacher-level inputs was recognized. Second, more of the variance in student achievement could be accounted for by narrowing the focus from school-level inputs to student-level inputs.

As a result of this advancement, certain characteristics of classroom teachers were found to be significantly related to their students' achievement. For example, Summers and Wolfe (1977) were able to explain 25% of the variance in student gain scores by using student-level inputs, which included teacher characteristics. The quality of the college the teachers attended was found to be a significant predictor of their students' learning rate. Murnane (1975) was able to increase the total amount of explained variance in student achievement by 15% when incorporating information on classroom and school assignments, after controlling for student background and prior achievement. Principals' evaluation of teachers was found to be a significant predictor in this study, as well as in the study by Armor, Conry-Oseguera, Cox, King, McDonnell, Pascal, Pauly, and Zellman, (1976) (Reynolds, et al., 2000).

Reviews by Hanushek (1981, 1986) indicate that some teacher variables, specifically those related to school expenditures (e.g. teacher-student ratio, teacher education, teacher experience, teacher salary) had no consistent relationship with student achievement. These findings were similar to what was found in the Coleman Report (and the subsequent re-analyses) with regard to school expenditure variables. In summary, the variables that have the most significant relationships with student achievement are "human resource" variables

(e.g. locus of control, influence of peer groups, quality of teachers' education) as opposed to school expenditure variables (e.g., Brookover et al., 1979; Hanushek, 1972; Henderson, Miezowski, & Sauvageau, 1978; Link & Ratledge, 1979; Murnane, 1975; Summers & Wolfe, 1977; Winkler, 1975).

A second methodological advance from this stage was the development of social psychological scales to be used in measuring school processes (i.e., teacher behaviors and attitudes and school climate). At the beginning of this stage, teacher behaviors and attitudes were measured using achievement data (Murnane, 1975; Summers & Wolfe, 1977). By the end of this stage and the beginning of stage three, the measurement of teacher behaviors and attitudes had progressed to direct observations of effective teaching behaviors based on the teaching effectiveness literature (e.g., Brophy & Good, 1986; Gage & Needels, 1989; Rosenshine, 1983; Stringfield, Teddlie, & Suarez, 1985).

Research into the area of school climate progressed significantly during this stage of SER due to the need for better measurement of school processes. Based on the earlier work of researchers in school climate (e.g., McDill, Meyers, & Rigsby, 1967; McDill, Rigsby, & Meyers, 1969; McDill & Rigsby, 1973) who found a significant relationship between school climate and achievement, Brookover, Schweitzer, Schneider, Beady, Flood, & Wisenbaker, (1978) and Brookover et al. (1979) designed and tested surveys to measure student, teacher, and principal perceptions of school climate. Over the years Brookover and his fellow researchers developed fourteen climate scales based on four sources:

- “student sense of academic futility, which had evolved from the Coleman et al. (1966) variable measuring student sense of control and the internal/external locus of control concept of Rotter (1966);

- academic self-concept, which had evolved in a series of studies conducted by Brookover and his colleagues from the more general concept of self esteem (Coopersmith, 1967; Rosenberg, 1965);
- teacher expectations, which had evolved from the concept of the self-fulfilling prophecy in the classroom (Cooper & Good, 1982; Rosenthal & Jacobsen, 1968), which had in turn evolved from Rosenthal's work on experimenter bias effects (Rosenthal, 1968, 1976; Rosenthal and Fode, 1963);
- academic or school climate, which had roots going back to the work of McDill and Rigsby (1973) on concepts such as academic emulation and academically oriented status systems and the extensive work on organizational climate (e.g. Halpin & Croft, 1963; Dreeban, 1973; Hoy, Tarter, & Kottkamp, 1991)" (Reynolds, et al., 2000, p. 9).

In studying the relationship among school climate and school-level aggregates of student SES, student ethnicity, student achievement, Brookover et al. (1978, 1979) examined further the problem of multicollinearity among school climate and these family background variables.

A third methodological advancement of the second stage of SER was the use of more sensitive outcome measures that are linked more closely to the actual courses or curriculum taught at the schools under study. Two studies conducted by researchers from different countries both concluded that the measured relationship between school characteristics and student achievement could be greatly affected by the instrument used to measure student achievement (Brimer, Madaus, Chapman, Kellaghan, & Woodrof, 1978; Madaus et al., 1979). Specifically, Madaus et al. (1979) found that classroom variables explained more of the variance of the curriculum-specific tests than of the standardized tests used in the study. Researchers concluded that curriculum-specific tests measure material that is actually taught

at the schools, whereas standardized tests measure material that schools cover more “incidentally” (e.g., Carver, 1975; Coleman et al., 1966; Madaus et al., 1979).

Stage 3: The Equity Emphasis and the Emergence of School Improvement Studies

The third stage of SER was centered on the theme of “equity.” The initiator of this era of research, Ron Edmonds, used his research (Edmonds, 1978, 1979a, 1979b) and that of others (e.g., Lezotte & Bancroft, 1985; Weber, 1971) to promote the creation of schools that were effective for the urban poor. The five correlates of school effectiveness emerged from this era of SER: consensus of goals, safe and orderly climate, strong instructional leadership, high expectations of all students, and the use of student achievement data to closely monitor instructional programs (Reynolds & Teddlie, 2000). At this point researchers began conducting the first school improvement studies that were based on these five ‘correlates’ of effective schools (e.g., Clark & McCarthy, 1983; McCormack-Larkin, 1985; McCormack-Larkin & Kritek, 1982; Taylor, 1990).

In the early to mid-1980s, the “equity” movement in SER began to receive criticism from the educational research community (e.g., Cuban, 1983, 1984; Firestone & Herriot, 1982; Good & Brophy, 1986; Purkey & Smith, 1983; Rowan, 1984; Rowan, Bossert, & Dwyer, 1983; Ralph & Fennessey, 1983). There were several criticisms with regard to the “five factor model.” First, these five characteristics are correlates; therefore, causal relationships cannot be drawn. Second, because goals are often defined as emphasizing basic skills, the outcome variable is basically the same construct as one of the independent variables. Also, most schools do impart basic skills; however, what should be of interest is what is learned beyond the basic skills and for how long. Third, these five factors may not

be independent of one another. A final problem is the locus of these factors. These criticisms demonstrate ways in which the model needed to be refined (e.g., Creemers, 1994; Teddlie & Stringfield, 1993). As a result, researchers began conducting more sophisticated studies of SER using better sampling and analysis techniques (Reynolds, et al., 2000).

Stage 4: The Introduction of Context Factors and Other Methodological Advances:
Towards “Normal Science”

The next phase of school effectiveness began with the question of whether or not the five correlates could be applied to contexts other than “urban elementary schools.” The purpose of the research shifted from “equity” to “efficiency.” This does not mean that researchers decided that achieving efficiency is more important than equity, but rather that efficiency became the focus of research. Researchers began to look for the characteristics of schools, other than the available fiscal resources, which produced achievement while studying all types of schools and all types of contexts (e.g., Hallinger & Murphy, 1986; Teddlie, Stringfield, & Desselle, 1985; Teddlie, Virgilio, & Oescher, 1990).

Wimpelberg, Teddlie, & Stringfield, (1989) suggest that in this phase of school effectiveness research a balance between the concern for equity and the press for efficiency could be achieved by considering context and multilevel effects. They recommended that researchers design studies that are sensitive to contextual factors and involve the improvement of education for everyone, despite the constraints of fiscal resource limitations.

The inclusion of context enhanced the quality of the research in all three strands of SER. Within the School Effects Strand, context variables became included as covariates in the analyses (e.g., Creemers & Scheerens, 1994; Scheerens, 1992). Within the Effective

Schools Strand, schools were selected for case study analysis based on effectiveness status and at least one context variable (e.g., Teddlie & Stringfield, 1993). These studies became known as “contextually sensitive studies of school effectiveness processes” (Reynolds, et al., 2000, p. 12). Within the School Improvement Strand, the context of the school influenced the selection of the particular approach to school change (e.g., Chrispeels, 1992; Stoll & Fink, 1992).

Several methodological advances have occurred in the past decade, which have significantly improved the research in all three strands of SER. The most significant advancement has been the development of multilevel mathematical models, which are used to more accurately depict the effects of different levels of analysis from students to teachers to schools and beyond. This methodological advance was heralded by several researchers in the USA (e.g., Alexander, Pallas, & Cook, 1981; Burstein, 1980a, 1980b; Burstein & Knapp, 1975; Cronbach, Deken, & Webb, 1976; Hannan, Freeman, & Meyer, 1976; Knapp, 1977; Lau, 1979). Computer programs used to conduct multilevel modeling analyses were created in the USA (Bryk, Raudenbush, & Congdon 1986; Bryk, Raudenbush, Seltzer, & Congdon 1986) and in the UK (e.g., Longford, 1986) at about the same time. This analysis technique has been refined further over the years (e.g., Bryk & Raudenbush, 1988, 1992; Lee & Bryk, 1989; Raudenbush, 1986, 1989; Raudenbush and Bryk, 1986, 1987, 1988; Raudenbush & Willms, 1991; Willms & Raudenbush, 1989).

Many of the methodological advances made in stage two of SER have been further enhanced in stage four. First, through the use of multivariate analysis of variance researchers have shown that more effective teaching occurs at more effective schools as

opposed to less effective schools (e.g., Crone & Teddlie, 1995; Stringfield, Teddlie, & Suarez, 1985; Teddlie Kirby, & Stringfield, 1989; Teddlie & Stringfield, 1993; Virgilio, Teddlie, & Oescher, 1991). Second, measurement of educational processes has improved, as more surveys have been developed to measure social psychological indices such as social organization (Rosenholtz, 1988, 1989), organizational effectiveness (e.g., Pallas, 1988; Rowan, Raudenbush, & Kang, 1991), and school climate (e.g., Teddlie, Falkowski, Stringfield, & Desselle, Garvue, 1984; Teddlie & Stringfield, 1993). Finally, the area of improved outcome measures is still being examined by Fitz-Gibbon (1991), Willms (1985), and others.

Since the mid-1980s, the amount of SER in the USA has greatly declined. Reynolds et al. (2000, pp. 13-14) give seven reasons for this decline:

- The many criticisms of effective schools research in the early to mid-1980s led many researchers and doctoral students to avoid the entire field of school effectiveness research.
- Several researchers moved from the area of school effects research to the more applied strands, effective schools and school improvement (e.g., Brookover, Beamer, Efthim, Hathaway, Lezotte, Miller, Passalacqua, & Tornatzky, 1984).
- Other researchers who were once interested in the field of SER, moved to other areas of interest such as school restructuring and school indicator systems.
- Before the multilevel modeling techniques became available, many researchers began to steer clear of SER because there was no easy way to handle the problems of different levels of analysis.
- Research involving the study of the economic input-output models declined because tests failed to find significant relationships between school financial variables and student achievement (e.g., Geske & Teddlie, 1990; Hanushek, 1981, 1986).

- Federal funding for educational research became scarce during the Republican administrations of the 1980s (Good, 1989), and state departments of education began to focus more on accountability programs than on basic research.
- The communication among the SER community broke down into “separated circles” as a group of the researchers, the more “scientifically” oriented researchers, became more involved in the statistical issues associated with multilevel modeling approaches and less involved in the impact of their results on education (Reezigt, Creemers, & deJong, in press).

Fetler (1989) found that higher achievement is associated with lower dropout rates even after statistically controlling for socioeconomic status and enrollment. This suggests that many of the factors that encourage high achievement also encourage lower dropout rates, independent of social background. The traditional correlates of school effectiveness can be used as reform measures in lowering dropout rates.

CHAPTER 3. METHODS USED IN THE STUDY

Overall Design and Characteristics of the School Population

This study has a sequential design and consists of three phases. Phase I had both exploratory and confirmatory investigations. The data used were quantitative, and statistical analyses were conducted. Phase II was a strictly confirmatory investigation with quantitative data and analyses. Phase III of this study had confirmatory and exploratory purposes. Quantitative data were examined using quantitative analyses. In the first phase, the quantitative data were “qualitized” through the formation of narrative profiles. The use of mixed data analysis strategies in this study gives the study a mixed method design (Tashakkori & Teddlie, 1998; Teddlie & Tashakkori, 2003).

Figure 3.1 displays the design of this study. The three phases are separated to show the objectives, hypotheses, sub-hypotheses, and research questions associated with each phase of this study. The objectives are listed in the order they were addressed. Each objective had to be addressed before those below it. Those that are presented horizontally did not require prior objectives to have been met. The hypotheses, sub-hypotheses, and/or research questions shown adjacent to or below any objective were those that were addressed when that particular objective was studied.

