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ABSTRACT

This study used data from the National Educational Longitudinal Study of 1988 and follow-up data collected in 1990, 1992, and 1994, to examine the characteristics and personal/educational factors related to gifted high school dropouts (n=3,520). Results indicate: (1) many gifted students left school because they were failing school, did not like school, got a job, or were pregnant; (2) most parents whose gifted child dropped out of school were not actively involved in their child's decision to dropout; (3) many gifted students who dropped out of school participated less in extracurricular activities; (4) few gifted students who dropped out had plans to return to school; (5) gifted students who dropped out of school had higher self-concepts than typical dropouts; (6) many gifted students who dropped out were from low socioeconomic families and racial minority groups; (7) gifted students who dropped out had parent with low levels of education; (8) gifted students who dropped out had used marijuana more than gifted students who completed school; and (9) dropout behavior for gifted students was significantly related to students' educational aspirations, pregnancy or child-rearing, gender, and parents' highest level of education. An appendix provides information on the study variables. (Contains more than 90 references.) (Author/CR)

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Giftedness and High School Dropouts: Personal, Family, and School-related Factors

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ABSTRACT

While the issue of high school dropouts has received much attention, the subject of dropouts among gifted and talented students has not been adequately addressed in research studies. Moreover, some research studies focusing on gifted dropouts used only IQ to identify gifted students. Using such a restricted definition of giftedness may cause a misunderstanding of gifted dropouts. This study was conducted to obtain more comprehensive information about gifted high school dropouts and to examine factors related to gifted students' dropout behavior using a more flexible definition of the gifted.

For this study, the National Education Longitudinal Study of 1988 (NELS:88) data base, which was a longitudinal study conducted by the National Center for Education Statistics (NCES), was used to address research questions. The NELS:88 began in 1988 by collecting data on approximately 25,000 eighth grade students, including data from their parents, teachers, and school administrators, and then followed up at 2-year intervals. Two computerized database studies were conducted using different samples. In Study 1, the Second Follow-up Dropout Questionnaire was directly analyzed to obtain specific information about gifted dropouts regarding their reasons for leaving school, parents' reactions, use of time, future career plans, relationships with parents and peers, and self-concepts. In Study 2, student questionnaires were analyzed mainly to examine personal/educational factors related to the gifted students' dropout behavior.

The results from Study 1 indicated that (a) many gifted students left school because they were failing school, didn't like school, got a job, or were pregnant, although there are many other related reasons, (b) most parents whose gifted child dropped out of school were not actively involved in their child's decision to drop out of school, (c) many gifted students who dropped out of school participated less in extracurricular activities, (d) few gifted students who dropped out of school had plans to return to school, and (e) gifted students who dropped out of school had higher self-concepts than non-gifted students who dropped out of school. The results from Study 2 indicated that (a) many gifted students who dropped out of school were from low SES families and racial minority groups, (b) gifted students who dropped out of school had parents with low levels of education, (c) gifted students who dropped out of school had used marijuana more than gifted students who completed school, and (d) dropout behavior for gifted students was significantly related to students' educational aspirations, pregnancy or child-rearing, gender, father's highest level of education, and mother's highest level of education.

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EXECUTIVE SUMMARY

Introduction

Research studies report that high school dropout rates still remain at high levels and vary significantly by socioeconomic status and racial/ethnic background (Lunenburg, 2000; Naylor, 1989; National Center for Education Statistics, 2001). Rumberger (1987) indicated that educators and policymakers have given attention to the issue of high school dropouts because of the large percentage of minority students who leave school before graduation. In addition, the performance of schools is sometimes judged by the dropout rates of these populations. Naylor (1989) pointed out that a great amount of money should be spent for these dropouts' welfare and lost revenue.

While the issue of high school dropouts has received much attention, the dropout rate of gifted and talented students has been studied less often at local and national levels (Robertson, 1991; Sadowski, 1987; Stephenson, 1985). Therefore, little is known about these students. Previous studies have reported a wide range of estimates of gifted drop out rates. These estimates vary with the definitions of "giftedness" and "dropouts." Lajoie and Shore (1981) criticized that gifted dropout studies used vague definitions of gifted, varied in age and grade levels and needed to follow up on the permanence of those having dropped out. In fact, many studies about gifted dropouts have focused on academically high ability students, selected primarily by IQ scores. However, recent trends in gifted and talented education have employed more flexible definitions. Another issue in the study of gifted dropouts is the difficulty in obtaining nationally representative longitudinal data about this population (Robertson, 1991).

Nationally representative longitudinal data from the National Education Longitudinal Study of 1988 (NELS:88) were used in researching this population. The longitudinal data included a variety of personal, family, and school variables related to high school students' dropout decisions. The purpose of this study was to gain comprehensive information from the NELS:88 data set about gifted dropout students regarding their reasons for leaving school; parents' reactions; use of time; future career plans; relationships with parents and peers; and self-concepts. It also compared gifted dropouts with gifted non-dropouts in terms of personal and educational factors related to decisions to drop out of school.

Research Questions

Using two different sources from the NELS:88 databases, two studies were conducted, which addressed the following research questions:

Study 1

1. What are gifted dropouts' reasons for leaving school, what are parents' reactions to their leaving school, what activities accounted for their time, what are their relationships with parents and peers, and what are their future career plans?
2. Is there any difference between gifted dropouts and non-gifted dropouts with respect to their plans to return school?
3. Is there any difference between gifted dropouts and non-gifted dropouts with respect to self-concept and locus of control?

Study 2

1. What are the descriptive characteristics of gifted dropouts regarding their personal background (SES, race/ethnicity, father's highest level of education, and mother's highest level of education)?
2. Are there any differences between gifted male and gifted female students who dropped out of school in terms of father's educational expectations, mother's educational expectations, student's educational aspirations, employment, pregnancy/child-rearing?
3. Are there any differences between gifted students who dropped out of school and gifted students who completed school with respect to the use of marijuana or cocaine?
4. To what extent and in what manner can variations in the drop out rates of gifted students vary among students by personal and educational factors (SES, race, gender, quality of school, father's highest level of education, mother's highest level of education, student's educational aspirations, pregnancy/child-rearing, and absenteeism)?

Definition of Terms

Throughout this study the following definitions are used:

Gifted: The definition of gifted students is those who have participated in their school district's gifted program or who have been enrolled in three or more classes in advanced, enriched, or accelerated English, social studies, science, or math.

Dropout: The definition of dropout in this study is adopted from the definition used in NELS:88 data:

1. An individual who, according to the school (if the sample member could not be located), or according to the school and home, is not attending school (i.e., has not been in school for 4 consecutive weeks or more and is not absent due to accident or illness); or
2. A student who has been in school for less than 2 weeks after a period in which he or she was classified as a dropout. (National Center for Education Statistics, 1996, p. 112)

The variable that was used to define dropouts was "High School Completion Status (f3diplom)." Category 4 was considered as a dropout.

1. High school graduate—if individual has received a high school diploma
2. Received alternative credential—if individual has received a GED or received a certificate of attendance
3. Still enrolled in high school—if individual is currently in high school or is working toward an equivalent
4. Dropout—if individual is not a graduate or GED/certificate holder. (National Center for Education Statistics, 1996, p. 115)

Method

Research Design

This study utilized data from the National Education Longitudinal Study of 1988 (NELS:88), collected by the National Center for Education Statistics (NCES). The NELS:88 began in 1988 by collecting data on approximately 25,000 eighth graders including data from their parents, teachers, and school administrators. These data were then followed up at 2-year intervals in 1990, 1992, and 1994.

To address the research questions, two studies were conducted using two different sources of data and samples. In Study 1, the Second Follow-up Dropout Questionnaire of NELS:88 was analyzed to obtain specific information about gifted students who drop out of school. Only students who had dropped out of school completed this questionnaire; therefore, gifted and non-gifted students were compared. In Study 2, student questionnaire data were analyzed to examine personal and educational factors related to the decision by gifted students to drop out of school.

Samples for Study 1 and Study 2

The sample in this study is composed of the students who were eighth graders in 1988 and participated in the base year through the third follow-up survey of NELS:88. The sample from Study 1 consists of dropouts who were not in an academic program leading to a high school diploma, had not received a GED by the spring 1992, and completed the Second Follow-up Dropout Questionnaire. In this study, gifted students were defined more flexibly as those who participated in their school district's gifted program or who had been enrolled in three or more classes in advanced, enriched, or accelerated English, social studies, science, or math. Among 1,285 students who completed the Second Follow-up Dropout Questionnaire, 334 were identified as gifted.

The sample in Study 2 consists of gifted students who were eighth graders in 1988 and participated in all four rounds of the survey. It should be noted that gifted students who dropped out of school in Study 1 and Study 2 are not exactly the same group, because some of the students who dropped out of school in Study 1 might have returned to school before the third follow-up, classifying them as non-dropouts in Study 2. Also, gifted students who dropped out of school in Study 1 did not participate in the third follow-up survey, thus decreasing the number of students in the third follow-up. Among 12,625 students who participated in the four rounds of the survey, a total of 3,520 gifted students were identified as a sample using the same definition of gifted as in Study 1. In Study 2, dropout students were defined as students who were not graduates or GED/certificate holders (f3diplom =6) in 1994.

Weights and Standard Error of the Study

To compensate for unequal probabilities of sample selection and to adjust for the non-response effect, an appropriate weight was used for data analyses. Also, all estimates, standard errors, and significant test results were calculated based on the sample design. For this study, SPSS (Statistical Package for the Social Sciences) and the SUDAAN (Software for Statistical Analysis of Correlated Data) statistical program from the Research Triangle Institute (1995) were used to estimate the standard errors, taking into account the complex survey design.

Data Analyses and Results

Study 1

Research Question 1: What are gifted dropouts' reasons for leaving school, what are parents' reactions to their leaving school, what activities accounted for their time, what are their relationships with parents and peers, and what are their future career plans?

Several descriptive data analyses were conducted to gain more specific information about gifted students who dropped out of school regarding: (a) reasons for leaving school, (b) parents' reactions, (c) time spent using a computer, (d) time spent working on hobbies, (d) time spent doing volunteer work, (e) time spent talking with friends, (f) time spent talking with parents, and (g) future career plans.

Regarding reasons for leaving school, results indicated that the majority of the gifted males left school because they were failing school, they got a job, they couldn't keep up with their schoolwork, and they didn't like school. Gifted females reported that they left school because they didn't like school, they were pregnant, they became a parent, and they were failing school. In both groups, school-related reasons such as "I did not like school" and "I am failing school" were important reasons for leaving school.

An examination of the parents' reactions to their children's dropout behavior revealed that many parents (75%) tried to talk them into staying in school. Interestingly, 64.4% of respondents reported that parents said that it was their children's own decision, while 69.3% of respondents said that their parents were upset. Results indicated that only a small percentage of parents offered outside counseling (9.5%), called a school counselor (22.8%), or called the child's teachers (26.1%).

A majority of gifted students who dropped out of school (73.8%) responded that they never or rarely used a computer, not including playing video/computer games, and only 5.9% of them responded that they used a computer every day. Also, 37% of gifted dropouts responded that they never or rarely spent their time on hobbies. A large majority of dropouts (83%) responded that they never or rarely spent time volunteering. Only 17% of dropouts participated in volunteer work.

The amount of time that gifted students who dropped out of school spent with friends and parents was examined. While 51% responded that they spent time talking with friends every day, 31% spent time talking with their parents every day, and 40% of dropouts responded that they talk with parents less than once a week or never.

In response to the type of job that they would have at age 30, 11.7% wanted to be in the professional I category (accountant, nurse, engineer, banker, librarian, writer, social worker, artist, athlete, actor, and politician); 10.5% wanted to be a service worker (e.g., hair stylist, practical nurse, child care worker, waiter, domestic, and janitor); 9.3% wanted to be an office worker (e.g., data entry clerk, bank teller, bookkeeper, secretary, word processor, mail carrier, and ticket agent); and 9% wanted to be an owner of a small business or restaurant, or a contractor.

Research Question 2: Is there any difference between gifted dropouts and non-gifted dropouts with respect to their plans to return to school?

A chi-square analysis was conducted to examine differences between gifted students and non-gifted students who dropped out of school, with respect to their plans to return to school. Results indicated that there was no significant difference between the two groups with respect to their plans to return to school. Only 35.9% of gifted students planned to return to school, while 64.2% had no plans to return to school. Similarly, 34% of non-gifted students planned to return to school, while 65.1% had no plans to return to school.

Research Question 3: Is there any difference between gifted dropouts and non-gifted dropouts with respect to their self-concept and locus of control?

To examine differences between gifted and non-gifted students who dropped out of school with respect to their self-concept and locus of control, a multivariate analysis of variance (MANOVA) was performed. Prior to conducting the MANOVA, a principal factor analysis was performed to determine the subscale of self-concept. Two factors were extracted and labeled as self-concept and locus of control.

A MANOVA was conducted to examine differences between gifted and non-gifted students who dropped out of school on self-concept and locus of control. Results indicated that the combined dependent variables were significantly affected by the two groups ($F = 23.79, p < .0001$ ES = .03). The Univariate F-test results showed that the two groups were significantly different on self-concept ($F = 41.39, p < .001$), but not on locus of control ($F = .04, p = .83$). Gifted students who dropped out of school had higher self-concepts ($M = 3.33$) than non-gifted students who dropped out of school ($M = 3.16$).

Study 2

Research Question 1: What are the descriptive characteristics of gifted dropouts regarding their personal background (SES, race/ethnicity, father's highest level of education, and mother's highest level of education)?

Four descriptive analyses were conducted regarding percentages of gifted students who dropped out of school by (a) SES, (b) race/ethnicity, (c) father's highest level of education, and (d) mother's highest level of education.