This study was conducted using public high schools and students in Louisiana, a moderate-sized state in the southern United States. During the 2000-2001 school year, which is the primary school year during which the data in this study were collected, 741,553 students were enrolled in Louisiana public schools. There are 66 public school districts in

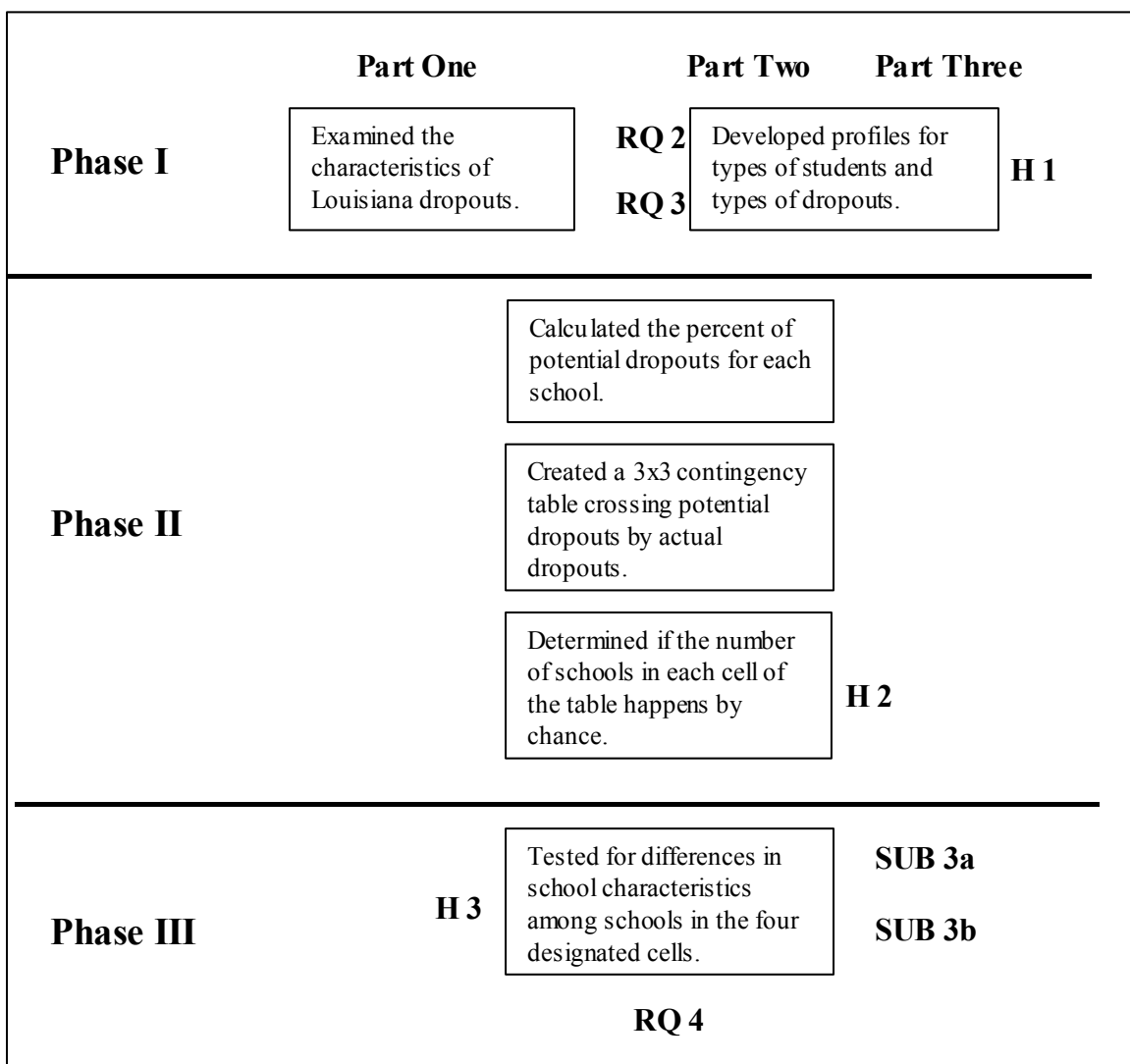


Figure 3.1

Pictorial Illustration of the Three-Phase Study Design(H: Hypothesis; RQ: Research Question; SUB: Sub-hypothesis)

Louisiana, and a handful of schools (e.g., laboratory and charter schools) that falls outside of these school districts. The student population is composed of 49.0% White students and 47.7% African-American students. American Indian, Asian, and Hispanic students

combined only make up 3.3% of the student population (Louisiana Department of Education (LDE), 2002a).

In educational research, the percentage of students eligible to participate in the Free and Reduced-Priced Lunch Program is often used as an indicator of family socioeconomic status (SES). Based on the 2000-2001 federal guidelines, the maximum family income allowed for participation in the Free Lunch Program is 130% of the federal poverty level, or \$21,945 annually for a family of four. The maximum family income allowed for participation in the Reduced Lunch Program is 185% of the federal poverty level, or \$32,653 annually for a family of four. The percent of Louisiana students who were eligible to participate in this program in 2000-2001 in grades pre-kindergarten through twelve was 58.2%. Of those students eligible to participate in the lunch program, 49.6% were eligible for free lunches and 8.5% were eligible for reduced-priced lunches (LDE, 2002a).

In the 2000-2001 school year there were 1,532 public schools in Louisiana. Of these, 843 were elementary schools, 251 were middle/junior high schools, 292 were high schools, and 146 were combination schools. In 2001, 1,381 schools participated in the Louisiana School Accountability System. As part of this system, schools receive a School Performance Score based on test scores, attendance, and dropout rates. Of these accountability schools in 2000-2001, 16.1% had reached the state ten-year goal of 100. Almost three percent of the accountability schools were labeled “Academically Unacceptable Schools” and received extra assistance and monetary resources from the state (LDE, 2002a).

Phase I - Profiling Student Dropouts

The purpose of this phase of the study was to develop profiles of different types of student dropouts. The previously studied characteristics of dropouts available for profile examination in this study included: (1) being overage when compared to one's grade-level peers, (2) poverty, (3) limited English proficiency, (4) low academic achievement, (5) frequent misbehavior as measured by in- and out-of-school suspensions, and (6) high absenteeism. This phase consists of three parts. Part One examines the profile of Louisiana dropouts as a whole. Part Two involves the creation of clusters of students, both dropouts and non-dropouts combined. Part Three focuses solely on the creation of dropout clusters. Gender and ethnicity were not included in the cluster analyses as research has shown that dropout rates do not differ for these groups after controlling for the other risk factors (Goldschmidt & Wang, 1999; Jordan, Lara, & McPartland, 1996).

Phase I Sample

Students were the units of analysis in Phase I. Student enrollment and demographic data were obtained from the Student Information System (SIS), the Louisiana Department of Education's detailed database of information on public school students submitted via the school districts. The Phase I samples included students who were enrolled at least one day during 2000-2001 school year. The most recent enrollment record was obtained for students who had duplicate records, mainly due to mobility.

The purposes of obtaining these 2000-2001 records were to determine if students were dropouts or non-dropouts, to establish the school from which students did or did not drop out, and to collect various demographic data on students including education

classification (e.g., special education), ethnicity, gender, birth date, reason for dropping out, how the student dropped out (e.g., summer dropout), grade enrolled, free or reduced-priced lunch status, and limited English proficiency status. The SIS database was improved during the 2000-2001 school year resulting in data collection and aggregation that more accurately reflected education classification. Also obtained from the 2000-2001 file was the unique student identifier (i.e., the generated identification number) assigned to students by the Louisiana Department of Education. This number was important throughout the creation of the sample since it was used to match key data back to the 2000-2001 student records (LDE, 2000a, 2000b, 2002b).

Students were selected if they were enrolled in grades 9 through 12 in 2000-2001; therefore, students enrolled in the middle school grades (i.e., grades 6 through 8) were not included in the sample. These earlier grades would distort the results by including middle school dropouts, a group shown in previous research to be different from high school dropouts, the focus of this study. Previous research has found that after accounting for aggregated student-level characteristics, there is little variation among middle schools with regard to dropout rates (Goldschmidt and Wang, 1999). There were 210,868 students in the database at this stage of the sampling process.

The next step in the sampling process was to obtain 1999-2000 data for the students in the sample. The data obtained from the previous year included number of absences, number of days enrolled, and number of suspensions. Three different methods for obtaining 1999-2000 data were explored for their impact on the final sample size. Ideally, the data from the 1999-2000 school year would be based on an entire school year of data (Method

Number One) to get the most accurate picture of absenteeism and misbehavior for each student. The number of students enrolled in grades 7 through 12 for approximately a full school year in 1999-2000 was 281,222. When merged with the 2000-2001 data, the resulting sample size was 179,782. The number of dropouts in this group of students was only 10,622 (5.9%).

Method Number Two for obtaining the 1999-2000 data was to include students who were enrolled during the second half of the school year, or from January 1, 2000 to the end of the year. The number of students enrolled in grades 7 through 12 who met these criteria was 289,836. When merged with the 2000-2001 data, the resulting sample size was 184,953. The number of dropouts in this group of students was 11,668 (6.3%).

Method Number Three for obtaining 1999-2000 data was to include students who were enrolled for at least half a school year, or four and one-half months. The number of students enrolled in grades 7 through 12 who met these criteria was 314,081. When merged with the 2000-2001 data, the resulting sample size was 194,562. The number of dropouts in this group of students was 14,012 (7.2%). The number of dropouts reported in Louisiana for the 2000-2001 school year was 16,361 (7.8%) (LDE, 2003a). The dropout percentage for the third sampling method is the closest to the actual dropout percentage; thus, this method was selected. Therefore, the final sample size for this phase of the study was 194,562.

Part One of Phase I examined the characteristics of all the Louisiana dropouts in this sample (14,012) through a descriptive analysis. Parts Two and Three used samples drawn from the entire database of 194,562 students to further examine types of students through cluster analyses. The full sample of 194,562 students was stratified based on gender,

ethnicity, and dropout status before randomly drawing the samples to ensure representativeness of the smaller samples, a key assumption that must be met when using cluster analysis. Samples were required because cluster analysis is not very practical for large samples. The sizes of the smaller samples were determined using Cochran's (1977) formula (as cited in Bartlett, Kotrlik, & Higgins, 2001).

Part Two of this phase examined the characteristics of both dropouts and non-dropouts combined through cluster analysis. The entire population of dropouts and non-dropouts was stratified using gender, ethnicity, and dropout status. The proportions of students in each cell were used to determine the number of students to include in the smaller samples to ensure the samples were representative of the population. Two samples of 807 were then randomly drawn using the specified number for each strata from the total sample. Ideally these two samples would have contained 800 students, but this number was slightly exceeded due to rounding within the strata. The second sample was used to validate the results found with the first sample. Pertinent variables in the analysis were compared across the two samples to ensure the two samples were similar. Part Three of this phase examined the characteristics of dropouts only through cluster analysis. The population of just dropouts was stratified by gender and ethnicity. A similar stratification procedure was used to randomly draw the two samples of 400 from the total sample of dropouts. Again the purpose of the second sample was to validate the findings of the first. The two smaller dropout samples were also compared for similarity. Special education students were excluded from the samples used in Parts Two and Three.

Phase I Data Sources

Overage Status

Research has revealed that grade failure affects students' self-concept and reinforces feelings of failure. Being older than one's grade-level peers has been shown to lead to school alienation and subsequent dropping out (e.g., Denson & Schumacker, 1996). A student's birth date was used to compute the student's age, which was then compared to the grade appropriate age to determine if the student was overage by two or more years at the beginning of the school year. Students who were one-year older than their peers were not considered to be overage because many times students either (1) are held back a grade due to illness, or (2) start school slightly older than their peers. This method has been used in previous research (Frazer & Ligon, 1991). These data were obtained during the retrieval of the 2000-2001 SIS data. This variable is dichotomous.

Poverty

Eligibility to participate in the Free or Reduced-Priced Lunch Program was used as a proxy for socioeconomic (SES) of the student's family¹. Children who live in poverty (i.e., from low SES backgrounds) are more likely to drop out (Goldschmidt & Wang, 1999). Eligibility for free lunch was separated from eligibility for reduced-priced lunch in this study.

¹ As compared to elementary students, the actual percent of students eligible for free or reduced-priced lunches is understated for high school students, who are often reluctant to submit applications for the lunch program due to concerns over peer group perceptions.

Students eligible to participate in the Free Lunch Program have been shown to have different characteristics from Reduced-Priced Lunch Program students (e.g., LDE, 2001a). This variable was obtained from the SIS database and was categorical.

Limited English Proficiency (LEP) Status

Students are classified as LEP students if they have a language background other than English, and the student's English proficiency limits his or her probability of success in an English-only environment when compared to the success of peers with English language backgrounds. A student's adeptness at English was indicated by examining reading skills, listening skills, writing skills, and speaking skills (LDE, 2000b). This variable was obtained from the SIS database and was dichotomous.

Student Achievement

The average test score for each student was used as a measure of student achievement. One must use caution when comparing different types of tests. For each test, grade, subject, and year of data, after eliminating duplicate student records, scores for all students tested were standardized using z -scores. This made scores across different grade levels and different types of tests more comparable. Where possible, scores from more than one year were obtained to allow both a norm-referenced test (NRT) score and a criterion-referenced test (CRT) score to be incorporated into the student's final averaged test score, which was then used in the analysis (Brooks & Oescher, 1992).

For the NRT's, language, reading, and mathematics subject areas were separately standardized and then averaged for each student for a given year. For the CRT's, English language arts and mathematics subject areas were separately standardized and then averaged

for each student for a given year. Reading content standards were assessed as part of the English language arts CRT. The scores of students known to have cheated or to have excessive wrong-to-right erasures were eliminated from the standardization process. Assessment data were obtained from the Division of Standards and Assessments within the Louisiana Department of Education. This variable was continuous.

Student Misbehavior

The number of suspensions received, both in-school and out-of-school, in the 1999-2000 school year was used as a measure of student misbehavior. In-school and out-of-school suspensions were both used because the difference in receiving one or the other is not so much a factor of a student's offense, but rather the policies of individual schools and districts. The number of offenses was counted for each student by school. These data were merged with the main file of SIS data by generated identification number and school code. These data were obtained from the SIS discipline file (LDE, 2000a, 2000b, 2002b). This variable was continuous.

Student Attendance

School attendance has been found to be a good predictor of dropping out (Kronick and Hargis, 1998). In this study, the number of absences in the previous school year (1999-2000) was used to evaluate student attendance. The number of absences was divided by the number of days enrolled to obtain a percentage of days absent. This variable was obtained from the SIS database and was continuous.

Phase I Hypothesis and Research Questions

Research Question 1

What is the profile of dropouts from Louisiana public schools as a whole?

Hypothesis 1

High school students can be grouped into clusters representing the five profiles of students: “quiet dropouts,” “low-achieving pushouts,” “high-achieving pushouts,” “in-school dropouts,” and “potential high school graduates” as theorized by Kronick and Hargis (1998).

Research Question 2

Do profiles of other types of dropouts or potential graduates arise through the cluster analysis?

Research Question 3

What percentage of Louisiana dropouts are “typical” and “non-typical” dropouts, based on the clusters formed through the cluster analysis?

Phase I Analysis

The analysis for Part One involved the creation of a profile of all Louisiana dropouts in the full sample by describing the characteristics of these former students. This descriptive analysis addressed Research Question 1.

A cluster analysis was used in Parts Two and Three of Phase I to address Hypothesis 1 and Research Questions 2 and 3. This technique allows one to classify a sample of units into meaningful subgroups by grouping the units based on their similarities. Unlike discriminant function analysis, the groups are not predefined. This does not mean that one

cannot expect certain students to be grouped together, as predicted in Hypothesis 1, but rather that one does not know group membership before the analysis (Hair, Anderson, Tatham, & Black, 1998).

According to Hair et al. (1998), it is important that the variables included in the cluster analysis be “adequate in both scope and detail” (p. 502). The variables selected for inclusion in the cluster variate were selected based on prior research. As stated by Aldenderfer and Blashfield (1984), “The importance of using theory to guide the choice of variables should not be underestimated” (p. 20). To avoid using mixed data types in the cluster analyses, all variables were transformed to binary variables. Chapter 4 provides the details of these transformations.

The similarity measure used to join observations and clusters in this study was a measure of association referred to as “simple matching.” An association measure had to be used since the data are binary (e.g., Aldenderfer & Blashfield, 1984; Everitt, 1993; Hair et al., 1998). With the simple matching coefficient, some observations were grouped together because they both were missing some attribute (i.e., joint absence) of some variable. Therefore, one level of each variable was excluded from the analysis, a common practice used with a series of binary variables (i.e., dummy variables) representing a categorical variable.

A hierarchical cluster analysis was utilized in both Parts Two and Three. Ward’s (1963) clustering algorithm was used “to minimize the within-cluster differences and to avoid problems with ‘chaining’ of the observations found in the single-linkage (nearest neighbor) method.” (Hair et al., 1998, p. 503). Hands and Everitt (1987) found that the

Ward method performed the best at cluster extraction when used in conjunction with the matching coefficient. Ward's method has been recommended and/or used in many studies (Finch & Huynh, 2000; Kamphaus, Huberty, DiStefano & Petoskey, 1997; Milligan & Cooper, 1987; Overall, Gibson & Novy, 1993). The SPSS package was used for the cluster analyses. The cluster analysis results were validated using a second sample in both Parts Two and Three. Narrative profiles of each cluster were created.

Phase II - Classification of Schools

Phase II was purely quantitative. The purpose of this phase was to classify schools into one of nine cells contained in a 3 x 3 contingency table constructed by crossing three levels of *Percent of Actual Dropouts* with three levels of *Percent of Potential Dropouts*.

Phase II Sample

Schools were the units of analysis in Phase II. Schools were selected if they at least had grades 9 through 12. Grades beyond these four were allowed in the sample. There were 422 such schools from throughout Louisiana in the initial sample.

A "public" school is defined as a school included in one of the 66 Louisiana school districts. All public schools in the state were included provided they had a regular education program. The following types of schools were excluded from the study because these schools have characteristics (e.g., admissions criteria) which make them differ from the traditional public school: magnet schools, laboratory schools, charter schools, alternative schools, adjudicated juvenile facilities, and nondiploma-bound schools. Schools had to be in existence during the 1999-2000 and 2000-2001 school years, since data were needed from both school years to be used in Phase III. The final sample consisted of 301 schools.

Phase II Data Sources

Percent of Potential Dropouts

A student was considered to be a potential dropout if he or she possessed at least two of the risk factors for dropping out, as identified in Phase I. These included the following: a high percent of days absent from school, low achievement as measured by inclusion in the bottom quartile, three or more in- or out-of-school suspensions, limited English proficiency status, being two or more years older than one's grade-level peers, and being eligible for free or reduced-priced lunch. Students who were in the top quartile of the achievement measure who had a high percent of days absent from school were also considered to be potential dropouts. The number of potential dropouts in the entire sample was 53,015 (27.3%).

The percent of potential dropouts was calculated at each school by dividing the number of potential dropouts by the number of students included in the Phase I large sample for each school.

$$\textit{Percent of Potential Dropouts} = \frac{\textit{Number of Potential Dropouts}}{\textit{Number of Students in Sample}} \times 100$$

Percent of Actual Dropouts

The 2000-2001 actual dropout rates were obtained for each school in the sample. The source of this data was the district-reported data submitted to the Louisiana Department of Education via the SIS database. The districts code students who drop out during a school year as a dropout on SIS and also provide a code for the reason for dropping out. Officials at the Louisiana Department of Education also categorize students as dropouts and non-dropouts based on federally accepted rules applied during the processing of the SIS files.

The number of dropouts is summed for each school and the percent of student dropouts is calculated as shown in the formula below:

$$\text{Percent of Actual Dropouts} = \frac{\text{Number of Student Dropouts} \times 100}{\text{Dropout Denominator}}$$

The *dropout denominator* is defined as the “cumulative enrollment plus any dropouts not included in the cumulative enrollment (e.g., reported and non-reported summer dropouts),” (LDE, 2003a, p. 3-23). The *cumulative enrollment* is defined as “the unduplicated count of all students enrolled in a school or district for at least one school day during the course of the school year” (p. 3-23).

This actual dropout rate used throughout this study is an “event dropout rate” as opposed to a “status dropout rate.” As discussed in Chapter 1, an event dropout rate is the number of students who drop out during a specific year. A status dropout rate is the number of students in a certain age group who are high school dropouts at a specific moment in time (Kaufman, Alt, & Chapman, 2001).

Phase II Hypothesis

Hypothesis 2

For some categories (low, medium, and high dropouts) of schools, the percentage of actual dropout rates will be inconsistent with the percentage of potential dropouts predicted for those categories based on the Phase I cluster analysis results.

Phase II Analysis

The distribution of the actual dropout rates for the schools was examined to determine the cutpoints that were used to group schools based on high, medium, and low

percentages of dropouts. The distribution of the percentages of potential dropouts was also examined to determine if the same cutpoints could be used. Schools were then grouped based on high, medium, and low numbers of potential dropouts.

The two resulting categorical variables, actual dropouts and potential dropouts, were then crossed in a 3 x 3 contingency table. Schools were assigned to one of the nine resulting cells in the table, as pictured in Figure 3.2. Cells are referenced from this point on, based on the cell number. For example, Cell One containing a low percentage of potential dropouts and a low percentage of actual dropouts will be referred to as “C1.”

		Potential Dropouts		
		Low	Medium	High
Actual Dropouts	Low	C1 Low % Potential/ Low % Actual	C2 Medium % Potential/ Low % Actual	C3 High % Potential/ Low % Actual
	Medium	C4 Low % Potential/ Medium % Actual	C5 Medium % Potential/ Medium % Actual	C6 High % Potential/ Medium % Actual
	High	C7 Low % Potential/ High % Actual	C8 Medium % Potential/ High % Actual	C9 High % Potential/ High % Actual

Figure 3.2
School Dropout Prevention Effectiveness Classification Matrix

Hypothesis 2 was tested using two statistical procedures. First, a Chi-Square statistic was calculated to determine if schools were assigned to the nine cells in a manner different from what was expected by chance. This statistic is calculated by first examining the observed frequencies or number of times a school is assigned to one of the nine cells. These

frequencies are compared with the frequencies that are expected by chance. A large value for the Chi-square statistic indicates that the observed frequencies differ significantly from the expected chance values.

Finally, the kappa *t*-test was used to determine the magnitude of agreement between the two factors. The kappa *t*-test measures agreement between the weighted kappa coefficient (chance-controlled agreement), the weighted agreement ratio (adjusted agreement), and the unweighted agreement ratio (absolute agreement) (Lang, 1991).

The four shaded cells in the table in Figure 3.3 were the focus for the next phase of the study. Cell One (C1) schools were classified as having both a low percentage of potential

		Potential Dropouts		
		Low	Medium	High
Actual Dropouts	Low	C1 Low % Potential/ Low % Actual	C2 Medium % Potential/ Low % Actual	C3 High % Potential/ Low % Actual
	Medium	C4 Low % Potential/ Medium % Actual	C5 Medium % Potential/ Medium % Actual	C6 High % Potential/ Medium % Actual
	High	C7 Low % Potential/ High % Actual	C8 Medium % Potential/ High % Actual	C9 High % Potential/ High % Actual

Figure 3.3
Cells of the Table to Be Used in Subsequent Analyses

dropouts and a low percentage of actual dropouts and are described as consistently low dropout schools. Cell Nine (C9) schools were classified as having both a high percentage of

potential dropouts and a high percentage of actual dropouts and are considered as consistently high dropout schools. Cell Three (C3) schools were classified as having a high percentage of potential dropouts and a low percentage of actual dropouts and are described as schools that are more effective in preventing dropouts. Cell Seven (C7) schools were classified as having a low percentage of potential dropouts and a high percentage of actual dropouts and are considered as schools that are less effective in preventing dropouts.

Phase III – School Dropout Prevention Effectiveness

This phase of the study examined the characteristics of schools in the four shaded cells of the 3 x 3 contingency table in Figure 3.2. These four categories included schools with consistently high dropouts (C9 schools), schools with consistently low dropouts (C1 schools), schools more effective in preventing students from dropping out (C3 schools), and schools less effective in preventing students from dropping out (C7 schools).

Phase III Sample

Schools were the units of analysis in Phase III. The sample consisted of all schools in the four shaded cells of the 3 x 3 contingency table created in Phase II. These four cells, as defined in Phase II, include schools with consistently low dropouts (C1 schools), schools with consistently high dropouts (C9 schools), schools more effective in preventing students from dropping out (C3 schools), and schools less effective in preventing students from dropping out (C7 schools).

Phase III Data Sources

Average Class Size

This variable was obtained by calculating the average class size for each school. Activity classes such as band, choir, and physical education were excluded since these courses are large in nature and their inclusions in the calculation would distort the results (LDE, 2003a).

Average Teacher Test Score

This variable was measured using the average teacher test scores for each school. This variable was an index calculated by the Louisiana Department of Education. The WCET, National Teacher Examination (NTE), and Praxis test scores were standardized to a common scale with 500 as the mean and 100 as the standard deviation. Teachers employed in the Louisiana public school system during the 1999-2000 school year were included in the standardization (LDE, 2003d). This teacher test score index was found to be a significant predictor of district student performance (LDE, 2003c). For the current study, the average teacher test score based on this index was obtained for each school in the sample.

Percent of Teachers with A or B Certificates

Teachers who hold standard certificates have either an “A, B, or C” certificate. The “C” certificate is the first certificate issued to new teachers meeting certification requirements. Upon completion of three years of teaching experience in his/her certified field and completion of the Louisiana Teacher Assistance and Assessment Program (LTAPP), the “C” certificate is converted into a “B” certificate. Upon completion of five years of teaching experience in his/her field, completion of the LTAAP, and earning a

Master's degree, a "C" or "B" certificate can be converted into an "A" certificate. For this study, the percent of A or B certified teachers at each school was computed (LDE, 2003b).

Attendance rate

The attendance rate is calculated by dividing the aggregate days of attendance by the aggregate days of membership. A day of attendance is defined as a student being physically present at the school site or participating in an authorized school activity and being under the supervision of authorized school personnel. Aggregate days of membership is defined as the total number of days that students are enrolled over the school year (LDE, 2003a).

Out-of-school suspension rate

The suspension rate is calculated by dividing the unduplicated count of students suspended by the cumulative enrollment. A student is considered to be suspended if he/she is temporarily removed from his/her school with no instructional service provided for at least one full day. Cumulative enrollment is defined as the sum of all students in a school for at least one day over the course of the school year (LDE, 2003a). Only the out-of-school suspension rate was used. In-school suspension practices are viewed as positive ways of disciplining at-risk youth while keeping them at school where they can continue the learning process.

Achievement Components of the School Performance Score (SPS)

As discussed in Chapter 1, each school in Louisiana receives an annual School Performance Score that is a composite of a weighted criterion-referenced test index, a weighted norm-referenced test index, a weighted attendance index, and a weighted dropout index. For purposes of this study, only the sum of the achievement data indices, which make

up 90% of the School Performance Score, was used. This variable was used to give an overall picture of the academic press in each school. This has been shown to affect the climate in the school. The attendance and dropout indices were excluded because these indicators are used elsewhere in the analysis.

Phase III Hypotheses and Research Questions

Hypothesis 3

The profiles of schools in the four cells (C1, C3, C7, and C9) will differ based on the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Sub-Hypothesis 3a

Of the schools predicted to have low dropout rates, schools that are more successful in preventing dropouts (C1 schools) differ from those that are less successful (C7 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Sub-Hypothesis 3b

Of the schools predicted to have high dropout rates, schools that are more successful in preventing dropouts (C3 schools) differ from those that are less successful (C9 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Research Question 4

What characteristics differentiate the four types of schools?

Phase III Analysis

Hypothesis 3 was tested using the multivariate analysis of variance (MANOVA) statistical procedure. This analysis technique is an extension of analysis of variance (ANOVA) in that MANOVA can accommodate more than one dependent variable. As with ANOVA, the independent variables in a MANOVA can be one or more categorical variables, and the focus is on the differences between groups, or levels of each categorical variable. However, what makes MANOVA a multivariate procedure is that it examines the differences between groups for more than one dependent variable simultaneously (Hair et al., 1998). The four shaded cells of the 3 x 3 contingency table were the four levels of the independent variable in this 1 x 4 MANOVA design. The dependent variables included average class size, average teacher test score, percent of teachers with A or B certificates, student achievement, the attendance rate, and the suspension rate.

Planned orthogonal contrasts were used to address Sub-Hypotheses 3a and 3b. Post-hoc Tukey tests were used to address Research Question 4. Planned contrasts can be used when the contrasts to be tested are specified before analyses are run. The distribution theory and probability statements are only valid when the user is not influenced by the data when determining which comparisons to make. On the other hand, post-hoc comparisons allow for comparisons that are not specified beforehand by making restrictions on power (Glass & Hopkins, 1996).

CHAPTER 4. RESULTS

Overview

As mentioned in Chapter 1, this study had two main purposes. The first purpose was to evaluate the characteristics of various dropout types. The second purpose was to examine school characteristics that mediate students' likelihood of dropping out. A three-phase study was conducted to address these objectives.

Phase I – Profiling Student Dropouts

Phase I consisted of three parts. The first part examined the characteristics of Louisiana dropouts as a whole. The second part examined the profiles of types of students in Louisiana, both dropouts and non-dropouts. The third part examined the profiles of types of dropouts only. Both Parts Two and Three utilized samples from the total population of students in schools selected for use in this study.

Part One – Profile of Louisiana Dropouts

The sample included 14,012 (86%) dropouts of the total 16,361 students who were considered to be dropouts during the 2000-2001 school year. This reduction was due to missing data generated when matching records from the 1999-2000 school year were not found for these 2,349 students. An examination of these missing students as compared to the entire sample of Louisiana dropouts did not yield any differences in the gender, ethnicity, or grade. An examination of the 1999-2000 enrollment periods for these students found that these students were enrolled for less than four and one-half

months; therefore, they did not have an adequate enrollment period to evaluate key characteristics examined in this study.

Table 4.1

Characteristics of Louisiana Dropouts and Statewide Population – Percentages

Characteristics	Dropouts	Statewide Population
Gender		
Female	43.9%	50.6%
Male	56.1%	49.4%
Ethnicity		
African-American	55.3%	43.7%
White	41.8%	53.0%
Other	2.9%	3.3%
Grade		
Ninth	28.7%	27.0%
Tenth	26.7%	27.1%
Eleventh	22.4%	23.3%
Twelfth	22.2%	22.6%
Poverty		
Free Lunch	32.3%	33.7%
Reduced-Priced Lunch	3.1%	6.6%
Lunch Paid by Students	64.5%	59.7%
Education Classification		
Special Education	12.1%	8.9%
Regular Education	87.9%	91.1%
English Proficiency		
Limited English Prof.	0.6%	0.5%
English Proficient	99.4%	99.5%
Overage		
Yes	54.6%	11.0%
No	45.4%	89.0%

Note: The poverty free and reduced-priced lunch percentages may be understated for these high school students because these students are often reluctant to submit applications for the lunch program due to concerns over peer group perceptions regarding program participation.