Almost half the gifted students who dropped out of school (48.2%) were in the lowest quartile SES level, while only 3.6% of them were in the highest quartile SES level. By comparison, of gifted students who completed high school, 20% were in the lowest quartile level of SES, while 33.8% of them were in the highest quartile level of SES.

Among 5 categories of race/ethnicity in the NELS:88, 42.9% of gifted students who dropped out of school in the sample were White, 17.9% were Hispanic, 27% were Black, 10.5% were Native American, and 1.8% were Asian/Pacific Islanders.

Regarding father's highest level of education, a high percentage of fathers of gifted students who dropped out of school did not finish high school (40%) or completed high school but did not go on to higher education (23%). The descriptive analysis of mother's highest level of education showed similar results, indicating 25.6% of mothers of gifted students who dropped out of school did not graduate from high school and 35.9% of them graduated only from high school.

Research Question 2: Are there any differences between gifted male and gifted female students who dropped out of school in terms of father's educational expectations, mother's educational expectations, student's educational aspirations, employment, and pregnancy/child-rearing?

To examine gender differences, several chi-square analyses were conducted between male and female gifted students who dropped out of school with respect to father's educational expectations, mother's educational expectations, student's educational aspirations, employment, and pregnancy/child-rearing. Regarding parents' educational expectations, results indicated that most parents retained high educational expectations for their children even after they dropped out of school. More than half the fathers wanted their children to graduate from college or to continue higher education. No significant gender differences were found in the father's educational expectations and mother's educational expectations between gifted male and female students who dropped out of school.

In addition to educational expectations, employment and pregnancy issues were examined. Chi-square analyses were performed to investigate differences between gifted male and female students who dropped out of school with respect to employment and having children. A significant difference was found between gifted male and female students who dropped out of school with respect to expecting or having children. More gifted dropout females than males expected have children. However, there was no significant difference between the two groups with respect to the number of hours they worked for pay per week.

Research Question 3: Are there any differences between gifted students who dropped out of school and who completed school with respect to the use of marijuana or cocaine?

To examine differences between gifted students who dropped out of school and who completed school with respect to drug use, two t-tests were performed. The results indicated that the effect on dropout status was significant with respect to the number of times students used marijuana. Gifted students who dropped out of school used marijuana more than gifted students who completed school. However, there was no significant difference between the two groups with respect to the number of times they used cocaine.

Research Question 4: To what extent and in what manner can variation in the dropout rate of the gifted vary among students by personal and educational factors (SES, race, gender, quality of school, father's highest level of education, mother's highest level of education, student's educational aspirations, pregnancy/child-rearing, and absenteeism)?

A logistic regression analysis was conducted to examine the relationship between the criterion variable and the set of predictors. After data screening, direct logistic regression analyses were performed with students' group membership (gifted students who dropped out of school vs. gifted students who completed school) as a criterion variable and a set of predictors. When examining the gifted students' decision to drop out, a test of the final full model with nine predictors (SES, gender, race, students' educational aspirations,

father's highest education level, mother's highest education level, pregnancy or having children, school quality, and absenteeism) against a constant-only model was found to be statistically significant, $\chi^2(31, N = 1{,}505) = 332.45, p < .001$, accounting for the highest percentage of variance (42%). The results indicated that overall, five variables significantly predicted gifted students' dropout behavior: students' educational aspirations ($F = 8.60$, $p < .0001$), pregnancy or child-rearing ($F = 6.15, p < .01$), gender ($F = 9.87, p < .01$), father's highest level of education ($F = 12.86, p < .0001$), and mother's highest level of education ($F = 3.52, p < .01$). In addition, the results of SUDAAN statistical analysis are very conservative in dealing with design effect; SES could be considered a significant variable at the $p = .07$ level.

Examination of the odds ratios reveals the influence of the significant variables. The results revealed first that gifted students who wanted to finish college had significantly lower odds of dropping out of school than other students. Second, gifted students who did not have a child had significantly lower odds of dropping out of school than gifted students who had or were expecting a child. Third, gifted male students were about 3 times more likely to drop out of school than gifted female students. Fourth, White gifted students were significantly less likely to drop out than other ethnic groups. Fifth, gifted students with fathers who did not finish high school were about 3 times more likely to drop out of school, while gifted students with fathers who had a Master's degree were significantly less likely to drop out. Interestingly, gifted students with mothers who did not finish high school or had graduated junior college were less likely to drop out. These results indicated that father's highest level of education was more related to the gifted student's dropout behavior than mother's. Finally, results showed that SES was one of the important predictors of dropout. Gifted students who were in the low quartile and medium-low quartile of SES were much more likely to drop out of high school.

Conclusions

Analyzing the nationally representative longitudinal data provided comprehensive information regarding characteristics of gifted students who dropped out of school, their family backgrounds, their problems, and the reasons that they dropped out of school. These results can aid in developing prevention programs. Understanding the characteristics of gifted students who drop out of school enables teachers to identify potential gifted dropouts. Several characteristics specific to gifted students who dropped out of school were found in this study, suggesting some implications. First, the study results confirmed that many gifted students who dropped out of school were from low SES families and racial minority groups, had parents with low levels of education, and participated less in extracurricular activities. Findings from the present study indicated that Hispanics and Native Americans are more likely to drop out of school, while White gifted students were less likely to drop out than other ethnic groups. In addition, the study results clearly indicated that SES and parents' educational levels were significantly related to the gifted students' dropping out of high school. Findings also revealed that many gifted students who dropped out of school had very limited experience with computers and seldom engaged in hobbies. The results also showed that parents whose gifted child dropped out of school were not actively involved in their children's decision to drop out of school.

In this study, gifted students who dropped out of school reported a variety of reasons for dropping out of school. Although gifted male students' reasons were more related to economic factors and gifted female students' reasons were more related to personal factors, school-related reasons such as "I did not like school" or " I am failing school" were common between both groups. In addition, study results indicated that gifted

students' educational aspirations were significantly related to dropping out of school. Low educational aspirations were often reported because of personal or school-related problems.

"Gifted dropouts" is a group that has attracted less attention in research than other groups but that should not continue to be ignored. The dropout rate of gifted and talented students from high school constitutes the loss of a national resource that must be addressed.

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CHAPTER 1: Introduction

The problem of high school dropouts has generated increased interest from researchers, educators, and policymakers. Research studies indicate that high school attrition rate has remained at a high level or increased for some racial/ethnic groups although the long-term trend has declined (Lunenburg, 2000; National Center for Education Statistics, 2001; Naylor, 1989). The recent statistics indicates that the dropout rates have remained stable during 1990s while those rates have improved during 1970s and 1980s (National Center for Education Statistics, 2001). According to the National Center for Education Statistics (NCES) report, each year approximately 347,000 to 544,000 students left high school without completing their program. For example, in 2000 3.8 million youths, who composed 10.9% of the population (16-24 year olds) in the U.S., were not enrolled in a high school program and had not completed high school. This report also indicated that dropout rates varied significantly by socioeconomic status and racial/ethnic background. In 2000, the dropout rates of youths from the lowest income level were quite high compared to those of youth from the highest income level. Students from the lowest income families were approximately six times more likely to be dropouts than those from the highest income families (National Center for Education Statistics, 2001). Dropout rates also varied by racial/ethnic groups; the gap between the dropout rates for Blacks and Whites has not narrowed since 1990. Dropout rates for Hispanics remained higher than those for other ethnic groups. Rumberger (1987) indicated that the issue of high school dropouts is a great concern to policymakers because minority students, who had higher dropout rates, constitute a large percentage of the school population. Also, the performance of schools is sometimes judged by the dropout rates of these populations. Naylor (1989) indicated that a great amount of money was spent for these dropouts' welfare and for their potential lost revenue.

Background of the Study

While the issue of high school dropouts has received much attention, the dropout rate of gifted and talented students has not been studied very often at local or national levels (Robertson, 1991; Sadowski, 1987; Stephenson, 1985). Because only limited research has been devoted to gifted or high ability dropouts, little is known about these students. Robertson (1991) reported that between 18% and 25% of gifted and talented students drop out of school. Solorzano (1983) reported that up to 18% of all high school dropouts are gifted students. The Marland report (cited by Irvine, 1987) also stated that 18% of dropouts are gifted. However, Irvine (1987) believed that dropout rates for gifted students have been misrepresented. In fact, a wide range of estimates exists for the percentage of gifted students who drop out of school. These gifted dropout estimates vary with the definitions of giftedness and dropouts. Lajoie and Shore (1981) criticized previous gifted dropout studies because they gave vague definitions of gifted students, because the students varied in age and grade levels, and because they needed follow-up on the permanence of the drop out.

Regardless of the actual rate of gifted students who drop out of school, they are the loss of a national resource that cannot be ignored.

Previous studies about gifted dropouts have focused on academically high ability students, selected primarily by IQ scores. However, recent trends for defining gifted and talented students have become more broad and flexible. In his three-ring conception of giftedness, Renzulli (1986) argued that there is no single criterion for "giftedness." Rather, interaction among the three clusters of traits including (a) above average, though not necessarily superior ability, (b) task commitment, and (c) creativity contribute to the development of gifted behaviors. According to this theory, nonintellective factors like motivation are also important and should be considered. The Javits Gifted and Talented Students Education Act defined children with outstanding talent, supporting the broad definition of gifted:

> Children and youth with outstanding talent perform or show the potential for performing at remarkably high levels of accomplishment when compared with others of their age, experience, or environment. These children and youth exhibit high performance capability in intellectual, creative, and/or artistic areas, possess an unusual leadership capacity, or excel in specific academic fields. They require services or activities not ordinarily provided by the schools. Outstanding talents are present in children and youth from all cultural groups, across all economic strata, and in all areas of human endeavor. (U.S. Department of Education, 1993, p. 26)

As Lajoie and Shore (1981) indicated, the study results that include a broad definition of giftedness may differ from those that use a restricted definition, but it is not clear how they might differ. Another issue in the study of gifted dropouts is the difficulty in obtaining nationally representative longitudinal data about this population (Robertson, 1991). Although various research studies have been proposed for studying high school dropouts, Kunkel, Pittman, Curry, Hildebrand, and Walling (1991) indicated that previous research studies have failed to clarify the process of dropping out because they examined only a few variables such as student or institutional characteristics. Willett and Singer (1991) also noted that research on dropouts' needs should focus on these questions: Are students more at risk of leaving during particular stages of their education? Does the level of risk differ across racial groups? Do particular policies and programs have an impact? The authors recommend follow-up studies, which investigate a single cohort of students for several years. Tinto (1975, 1982, 1988) linked attrition to academic and social integration and considered such attrition to be a process that occurs over time, rather than a discrete event isolated from students' other experiences (Kunkel et al., 1991). Bachman, Green, and Wirtinen (1972) also indicated that the dropout decision is long in the making and is based on the students' personal background, traits, abilities, and school experiences. It is obvious that longitudinal data for gifted dropouts are necessary; however, it is not easy to gather these type of data about gifted dropouts.

Therefore, it is best to resort to nationally representative longitudinal data in researching this population. The National Education Longitudinal Study of 1988 (NELS:88) data are a good source to address this issue because it is nationally representative longitudinal data that include a variety of personal, family, and school variables related to high school students' dropout decisions. In addition, the NELS:88 data provide an opportunity to investigate not only the number of gifted students who are not completing high school, but what factors contribute either to the completion or dropping out of high school.

The purposes of this study from NELS:88 data set were to gain comprehensive information about gifted dropout students regarding (a) reasons for leaving school; (b)

parents' reactions; (c) use of time; (d) future career plans; (e) relationships with parents and peers; and (f) self-concept. Data were also be used to compare gifted dropouts with gifted non-dropouts in terms of personal and educational factors related to gifted dropout students' decision to leave school.

Research Questions

Study 1: Analysis of Dropout Questionnaire

1. What are gifted dropouts' reasons for leaving school, what are parents' reactions to their leaving school, what activities account for their time, what are their relationships with parents and peers, and what are their future career plans?
2. Is there any difference between gifted dropouts and non-gifted dropouts with respect to their plans to return to school?
3. Is there any difference between gifted dropouts and non-gifted dropouts with respect to self-concept and locus of control?

Study 2: Analysis of Student Questionnaire

1. What are the descriptive characteristics of gifted dropouts regarding their personal background (SES, race/ethnicity, father's highest level of education, and mother's highest level of education)?
2. Are there any differences between gifted male and gifted female students who dropped out of school in terms of father's educational expectations, mother's educational expectations, student's educational aspirations, employment, pregnancy/child-rearing?
3. Are there any differences between gifted students who dropped out of school and gifted students who completed school with respect to the use of marijuana or cocaine?
4. To what extent and in what manner can variation in the dropout rate of gifted vary among students by personal and educational factors (SES, race, gender, quality of school, father's highest level of education, mother's highest level of education, student's educational aspiration, pregnancy/child-rearing, and absenteeism)?

Definition of Terms

Throughout this study the following definitions and used:

Gifted: The definition of gifted students is those who have participated in their school districts' gifted program or who have been enrolled in three or more advanced, enriched, or accelerated English, social studies, science, or math (BYS66A, B, C, D, BYS68A; see Appendix A).

Dropout: The definition of dropout in this study is adopted from the definition used in NELS:88 data:

1. An individual who, according to the school (if the sample member could not be located), or according to the school and home, is not

attending school (i.e., has not been in school for 4 consecutive weeks or more and is not absent due to an accident or illness); or

2. A student who has been in school for less than 2 weeks after a period in which he or she was classified as a dropout. (National Center for Education Statistics, 1996, p. 112)

The variable that was used to define dropouts was "High School Completion Status (f3diplom)." Among four categories, category 4 (f3diplom =6) was considered as a dropout.