Research Question 1

What is the profile of dropouts from Louisiana public schools as a whole?

Tables 4.1 and 4.2 contain the results of a descriptive analysis of characteristics of dropouts and the statewide student population. These results were used to generate a profile of Louisiana dropouts. Although the statewide population does include the dropout population, the statewide population demographics can be used as a frame of reference in evaluating the dropout statistics.

Table 4.2

Characteristics of Louisiana Dropouts and Statewide Population – Means and Standard Deviations

<u>Characteristics</u>	Dropouts		Statewide Population	
	Mean	SD	Mean	SD
Average Student Achievement	445.5	79.1	507.1	86.2
Number of Absences	28.6	25.5	12.5	13.9
Percent Days Absent	18.2%	16.4%	7.5%	8.8%
Number of Suspensions	1.0	1.8	0.5	1.1

Note: The Average Student Achievement is based on an average of available standardized test scores across four years.

The Profile of Louisiana Dropouts

There are approximately twelve percent more male dropouts than female dropouts in Louisiana. For the statewide population, the proportion of males versus females is almost equal. There are approximately fourteen percent more African-American dropouts than white dropouts. Asian, Hispanic, and American Indian dropouts make up three percent of the Louisiana dropouts. The entire population has more White than African-American students with a similar percentage of the other ethnicities. Grades nine through twelve have almost the same percentage of dropouts with slightly more students dropping out of grades nine and ten.

The majority of dropouts are not eligible for free or reduced-priced lunches; however, almost a third of the dropouts qualify for free lunch, a proxy for highest poverty. This is similar to the free/reduced-priced lunch distribution for the statewide population. It should be noted that the actual percent of students eligible for free and reduced-priced lunches is understated for high school students, as compared to the percent of elementary school students, because high school students are often reluctant to submit applications for the lunch program due to concerns over peer group perceptions regarding program participation.

Twelve percent of dropouts are classified as special education students, compared to only nine percent statewide. The percent of dropouts that are classified as Limited English Proficient (LEP) is 0.6%. Although this percentage is small, it is still important due to the small number of LEP students in Louisiana (0.5%). The percent of dropouts who were overage when compared to their grade-level peers was 54.6 percent, compared to 11 percent statewide.

The average achievement for Louisiana dropouts based on the criterion-referenced test and norm-referenced test results was 445.5, compared to 507.1 statewide. This achievement score was based on a scale with a mean of 500 and a standard deviation of 100. The standard deviation for the dropout sample was 79.1 indicating that there is less variation among the dropouts as among the entire sample of students with test scores standardized on this scale. The standard deviation of the average student test score for the statewide population was 86.2. Of the total sample of dropouts, 1,954 dropouts

(14%) were missing the average test score. An examination of students missing the average test score is discussed later in this chapter.

The average number of days absent for dropouts was 28.6, compared to 12.5 for the statewide population. The standard deviation of 25.5 suggests that some dropouts have extreme values due to missing a substantial amount of school in the prior year, 1999-2000. To control for the factor of some students having more absences due to more days of enrollment, a percent of total enrollment days that students missed school was calculated. The average percent of days absent for dropouts was 18.2%, with a standard deviation of 16.4%. This is much higher than the percent of days absent for the statewide population (7.5%). There were 269 dropouts missing percent days absent and number of absences. An examination of students with missing absence data is discussed later in this chapter.

Finally, the average number of days suspended was 1 day with a standard deviation of 1.8. For the entire population, the average number of days suspended was half of a school day. Almost 60% of dropouts did not have any suspensions, thus lowering the average to 1 day. Fifteen percent of dropouts had 3 or more suspensions. This suggests that there may be two types of dropouts based on suspension data alone, which leads to the findings of Part Two of this study.

Two other variables obtained from the Louisiana Department of Education's Student Information System (SIS) were examined for the Louisiana dropouts. Table 4.3 presents the first variable, the timing of dropping out. Reported and non-reported summer dropouts were students who were enrolled at a school during the previous year

and who did not enroll by October 1 of the current year. These two types were differentiated by whether or not the school district reported the student as a dropout. Reported school-year dropouts are those students whom the district reported to have dropped out during the 2000-2001 school year. The next category of students included those twelfth graders who failed the Graduation Exit Examination (GEE) and who did not

Table 4.3

Timing of Dropping Out – Number and Percent of Dropouts

Timing of Dropping Out	Number	Percent
Reported Summer Dropout	3,291	23.5%
Non-Reported Summer Dropout	1,715	12.2%
Reported School-Year Dropouts	7,163	51.1%
Failed GEE and Did Not Return to School	490	3.5%
Expelled Students Who Did Not Return to School	213	1.5%
Other Students Who Did Not Return to School	1,140	8.1%

return to school. Expelled students who did not return to school at the end of their expulsion period were considered to be dropouts. Dropouts who did not fall into one of the above groups were classified into the other dropout timing category (LDE, 2000a, 2000b). The majority of dropouts do so during the school year. Approximately thirty-five percent drop out during the summer.

For some students, a reason for dropping out was reported. Table 4.4 presents the dropout reasons for Louisiana dropouts. The percent of dropouts in the sample with a reported dropout reason was 24.8%.

Approximately 75% of the dropouts do not have a reported dropout reason. This is the reason this variable was not included in the cluster analysis in Part Three of this

phase. The reason for dropping out given the most was “dislike of the school experience” (4.5%). The second most-reported dropout reason was “academic difficulty” (4.1%).

Table 4.4

Reasons for Dropping Out – Number and Percent of Dropouts

Reasons for Dropping Out	Number	Percent
Academic Difficulty	570	4.1%
Behavioral Difficulty	181	1.3%
Dislike of School Experience	626	4.5%
Economic Reasons	86	0.6%
Employment	275	2.0%
Entered Criminal Justice System	39	0.3%
Failed Required Test	17	0.1%
Health Problems	31	0.2%
Lack of Appropriate Curriculum	11	0.0%
Lack of Child Care	41	0.3%
Lack of Transportation	4	0.0%
Language Difficulty	4	0.0%
Marriage	26	0.2%
Military	19	0.1%
Needed at Home	9	0.0%
Parent/Guardian Influence	52	0.4%
Poor Relationships with Fellow Students	6	0.0%
Poor Student-Staff Relationships	4	0.0%
Pregnancy	63	0.4%
Substance Abuse	2	0.0%
Unknown	900	6.4%
Other	513	3.7%
Missing	10,533	75.2%

Part Two – Cluster Analysis of Dropouts and Non-Dropouts

The entire sample of dropouts and non-dropouts was 194,562 students. Two samples¹ of approximately 800 students were randomly drawn to be used to examine the

¹ Smaller samples were used in the cluster analyses instead of the full sample because cluster analysis procedures require a substantial amount of processing time even for a smaller sample.

types of students in Louisiana and to construct profiles of these types of students. These two smaller samples were examined and determined to be representative of the population as discussed in Chapter 3.

Hypothesis 1

High school students can be grouped into clusters representing the five profiles of students: “quiet dropouts,” “low-achieving pushouts,” “high-achieving pushouts,” “in-school dropouts,” and “potential high school graduates” as theorized by Kronick and Hargis (1998).

Research Question 2

Do profiles of other types of dropouts or potential graduates arise through the cluster analysis?

Preliminary Analyses

Examination of missing data. When cases had missing values for any of the variables to be used in the analyses, those cases were examined to determine whether the missing values were random. The cases with non-missing values and those with missing values were compared with regard to dropout status, ethnicity, gender, and grade to determine if any major differences existed. The *Average Test Score* variable had 7,030 cases with missing data.

Approximately 28% of the 7,030 missing cases were dropouts compared to 6% for the non-missing cases. This is probably due to the fact that in the past, schools were not required to test all students as they are now. Low-achieving students who were probably considered to be potential dropouts often were not tested to avoid having their

lower test scores included in school and district averages (Fitz-Gibbon, 1996; Fitz-Gibbon & Kochan, 2000). This problem has been alleviated in Louisiana, as all students are required to be tested unless there is a documented and justified reason for their exclusion. In addition, as part of the state's accountability system, the achievement components of the accountability score of schools with high dropout rates are lowered (LDE, 2001b). These missing test data for approximately 2,000 dropouts are considered a limitation because inclusion of these students would have allowed for the study of dropouts with very low achievement.

The *Number of Absences* variable had 3,058 cases with missing data. The cases with non-missing values and those with missing values were compared with regard to dropout status, ethnicity, gender, and grade. No major differences were found.

Examination of outliers. Although cluster analysis does not require many of the assumptions that other multivariate techniques do, it does require two: the absence of outliers and the absence of multicollinearity. It is important to examine all variables for potential outliers when using cluster analysis. All continuous variables in this study were examined for the presence of outliers. The cluster solutions were also examined for the presence of outliers.

The *Number of Absences* variable was positively skewed. The *Number of Absences* variable was examined for potential outliers. Cases that had values above four standard deviations were examined as possible outliers (Hair, Anderson, Tatham, & Black, 1998). Because the distribution was positively skewed, it did not make sense to examine values below four standard deviations. The value at 4 standard deviations above

the mean was 68.1. The cases with values beyond 68.1 were examined, and it was determined that a disproportionate number were dropouts as opposed to non-dropouts.

Since previous research (Kronick & Hargis, 1998) had indicated that students with higher absentee rates are more likely to drop out, the decision was made to keep these cases. These were not aberrations in the data but outliers for justified reasons. However, cases with 200 or more absences appeared excessive. One case fell within this range and was deleted. This variable was transformed into the *Percent Days Absent* by dividing the number of absences by the number of days enrolled. Six cases with percentages greater than 100% were deleted.

The *Average Test Score* variable was negatively skewed. The value of the *Average Test Score* variable at four standard deviations below the mean was 169.2, and the value four standard deviations above the mean was 846. No cases were in the extreme right tail of the distribution; however, 321 cases were within the extreme bottom tail of the distribution. These extreme low values were determined to be valid for those cases, since low scores are associated with dropping out.

The *Number of Suspensions* variable was positively skewed. The value of the *Number of Suspensions* variable at four standard deviations above the mean was 5.34. The cases with values beyond five suspensions were determined to be valid and were included in the analyses.

Conversion of continuous variables into binary variables. To avoid using mixed data types in the cluster analyses, the three continuous variables (*Percent Days Absent*, *Average Test Score*, and *Number of Suspensions*) were converted into binary variables.

The *Percent Days Absent* variable was split into high and low categories at the 60th percentile value of 6.29%. The *Number of Suspensions* variable was split into high and low categories at 3 or more suspensions. The *Average Test Score* variable was divided into quartiles. The first, third, and fourth quartiles were converted into binary variables. As all variables had values of “0” or “1”, standardization was not required.

Hierarchical Cluster Analysis

As noted in Chapter 3, the similarity measure selected was simple matching (e.g., Aldenderfer & Blashfield, 1984; Everitt, 1993; Hair et al., 1998), and the cluster method selected was Ward’s method (e.g., Finch & Huynh, 2000; Hands and Everitt, 1987; Kamphaus, Huberty, DiStefano & Petoskey, 1997; Milligan & Cooper, 1987; Overall, Gibson & Novy, 1993). The first step in analyzing the results involved examining the agglomeration schedule. Hierarchical cluster analysis can be done using agglomerative methods, which build up the cluster from individual observations to one big cluster or by using divisive methods, which start with one big cluster and separate the clusters down to individual clusters. Clusters that are the most similar are joined together in agglomerative methods. The agglomeration schedule lists each successive stage of the clustering process.

The agglomeration schedule was examined to determine the optimal cluster solution. The range of reasonable cluster solutions was determined prior to the analysis to be between 3 and 6. Theory suggested that five types of students exist. A stopping rule is needed to determine the actual number of clusters. Changes in the agglomeration coefficient were evaluated during the final stages of the clustering process. Small

coefficients indicated that fairly homogeneous clusters were merged. Larger coefficients indicated two different clusters were merged. To allow for relative comparisons, the percent change from one coefficient to the next was examined. Large percent change values indicated the merging of two heterogeneous clusters and possible stopping points for the final cluster solution. This test has been shown to be an accurate procedure (Hair et al., 1998). Table 4.5 lists the agglomeration coefficient for 10 clusters down to 1.

Table 4.5

Possible Cluster Solutions for Non-Dropouts and Dropouts

Number of Clusters	Agglomeration Coefficient	% Change in Coefficient
10	362.81	0.8%
9	359.73	0.9%
8	356.55	1.2%
7	352.16	1.3%
6	347.69	1.6%
5	342.25	1.7%
4	336.38	2.9%
3	326.73	4.7%
2	311.29	6.6%
1	290.79	-

There are two places where the percent change in agglomeration coefficients changes the most. The first was going from three to two clusters. The largest was going from two to one cluster. Based on criteria taken from previous research (Kronick & Hargis, 1998), the two-cluster solution was considered unreasonable due to the small number, and the three cluster-solution was determined to be optimal.

The agglomeration schedule should also be examined for potential outliers and for single-member clusters. These can be determined by looking for observations that joined

the cluster analysis late in the process. Every time two clusters are combined, the agglomeration schedule indicates for both clusters the stage at which the cluster first entered the analysis. A value of zero means the observation has just entered. This could be a potential outlier. The last observation (405) joined the analysis at Stage 757. Since this is well before the analysis reduced the observations to 10 clusters, there is no need for concern.

Single-member clusters (or those with few members) can be identified by looking for clusters that were last seen at early stages in the analysis. At Stage 771 a cluster formed at Stage 23 was combined with another cluster. This is the earliest stage that shows up in the final part of the analysis. Since no outliers were identified through the cluster solution, it did not need to be respecified.

To validate these findings, a second cluster analysis was run with a second sample. All the steps used in the initial analysis were followed, including examining the agglomeration schedule for the stopping point in determining the number of clusters and evaluating the characteristics of the students in each cluster. Similar results were obtained (see Appendix A).

Profiles of Non-Dropouts and Dropouts

The next step was to examine the profiles of the three-cluster solution. Table 4.6 contains the percentages of students in each of the three clusters who have the listed characteristics. The numerical data for each cluster were “qualitized” to create a narrative profile of students within each cluster to describe the characteristics of the cluster members.

Table 4.6

Percent of Dropouts and Non-Dropouts with Characteristics for Each Cluster

Characteristics	Clusters		
	1	2	3
Achievement			
High Achievement	3.4%	0.9%	100.0%
Above Average Achievement	57.1%	0.4%	0.0%
Below Average Achievement	36.2%	26.0%	0.0%
Low Achievement	3.2%	72.8%	0.0%
Poverty			
Free Lunch	35.7%	41.3%	16.0%
Reduced-Priced Lunch	14.6%	2.6%	0.0%
Lunch Paid by Students	49.7%	56.2%	84.0%
Overage			
Yes	3.7%	31.1%	0.0%
No	96.3%	68.9%	100.0%
Limited English Proficient			
Yes	0.3%	1.3%	0.5%
No	99.7%	98.7%	99.5%
High suspensions			
Yes	2.6%	14.9%	0.0%
No	97.4%	85.1%	100.0%
High absenteeism			
Yes	35.4%	63.0%	27.8%
No	64.6%	37.0%	72.2%
Gender			
Female	54.2%	47.2%	55.7%
Male	45.8%	52.8%	44.3%
Ethnicity			
African-American	43.9%	60.0%	16.0%
White	52.6%	34.9%	80.4%
Other	3.4%	5.1%	3.6%
Grade			
Ninth	25.1%	28.9%	26.3%
Tenth	27.2%	27.7%	20.6%
Eleventh	20.9%	22.6%	26.3%
Twelfth	26.7%	20.9%	26.8%
Dropout Status			
Dropout	1.6%	20.0%	1.0%
Non-Dropout	98.4%	80.0%	99.0%
Cluster Size	378	235	194

Box 4.1**Cluster One for All Students – Average Achievers**

The majority of these students were average achievers. The majority of these students were not from poverty backgrounds; however, over a third were eligible for free lunches. Only a small percentage of these students were average, Limited English Proficient, or had high suspensions. Approximately a third of these students had high absenteeism. There were more females than males in this group, and there were slightly more White than African-American students. Almost none of these students were dropouts.

Box 4.2**Cluster Two for All Students – Low Achievers**

Over 98% of these students were below average to low achievers. Over forty percent were eligible for free lunches. A third of these students were average when compared to their grade-level peers. A small percentage of these students were classified as Limited English Proficient. Almost fifteen percent had high suspensions, and over sixty percent had high absenteeism. There were slightly more males than females in this group, and there were approximately 25% more African-Americans than White students in this group. In addition, this group had the most students from the other ethnicity groups, as compared to the other two clusters. Twenty percent of these students were dropouts, substantially more than the dropout percentages for the other two clusters.

Box 4.3**Cluster Three for All Students – High Achievers**

Students in Cluster Three were all high achievers. Only a small percentage (16%) of these students were from poverty backgrounds. None of these students were overage. Very few of these students were classified as Limited English Proficient. These students did not have high suspensions, and only about a quarter had high absenteeism. This group had more females than males and significantly more White students than African-American students. Almost none of these students were dropouts.

Part Three – Cluster Analysis of Dropouts

The entire sample of dropouts was 14,012 students. Two samples² of 400 students were randomly drawn to be used to examine the types of dropouts in Louisiana and to construct profiles of these types of students. These two smaller samples were examined and determined to be representative of the population as discussed in Chapter 3.

Hypothesis 1

High school students can be grouped into clusters representing the five profiles of students: “quiet dropouts,” “low-achieving pushouts,” “high-achieving pushouts,” “in-school dropouts,” and “potential high school graduates” as theorized by Kronick and Hargis (1998).

² Smaller samples were used in the cluster analyses instead of the full sample because cluster analysis procedures require a substantial amount of processing time even for a smaller sample.

Research Question 2

Do profiles of other types of dropouts or potential graduates arise through the cluster analysis?

Research Question 3

What percentage of Louisiana dropouts are “typical” and “non-typical” dropouts, based on the clusters formed through the cluster analysis?

Hierarchical Cluster Analysis

As with Part Two, the similarity measure selected was simple matching, and the cluster method selected was Ward’s method. The first step in analyzing the results involved examining the agglomeration schedule, which was used to determine the optimal cluster solution. The range of reasonable cluster solutions was determined prior to the analysis to be between 3 and 5. As indicated earlier in this document, previous research suggested that three types of dropouts exist. The percent change in agglomeration coefficients for the final ten stages of the cluster analysis were examined. As in Part Two, large percent change values indicated the merging of two heterogeneous clusters and stopping points for the final cluster solution. Table 4.7 lists the agglomeration coefficient for 10 clusters down to 1.

There were three places where the percent change in agglomeration coefficients changes the most. The largest was going from two to one cluster, followed by the change from five to four clusters, and then by the change from three to two clusters. Based on previous research, the two-cluster solution and the five-cluster solutions were considered

unreasonable. The three-cluster solution was determined to be optimal because it fell within the pre-specified range of cluster solutions based on previous research.

Table 4.7

Possible Cluster Solutions for Dropouts

Number of Clusters	Agglomeration Coefficient	% Change in Coefficient
10	176.48	0.7%
9	175.22	0.8%
8	173.86	0.9%
7	172.27	1.2%
6	170.28	1.3%
5	168.13	2.2%
4	164.47	2.4%
3	160.51	3.2%
2	155.45	6.6%
1	145.12	-

The agglomeration schedule was also examined for potential outliers and for single-member clusters as in Part Two. Clusters joining the analysis late in the process may be outliers. The last observation (99) joined the analysis at Stage 358. This is well before the analysis reduced the observations to 10 clusters. The agglomeration schedule was examined for single-member clusters (or those with few members) by looking for clusters that were last seen at early stages in the analysis. At Stage 364 a cluster formed at Stage 71 was combined with another cluster. This is the earliest stage that shows up in the final part of the analysis. Since no outliers were identified through the cluster solution, it did not need to be respecified. A second cluster analysis was run with a second sample for validation purposes. All steps used with the initial analysis were repeated. Overall, similar results were obtained (see Appendix B).

Profiles of Dropouts

The next step was to examine the profiles of the three-cluster solution. Table 4.8

Table 4.8

Percent of Dropouts with Characteristics for Each Cluster

Characteristics	Clusters		
	1	2	3
Achievement			
High Achievement	0.0%	13.1%	3.4%
Above Average Achievement	0.0%	27.8%	0.0%
Below Average Achievement	0.0%	59.1%	36.2%
Low Achievement	100.0%	0.0%	60.3%
Poverty			
Free Lunch	35.5%	26.1%	36.2%
Reduced-Priced Lunch	3.0%	1.7%	0.0%
Lunch Paid by Students	61.4%	72.2%	63.8%
Overage			
Yes	66.3%	43.8%	63.8%
No	33.7%	56.3%	36.2%
Limited English Proficient			
Yes	1.2%	0.0%	0.0%
No	98.8%	100.0%	100.0%
High suspensions			
Yes	0.6%	8.0%	100.0%
No	99.4%	92.0%	0.0%
High absenteeism			
Yes	73.5%	79.5%	86.2%
No	26.5%	20.5%	13.8%
Gender			
Female	45.2%	50.0%	34.5%
Male	54.8%	50.0%	65.5%
Ethnicity			
African-American	65.1%	37.5%	65.5%
White	30.1%	60.2%	34.5%
Other	4.8%	2.3%	0.0%
Grade			
Ninth	29.5%	21.6%	43.1%
Tenth	28.9%	30.1%	31.0%
Eleventh	15.1%	26.1%	15.5%
Twelfth	26.5%	22.2%	10.3%
Cluster Size	166	176	58

displays the percentages of students in each of the three clusters who have the listed characteristics.

To assist in profile development, two other variables were examined for the dropouts in the three clusters: timing of dropping out and reasons for dropping out.

Table 4.9 presents the timing of dropping out for dropouts in each cluster.

Table 4.9

Timing of Dropping Out by Cluster – Percent of Students

Timing of Dropping Out	Clusters		
	1	2	3
Reported Summer Dropout	27.7%	28.4%	13.8%
Non-Reported Summer Dropout	18.1%	8.0%	6.9%
Reported School-Year Dropouts	40.4%	54.0%	69.0%
Failed GEE and Did Not Return to School	7.2%	1.1%	1.7%
Expelled Students Who Did Not Return to School	0.0%	1.7%	5.2%
Other Students Who Did Not Return to School	6.6%	6.8%	3.4%
Cluster Size	166	176	58

For some students, a reason for dropping out is reported. Table 4.10 presents the dropout reasons for dropouts in each cluster.

Table 4.10

Percent of Students – Reason for Dropping Out by Cluster

Reasons for Dropping Out	Clusters		
	1	2	3
Academic Difficulty	3.0%	6.3%	3.4%
Behavioral Difficulty	1.2%	1.1%	1.7%
Dislike of School Experience	2.4%	5.1%	12.1%
Economic Reasons	0.0%	1.1%	0.0%
Employment	0.6%	2.3%	3.4%
Entered Criminal Justice System	0.6%	1.1%	0.0%
Lack of Child Care	0.0%	0.6%	0.0%
Military	0.0%	0.6%	0.0%
Parent/Guardian Influence	0.6%	1.7%	0.0%

(Table 4.10 continued)

Table 4.10 (continued)

Reasons for Dropping Out	Clusters		
	1	2	3
Poor Relationships with Fellow Students	0.6%	0.0%	0.0%
Pregnancy	0.0%	1.1%	1.7%
Unknown	8.4%	8.0%	1.7%
Other	3.6%	3.4%	1.7%
Missing	78.9%	67.6%	74.1%
Cluster Size	166	176	58

Box 4.4

Cluster One for Dropouts – Quiet Dropouts

This group of dropouts displayed the characteristics proposed in theory. They were low achieving. Over a third were from poverty backgrounds. More than 65% were overage when compared to their grade-level peers. This was the only cluster with Limited English Proficient (LEP) students (1.2%). Less than 1% of these students had high suspensions, and many (73.5%) had high absenteeism.

As their name suggests, these students experience academic failure, but often go unnoticed because they are not disruptive. The presence of LEP students only in this cluster suggests that students from other cultures may not speak up when their academic needs are not being met and also that they may be ignored. More dropouts in this cluster drop out due to failing the GEE and not returning to school (7.2%) as compared to the other two clusters, both with less than 2% in this category. This group had zero dropouts who did not return to school after expulsion, which confirms the low rate of misbehavior discussed previously.

(Box 4.4 continued)

Box 4.4 (continued)

Cluster One for Dropouts – Quiet Dropouts

The dropouts in this group who did report a reason for dropping out gave “academic difficulty” as the most-reported reason (3%). Almost 2.5% gave “dislike of school experience” as the reported dropout reason; however, this group had the smallest percentage of dropouts to give “dislike of school experience” as the reported reason for dropping out.

There were more males than females in this group, and there were significantly more African-American dropouts than White dropouts. Of the three clusters, this group had the most dropouts from the other ethnicity categories.

Box 4.5

Cluster Two for Dropouts – High-Achieving Pushouts

As suggested by theory, this group of dropouts had over forty percent above average to high achieving students and no low achieving students. Over seventy percent are not eligible for free or reduced-priced lunches. Over forty percent of these students were overage. None of these students were classified as LEP. Eight percent had a high number of suspensions, and almost eighty percent had high absenteeism.

(Box 4.5 continued)

Box 4.5 (continued)

Cluster Two for Dropouts – High-Achieving Pushouts

This group had the lowest percent of dropouts who did not return to school after failing the GEE (1.1%) when compared to the other two clusters. The dropout reason reported the most by this group of dropouts was “academic difficulty” (6.3%) and the reason given second most often was “dislike of the school experience” (5.1%). This group had equal percentages of males and females. There were considerably more White dropouts than African-American dropouts.

Box 4.6

Cluster Three for Dropouts – Typical Dropouts

This group of dropouts is the “typical” dropout and is referred to in previous research as the “low-achieving pushouts.” As theory suggests, these dropouts were below average to low achieving students (96.5%). Over a third of these dropouts were from high poverty backgrounds. Almost sixty-five percent were overage. None of these dropouts were classified as LEP. All of these dropouts had a high number of suspensions. Over 85% had high rates of absenteeism.

This group had the largest percentage of dropouts to be reported during the school year (69%). This group also had the highest percentage of dropouts who did not return to

(Box 4.6 continued)

Box 4.6 (continued)

Cluster Three for Dropouts – Typical Dropouts

school after expulsion (5.2%). This group gave “dislike of the school experience” (12.1%) more as a reason for dropping out of school.

There were many more male dropouts than female dropouts in this group and significantly more African-American dropouts than White dropouts. More of these dropouts left school in grades nine and ten.

Phase II - Classification of Schools

Overview of Phase II

Phase II involved the creation of a 3 x 3 contingency table crossing high, medium, and low percent of potential dropouts by high, medium, and low percent of actual dropouts. The two variables used to create the contingency table were tested for independence and association.

Hypothesis 2

For some categories (low, medium, and high dropouts) of schools, the percentage of actual dropout rates will be inconsistent with the percentage of potential dropouts predicted for those categories based on the Phase I cluster analysis results.

Descriptive Analysis

A descriptive analysis was performed on both the percent of actual dropouts and the percent of potential dropouts to gain understanding of the distributions of these two variables. Table 4.11 presents the results of this analysis.

Table 4.11

<u>Descriptive Analysis of Percent of Actual and Potential Dropouts</u>				
	Mean	Std. Deviation	Minimum	Maximum
% Actual	6.05%	3.58%	0%	24.3%
% Potential	25.38%	8.79%	3%	68.7%

Note: The percent potential dropouts is based on the percent of students with risk factors for dropping out. The percent potential dropouts is higher than the percent actual dropouts because not all at-risk students will ultimately drop out.

Converting Potential and Actual Dropouts Percents to Three-Level Categorical Variables

Two methods of establishing the cut-offs for the creation of the high, medium, and low percent categories for both variables were explored. The first method was using the $\pm .674$ standard deviation points to establish the cut-offs (Kochan-Teddle, 1998; Lang, 1991). The second method was using the 40th and 60th percentiles to establish the cut-offs (Crain & Tashakkori, 1997).

Method One

Using the $\pm .674$ standard deviation method, the cut-offs for potential dropouts were 19.46 and 31.3. The cut-offs for actual dropouts were 3.69 and 8.51. Figure 4.1 presents the results of a 3 x 3 contingency table using these cut-offs. This method for establishing cut-offs yielded small cell sizes for two key cells, C3 and C7.

Method Two

Using the 40th and 60th percentiles method, the cut-offs for potential dropouts were 22.5 and 26.7. The cut-offs for the actual dropouts was 4.9 and 6.3. Figure 4.2 presents the results of a 3 x 3 contingency table using these cut-offs.

This method was selected since it yielded cell sizes that meet the sample size requirements of approximately twenty cases per cell as needed for Phase III. In addition, this method was not influenced by extreme values in the distribution as with Method One.