1. High school graduate—if individual has received a high school diploma (f3diplom =1)
2. Received alternative credential—if individual has received a GED (f3diplom =2) or received a certificate of attendance (f3diplom =3)
3. Still enrolled in high school—if individual is currently in high school (f3diplom =4) or is working toward an equivalent (f3diplom =5)
4. Dropout—if individual is not a graduate or GED/certificate holder (f3diplom =6). (National Center for Education Statistics, 1996, p. 115)

CHAPTER 2: Review of the Literature

Definition of Dropouts

A dropout is generally considered to be a student who has withdrawn from a school without graduating or completing a program of studies for any reason except death or transfer (Ascher & Schwartz, 1987; French, 1969; Sadowski, 1987). The U.S. Office of Education defined dropout as:

> . . . a student who leaves a school, for any reason except death, . . . who has been in membership during the regular school term, and who withdraws . . . before graduating . . . or completing an equivalent program of studies . . . . [He or she] is considered a dropout whether . . . dropping out occurs before or after (reaching) compulsory school attendance age. (Bernoff, 1981, p. 19)

Although there is general consensus of the definition of dropouts, some researchers indicated that there are definition problems especially because dropout rates are inaccurate due to the definition problem. Strother (1986) described the problem of definition as follows:

> The record suggested that dropping out is a serious problem but that there is little agreement on the definition of a dropout. Some districts change the definition from year to year, and many districts define dropout to match the purpose for which the statistics are being kept. Cities or states sometimes put pressure on school districts to keep records in such a way as to make the dropout rate appear low. Moreover, school districts calculate the dropout rate in different ways. Many of them count only high school students. Nor does a standard system exist for keeping records on dropouts. Because the definitions vary, estimates of the number of dropouts also vary. (p. 326)

Further, Ascher, and Schwartz (1987) explained why counting dropouts is difficult:

> Counting dropouts is even more difficult than determining who they are because no system based on student numbers counted at a particular point in time, can correctly reflect the status of every student. Moreover, it is the ability of the staff member inputting data to accurately evaluate every student's status in the face of a great volume of information that ultimately determines the quality of a dropout analysis. While the basis of all dropout rates is the difference between the number of students enrolled at two different points in time, the points chosen by school vary widely: September and September, September and June, November and June, the beginning term of the school's lowest grade level and that class's normal graduation date. (p. 2)

To obtain a more precise estimate of dropout rates, the terms *dropout* and *dropout rates* should be clearly defined. National Center for Education Statistics (1997) provided three different types of dropout rates, as follows:

> **Event** rates describe the proportion of students who leave high school each year without completing a high school program. Offering an annual measure of recent dropout occurrences, event rates can provide important information about how effective educators are in keeping students enrolled in school.

Status rates provide cumulative data on dropouts among all young adults within a specified age range. Generally, status rates are much higher than event rates because they include all dropouts regardless of when they last attended school. Since status rates reveal the extent of the dropout problem in the population, this rate also can be used to estimate the need for further education and training that will help dropouts participate fully in the economy and life of the nation.

Cohort rates measure what happens to a cohort of students over a period of time. This rate is based on repeated measures of a group of students with shared experiences, and reveals how many students starting in a specific grade dropout over time. Typically, cohort rates from longitudinal studies provide more background and contextual data on the students who drop out than are available through the CPS or CCD data Collections. (p. 4)

Factors Related to the High School Dropouts

Various research approaches and theoretical models have been proposed for studying the personal, educational, and psychological variables that cause the high school student to drop out. Robertson (1991) indicated that previous studies reported several common characteristics of high school dropouts: minority group, low socioeconomic status, limited ability to speak English, and low academic ability. Similarly, from the analysis of "High School and Beyond" data, Ekstrom, Goertz, Pollack, and Rock (cited in Marquardt, 1987) found the following characteristics of high school dropouts:

1. Dropouts were disproportionately from low socioeconomic status families and racial/ethnic minority groups.
2. Compared to "stayers," dropouts came more from homes lacking in support for education, including fewer study aids, less likely to have both natural parents at home, mothers who were working and had both lower levels of education and lower expectations for offspring, and parents less likely to express interest in or monitor school activities.
3. Dropouts had lower school grades, lower test scores, did less homework, and reported more disciplinary problems than "stayers."
4. Dropouts reported more behavior problems, expressed in cutting class, suspensions, higher rates of absenteeism and tardiness, and trouble with the police.
5. Dropouts appeared to feel more alienated, by reporting lower levels of participation in extracurricular activities and athletics.
6. Dropouts were more likely to feel unpopular and looked upon as troublemakers; they were less likely to feel satisfied with or interested in school and seemed to have chosen friends who felt the same way. (Marquardt, 1987, pp. 21-22)

Rumberger (1987) stated that students' reasons for leaving school varied by different social groups. For example, he found a high percentage of White and Black males cited school-related reasons for leaving school, while almost 40% of Hispanic males reported economic reasons for leaving school. Also, female dropouts mainly indicated personal reasons, such as pregnancy and marriage, as important reasons for leaving school. Similarly, Grant and Sleeter (1986) proposed that separate models of dropping out need to be developed for different types of students. Hicks (1969) describes a process in which students decide to drop out of school. According to him, dropouts are not interested in

school and have lower grades at the beginning stage. Out of frustration, they begin to skip school and show disruptive behavior. Due to parents' increasing negativism, the students finally decide to drop out of school.

Tinto (1975) proposed that persistence should be examined in terms of the students' education. Students are "persisters" if they are continuing to work toward a degree. According to Tinto's model (see Figure 1), the decision to persist and stay in school is the result of the intersections of students' backgrounds, their goals and intentions, and their interactions with the academic and social systems of their institution. Students enter an institution with differing family backgrounds, skills and abilities, and prior schooling. These "pre-entry attributes" influence students' academic goals, their commitment to their education, and their commitment to the particular institution in which they are enrolled. The resulting positive or negative sense of academic and/or social "integration" with the school contributes to the students' decisions about whether or not to persist. External commitments and other external factors also influence students' decisions to continue or stop their education (Goldsmith, 1995).

As many researchers have indicated, the process of deciding to drop out is long and complex. Also, researchers agree that a number of reasons are related to the dropout decision, and there is no typical single reason (Bachman, Green, & Wirtinen, 1972; Rumberger, 1987; Sadowski, 1987).

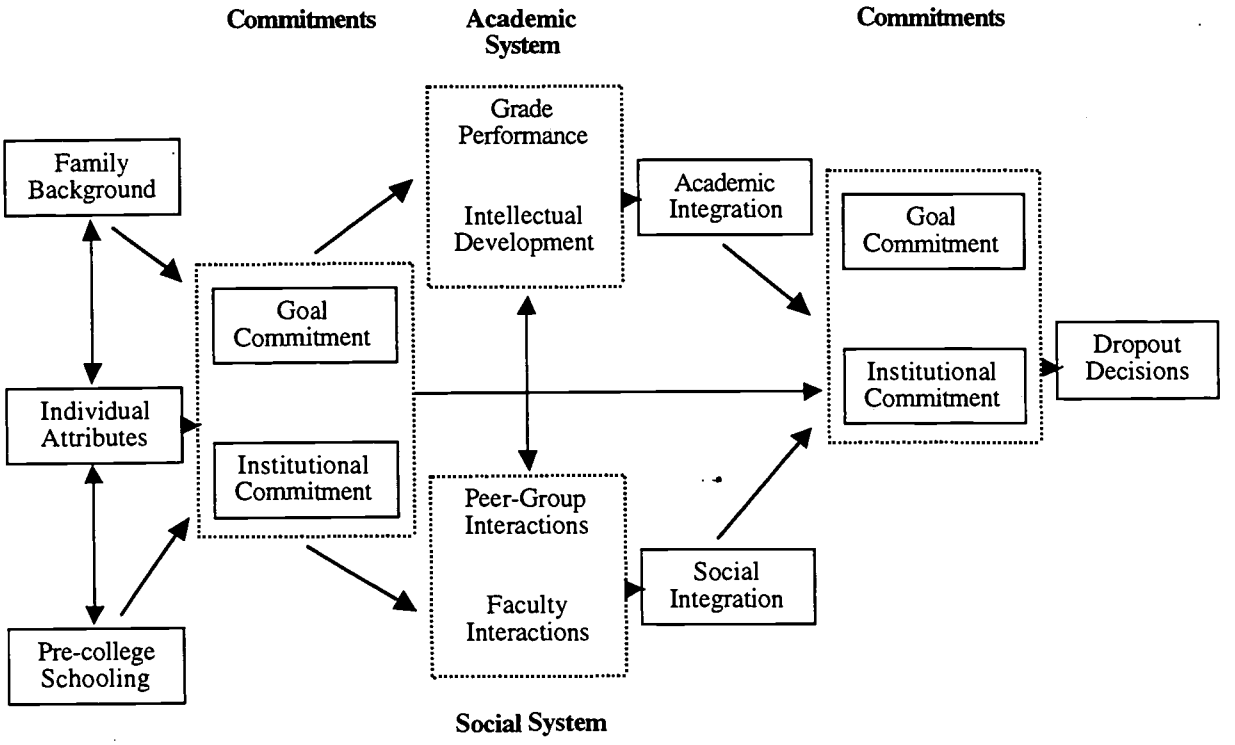

Figure 1. Tinto's conceptual schema for dropping out of college.

Source: This figure was quoted from the article, Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), p. 95.

Personal and Family Background

The literature has suggested that factors from the students' personal backgrounds such as sex, race, socioeconomic status, family background, and personal problems affect the students' decision to drop out of high school. Some research studies (Beacham, 1980; National Center for Education Statistics, 1993; Nelson, 1985; Young & Reich, 1974) reported that dropouts were most frequently males, while other research studies reported opposite results (Curtis, McDonald, Doss, & Davis, 1983; Noth & O' Neill, 1981). French (1969) studied the reasons for dropping out by sex and marital status. Examining 125 male dropouts, 55 married female dropouts, and 26 unmarried female dropouts, he found the reasons that married females dropped out were quite different from those of male and unmarried female dropouts. Many male dropouts left school because they did not like school (20%), they were asked to leave (18%), or they wanted to get a job (17%). Unmarried female dropouts left school because they did not like it (20%); others left school because they wanted jobs (16%), they had failing grades (12%), or they were needed at home (12%). However, a majority (82%) of the married female dropouts left school because of marriage.

Some research focused on racial issues. The South Dakota State Department of Education and Cultural Affairs (1993) reported that among 178 public school districts and 44 non-public schools, the dropout rate for American Indian students was highest (12.8%) compared with White students (1.5%). Studying eighth graders and high school students in Dade County, Stephenson (1985) found that almost 60% of dropping out took place during the first 2 years of high school, and Blacks were more likely to drop out later than other ethnic groups. Nelson (1985) quoted the estimates from the National Center for Education Statistics. According to those estimates, among the dropouts in 1982, Hispanics (18%) and Black students (17%) had higher dropout rates than White students. The Los Angeles Unified School District (Bernoff, 1981) also found that the proportions of Black and Hispanic dropouts were higher than their respective proportions of all high school students in their school districts. However, Lobosco (1992) found that after controlling for family background and other factors, Blacks were more likely to graduate from high school than Whites, Asians, or Hispanics. Similarly, the National Center for Education Statistics (1993) report stated that the stereotype of the high school dropout being a Black male teenager is not true. According to the report, the proportion of Black male students leaving school in 1992 was lower than White males (3.3%), White females (4%), Black females (6.7%), Hispanic males (7.6%), and Hispanic females (9%). Whites account for 59% of all dropouts, and students from middle-income families account for 57%.

Personal problems were also considered as reasons for dropping out of school. Bempechat (1989) stated that drug and alcohol abuse and pregnancy are related to dropping out. She also stressed that some factors such as parental drug use, peer influence, and stress might lead to drug use. LaChance (1988) reported that approximately 17% of 13-17 year old youths have used marijuana, and 67% of them have experimented with drugs before graduating from high school. Bempechat (1989) also studied the problem of teenage pregnancy. She reported that teenagers in the U.S. typically first experience sexual activity at 16 years old. The average age of first intercourse becomes much lower in some cities, especially when disadvantaged minority teenagers are involved. Teenage pregnancy is strongly associated with poor academic achievement, family influences, and dropout decision.

Another significant factor related to students' dropout behavior is family background. Some researchers indicated that low levels of education and occupational status of parents were significantly related to the student's decision to drop out (Noth & O'Neil, 1981; Sadowski, 1987). The Wisconsin Department of Public Instruction (Naylor,

1989) reported that students whose parents have low expectations for their child's success, whose parents place little value on education, and whose family has a history of dropouts are likely to drop out. Self (1985) also indicated that many dropouts' parents had low educational achievement and had themselves dropped out of school. Grossnickle (1986) stated that home problems are common among dropouts. Similarly, Nelson (1985) stated that dropouts typically have family problems such as divorce, death, alcohol, drug, emotional, or physical abuse, and family members who dropped out of school. Sadowski (1987) concluded that the dropout's family was less solid, not much influenced by the father, participated little in the leisure activities, and communicated less as a family. In addition to family background, friends also influenced students' decision to drop out. Cervantes (cited in Sadowski, 1987) found that dropouts did not have many family friends, and their parents did not approve of their friends. Dropouts often have friends and/or siblings who have similar problems and are also likely to drop out (Lashaway-Bokina, 1996).

School-related Factors in the General Population

The literature has suggested that academic or school-related factors such as grades, poor reading ability, absence from school, disciplinary problems, academic failure, lack of interest in school, and dislike for school and teachers are related to students' decisions to drop out (Beacham, 1980; Beekman, 1987; Curtis et al., 1983; Durken, 1981; Frazer, 1992; Grossnickle, 1986; Hewitt & Johnson, 1979; Martin, 1982; Massey & Crosby, 1982; Mayhood, 1981; National Center for Education Statistics, 1983; Noth & O' Neil, 1981; Rumberger, 1981; Schreiber, 1979; Self, 1985; Sewell, Palmo, & Manni, 1981; Strother, 1986; Thornburg, 1975; Young & Reich, 1974).

By interviewing 95 students, Jordan-Davis (cited in Sadowski, 1987) found that school and social factors were related to their decisions to drop out of school. Academic difficulty in reading and writing was the main school-related factor for dropping out, while the two most common social/personal reasons for dropping out were pregnancy and needing to work full time. Similarly, Mayhood (1981) emphasized that the most significant factor related to dropping out of school is a lack of reading skills. Due to poor reading ability, students often failed school and repeated failures led to the dropout decision. Beekman (1987) reported that dropouts listed three major reasons for leaving high school; (a) a dislike of school and a view that school is boring and not relevant to their needs; (b) low academic achievement, poor grades, or academic failure; and (c) a need for money and a desire to work full time. Self's research on secondary school dropouts (1985) found that several school-related factors were related to the potential high school dropouts: poor academics, poor reading ability, dislike of school, and high absenteeism. McNeal (1995) also found that participation in extracurricular activities, such as athletics and fine arts, significantly decreases a student's likelihood to drop out. Beacham (1980) indicated that lack of interest in school is a major reason for dropping out. Similar results were found by Barr and Knowles (1986). They found that school experiences had important influence on students' decisions to drop out. Those students who left perceived schools as uninteresting and boring places that do not provide challenges (Barr & Knowles, 1986; Lashaway-Bokina, 1996). Using discriminant function analysis, Frazer (1992) found that four variables were significant in classifying dropouts: grade point average, being older than other students, being new to the system, and number of days that the student attended eighth grade. Soltys (1990) indicated that absenteeism, lower grade point averages, and higher rates of school suspensions were significant predictors of students' dropout behavior. On the other hand, Cordy (1993) reported that the presence of a caring adult, a supportive peer group, alternative educational programs, academic success, motivation to attend post-secondary educational institutions, and participation in fundamental religious groups were positively related with at-risk students' decisions to stay in school rather than to drop out.

Educators who accommodate a variety of learning styles can also be a positive factor according to Hertz (1989). Ford (1994) identified social environment, family, personality, and attitude toward school as factors that could help identify potential dropouts from gifted programs. Many of these factors may also be applicable to dropouts from high school. Roderick (1991) found that dropout rates increased after transition periods, such as moving from one school to another. She also found that, even after controlling for background and school performance, students who had repeated grades were substantially more likely to drop out, regardless of when the grade retention had occurred.

Gifted Dropouts

Some research studies focused on gifted dropouts. Nyquist (1973) reported that in New York State 55% of gifted children were underachieving and 19% of high school dropouts were gifted. Robertson (1991) reported that 25% of all students drop out of school by age 16, and between 18% and 25% of gifted and talented students drop out. Solorzano (1983) reported that up to 18% of all high school dropouts are gifted students. The Marland report (cited by Irvine, 1987) stated that 18% of dropouts are gifted. However, Irvine (1987) criticized this finding, saying, "We don't know how many gifted students drop out, but it's not 18 percent. The Marland Report (1972) was incorrectly interpreted that approximately 18 percent of high school dropouts are gifted" (p. 79).

Although the estimates of gifted dropouts vary, some researchers indicated that a high percentage of high school dropouts have the ability to graduate from high school and perhaps even to further their education (French, 1969; Nyquist, 1973). Howard and Anderson (1978) indicated that approximately 11% of dropouts have the ability to complete college. Robertson (1991) indicated that this group represents a major loss of potential to self and society; however, there is very limited research about this group.

Characteristics of Gifted Dropouts

While research studies generally indicated that gifted dropouts have characteristics of maladjustment, poor self-concept, problems with authority, resentment, non-conformity, hostility, over sensitivity, and egotism (Betts & Neihart, 1988; Davis, 1984; Johnson, 1970; Vaughan, 1968), others have suggested that gifted dropouts are qualitatively different from other students and have different developmental needs (Robertson, 1991; Zaccaria & Creaser, 1971).

In his case study of gifted high school dropouts, Sadowski (1987) listed the following characteristics:

> (a) there was evidence of instability in the home environment, (b) drug and alcohol consumption [was] a part of the dropout's environment, (c) gifted dropouts exhibited a lack of interest and motivation in high school, (d) there was evidence of a negative and rebellious attitude towards school and authority, (e) there was evidence of an incomplete or inappropriate gifted curriculum in high school, (f) gifted dropouts developed poor peer relationships and exhibited poor social adjustment, (g) there was evidence of lack of counseling in high school and inadequate communication between the school and the home. (p. i)

Betts and Neihart (1988) developed profiles of gifted and talented students on the basis of their feelings and attitudes, behaviors, needs, adults and peer perceptions of identification (e.g., Type I; successful, Type IV; dropouts), home support, and school

support (see Table 1). According to these profiles, the gifted and talented dropouts were depressed and withdrawn because their needs and feelings were not addressed. School did not support their talents and interests, and it seemed irrelevant to them. Betts and Neihart (1988) recommended family counseling and individual counseling to help with their self-esteem.

Table 1

Profiles of Gifted and Talented Students

	Type I: Successful	Type IV: Dropouts
Feelings and Attitudes	Boredom; dependent; positive self-concept; anxious; guilty about failure; extrinsic motivation; responsible for others; diminish feelings of self and rights to their emotion; self critical	Resentment; angry; depressed; explosive; poor self-concept; defensive; burn-out
Behaviors	Perfectionist; high achiever; seeks teacher approval and structure; non-risk taking; does well academically; accepts & conforms; dependent	Has intermittent attendance; doesn't complete tasks; pursues outside interests; "spaced out" in class; is self abusive; isolates self; is creative; criticizes self & others; does inconsistent work; is disruptive, acts out; seems average or below; is defensive
Needs	To see deficiencies; to be challenged; to take risks; assertiveness skills; autonomy; help with boredom; appropriate curriculum	An individualized program; intense support; alternatives; counseling; remedial help with skills
Adults & Peers Perceptions of Type	Loved by teachers; admired by peers; loved & accepted by parents	Adults are angry with them; peers are judgmental; seen as loners, dropouts, dopers, or air heads; reject them and ridicule; seen as dangerous and rebellious
Identification	Grade point average; achievement test; IQ test; teacher nomination	Review cumulative folder; interview earlier teachers; discrepancy between IQ and demonstrated achievement; incongruities and inconsistencies in performance; creativity testing; gifted peer recommendation; demonstrated performance in non-school areas
Home Support	Independence; ownership; freedom to make choices; time for personal interests; risk taking experiences	Seek counseling for family
School Support	Accelerated and enriched curriculum; time for personal interests; compacted learning experiences; opportunities to be with intellectual peers; development of independent learning skills; in-depth studies; mentorships; college & career counseling	Diagnostic testing; group counseling for young students; nontraditional study skills; in-depth studies; mentorship; alternative out of classroom learning experiences; G.E.D.

Source: Betts, G. T., & Neihart, M. (1988). Profile of the gifted and talented, *Gifted Child Quarterly*, *32*(2), pp. 250-251.

Reasons That Gifted Students Leave School

Among the various reasons gifted students drop out of school, low self-concept has been reported as a significant factor in some research studies (Betts & Neihart, 1988; Fine, 1986; French, 1969; Gilligan, 1990; Worrell, 1997). That is, gifted students who dropped out of school have lower self-concepts and self-esteem compared with gifted students who completed school. Worrell (1997) compared gifted at-risk students with gifted not-at-risk students on individual, environmental, and protective factors. Findings indicated that the at-risk gifted students were significantly different from the gifted students who were not at risk on seven risk factors: GPA, behavior problems, number of days spent with friends, number of high schools attended, number of extracurricular activities, frequency of fights with parents, and number of children in the family. Regarding protective factors, the two groups did differ on academic self-concept but not on global self-esteem. Robertson (1991) found that, although the reasons for dropping out appear similar between gifted and non-gifted students, the underlying motivation is different. She stated:

> Gifted dropouts appear on a self-actualizing quest; the wanderlust is a means to an end that may not be fully understood, but is an affective and a cognitive component of identity development as they strive for their niche in the world. Non-gifted dropouts are escaping from the hostile academic world, viewing the real world as less inimical to them than school. . . . Gifted dropouts tend to have more supportive families, have more money, come from a value system that encourages self expression and development, are non-minority, and speak English as a primary language. (Robertson, 1991, p. 67)

Other studies have focused on school-related factors, such as the failure of the school to address the needs of gifted students and their learning styles (Robertson, 1991). French (1969) reported that the reasons high ability dropouts give for withdrawing from school are similar to those of average dropouts; for example, disliking school, wanting to get a job, or getting married. Lajoie and Shore (1981) indicated that school pressures for conformity, rather than a lack of interest in school, might create a stumbling block for the potential dropout. Robertson (1991) indicated that schools fail to present curricula that address the appropriate learning styles of gifted students. Because gifted students often think in a holistic way, they tend to dislike routine and rote tasks. As proof, she indicated that many gifted scientists, writers, and artists dropped out of elementary and secondary school. She stated:

> Gifted children are qualitatively different from others, and those who are potential dropouts are qualitatively different from other gifted children. . . . An important dimension of the culture of a school is respect for self, for others, and for the school environment. . . . Also, both gifted and at-risk students are clear when they discuss the irrelevance of the curriculum. . . . It appears that the gifted potential dropout needs the following: an experiential learning process, individual projects of the students' own choice, challenging and difficult problems within the real world, some competition and challenge from others, the ability to make decisions for self regarding what will be learned and how it will be learned. Gifted students who may drop out of school need to work with a teacher who models a consultant role or works as a smart colleague in a mentor relationship. (pp. 69-70)

CHAPTER 3: Research Methods and Procedures

In this chapter, the research methods and procedures are described. First, the survey design and data collection methods of the National Education Longitudinal Study of 1988 (NELS:88) data are described. Then, the research design, sample, and variables are reported. Finally, weights and standard error of the study are discussed.

National Education Longitudinal Study of 1988 (NELS:88)

To survey high school students' experiences and performance in 1970s, 1980s, and 1990s, three longitudinal studies have been conducted by NCES: The National Longitudinal Study of the High School Class of 1972 (NLS-72); High School and Beyond (HS&B); and the National Education Longitudinal Study of 1988 (NELS:88). The NELS:88, the most recent longitudinal study, began in 1988 by collecting data on approximately 25,000 eighth grade students, including data from their parents, teachers, and school administrators, which was then followed up at 2-year intervals in 1990, 1992, and 1994.

In the base year (1988), a two-stage, stratified sample design was used to collect the NELS:88 data. In the first stage, as a primary sampling unit, 1,032 schools were proportionally selected according to their estimated eighth grade enrollment. By excluding ineligible schools and including additional schools, a total of 1,052 schools (815 public and 237 private) of 39,000 schools with eighth graders were finally selected (National Center for Education Statistics, 1994a). In the second stage, 24,599 eighth grade students were selected. Students completed a self-administered questionnaire and a cognitive test on reading, math, science, and history/citizenship/geography. The alpha reliabilities for these cognitive tests given in the base year were r= .84, .90, .75, and .83, respectively (National Center for Education Statistics, 1995). In the first follow-up (1990), students also completed a questionnaire and a cognitive test. In addition to this student questionnaire, a dropout questionnaire, including a wide range of personal and educational subjects, was given to students who had dropped out of school between the spring term of the 1987-88 school year and the 1989-90 school year (National Center for Education Statistics, 1994a).

The second follow-up data, collected in 1992, included the same components as the first follow-up, plus the parents' questionnaire, students' transcripts, and course offering information. In the second follow-up, a dropout questionnaire was given to the students who had dropped out of school at some point between the spring term of the 1987-88 school year and the spring term of the 1991-92 school year. The questionnaire covered reasons for leaving school, school experiences, absenteeism, plans for the future, employment, attitudes, self-concept, and home environment. In addition, transcript data were collected on 17,000 students out of a target number of 21,188 individuals, including both high school seniors and dropouts. Data from the third follow-up were collected in 1994, 2 years after the students graduated. Because most students had graduated from high school, the data provide information about students' high school completion status, higher education, and/or labor market choices.

Because the NELS:88 data were collected using stratified cluster sampling, some groups of students, such as minority and private school students, were oversampled, and different groups were included in the follow-up data collection (Keith & Benson, 1992). Therefore, to obtain an accurate estimate of the population and to extend the results to the U.S. target population, variables must be weighted to compensate for unequal probabilities

of selection and adjust for the non-response effect. Several weights were calculated and provided through NELS:88 CD-ROM with other variables by NCES (see National Center for Education Statistics, 1994a, pp. 38-39).

In survey studies, the standard error is often reported as a measure of variability of estimates due to sampling. Because of the nature of the complex sample design of the NELS:88 data, the sampling error overstates the precision of test statistics in the data analyses (Czaja & Blair, 1996). To calculate the precision of the sample estimates, the design effect should be measured, then multiplied by the standard error to determine significance (Folsom, 1975; Folsom & Williams, 1985; Jolliffe, 1986; Kish, 1965; Moser & Kalton, 1971; National Center for Education Statistics, 1994a; Rossi, Wright, & Anderson, 1983). The design effect (DEFF) is "the ratio of the sampling variance (squared standard error) of a particular sample estimate using a specified (non-simple random) sample design to the sampling variance for the same estimate based on a simple random sample with the same number of cases" (Rossi, Wright, & Anderson, 1983, p. 35).

Research Design

Since the National Education Longitudinal Study of 1988 is a nationally representative longitudinal study that includes comprehensive information about dropouts, it is a valuable data set for examining influences related to gifted students' decision to drop out of school. The purposes of this study were (a) to obtain comprehensive information about gifted students who drop out of school, regarding reasons for leaving school, parents' reactions, use of time, future career plans, relationships with parents and peers, and self-concept; and (b) to examine personal and educational factors related to the gifted students' decision to drop out of school.