		Potential Dropouts		
		Low	Medium	High
Actual Dropouts	Low	C1 30 10.0%	C2 43 14.3%	C3 2 0.7%
	Medium	C4 40 13.3%	C5 99 32.9%	C6 23 7.6%
	High	C7 2 0.7%	C8 30 10.0%	C9 32 10.6%

Figure 4.1
3 x 3 Contingency Table Using +/- .674 Cut-Offs

Consistency Analyses

Test of Independence

The Pearson chi-square statistic was utilized to test the independence of percent of potential dropouts and percent of actual dropouts. The observed counts are given in Figure 4.2. The null hypothesis for the Pearson chi-square test is that the two variables are independent of one another. The computed chi-square statistic for this contingency table is 65.29 ($df = 4, p < .001$). The null hypothesis of independence is rejected;

therefore, there is an association between the percent of potential dropouts and the percent of actual dropouts.

		Potential Dropouts		
		Low	Medium	<u>High</u>
Actual Dropouts	Low	C1 76 25.2%	C2 19 6.3%	C3 26 8.6%
	Medium	C4 27 8.9%	C5 13 4.3%	C6 17 5.6%
	High	C7 19 6.3%	C8 25 8.3%	C9 79 26.2%

Figure 4.2
3 x 3 Contingency Table Using 40th and 60th Percentiles Cut-Offs

Certain assumptions had to be met to avoid a misleading result from the chi-square test of independence. First, no cell should have an expected value less than 1.0. Second, no more than 20% of the cells should have expected values less than 5.0. Both of these assumptions were met (SPSS, 1999).

Test of Association

The kappa test was used to evaluate the agreement between percent potential dropouts and percent actual dropouts by evaluating whether the observed counts in the diagonal cells (C1, C5, and C9) differed from those expected by chance alone. These three cells are the ones in which the two variables are consistently categorized. The

number of schools in the sample for which these two variables agreed was 168 (76 + 13 + 79). This represents 55.8% of the total sample of schools.

The null hypothesis was that these two variables showed greater agreement than what was expected by chance alone. The obtained value of kappa is 0.305. Values of kappa greater than 0.75 indicate excellent agreement beyond chance; values between 0.40 and 0.75 indicate fair to good agreement; and values below 0.40 indicate poor agreement (SPSS, 1999).

The calculated kappa value of 0.305 is below 0.40 thus indicating that poor agreement exists. The null hypothesis of agreement between the two variables, or that kappa is 0, is rejected ($t = 7.21$, $p < .001$). Therefore, there are schools that are inconsistent with regard to the classification of these two variables (Lang, 1991; SPSS, 1999). Therefore, there was empirical evidence for the prediction made in Hypothesis 2.

Phase III - School Dropout Prevention Effectiveness

Overview of Phase III

This phase of the study focused on examining the characteristics of four types of schools: consistently high schools (those with high potential and actual dropouts), consistently low schools (those with low potential and actual dropouts), more effective schools (those with high potential dropouts and low actual dropouts), and less effective schools (those with low potential dropouts and high actual dropouts).

Hypothesis 3

The profiles of schools in the four cells (C1, C3, C7, and C9) will differ based on the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Sub-Hypothesis 3a

Of the schools predicted to have low dropout rates, schools that are more successful in preventing dropouts (C1 schools) differ from those that are less successful (C7 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Sub-Hypothesis 3b

Of the schools predicted to have high dropout rates, schools that are more successful in preventing dropouts (C3 schools) differ from those that are less successful (C9 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Research Question 4

What characteristics differentiate the four types of schools?

Descriptive Analysis

To fully understand the data and the sample used in this phase of the study, a descriptive analysis was conducted using the set of dependent variables to be used in the MANOVA. Table 4.12 displays these results.

Assumptions of MANOVA

The recommended sample size for MANOVA is 20 per cell. At a minimum the sample in each cell should be more than the number of dependent variables to be used in the analysis. The sample sizes for each cell are: 76 consistently low schools (C1), 26 more effective schools (C3), 19 less effective schools (C7), and 79 consistently high schools (C9). All cell sample sizes are within the acceptable range.

Table 4.12

Characteristics of Louisiana Schools with High School Grades

Characteristics	Mean	Std. Dev.	Minimum	Maximum
Attendance Rate	91.7%	2.91%	71.3%	98.1%
Average Class Size	19.6	3.68	5.4	29.1
SPS Student Achievement	64.9	19.6	12.7	110.4
Average Teacher Test Score	508.3	29.51	393.5	594.2
Percent Suspensions	12.3%	9.54%	0%	45.3%
Percent AB Certificates	69.8%	11.62%	34.5%	100%

The F test in MANOVA is robust to violations of the assumptions of ANOVA such as normal distribution of dependent variables and equal variances for all treatment groups (Hair et al., 1998). There are three assumptions of MANOVA that must be met. The first assumption is that observations are independent. Some examples of violations of this assumption include a time-ordered effect, a data collection effect from gathering data in a group setting, and extraneous or unmeasured effects. This assumption is not violated for this study. The data collection procedures used by the Louisiana Department of Education are very stringent with many checks and balances (LDE, 2000a, 2000b,

2002b). In addition, many checks were conducted as the database was compiled for this study.

A second assumption is that the variance-covariance matrices must be equal for all treatment groups. Violation of this assumption is acceptable if sample sizes are similar (largest divided by smallest size is less than 1.5). For this study, the sample sizes are not considered to be similar ($79/19 = 4.16$.) If more than 1.5, as with this study, one would need to test and correct for unequal variances. Box's M test was used to test for equal variance-covariance matrices. The calculated value was 175.8 ($F = 2.55$; $df = 63, 15,002$; $p < .001$). This suggests this assumption has been violated. To address this issue in the analyses, one must examine the variances of larger cells versus the smaller cells. If the larger cells have the larger variances, the alpha level is overstated, meaning the results should be interpreted using a smaller alpha (e.g., use .03 instead of .05). If the smaller cells have the larger variances, the alpha level is understated making the power of the test reduced, and one should increase the alpha level (Hair et al., 1998). For this study, overall the larger cells had the larger variances; therefore, an alpha of .03 was used.

The final assumption of MANOVA is the set of dependent variables must follow a multivariate normal distribution. In other words, any linear combination of the dependent variables must follow a normal distribution. Although there is no method to test this directly, one can assess the univariate normality of the dependent variables. This does not guarantee that the set of dependent variables are multivariate normal; however, if all variables are normally distributed, any deviations from multivariate normality are

minor. Modest violations of univariate normality are not a problem if the violations are due to skewness and not outliers (Hair et al., 1998).

All six dependent variables were evaluated for violations of univariate normality. Table 4.13 displays the skewness and kurtosis statistics and the results of the Shapiro-Wilks test for normality for these variables.

The average teacher test score is the only variable that is clearly normally distributed. The average class size, SPS student achievement, and percent A or B certificates all have slight deviations from normality and are negatively skewed. The percent of suspensions variable is dramatically positively skewed. A square root

Table 4.13

Skewness and Kurtosis Statistics for Dependent Variables

Variable	Skewness	Kurtosis	Shapiro-Wilks	Sign.
Attendance Rate	-2.76	14.16	0.80	.001
Average Class Size	-0.29	0.56	0.99	.034
SPS Student Achievement	-0.49	-0.06	0.98	.001
Average Teacher Test Score	-0.29	0.58	0.99	.071
Percent Suspensions	0.72	0.20	0.94	.001
Percent AB Certificates	-0.38	0.23	0.99	.011

transformation was performed on this variable to attempt to make the distribution approximate a normal distribution. An examination of the normal probability plot indicated that this was successful. The attendance rate variable was extremely negatively skewed. Transformations on this variable did not make the distribution resemble a normal distribution. An examination of the cases causing the negatively skewed distribution showed that the attendance rates for these cases were indeed valid and not

aberrations in the data. The transformed suspension variable was included in the set of dependent variables used to conduct the Box's *M* test mentioned previously. The negatively skewed distributions of the four other variables probably explain why the Box's *M* test was significant. Violations of normality cause the Box's *M* test of equal variance-covariance matrices to be significant (Hair, et al., 1998).

Finally, linearity and multicollinearity were assessed for the set of dependent variables. None of the combinations of variables displayed significant deviations from linearity. The correlations of the dependent variables in Table 4.14 were calculated to assess multicollinearity. None of the variables were highly correlated with one another.

Table 4.14

Correlation Matrix of School-Level Variables

Variables	1	2	3	4	5	6
1. Attendance Rate						
2. Average Class Size	-.19**					
3. SPS Student Achievement	.43**	-.16**				
4. Average Teacher Test Score	.14*	.23**	.38**			
5. Percent AB Certificates	.09	-.02	.36**	.23**		
6. Suspension Rate	-.10	.09	-.33**	-.14*	-.12	

Multivariate Analysis of Variance Results

The MANOVA had a 1 x 4 design. The independent variable in this analysis was the four types of schools: consistently high, consistently low, more effective, and less effective. The set of dependent variables consisted of six variables: attendance rate, average class size, average teacher test score, School Performance Score (SPS) student achievement, percent of teachers with A or B teaching certificates, and percent of

students suspended. To address normality violations, the suspension variable was transformed by taking its square root.

Wilks' Lambda was selected as the test statistic to use in evaluating the presence of differences across the levels of the independent variable with regard to the set of dependent variables. The calculated value of Wilks' Lambda was .447 ($F = 9.88$, $df = 18$, 541 , $p < .001$). This overall test is significant indicating that differences exist for some levels of the independent variable for at least one of the dependent variables.

Table 4.15 displays the univariate F tests for each of the six dependent variables. The only dependent variable that did not have significant results was the average teacher test score.

Table 4.15

Univariate F -Tests Results for the Six School Characteristics

	Sum of Squares	Mean Square	F	Sign.
Between Subjects Effects				
Attendance Rate	582.55	194.18	26.16	.001
Average Class Size	186.55	62.18	4.51	.004
SPS Student Achievement	38095.62	12698.54	47.4	.001
Average Teacher Score	2988.84	996.28	1.17	.322
Percent AB Certificates	1773.70	591.23	5.11	.002
Suspensions	55.05	18.35	7.38	.001
Within Subjects Effects				
Attendance Rate	1454.84	7.42		
Average Class Size	2703.25	13.79		
SPS Student Achievement	52543.40	268.08		
Average Teacher Score	166852.08	851.29		
Percent AB Certificates	22692.43	115.78		
Suspensions	487.22	2.49		

Planned orthogonal contrasts were used to address Sub-Hypotheses 3a and 3b. Tables 4.16 and 4.17 present the results. The only dependent variable for which the consistently low schools and the less effective schools differ was the SPS student achievement. The consistently low schools had a higher average student achievement than the less effective schools.

Table 4.16

Consistently Low Schools Minus Less Effective Schools: Differences on Key Variables

Variables	Difference	Std. Error	Sign.
Attendance Rate	.87	.70	.213
Average Class Size	-.19	.95	.845
SPS Student Achievement	12.96	4.2	.002
Average Teacher Test Score	5.35	7.48	.476
Percent Suspensions	-.31	.40	.451
Percent AB Certificates	-1.21	2.76	.662

The more effective schools had a significantly higher attendance rate and SPS student achievement. To address Research Question 4, the post-hoc Tukey comparison results were examined to find out where the differences exist for the levels of the independent variables.

Table 4.17

More Effective Schools Minus Consistently High Schools: Differences on Key Variables

Variables	Difference	Std. Error	Sign.
Attendance Rate	1.90	.62	.002
Average Class Size	-.90	.84	.284
SPS Student Achievement	23.33	3.70	.001
Average Teacher Test Score	9.11	6.60	.169
Percent Suspensions	-.46	.36	.195
Percent AB Certificates	.39	2.43	.873

A comparison of consistently low schools and more effective schools was first examined. Both of these types of schools have low actual dropouts. Where these schools differ is in the percent of potential dropouts. The consistently low schools have low potential dropouts while the more effective schools have high potential dropouts. The only dependent variable for which these two types of schools differed was attendance rate. The consistently low schools had a higher attendance rate than the more effective schools (93.5 versus 91.6). The mean difference was 1.91 with a standard error of .62 ($p < .012$).

A comparison of the consistently high schools and the less effective schools was examined next. Both of these types of schools have high actual dropouts. Where these schools differ is in the percent of potential dropouts. The consistently high schools have high potential dropouts, and the less effective have low potential dropouts. These two types differ on attendance rate and SPS student achievement. The consistently high schools had a lower attendance rate than the less effective schools (89.7 versus 92.6). The mean difference was 2.94 with a standard error of .70 ($p < .001$). The consistently high schools also had lower SPS student achievement when compared to the less effective schools (46.4 versus 64.1). The mean difference was -17.8 with a standard error of 4.18 ($p < .001$).

A comparison of the consistently high schools and the consistently low schools yielded the following results. These two types of schools differed on all five of the dependent variables eligible for post-hoc evaluation. (The average teacher test score did

not have a significant overall univariate result). Consistently low schools had higher attendance, smaller class sizes, higher SPS student achievement, higher percent of teachers with A or B certificates, and fewer suspensions.

Commonalities Among More Effective and Among Less Effective Schools

Additional variables were examined beyond those used in the MANOVA in an attempt to uncover any commonalities among the more effective schools and among the less effective schools. Table 4.18 presents the number and percent of high and combination schools within each of the four categories of schools. An example of a

Table 4.18

School Type by Four Groups of Schools

Four Groups of Schools	High Schools		Combination Schools	
	Number	Percent	Number	Percent
Consistently Low	43	56.6%	33	43.4%
Consistently High	72	91.1%	7	8.9%
More Effective	19	73.1%	7	26.9%
Less Effective	11	57.9%	8	42.1%

combination school is a school with grades K through 12. The majority of the combination schools are consistently low schools, while the majority of high schools are consistently high schools. This suggests a possible relationship between school type and dropout rates. The more effective schools and the less effective schools did not have noticeable differences with regard to school type.

Table 4.19 displays the community type of the schools in the four categories. The majority of the consistently low schools were rural, small town, or urban fringe. The majority of the consistently high schools were rural only. The more effective schools are

spread out across the community types, while the majority of the less effective schools are split between small town and being in or on the outskirts of cities.

Table 4.19

Urbanicity	Consistently Low	Consistently High	More Effective	Less Effective
Large City	2 (2.6%)	1 (5.3%)	1 (3.8%)	9 (11.4%)
Mid-Size City	5 (6.6%)	1 (5.3%)	4 (15.4%)	12 (15.2%)
Urban Fringe Large City	2 (2.6%)	2 (10.5%)	5 (19.2%)	14 (17.7%)
Urban Fringe Mid-City	18 (23.7%)		4 (15.4%)	9 (11.4%)
Large Town	1 (1.3%)			
Small Town	14 (18.4%)	5 (26.3%)	3 (11.5%)	20 (25.3%)
Rural Outside MSA	28 (36.8%)	10 (52.6%)	8 (30.8%)	12 (15.2%)
Rural Inside MSA	6 (7.9%)		1 (3.8%)	3 (3.8%)

One interesting finding was the discovery of school districts that had three to four schools represented either in the more effective or in the less effective school category. Because most districts have only a few high schools, this finding suggests that there may be district policies at work that are impacting school effectiveness in dropout prevention.