To obtain these objectives, two studies were conducted using two different sources of data and samples. In Study 1, the Second Follow-up Dropout Questionnaire of NELS:88 was analyzed to obtain specific information about gifted students who drop out of school. Only students who dropped out of school completed this questionnaire; therefore, gifted and non-gifted students were compared. In Study 2, student questionnaire data from the base year, the second follow-up, and the third follow-up were analyzed to examine personal and educational factors related to decisions to drop out of school by gifted students.

A causal-comparative design was used in this study because the NELS:88 data are collected from self-administered surveys. A causal-comparative design allows for the investigation of possible cause-and-effect relationships in a situation where experimental manipulation is impossible (Borg & Gall, 1989; Kerlinger, 1973).

Samples

The sample in this study is composed of the students who were eighth graders in 1988 and participated in the base year through the third follow-up survey of NELS:88. The sample in Study 1 consists of dropout students who were not in an academic program leading to a high school diploma, had not received a GED by the spring 1992, and had completed the Second Follow-up Dropout Questionnaire. In this study, to apply a more flexible definition of gifted, gifted students were defined as those who participated in their school district's gifted program or who had been enrolled in three or more classes in advanced, enriched, or accelerated English, social studies, science, or math (variable codes,

BYS66A, B, C, BYS68A). Among 1,285 students who completed the Second Follow-up Dropout Questionnaire, 334 were identified as gifted.

The sample in Study 2 consists of gifted students who were eighth graders in 1988 and participated in all four rounds of the survey. It should be noted that gifted students who dropped out of school in Study 1 and Study 2 are not exactly the same group, because some of the students who dropped out of school in Study 1 might have returned to school before the third follow-up, classifying them as non-dropouts in Study 2. Also, gifted students who dropped out of school in Study 1 did not participate in the third follow-up survey, thus decreasing the number of students in the third follow-up (see Figure 2). Among 12,625 students who participated in the four rounds of the survey, a total of 3,520 gifted students were identified as a sample using the same definition of gifted as in Study 1. In Study 2, dropout students were defined as students who were not graduates or GED/certificate holders (f3diplom =6) in 1994. The dropout and gifted status of the sample is described in Table 2. Of the students identified as gifted for this study, 95% (3,343) received their high school diploma, while 5% (177) were considered dropouts. Approximately 5% of students identified as non-gifted dropped out of school as well.

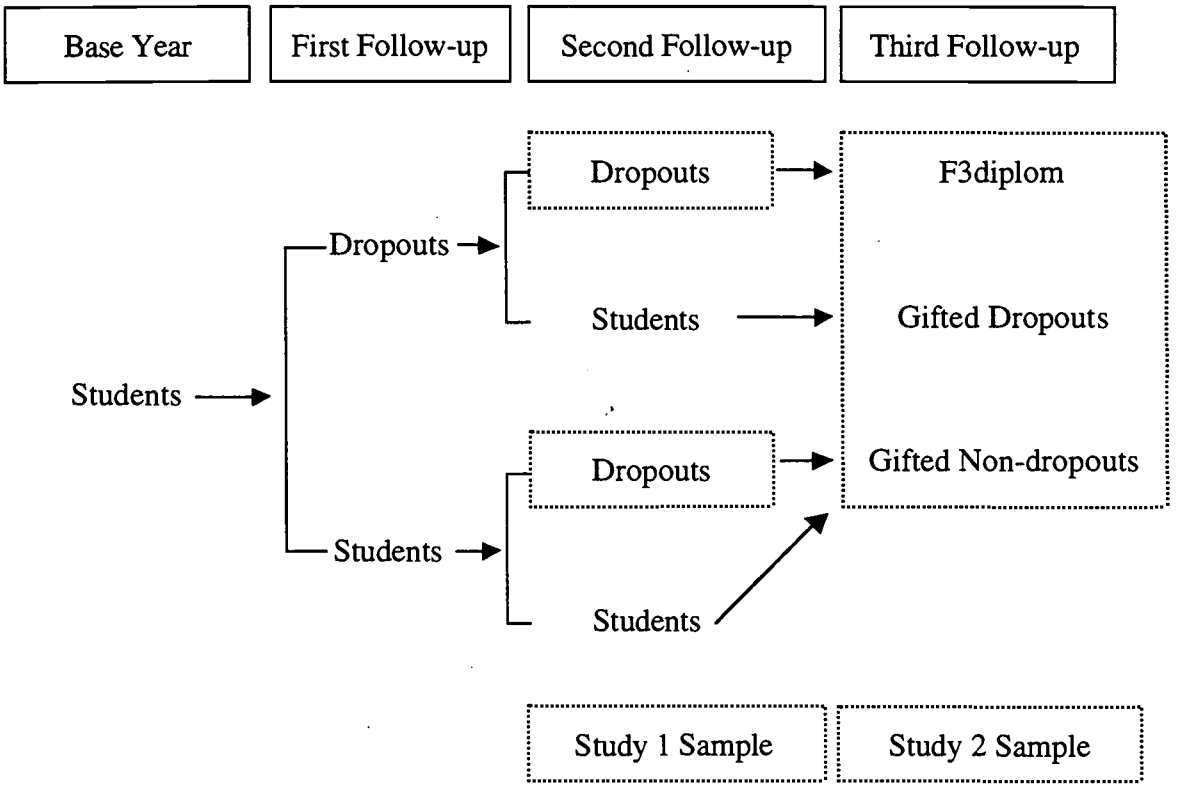

Figure 2. Study 1 and Study 2 samples.

Table 2

Dropout and Gifted Status of Study 2

	Non-gifted	Gifted	Total
	N (%)	*N* (%)	*N* (%)
Non-dropout	8,628 (94.8%)	3,343 (95%)	11,971 (94.8%)
Dropout	477 (5.2%)	177 (5%)	654 (5.2%)
Total	9,105 (100%)	3,520 (100%)	12,625 (100%)

Note. The *N* size is not weighted.

Weights and Standard Error of the Study

The variables used in Study 1 and Study 2 were all included in the NELS:88 third follow-up, public use data files. The operational definitions and NELS:88 coding schemes (in parentheses) for each variable are described in the Appendix A.

To compensate for unequal probabilities of sample selection and adjust for the non-response effect, an appropriate weight was used for data analyses. A panel weight (F3PNLWT) was used when addressing research questions. Final panel weight, which was calculated by dividing the panel weight (F3PNLWT) by its mean, was used for data analyses. All data analyses reported were based on matrices that included this weight.

All estimates, standard errors, and significant test results were calculated based on the sample design. For this study, SPSS (Statistical Package for the Social Sciences) and the SUDAAN (Software for Statistical Analysis of Correlated Data) statistical program from the Research Triangle Institute (1995) were used to estimate the standard errors, taking into account the complex survey design.

CHAPTER 4: Data Analyses and Results

Study 1: Analysis of Dropout Questionnaire

Research Question 1: What are gifted dropouts' reasons for leaving school, what are parents' reactions to their leaving school, what activities accounted for their time, what are their relationships with parents and peers, and what are their future career plans?

Several descriptive data analyses were conducted to gain more specific information about gifted students who dropped out of school regarding (a) reasons for leaving school, (b) parents' reactions, (c) time spent using a computer, (d) time spent working on hobbies, (e) time spent doing volunteer work, (f) time spent talking with friends, (g) time spent talking with parents, and (h) future career plans.

Gifted students who dropped out of school were asked to respond to 22 items, identifying the reasons that they decided to drop out. Results indicated that the majority of the gifted males left school for the following reasons: (a) I was failing school (49%), (b) I got a job (40.7%), (c) I couldn't keep up with my schoolwork (38.1%), (d) I didn't like school (37.4%), and (e) I couldn't work and go to school at the same time (32.7%). The reasons for leaving school reported by gifted males were mainly school-related and job-related, while the reasons reported by gifted females who dropped out of school were more related to personal and school problems. Gifted females reported that they left school for the following reasons: (a) I didn't like school (35.5%), (b) I was pregnant (33.8%), (c) I became a parent (29.1%) and I was failing school (29.1%), (d) I had another problem (26.8%), and (e) I couldn't keep up with my schoolwork (23.2%) (see Table 3). In both groups, school-related reasons such as "I did not like school" and "I am failing school" were important reasons for leaving school (Table 3).

An examination of the parents' reaction to their children's drop out behavior revealed that many parents (75%) tried to talk them into staying in school. Interestingly, 64.4% of respondents reported that parents said it was their children's own decision, while 69.3% of them said that parents were upset. The results indicated that only a small percentage of parents offered outside counseling (9.5%), called a school counselor (22.8%), or called the child's teachers (26.1%) (see Table 4).

Gifted students who dropped out of school reported the amount of time they spent on three different types of activities: (a) using computers, not including playing video/computer games; (b) working on hobbies, arts, or crafts on their own; and (c) doing volunteer or community service. A majority of gifted students who dropped out of school (73.8%) responded that they never or rarely used a computer, not including playing video/computer games, and only 5.9% of them responded that they used a computer every day (see Figure 3). Also, 37% of gifted dropouts responded that they never or rarely spent time doing their hobbies (see Figure 4). A large majority of dropouts (83%) responded that they never or rarely spent time volunteering. Only 17% of dropouts have participated in volunteer work (see Figure 5).

Table 3

Numbers and Percentages of Gifted Males and Females Who Reported Various Reasons for Dropping Out of School

Reasons for Leaving School	Gifted Students Who Dropped Out of School			
	Males (N = 173)		Females (N = 161)	
I got a job	66	40.7	30	19.7
I didn't like school	61	37.4	54	35.5
I couldn't get along with teachers	48	29.6	24	15.9
I couldn't get along with other students	22	13.8	24	15.9
I wanted to have a family	13	8.1	19	12.6
I was pregnant	-	-	51	33.8
I became a parent	20	12.6	44	29.1
I had to support my family	26	16.4	29	19.1
I was suspended from school	35	22.2	10	6.6
I did not feel safe at school	18	11.3	14	9.3
I wanted to travel	10	6.3	10	6.6
My friends had dropped out of school	18	11.4	6	2.0
I had to care for a family member	19	12.0	16	10.6
I was expelled from school	28	17.7	9	6.0
I felt I didn't belong at school	34	21.3	32	21.1
I couldn't keep up with my schoolwork	61	38.1	35	23.2
I was failing school	77	49.0	44	29.1
I got married or planned to get married	11	6.9	32	21.1
I changed schools and didn't like the new school	20	12.7	15	10.1
I couldn't work and go to school at the same time	52	32.7	22	14.6
I had a drug/alcohol problem	12	7.6	3	2.0
I had another problem	31	26.7	34	26.8

Note. Sum of the percentages is not equal to 100 because dropouts responded either "yes" or "no" on each item. N size on each item may vary due to missing values.

Table 4

Numbers and Percentages of Parents' Responses to Their Gifted Children's Decision to Drop Out

Parents' Reactions	*N*	%
Offered to arrange outside counseling	31	9.5
Called school counselor	74	22.8
Called my principal/teachers	85	26.1
Told me it was my decision	210	64.4
Punished me for leaving school	41	12.7
Told me they were upset	226	69.3
Told me it was O.K. to leave	44	13.5
Tried to talk me into staying in school	247	75.8
Offered to help with personal problems	154	47.5
Offered to help me make up missed work	99	30.4
Offered special tutoring	48	14.8
Offered to put me in a special program	55	16.9
Offered to send me to another school	98	30.3

Note. Sum of the percentages is not equal to 100 because dropouts responded either "yes" or "no" on each item. *N* size on each item may vary due to missing values.

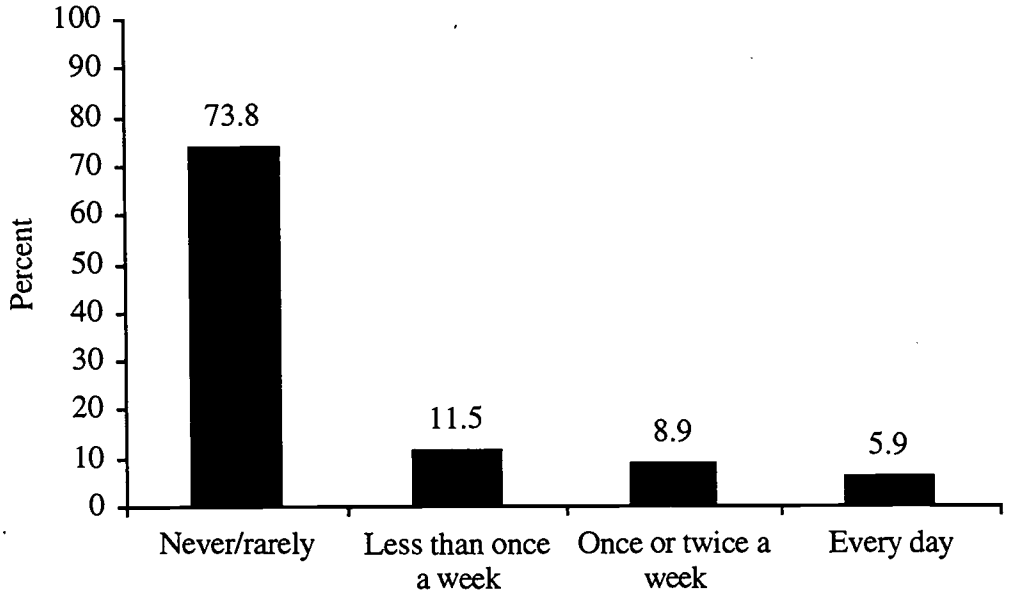

Figure 3. Time gifted students who dropped out of school spent using computers.

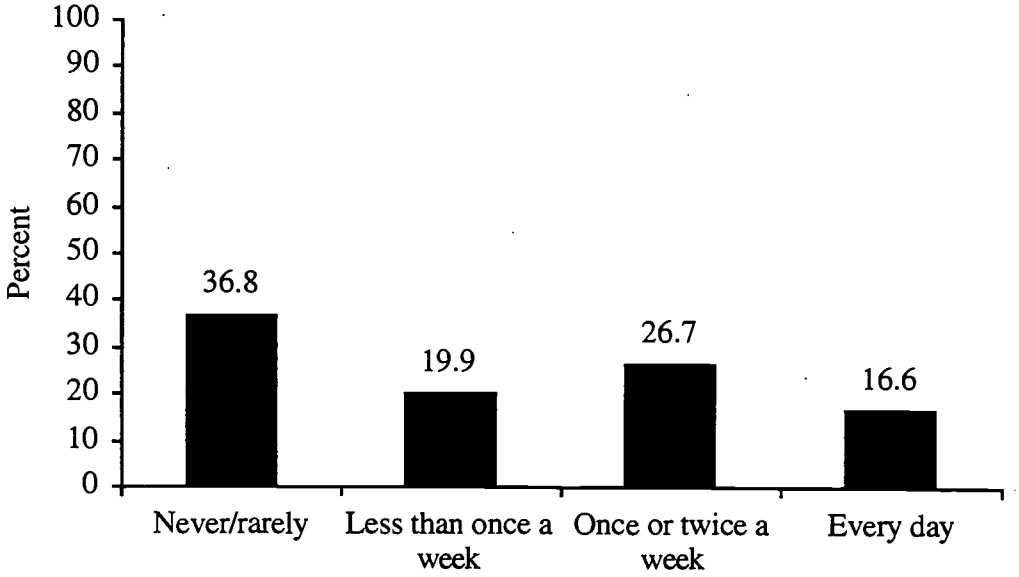

Figure 4. Time gifted students who dropped out of school spent doing hobbies, arts, or crafts.

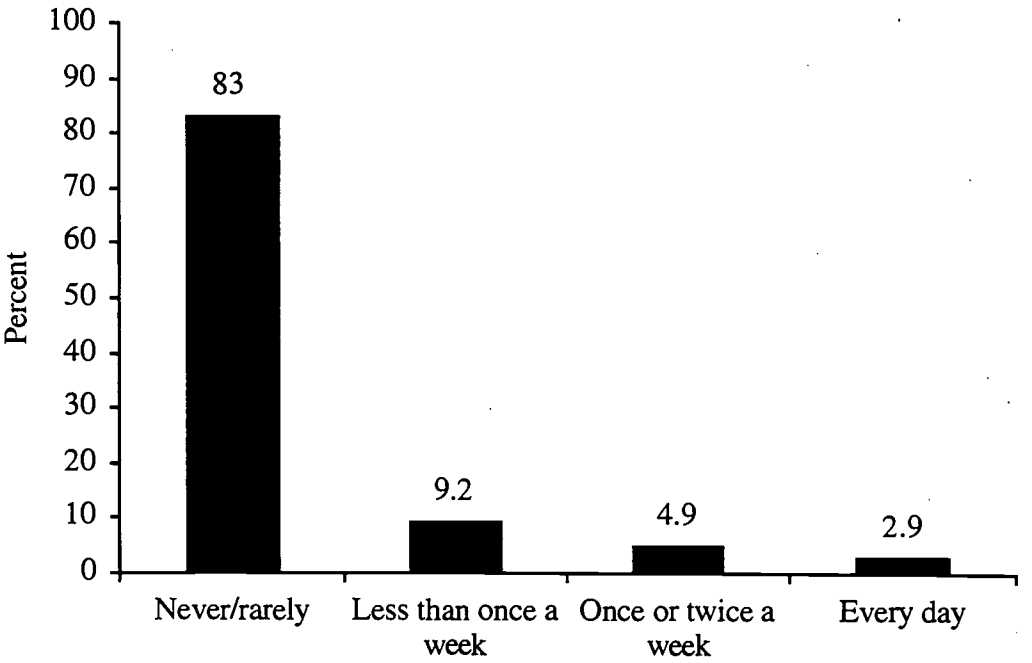

Figure 5. Time gifted students who dropped out of school spent volunteering.

In addition, the amount of time that gifted students who dropped out of school spent with friends and parents was examined. Fifty-one percent responded that they spent time talking with friends every day, while 31% spent time talking with their parents every day. Forty percent of dropouts responded that they never talk with parents or talk with parents less than once a week (see Figures 6 and 7). The results indicated that many gifted students who dropped out of school spent more time with peers than parents.

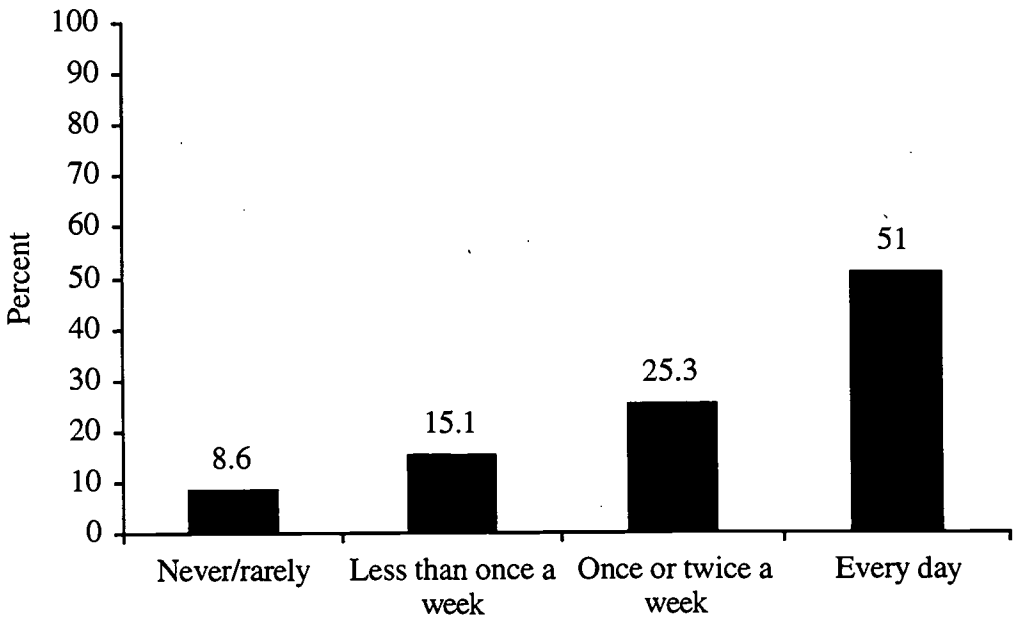

Figure 6. Time gifted students who dropped out of school spent talking with friends.

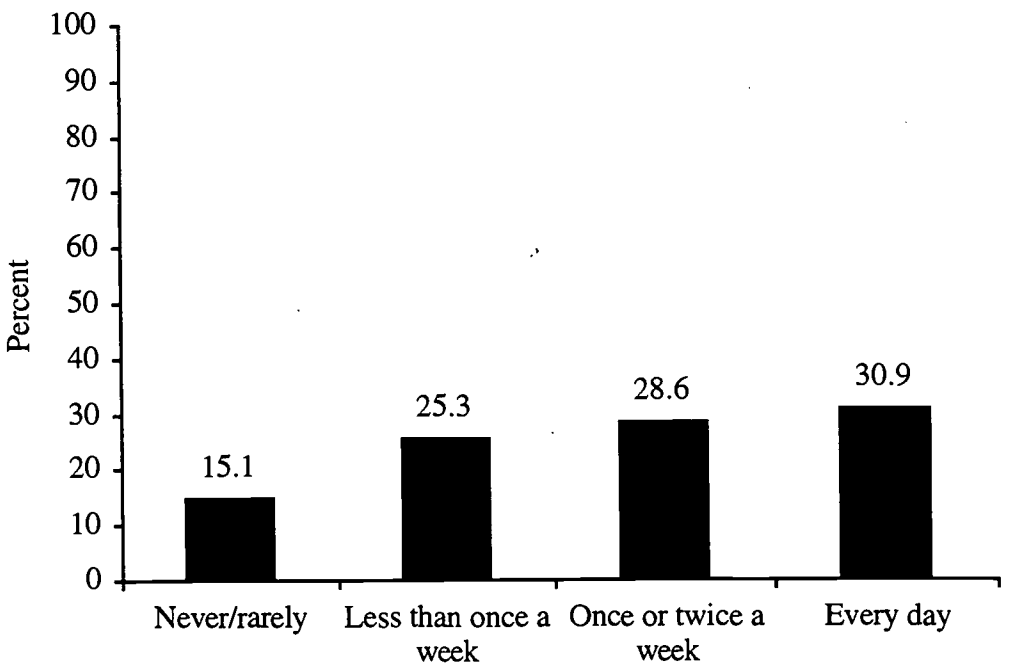

Figure 7. Time gifted students who dropped out of school spent talking with parents.

Finally, gifted dropouts' future career plans were examined. In response to the type of job that they would have at age 30, 11.7% wanted to be in the professional I category; 10.5% wanted to be a service worker (e.g., hair stylist, practical nurse, child care worker, waiter, domestic, and janitor); 9.3% wanted to be an office worker (e.g., data entry clerk, bank teller, bookkeeper, secretary, word processor, mail carrier, and ticket agent); and 9% wanted to be an owner of a small business or restaurant, or a contractor. Interestingly, 11.7% selected a professional I category, which includes accountant, registered nurse, engineer, banker, librarian, writer, social worker, actor, athlete, artist, politician, while only 4% selected a professional II category, which includes minister, dentist, doctor, lawyer, scientist, and college teacher (see Table 5).

Table 5

Future Job Aspirations of Gifted Students Who Dropped Out of School

Job	*N*	%
Farmer	5	1.5
Full time homemaker	12	3.7
Laborer	18	5.6
Manager	17	5.2
Military	13	4.0
Office worker	30	9.3
Operator	21	6.5
Owner	29	9.0
Professional I	38	11.7
Professional II	13	4.0
Protect service	8	2.5
Sales	5	1.5
School teacher	4	1.2
Service worker	34	10.5
Technician	13	4.0
Tradesperson	28	8.6
No plans to work	6	1.9
Other	30	9.3

Research Question 2: Is there any difference between gifted dropouts and non-gifted dropouts with respect to their plans to return school?

A chi-square analysis was conducted to examine differences between gifted students and non-gifted students who dropped out of school, with respect to their plans to return to school. The adequacy of expected frequencies was examined prior to the analysis, and no violation of assumptions was found. There was no significant difference between the two groups with respect to their plans to return to school, χ^2 (1, N = 839) = .02, p = .88. As Table 6 indicates, only 35.9% of gifted students planned to return to school, while 64.2% had no plan to return to school. Similarly, 34.9% of non-gifted students planned to return to school, while 65.1% had no plan to return to school.

Research Question 3: Is there any difference between gifted dropouts and non-gifted dropouts with respect to their self-concept and locus of control?

To examine differences between gifted and non-gifted students who dropped out of school with respect to their self-concept and locus of control, a multivariate analysis of variance (MANOVA) was performed. Prior to conducting the MANOVA, a principal factor analysis was performed to determine the subscales of self-concept. A total of 13 items from the NELS:88 questionnaire, which represent students' opinion about themselves and their attitudes, was included in the analysis. Results indicated that two factors were extracted, accounting for 45% of the variance. Loadings of variables on factors, percent of variance, and their reliabilities are presented in Table 7. To facilitate interpretation, factors below .45 were suppressed. Based on the theoretical grounds, factor 1 was labeled as self-concept and factor 2 was labeled as locus of control.

A MANOVA was conducted to examine the differences in self-concept and locus of control between gifted and non-gifted students who dropped out of school. Results indicated that the combined dependent variables were significantly affected by the two groups (F = 23.79, p < .0001, ES = .03). A univariate F-test result showed that the two groups were significantly different on self-concept (F = 41.39, p < . 001) but not on locus of control (F = .04, p = .83). Gifted students who dropped out of school had significantly higher self-concepts (M = 3.33) than non-gifted students who dropped out of school (M = 3.16).

Table 6

Numbers and Percentages of Dropouts Who Plan to Return to School

	Gifted Students *N* (%)	Non-gifted Students *N* (%)
Plan to return to school	84 (35.9%)	211 (34.9%)
Do not plan to return to school	150 (64.2%)	394 (65.1%)

Note. *N* and Percent are weighted values. *N* size was rounded.

Table 7

Factor Loadings, Percentage of Variance, and Alpha Reliabilities on the Self-concept and Locus of Control Items

	Factor	
Opinions about myself	Factor 1	Factor 2
I feel good about myself	.72	
I feel I am a person of worth, the equal of other people	.74	
I am able to do things as well as others	.74	
On the whole I am satisfied with myself	.69	
When I make plans, I am certain they work	.51	
*I do not have enough control over life		.55
*Good luck is more important than hard work		.52
*Every time I try to get ahead, somebody stops me		.68
*I feel plans hardly ever work out		.71
*I feel useless at times		.62
*At times I think I am no good at all		.62
*I do not have much to be proud of myself for		.58
*Chance and luck are very important for my life		.61
Percent of Variance	13.00	32.50
Alpha Reliability	.75	.79

Note. Some items (*) were transformed to make high mean scores indicate positive self-concepts and stronger locus of control. (The scores ranged from 1 to 4)

Study 2: Analysis of Student Questionnaire

Research Question 1: What are the descriptive characteristics of gifted dropouts regarding their personal background (SES, race/ethnicity, father's highest level of education, and mother's highest level of education)?

Several descriptive data analyses were conducted to obtain general characteristics of gifted students who dropped out of school. Four descriptive analyses were conducted regarding percentages of gifted students who dropped out of school by (a) SES, (b) race/ethnicity, (c) father's highest level of education, and (d) mother's highest level of education.