Another interesting finding is with regard to school size. The more effective schools had a higher average school size than did the less effective schools. Neither school category displayed gender or ethnicity trends.

CHAPTER 5. CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Overview of Study

This three-phase study addressed two main purposes. The first purpose of this study was to examine the characteristics of student dropouts. In Phase I dropout characteristics were studied using descriptive analyses and cluster analyses. Profiles of the types of dropouts were developed. The second purpose of this study was to examine the characteristics of schools that are successful or unsuccessful in mediating student risk factors for dropping out. Phase II began addressing this second purpose through creation of a contingency table crossing potential and actual dropout percentages. Four types of schools were obtained from this table: schools with consistently high percentages of dropouts, schools with consistently low percentages of dropouts, more effective schools in dropout prevention, and less effective schools in dropout prevention. Phase III continued addressing the second purpose of this study through descriptive analyses of the characteristics of these four types of schools and through a multivariate analysis of variance.

Kronick and Hargis (1998) proposed a theory of the high school graduation and dropout process based on research. The first type of dropout, and the largest group, is the “quiet dropout.” This type of dropout is defined by low achievement and repeated grade failure with a reaction of stoicism. The second type of dropout is the “low achieving pushout.” This type of dropout is defined by low achievement, chronic grade failure, and behavior problems. These students differ from the “quiet dropouts” because they overtly

react to their chronic failure. The third type of dropout, and the smallest group, is the “high achieving pushout.” These students have adequate and even above average academic potential and often display behavior problems. The sources of their school failures are circumstances outside of the school such as motivation problems, family problems, and substance abuse. The final type of dropout, “in-school dropouts,” are not formally considered to be dropouts because they do complete school; however, they drop out of the learning process due to their low academic potential while physically staying in school. To represent the entire student body, a fifth type of student must be included, the “potential high school graduate.” The current study found the existence of three types of actual dropouts listed above.

If groups of potential dropouts can be identified and characterized, then we can begin to find ways to develop policy that focuses dropout prevention efforts to keep these groups of students in school. Given the lifelong consequences of dropping out, secondary schools in today’s society need to find ways to encourage students to stay in school. Schools should consider dropout prevention as a part of what makes them successful schools. A school may be “effective” based on student achievement and not meet the needs of all of its students. Schools that place too much emphasis on achievement alone as a means of being “effective” may alienate their lower achieving students or force them out of school (Wehlage & Rutter, 1986).

Kochan, Tashakkori, and Teddlie (1996) tested a composite behavioral indicator of effectiveness (a “participation” indicator), which measured the extent to which a school balances its drive for academic excellence while keeping all students actively

engaged in school. The participation indicator was based on student attendance, suspensions, and dropouts. This participation indicator was compared to an achievement indicator and a moderate correlation was found suggesting that these two indicators measure related aspects of school effectiveness, but still capture different aspects of the schooling process. The Kochan, Tashakkori, and Teddlie (1996) study confirmed the importance and usefulness of evaluating schools on variables beyond achievement alone. In the same light, the current study sought to further explore school effectiveness with regard to mediating dropouts.

This study found that four types of schools exist with regard to dropout prevention, and that some differences do exist among these types of schools with regard to characteristics of schools successful in dropout prevention. This chapter will address each of the hypotheses, sub-hypotheses, and research questions and the findings associated with each. Overall conclusions and contributions of this study will be discussed. Finally, implications for policy and future research will be provided.

Hypotheses and Research Questions

Phase I – Profiling Student Dropouts

Phase I of this study addressed Research Questions 1 through 3 and the first Hypothesis.

Research Question 1

What is the profile of dropouts from Louisiana public schools as a whole?

There are more male dropouts and more African-American dropouts. Students drop out slightly more from grades nine and ten. A third of the dropouts qualify for free

lunch, a proxy for students from higher poverty backgrounds. Twelve percent of dropouts are special education students. Dropouts have a lower average test score and higher percent of days absent from school. The average number of days suspended was one day. The majority of students drop out during the school year, and approximately 35% of students dropped out during the summer before school started. The two main reasons cited for dropping out were “dislike of school experience” (626 dropouts) and “academic difficulty” (570 dropouts). This confirms previous research that has shown these two reasons to be the primary ones given by students for leaving school before graduation (e.g., Ekstrom, Goertz, Pollack, & Rock, 1986; Hahn, 1987; Wehlage, Rutter, Smith, Lesko, & Fernandez, 1989; White & Feldman, 1994). The full narrative profile of Louisiana dropouts is provided in Chapter 4.

Two cluster analyses were conducted to address Hypothesis 1 and Research Questions 2 and 3. The first cluster analysis was conducted on non-dropouts and dropouts together. The second cluster analysis was conducted on dropouts only.

Hypothesis 1

High school students can be grouped into clusters representing the five profiles of students: “quiet dropouts,” “low-achieving pushouts,” “high-achieving pushouts,” “in-school dropouts,” and “potential high school graduates” as theorized by Kronick and Hargis (1998).

The first cluster analysis resulted in three clusters of non-dropouts and dropouts. Clusters 1 and 3 differed with regard to academic achievement, poverty, and ethnic composition. Cluster 3 students were all high-achieving, most were non-poverty, and

were primarily White. Cluster 1 had average achievement students, over a third eligible for free lunch, and only slightly more White students. Cluster 2 differed dramatically from the other two clusters. The majority of students were below average to low achieving, over forty percent were eligible for free or reduced-priced lunches, a third were average, almost two percent were LEP students, almost fifteen percent had high suspensions, and sixty-three percent had high absenteeism. There were more males than females and more African-Americans than Whites.

One conclusion from these results is that achievement and then poverty are the main drivers in separating these groups of students based on the cluster analysis results. The ethnicity composition of the three clusters mirrors the poverty make-up of the groups. A second finding is that Cluster 2, which was the most different, contained all of the students in the sample that displayed the characteristics of typical dropouts. In fact, Cluster 2 contained almost all of the dropouts (85.5%) in the sample. The other two clusters did contain some dropouts, and Cluster 2 did have some variation with regard to the characteristics examined. This suggests that an analysis of dropouts only may show types of dropouts without the “typical” dropout characteristics. Theory suggested that a type of student called the “in-school dropout” exists. Cluster 2 contains 20% dropouts and 80% non-dropouts. The “in-school dropouts” are probably included in Cluster 2. Additional variables are needed to separate this group of “in-school dropouts.”

A second cluster analysis conducted on dropouts alone again yielded a three-cluster solution. These three types of dropouts were all the ones expected based on previous research. Cluster 1 was the “quiet dropout” with low achievement and low

suspensions. Cluster 2 was the “high-achieving dropout” with high achievement and high absenteeism. Finally, Cluster 3 was the “low-achieving pushout” with low achievement, overage status, high suspensions and high absenteeism. This type is also known as the “typical” dropout.

An examination of gender and ethnicity among the three dropout clusters yielded some interesting results. First, of the two clusters with the lower-achieving dropouts (i.e., the quiet dropouts and the “typical” dropouts), there are more male dropouts. The high-achieving cluster had equal percentages of males and females. Dropouts in this cluster do not leave school because they lack the academic ability. Either they do not fit into the school environment, perhaps due to psychological or learning disorders, or they are pulled away from school by other factors in their lives (Kronick & Hargis, 1998). This suggests that males and females are both affected by these factors, although they are affected by different circumstances (Ekstrom, Goertz, Pollack, & Rock, 1986; Hahn & Danzberger, 1987; Jordan, Lara, & McPartland, 1996). Second, the quiet dropout cluster had more of the other ethnicities (i.e., Hispanic, Asian, American Indian). This finding supports the finding that this group had all of the limited English proficient students. Finally, more of the “typical” dropouts drop out in the earlier grades. Perhaps their at-risk characteristics, such as misbehavior, cause schools to push them out earlier than other dropout types.

To summarize, Hypothesis 1 was supported, in part, as the types of dropouts that emerged from the cluster analysis were those expected by theory. Hypothesis 1 was not supported in that the two types of students remaining in school (“in-school dropouts” and

“potential high school graduates”) did not emerge as expected in the cluster analysis results.

Research Question 2

Do profiles of other types of dropouts or potential graduates arise through the cluster analysis?

Theory suggested a type of student called “potential high school graduates.” The cluster analysis on all students yielded two types of students that would more than likely graduate from high school based on the low percentage of dropouts in these two clusters. Additional research is needed to provide more insight on the profiles of these two types of students.

Research Question 3

What percentage of Louisiana dropouts are “typical” and “non-typical” dropouts, based on the clusters formed through the cluster analysis?

Based on the second cluster analysis of dropouts alone, of the 400 dropouts in the sample 14.5% are “typical” dropouts (those in cluster three) while 85.5% are “non-typical” dropouts (those in clusters one and two).

Phase II – Classification of Schools

Phase II of the study addressed Hypothesis 2. The risk factors of dropping out found in Phase I were used to calculate the percent of potential dropouts at each school in the sample. The percent of actual dropouts at each school was also computed. For each of these two percentages variables, schools were divided into three groups: high,

medium, and low percentages of dropouts. The three levels of each variable were crossed in a 3 x 3 contingency table.

Hypothesis 2

For some categories (low, medium, and high dropouts) of schools, the percentage of actual dropout rates will be inconsistent with the percentage of potential dropouts predicted for those categories based on the Phase I cluster analysis results.

Two statistical tests were conducted to examine Hypothesis 2. A test of independence, using chi-square, found that an association exists between the percent of actual dropouts and the percent of potential dropouts. A test of agreement, using kappa, led to the rejection of the null hypothesis of agreement between these two variables. Therefore, there are schools that are inconsistent with regard to the classification of percent of potential dropouts and percent of actual dropouts. Hypothesis 2 was supported.

Phase III – School Dropout Prevention Effectiveness

Phase III of this study addressed Hypothesis 3, Sub-hypotheses 3a and 3b, and Research Question 4. A multivariate analysis of variance (MANOVA) was conducted to test for differences among the four types of schools (consistently high, consistently low, more effective, and less effective) as mentioned earlier in this chapter. The set of dependent variables tested in the MANOVA included attendance rate, average class size, student achievement, average teacher test score, out-of-school suspension rate, and percent of teachers with A or B certificates. These variables are among those typically associated with effective schools and/or with schools successful in dropout prevention.

Hypothesis 3

The profiles of schools in the four cells (C1, C3, C7, and C9) will differ based on the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Hypothesis 3 was supported. The results of the MANOVA showed that these four types of schools differed on five out of six of the dependent variables. No differences existed with regard to the average teacher test score. With average teacher test score being used as a proxy for teacher's knowledge of their content area and verbal skills (Louisiana Department of Education (LDE), 2003d), it appears that a teacher's intellectual ability may have little to do with keeping students in school. Previous research (Felter, 2001) found that the proportion of new teachers and those with only a Bachelor's degree were related to dropout rates. Perhaps teacher experience working with at-risk students is more valuable to keeping them in school than their intellectual ability. The discussions associated with Sub-Hypotheses 3a and 3b and Research Question 4 describe how these schools differ on these five other dependent variables.

Sub-Hypothesis 3a

Of the schools predicted to have low dropout rates, schools that are more successful in preventing dropouts (C1 schools) differ from those that are less successful (C7 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

Both types of schools had low percentages of potential dropouts; however, the less effective schools had a high dropout rate. These two categories of schools differed significantly on only one of the dependent variables, the student achievement portion of the School Performance Score (SPS). There are factors causing more students to drop out at these less effective schools that are beyond the scope of this study. These factors may be within the school, or outside, such as employment opportunities.

Sub-Hypothesis 3b

Of the schools predicted to have high dropout rates, schools that are more successful in preventing dropouts (C3 schools) differ from those that are less successful (C9 schools) with regard to the characteristics associated with high or low dropout rates and the characteristics associated with successful or unsuccessful schools, as identified in previous research.

These two types of schools have a high percent of potential dropouts; however, the more effective schools ended up with a low dropout rate. The more successful schools had higher attendance rates and higher student achievement. As shown by previous research (e.g., Kochan-Teddlie, 1998), some schools have attendance policies and programs targeted to get at-risk students to come to school. Perhaps these more effective schools implement this practice. The higher student achievement suggests that these schools may have a curriculum in place that facilitates student learning. Based on their synopsis of dropout research and their experience working with dropouts, Kronick and Hargis (1998) discuss the impact of a rigid curriculum on dropping out. For low-achieving students, an inflexible curriculum is difficult for them to adapt to, thus causing

these students to experience failure and frustration and to ultimately give up on school. For high-achieving students, a rigid curriculum is not challenging, leaving these students feeling bored and unclear about the value of school. Another possible explanation for the higher achievement is that these are effective schools with characteristics such as positive school climate and good leadership.

Research Question 4

What characteristics differentiate the four types of schools?

The results of the post-hoc MANOVA tests did not yield any significant differences between the more effective and less effective types of schools with regard to the set of dependent variables. These schools must differ on variables beyond those used in this study.

A comparison of the consistently low schools and the consistently high schools found that these two types of schools differed on all the dependent variables with the exception of the average teacher test score, which was not eligible for post-hoc analysis because the univariate *F*-test for this variable was not significant. The consistently low schools had higher attendance rates, smaller class sizes, higher student achievement, higher percent of teachers with an A or B certificate, and fewer suspensions.

Conclusions

The results of the analyses of dropouts in Phase I led to the first major conclusion of this study. Not all dropouts in Louisiana display the characteristics associated with the “typical” dropout as shown in previous research. The results of the cluster analysis on dropouts yielded three dropout types, with only one cluster displaying “typical” dropout

characteristics. The larger percentage of the dropout sample was made up of non-typical dropouts.

The second major conclusion of this study is that four types of schools exist with regard to dropout prevention. The characteristics of these schools examined in this study did yield some differences among these types of schools. The characteristics that differentiated schools more often were attendance followed by student achievement.

Contribution of the Study to the Dropout Literature

Most educators would say that of course there are different types of dropouts, since they see the evidence on a day-to-day basis. However, there is very little empirical evidence in the literature to support this fact. This study has provided this evidence. By grouping students using variables that have been shown to be related to dropping out, the existence of the types of students theorized by researchers and practitioners was confirmed. This study used actual data for students as opposed to data reported by others, such as teachers. In addition, this study allowed the dropout types to form through the analysis; they were not based on pre-specifications by the researcher. Dropout research that has just focused on the “typical” dropout will need to be expanded to included study of all dropout types. Dropout prevention programs that do not take the different types of dropouts into account may need to be revamped.