Figure 8 presents the percentages of gifted students who dropped out of school and who completed high school by SES. Almost half the gifted students who dropped out of school (48.2%) were in the lowest quartile SES level, while only 3.6% of them were in the highest quartile SES level. By comparison, of the gifted students who completed high school, 20% were in the lowest quartile level of SES, while 33.8% were in the highest

quartile level of SES. Further analysis revealed a significant difference between dropout status and SES level, $\chi^2(3, N = 3{,}021) = 69.15, p < .0001$. Examination of the standardized residual showed that more gifted students who dropped out of school were in the lowest SES level than expected, and fewer gifted students who dropped out of school were in the highest SES level than expected. On the other hand, fewer gifted students who completed school were in the lowest SES level than expected.

Ethnic and racial information about gifted students who dropped out of school was investigated and compared with gifted students who completed school. Among five categories of race/ethnicity in the NELS:88, 42.9% of gifted students who dropped out of school in the sample were White, 17.9% were Hispanic, 27% were Black, 10.5% were Native American, and 1.8% were Asian/Pacific Islanders (see Figure 9). A chi-square analysis was performed to investigate a significant difference among racial/ethnic groups with respect to their dropout status, $\chi^2(4, N = 3{,}513) = 9.84, p < .04$. A significant difference was found among racial groups with respect to dropout status. The standardized residuals indicated that more Hispanic and Native Americans than expected dropped out of school, whereas fewer White and Asian Americans than expected dropped out of school.

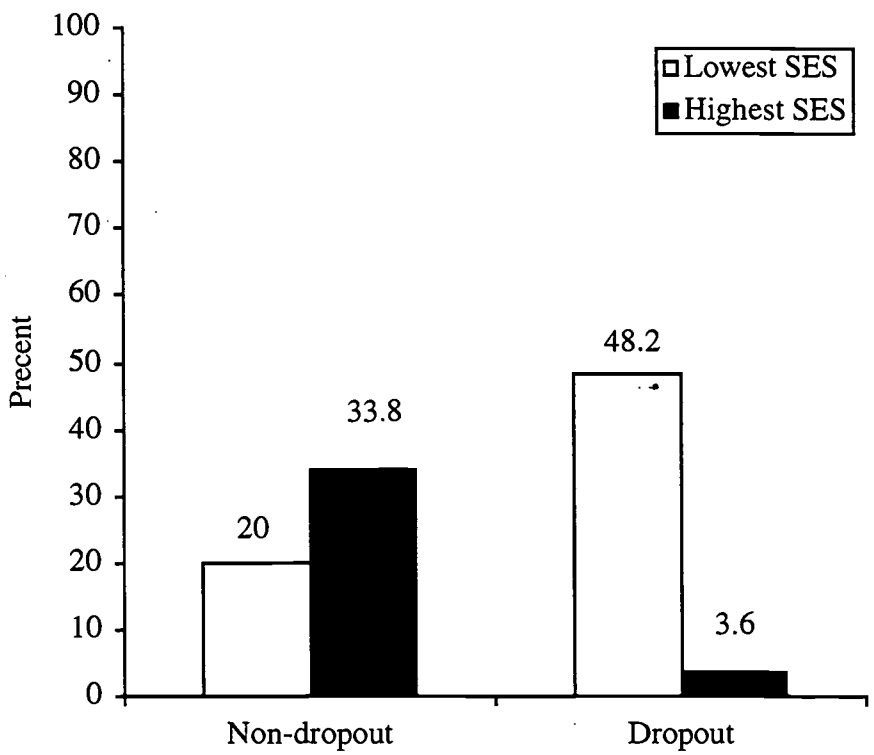

Figure 8. Weighted percentages of gifted students who dropped out of school and who completed high school by SES.

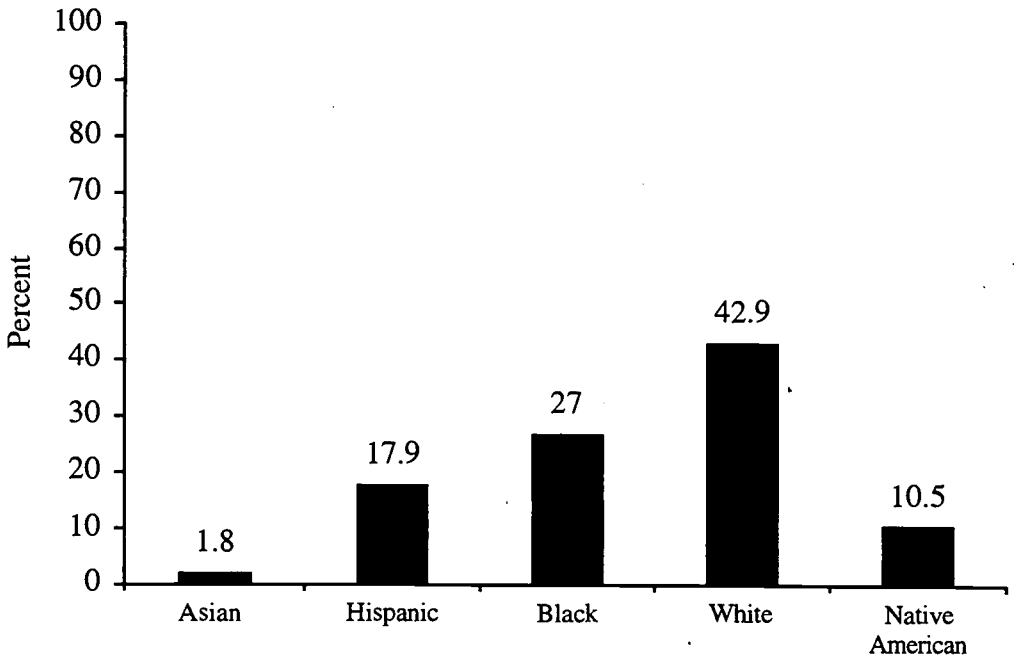

Figure 9. Weighted percentages of gifted students who dropped out of school by race/ethnicity.

Finally, parents' highest level of education was examined among gifted students who dropped out of school (see Figures 10 and 11). For father's highest level of education, a high percentage of fathers of gifted students who dropped out of school did not finish high school (40%) or completed high school but did not go on to higher education (23%). The descriptive analysis of mother's highest level of education showed similar results, indicating that 26% of mothers of gifted students who dropped out of school did not graduate from high school and 36% of them graduated from high school only. Chi-square analyses were conducted between gifted students who dropped out of school and gifted students who completed school with respect to parents' highest level of education. Significant differences were found on both father's educational level, χ^2 (7, N = 3,458) = 48.45, $p < .0001$ and mother's educational level, χ^2 (7, N = 3,489) = 48.07, $p < .0001$. Examination of the standardized residual indicated that more gifted dropout students' parents did not finish high school than expected, and fewer parents whose children dropped out of school continued on to higher education than expected.

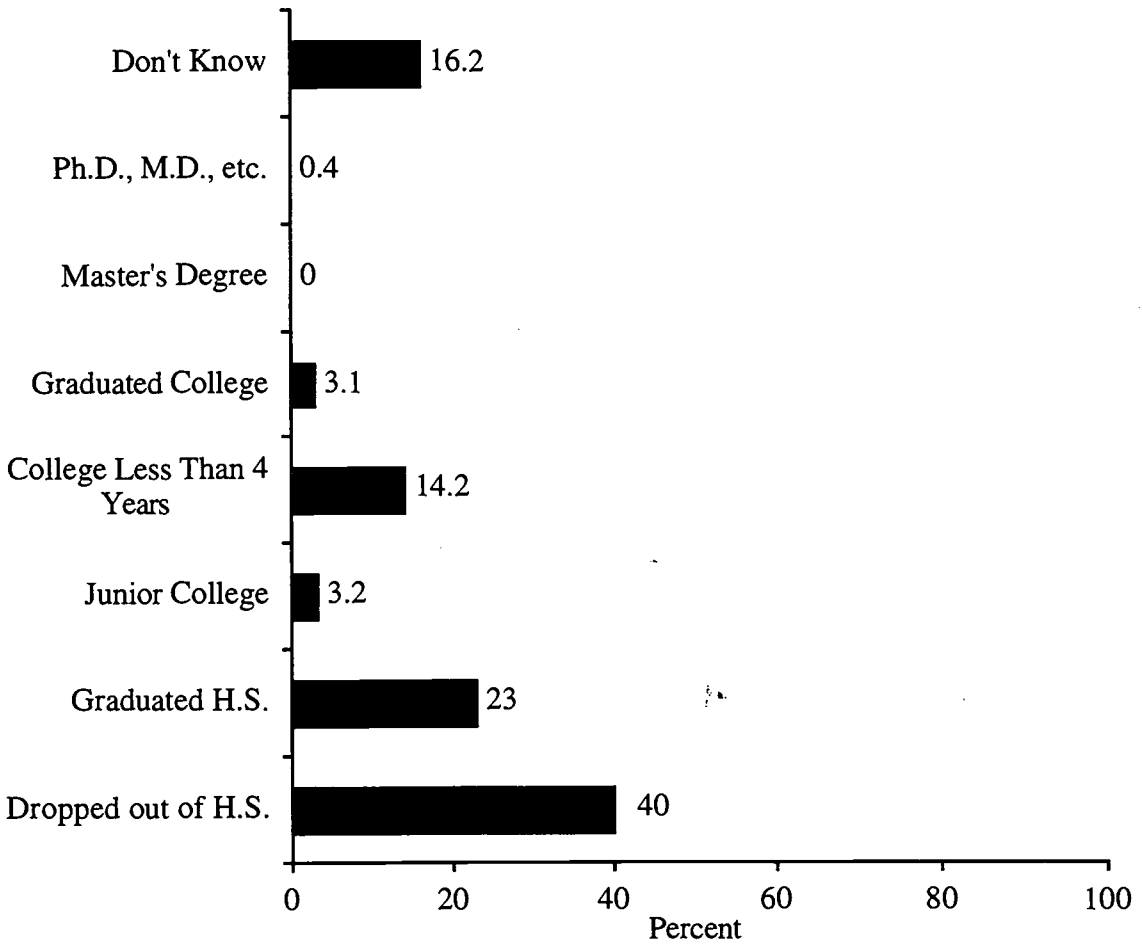

Figure 10. Weighted percentages of father's highest level of education (of gifted students who dropped out of school).

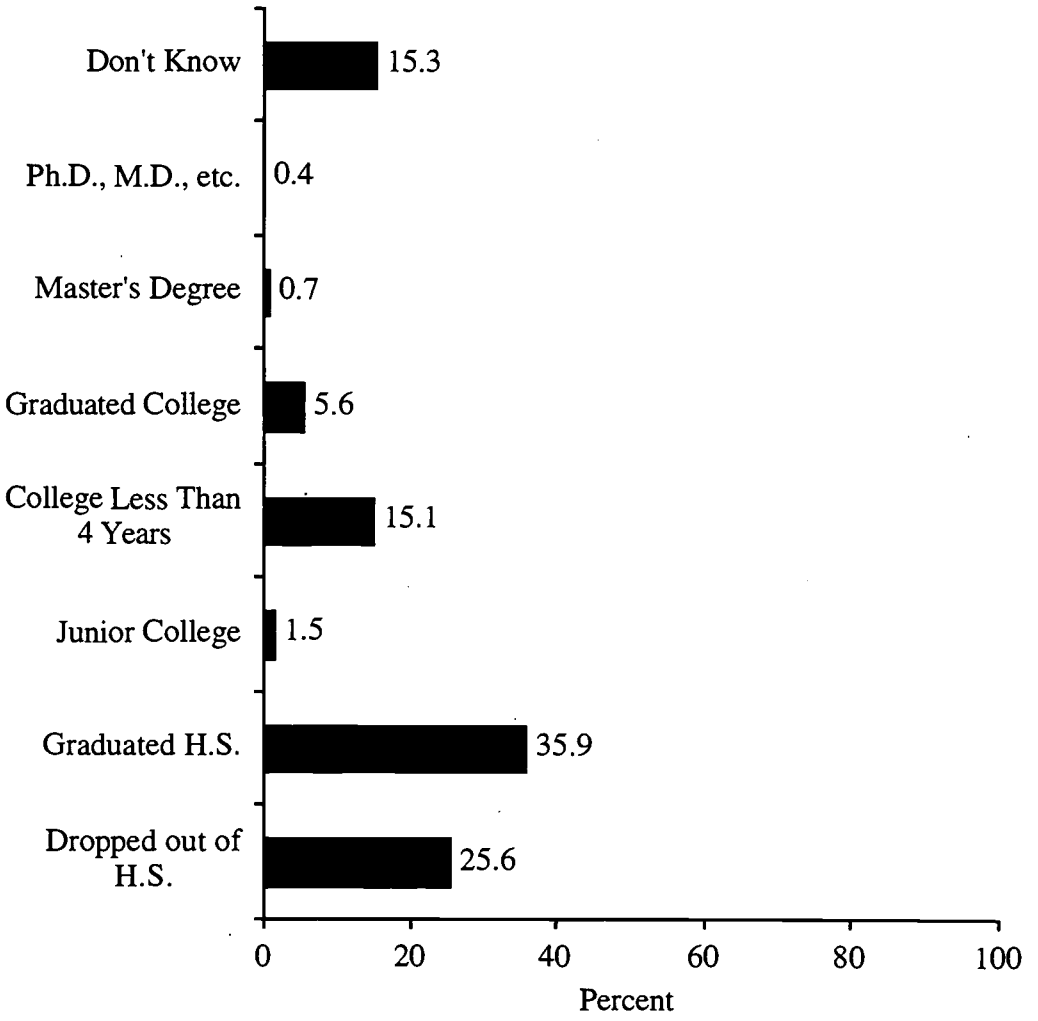

Figure 11. Weighted percentages of mother's highest level of education (of gifted students who dropped out of school).

Research Question 2: Are there any differences between gifted male and gifted female students who dropped out of school in terms of father's educational expectations, mother's educational expectations, students' educational aspirations, employment, pregnancy/child-rearing?