This study has made a second contribution to the dropout literature by establishing that schools can be categorized into dropout prevention school types based on a comparison of the percent of potential dropouts and the percent of actual dropouts at the school level. This opens the door to future research on what differentiates these

schools. This study explored the differences in these four types of schools using six of the characteristics of schools successful with dropout prevention and characteristics of effective schools. The differences found (and those not found) among the dependent variables in this study can serve as a basis for future research on these types of schools.

Policy Implications

The first policy implication is that better efforts need to be made in determining the reasons students drop out in Louisiana. Knowing why students drop out is important to finding ways to prevent other students from dropping out. As discussed in Chapter 4, only 25% of the dropouts in Louisiana have reported reasons for dropping out, with a large portion of these coded as unknown or other. One explanation for these missing data is that reasons are available only when a district reports a student as being a dropout. The rest of the Louisiana dropouts become labeled as such when officials at the Louisiana Department of Education process the files. For example, students who were enrolled one school year and do not show up in the files the next school year by October 1 automatically become dropouts. In the current data collection system, there is no way to determine why these students did not return to school. If methods were developed to better track these students, perhaps their reasons for dropping out could be obtained. This may require the cooperation of nonpublic schools and other states.

Another possible means of obtaining the reasons students drop out would be to interview a sample of dropouts. Beauvais, Chavez, Oetting, Deffenbacher, and Cornell (1996) state that “if effective preventive and remedial strategies are to be developed, risk

factors for and problems associated with dropping out of school must be mapped empirically” (p.292).

A second policy implication is that districts and schools need to be made aware that more than one type of dropout exists. Information on the characteristics of the different types of dropouts and on the ways to keep these students in school should be disseminated. This leads to the next policy implication.

A third policy implication is that more refined dropout prevention programs need to be developed in Louisiana to meet the needs of the various types of dropouts. The cluster analysis in the third part of Phase I of this study indicated that three types of dropouts exist. Most dropout prevention programs are tailored to the “typical” dropout. While some aspects of these programs can be used with the two other types of dropouts, the “quiet dropout” and the “high-achieving dropout,” there are specific areas that need to be focused on for both of these types. Beauvais et al. (1996) state that when dropouts have multiple problems, interventions will fail if all problems are not addressed. These researchers also advocate that dropout prevention programs be made gender and ethnically sensitive because different gender and ethnic groups have cultural differences that will impact the way that risk factors impact the process of dropping out of school. For example, different ethnic groups put different emphasis on the value of school (e.g., Ogbu, 1985, 1990; Valdivieso & Nicolau, 1994). Everett, Bass, Steele, and McWilliams (1997) also suggested that dropout programs that target the needs of various types of dropouts would be more effective than a blanket program for the total high school population.

The “quiet dropouts” are more influenced by employment opportunities outside the school primarily due to needs of their families. Perhaps dropout prevention programs that focus on incorporating work and school would address the specified needs of this type of potential dropout. The “quiet dropout,” as the name suggests, often goes unnoticed. Schools need to look for students who display risk factors for dropping out so these students can receive the help they need. This conclusion is relevant to all potential dropouts, not just the “quiet dropout” type.

The “high-achieving dropouts” are often students who have social, psychological, or personal factors that influence their decision to drop out. Some examples include substance abuse, attention deficit disorder, and pregnancy. Counseling may be an effective way of addressing these problem areas. Classes that focus on personal and social issues, such as improving interpersonal relations, would be of use to these types of dropouts and have been shown to reduce the rate of substance abuse among dropouts (Eggert, Seyl, Nicholas, 1990). School-wide programs that provide students with information on avoiding drugs and alcohol and practicing abstinence or safe sex would be useful in preventing dropouts, especially among high-achieving students. Behavioral disorders that affect student learning should be identified early and children should receive guidance on how to manage their disorders through behavior modification in addition to needed medication.

Another way of meeting the needs of all types of dropouts is to ensure that the school-wide curriculum, like dropout prevention programs, meets the needs of all students. It should include academic, career, and personal components. The academic

component needs to accommodate different ability levels and learning styles. This may involve changing the way schools are organized and classes are managed (Texas Education Agency, 1989). The career component should provide all students with the education and/or skills needed to be successful after high school whether students seek postsecondary education or enter the work force. The personal component should include helping students cope with the stresses in their lives and fostering motivation for staying in school (Scheffelin & Emmett, 1991; Kronick & Hargis, 1998).

Another policy implication is related to an accountability policy in Louisiana. As mentioned in Chapter 1, the Louisiana accountability model includes an adjustment to achievement scores based on the school-level dropout rate. Schools that have met or exceeded the state goal for the non-dropout rate have points added to their achievement scores. Schools that have not met the goal for the non-dropout rate have points taken away from their achievement scores. The principle behind this adjustment is to encourage schools to work to keep students in school instead of giving up on low-achieving students since these students lower the school's achievement scores.

However, this study found that not all dropouts are low achievers. Over forty percent of the dropouts in the cluster analysis became part of the higher-achieving group. None of the students in this group were low-achieving. This finding contradicts the logic behind the dropout adjustment to the achievement data in the accountability score. To further investigate this issue, the achievement level of dropouts at the school-level should be examined. This would provide information about the number of schools impacted and whether some schools have large numbers of high-achieving dropouts. Perhaps these

results would require the current accountability policy to be revisited, especially if large numbers of schools are impacted or if some schools are impacted significantly due to large numbers of high-achieving dropouts.

Recommendations for Future Study

This section discusses methods and areas in which to extend the current study. This discussion begins with the first purpose of the study, examining characteristics of student dropouts. The results of the cluster analysis on dropouts alone showed that there is more than one type of dropout, as predicted by previous research. The results of the cluster analysis on all students, however, lead to questions for future research. Two of the clusters were mainly composed of non-dropouts, who only seemed to differ on achievement level and poverty status. More variables, such as family, social, and psychological characteristics, are needed to further construct profiles that distinguish these groups. In addition, the remaining cluster from the analysis on all students yielded a large group that not only had the vast majority of dropouts in the sample, but also a large number of non-dropouts. What are the distinguishing characteristics of these non-dropouts in this cluster? This is an additional area for future research.

The findings of this study revealed an issue that permeates many areas in educational research, that being the relationship between ethnicity and poverty. Previous research has shown that after controlling for socioeconomic status and other family background variables, any ethnicity differences in dropout rates disappear (U.S. Department of Education, 1994). The profiles in this study show that the types of students and the types of dropouts differ with regard to ethnicity. Although these

differences mirror the poverty differences, there could be an ethnicity effect beyond the effect of poverty. Future research should focus on disentangling the relationships among ethnicity, poverty, and dropout type perhaps by examining the relationship between ethnicity and dropout type after controlling for poverty. In addition, future research should focus on studying the dropout process for different ethnicity and gender groups within the three types of dropouts found in this study.

This study used binary variables to conduct the cluster analyses since some of the variables to be included in the analyses could only be obtained in categorical or binary form. Future studies should utilize continuous versions of these variables, since these variables would provide a more detailed specificity to the differences between clusters.

To address the second purpose of the study, examining the characteristics of schools more or less effective in dropout prevention, this study examined the most common characteristics of schools successful in dropout prevention and effective schools. Attendance rate and student achievement were found to differentiate these four types of schools the most. There are other characteristics, such as school climate and the availability of vocational programs, that were not examined in this study, but that require attention. Future research should focus on identifying other variables that differentiate these four types of schools.

The ancillary analysis conducted at the end of Phase III yielded some interesting commonalities among the more effective schools and among the less effective schools with regard to school size, type of grade configuration, and community type. These are relationships that need to be studied more in-depth. Larger schools have been shown to

have higher dropout rates (Pittman & Haughwout, 1987). This study uncovered an interesting relationship between school size and dropping out when looking at the more effective schools versus the less effective schools (i.e., the more effective schools had a higher average school size than the less effective schools).

Are larger schools able to provide more attention to at-risk students? How do grade configuration (i.e. high school versus combination school) and community type fit into this relationship between school size and dropout rates? There were some school districts that had groups of schools in either the more effective category or the less effective category suggesting there are policies outside of the school that may be impacting dropout mediation both positively and negatively. All of these areas call for concentrated study.

A future extension of this study would involve conducting case studies in two different ways. First, case studies could be conducted on the types of dropouts to provide a thorough description of these students. The findings could provide useful insight on how to successfully implement dropout prevention programs when coupled with research on the reasons students drop out of school.

Second, case studies could be conducted on a sample of schools from each of the four types of schools studied in the final phase of this study. This would allow for an in-depth analysis of the characteristics of each of these four types of schools to learn what factors within the control of schools can mediate a student's likelihood of dropping out. Although collecting additional data and conducting quantitative analyses would expand

this study, case study analysis would allow for a much richer understanding of effective dropout prevention.

Much of the research on dropouts and dropout prevention has focused on descriptive statistics. This adds little to understanding the theoretical process of dropping out. In a 1994 report discussing the national education goal of increasing high school completion, the U.S. Department of Education recommended that dropout research move “in the direction of developing and advancing theoretical concepts that treat retention, graduation, and completion as consequences of a dynamic interaction of such variables as student characteristics, school context, occupational prospects, and cultural influences” (p. 1, Section 9). In this light, this dissertation has contributed to expanding the area of dropout research by confirming the existence of different types of dropouts and exploring the school-level factors that mediate the likelihood of dropping out.

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APPENDIX A.
RESULTS OF VALIDATION ANALYSES
FOR PART TWO OF PHASE I

Table A.1

Possible Cluster Solutions for Non-Dropouts and Dropouts – Validation Sample Results

Number of Clusters	Agglomeration Coefficient	% Change in Coefficient
10	366.96	0.8%
9	363.98	0.9%
8	360.64	1.1%
7	356.51	1.3%
6	351.76	1.5%
5	346.60	2.2%
4	339.08	2.9%
3	329.36	4.3%
2	315.32	6.0%
1	296.40	-

Table A.2

Percent of Dropouts and Non-Dropouts with Characteristics for Each Cluster –
Validation Sample Results

Characteristics	Clusters		
	1	2	3
Achievement			
High Achievement	16.8%	1.0%	100.0%
Above Average Achievement	48.8%	2.5%	0.0%
Below Average Achievement	34.4%	13.4%	0.0%
Low Achievement	0.0%	83.2%	0.0%
Poverty			
Free Lunch	29.5%	39.6%	0.0%
Reduced-Priced Lunch	10.3%	5.0%	0.0%
Lunch Paid by Students	60.2%	55.4%	100.0%
Overage			
Yes	3.1%	25.7%	0.0%
No	96.9%	74.3%	100.0%
Limited English Proficient			
Yes	0.4%	0.5%	0.0%
No	99.6%	99.5%	100.0%
High suspensions			
Yes	0.2%	20.3%	0.0%
No	99.8%	79.7%	100.0%
High absenteeism			
Yes	37.6%	57.9%	0.0%
No	62.4%	42.1%	100.0%
Gender			
Female	53.6%	46.0%	58.1%
Male	46.4%	54.0%	41.9%
Ethnicity			
African-American	38.7%	67.8%	16.2%
White	56.2%	29.2%	81.8%
Other	5.0%	3.0%	2.0%
Grade			
Ninth	29.1%	31.2%	29.1%
Tenth	27.6%	27.2%	27.0%
Eleventh	20.8%	23.3%	22.3%
Twelfth	22.5%	18.3%	21.6%
Dropout Status			
Dropout	4.8%	16.3%	0.0%
Non-Dropout	95.2%	83.7%	100.0%
Cluster Size	457	202	148

APPENDIX B.
RESULTS OF VALIDATION ANALYSES
FOR PART THREE OF PHASE I

Table B.2

Possible Cluster Solutions for Dropouts – Validation Sample Results

Number of Clusters	Agglomeration Coefficient	% Change in Coefficient
10	176.19	0.8%
9	174.82	1.2%
8	172.80	1.3%
7	170.58	1.4%
6	168.21	2.0%
5	164.90	2.2%
4	161.30	2.6%
3	157.07	3.4%
2	151.74	4.7%
1	144.59	-

Table B.2

Percent of Dropouts with Characteristics for Each Cluster – Validation Sample Results

Characteristics	Clusters		
	1	2	3
Achievement			
High Achievement	6.4%	13.5%	0.0%
Above Average Achievement	6.4%	25.0%	0.0%
Below Average Achievement	26.6%	38.0%	25.4%
Low Achievement	60.6%	23.4%	74.6%
Poverty			
Free Lunch	18.1%	32.3%	39.5%
Reduced-Priced Lunch	4.3%	5.2%	0.0%
Lunch Paid by Students	77.7%	62.5%	60.5%
Overage			
Yes	47.9%	25.5%	83.3%
No	52.1%	74.5%	16.7%
Limited English Proficient			
Yes	1.1%	0.0%	0.0%
No	98.9%	100.0%	100.0%
High suspensions			
Yes	4.3%	19.8%	0.0%
No	95.7%	80.2%	100.0%
High absenteeism			
Yes	0.0%	90.1%	100.0%
No	100.0%	9.9%	0.0%
Gender			
Female	41.5%	45.8%	49.1%
Male	58.5%	54.2%	50.9%
Ethnicity			
African-American	61.7%	42.2%	64.0%
White	33.0%	55.2%	34.2%
Other	5.3%	2.6%	1.8%
Grade			
Ninth	20.2%	18.2%	37.7%
Tenth	33.0%	27.1%	28.9%
Eleventh	20.2%	29.7%	15.8%
Twelfth	26.6%	25.0%	17.5%
Cluster Size	94	192	114

VITA

Mindy Lanette Crain-Dorough was born in Bogalusa, Louisiana, on October 6, 1974. She was reared in Franklinton, Louisiana, where she graduated from Franklinton High School in 1991. After earning a Bachelor of Science degree in secondary mathematics education from Louisiana State University in 1994, she taught briefly in the East Baton Rouge Parish School System and then returned to school. During graduate school she spent a year as a graduate assistant and had the opportunity to work on many research studies in areas such as school effectiveness and evaluation. She received a Master of Applied Statistics degree in 1998. Since 1999 she has been employed at the Louisiana Department of Education, first in the Division of Student Standards and Assessments and then in the Planning and Analysis section of the Division of Planning, Analysis, and Information Resources where she is currently an Education Research Analyst 3. In 2003 she received a second master's degree in educational research methodology. She is married and has one child.