Several chi-square analyses were conducted between male and female gifted students who dropped out of school with respect to father's educational expectations, mother's educational expectations, students' educational aspirations, having children, and employment using SPSS and SUDAAN to examine gender differences. Prior to the analyses, the adequacy of expected frequencies was examined, and as a result, there was no violation of assumptions.

Regarding parents' educational expectations, results indicated that most parents had high educational expectations for their children who dropped out of school. More than half the fathers wanted their children to graduate from college or to continue on to higher education. No significant gender differences were found in the father's educational expectations, χ^2 (5, N = 182) = 7.28, p = .21 or mother's educational expectations

χ^2 (5, N = 185) = 5.43, p = .37 between gifted male and female students who dropped out of school (see Tables 8 and 9). However, fathers wanted their sons more than their daughters to continue on to higher education. Also, the chi-square results indicated that there was no significant difference between gifted male and female students who dropped out of school with respect to their educational aspirations, χ^2 (5, N = 237) = 6.39, p = .28 (see Table 10).

Table 8

Father's Educational Expectations by Child's Gender

	Gifted Students Who Dropped Out of School	
	Males (N = 105)	Females (N = 77)
	N (%)	N (%)
Complete some high school	2 (1.9)	1 (1.3)
Graduate from high school	19 (18.3)	9 (11.8)
Attend vocational, trade, business school after high school	8 (7.5)	8 (10.2)
Attend college	4 (3.9)	14 (18.1)
Graduate from college	18 (17.3)	32 (41.3)
Continue education after college	54 (51.0)	13 (17.3)

Note. N and percent are weighted values. N was rounded.

Table 9

Mother's Educational Expectations by Child's Gender

	Gifted Students Who Dropped Out of School	
	Males (N = 103)	Females (N =82)
	N (%)	N (%)
Complete some high school	3 (2.6)	1 (1.3)
Graduate from high school	18 (17.8)	8 (9.2)
Attend vocational, trade, business school after high school	6 (5.8)	7 (8.7)
Attend college	12 (11.8)	14 (17.0)
Graduate from college	18 (17.6)	28 (34.2)
Continue education after college	46 (44.3)	24 (29.6)

Note. N and percent are weighted values. N was rounded.

Table 10

Gifted Students' Educational Aspirations by Gender

	Gifted Students Who Dropped Out of School	
	Males (N = 143)	Females (N =94)
	N (%)	N (%)
Complete some high school	7 (5.2)	3 (3.0)
Graduate from high school	47 (32.5)	27 (28.6)
Attend vocational, trade, business school after high school	17 (11.6)	10 (10.6)
Attend college	12 (8.5)	15 (15.8)
Graduate from college	15 (10.8)	27 (29.1)
Continue education after college	45 (35.6)	12 (13.0)

Note. N and percent are weighted values. N was rounded.

In addition to educational expectations, employment and pregnancy issues were examined. Chi-square analyses were performed to investigate differences between gifted male and female students who dropped out of school with respect to employment and having children. A significant difference was found between gifted male and female students who dropped out of school with respect to having children, $\chi^2(2, N = 233) = 17.36$, $p < .0003$. Standardized residual indicated that more gifted dropout females than expected have children, while fewer gifted dropout males than expected have children (see Table 11). However, the chi-square results indicated that there was no significant difference between the two groups with respect to the number of hours they work for pay per week, χ^2 (3, N = 182) = 2.06, p =.56 (see Table 12).

Table 11

Gifted Students by Gender Who Dropped Out of School Having or Expecting a Child

	Gifted Students Who Dropped Out of School	
	Males (N = 141)	Females (N = 92)
	N (Std. Res)	N (Std. Res)
I have children	1 (-3.5)	22 (4.3)
I don't have children	133 (1.2)	65 (-1.5)
I am expecting a child	7 (-.1)	5 (.1)

Table 12

Hours That Gifted Students Who Dropped Out of School Work for Pay per Week by Gender

	Gifted Students Who Dropped Out of School	
	Males (N = 100)	Females (N = 63)
	N (%)	N (%)
None	35 (41.5)	29 (45.8)
Up to 4 Hours	19 (23.3)	14 (22.5)
5-10 Hours	31 (37.2)	2 (3.0)
11-20 Hours	15 (18.1)	18 (28.8)

Research Question 3: Are there any differences between gifted students who dropped out of school and gifted students who completed school with respect to the use of marijuana or cocaine?

To examine differences between gifted students who dropped out of school and who completed school with respect to drug use, two t-tests were performed (Research Triangle Institute, 1995). Based on the result of the preliminary analyses, two dependent variables were transformed using inverse transformation because they were both extremely positively skewed. After transformations, two t-test procedures were conducted in which the independent variable was group (dropouts vs. non-dropouts) and the dependent variables were number of times marijuana and cocaine were used. The first t-test result indicated that the effect for dropout status was significant (t (3,026) = 2.04, $p < .04$) with respect to number of times students used marijuana. Gifted students who dropped out of school (M = .49) used marijuana more than gifted students who completed school (M = .24). However, there was no significant difference between the two groups with respect to the number of times they used cocaine (t (3,040) = .80, p = .42).

Research Question 4: To what extent and in what manner can variation in the gifted dropout rate vary among students by personal and educational factors (SES, race, gender, quality of school, father's highest level of education, mother's highest level of education, student's educational aspirations, pregnancy/child-rearing, and absenteeism)?

A logistic regression analysis was conducted to examine the relationship between the criterion variable and the set of predictors. Unlike discriminant function analysis, multiway frequency analysis, and multiple regression, logistic regression does not need to meet a normal distribution assumption, and it allows the prediction of a discrete criterion variable from a set of variables that may be continuous, discrete, dichotomous, or a combination of these (Tabachnick & Fidell, 1996).

Prior to the logistic regression data analyses, SPSS was used to examine plausible range of data, missing values, outliers, and adequacy of expected frequencies. As a result of the data screening, four predictors were excluded from analysis because of missing data. The four predictors were student's self-concept, GPA, standardized test scores, and extracurricular activities. Also, five univariate outliers were found and removed from the data analyses and two variables—father's highest level of education and mother's highest

level of education—were recoded because one of the cells did not have data. SPSS REGRESSION was further performed to inspect for multivariate outliers and multicollinearity. There was no multicollinearity indicating low tolerance (1-SMC) and there were no multivariate outliers.

After data screening, direct logistic regression analyses were performed with students' group membership (gifted students who dropped out of school vs. gifted students who completed school) as a criterion variable and a set of predictors. When examining the decision by gifted students to drop out, a test of the final full model with nine predictors (SES, gender, race, students' educational aspirations, father's highest education level, mother's highest education level, pregnancy or having children, school quality, and absenteeism) against a constant-only model was found to be statistically significant, χ^2 (31, N = 1,505) = 332.45, $p < .001$, accounting for the highest percentage of variance (42%). The regression coefficients, Wald statistics, odds ratio, and 95% confidence intervals of the odds ratios for each predictor are summarized in Table 13. The results indicated that overall, five variables significantly predict gifted students' dropout behavior: students' educational aspirations ($F = 8.60$, $p < .0001$), pregnancy or child-rearing ($F = 6.15$, $p < .01$), gender ($F = 9.87$, $p < .01$), father's highest level of education ($F = 12.86$, $p < .0001$), and mother's highest level of education ($F = 3.52$, $p < .01$). In addition, the results of SUDAAN statistical analysis are very conservative dealing with design effect; SES could be considered a significant variable at the $p = .07$ level.

Examination of the odds ratios reveals the influence of the significant variables. The odds ratio represents "the ratio of the predicted odds of dropping out with a one-unit increase in the independent variable to the predicted odds without the one-unit increase" (Rumberger, 1995, pp. 600-603). Therefore, an odds ratio that is greater than one means that the odds of dropping out increase due to a one-unit increase in the independent variable, while an odds ratio that is less than one means that the odds of dropping out decrease due to a one-unit increase in the independent variable.

The results revealed first that gifted students who wanted to finish college had significantly lower odds of dropping out of school than other students. Second, gifted students who did not have a child had significantly lower odds of dropping out of school than gifted students who had a child or were expecting a child. Third, gifted male students were about three times more likely to drop out of school than gifted female students. Fourth, White gifted students were significantly less likely to drop out than other ethnic groups. Fifth, gifted students with fathers who did not finish high school were about three times more likely to drop out of school, while gifted students with fathers who had a Master's degree were significantly less likely to drop out. Interestingly, gifted students with mothers who did not finish high school or had graduated junior college were less likely to drop out. These results indicated that father's highest level of education was more related to the gifted students' drop out behavior than mother's highest level of education. Finally, results showed that SES was one of the important predictors of dropping out. Gifted students who were in the low quartile and medium-low quartile of SES were much more likely to drop out of high school (see Table 13).

Table 13

Logistic Regression Analysis of Variables Predicting Gifted Students' Decision to Drop Out of School

Predictor Variables	Beta coeff.	*t*-test, $B = 0$	Odds Ratio	95% confidence interval for odds ratio	
				Upper	Lower
Educational Aspirations					
Will not finish high school	1.08	1.25	2.95	0.54	16.07
Will finish high school	0.97	2.00*	2.63	1.02	6.78
VOC, TRD, BUS school	-0.29	-0.62	0.75	0.31	1.85
Attend college	-0.24	-0.48	0.79	0.29	2.10
Finish college	-1.93	-4.23***	0.15	0.06	0.36
Continue education after college	0.00	_	1.00	1.00	1.00
Pregnancy or Having a Child					
Yes	-0.03	-0.04	0.97	0.22	4.36
No	-1.49	-2.33*	0.23	0.06	0.79
No, but expecting	0.00	_	1.00	1.00	1.00
Gender					
Male	1.05	3.14**	2.86	1.48	5.51
Female	0.00	_	1.00	1.00	1.00
Race					
Asian/Pacific Islanders	-1.51	-1.81	0.22	0.04	1.13
Hispanic	-0.63	-0.85	0.53	0.12	2.30
Black	-0.66	-0.09	0.52	0.13	2.12
White	-1.26	-2.01*	0.28	0.08	0.97
Native American	0.00	_	1.00	1.00	1.00
Quality of School	-0.49	-1.13	0.61	0.26	1.44
SES					
Low quartile	4.47	2.20**	87.52	1.63	4695.20
Medium-low quartile	3.86	1.90*	47.52	0.88	2579.84
Medium-high quartile	4.00	1.92*	54.42	0.90	3273.85
High quartile	0.00	_	1.00	1.00	1.00
Absenteeism					
None	-0.61	-0.99	0.54	0.16	1.83
1-2 days	-0.69	-1.12	0.50	0.15	1.69
3 or 4 days	-0.42	-0.57	0.66	0.16	2.79
5-10 days	0.00	_	1.00	1.00	1.00
More than 10 days	0.00	_	1.00	1.00	1.00
Father's Education Level					
Did not finish high school	1.21	2.07*	3.35	1.07	10.49
Graduated high school	-0.21	-0.35	0.81	0.25	2.65
Junior college	-1.43	-1.20	0.24	0.02	2.48
College fewer than 4 years	0.80	1.34	2.22	0.69	7.16
Graduated college	-0.06	-0.07	0.94	0.17	5.25
Master's degree	-5.30	-5.68***	0.01	0.00	0.03
Ph.D., M.D., etc.	0.00	_	1.00	1.00	1.00
Mother's Education Level					
Did not finish high school	-1.47	-2.45*	0.23	0.07	0.75
Graduated high school	-0.78	-1.48	0.46	0.16	1.29
Junior college	-2.44	-2.54*	0.09	0.01	0.58
College fewer than 4 years	0.57	0.96	1.77	0.55	5.70
Graduated college	-0.97	-1.37	0.38	0.09	1.52
Master's degree	0.85	0.59	2.33	0.14	38.20
Ph.D., M.D., etc.	0.00	_	1.00	1.00	1.00

*$p < .05$, **$p < .01$, ***$p < .001$.

Summary

This chapter presented descriptive and inferential data analysis results. Two studies were conducted using two different sources of data and samples. The studies yielded the following results:

Study 1: Analysis of Dropout Questionnaire

1. Many of the gifted male students left school because they were failing school, got a job, could not keep up with their schoolwork, and did not like school. Gifted female students left school because they did not like school, were pregnant, became a parent, or were failing school.
2. Many of the parents whose child dropped out of school tried to talk him or her into staying in school, but not many of them offered counseling services to their children.
3. A large percentage of gifted students who dropped out of school never or rarely used a computer or spent time doing their hobbies or volunteering.
4. Gifted students who dropped out of school spent more time talking with peers than with parents.
5. Gifted students who dropped out of school hoped to be professionals, service workers, office workers, and business owners in the future.
6. Not many gifted students who dropped out of school had a plan to return to school.
7. Gifted students who dropped out of school had higher self-concepts than non-gifted students who dropped out of school.

Study 2: Analysis of Student Questionnaire

1. Almost half the gifted dropout students (48.2%) were in the lowest quartile SES level, while only 3.6% of them were in the highest quartile SES level.
2. More Hispanic and Native Americans dropped out of school than White and Asian Americans.
3. A high percentage of gifted dropouts' fathers and mothers did not finish high school (father: 40%, mother: 25.6%) or graduated only high school (father: 23%, mother: 35.9%).
4. There were no significant differences between gifted male and female students who dropped out of school with respect to their parents' educational expectations and their own educational aspirations.
5. More gifted female students who dropped out of school had children than male gifted dropouts.
6. There was no significant difference between gifted male and gifted female students who dropped out of school with respect to the number of hours that they worked.
7. Gifted students who dropped out of school used marijuana more than gifted students who completed school, but there was no difference between the two groups with respect to the number of times they had used cocaine.
8. Students' educational aspirations, pregnancy or having children, gender, father's highest level of education, mother's highest level of education, and SES significantly predicted gifted students' decision to drop out.
9. Gifted students who wanted to finish college and who did not have a child were less likely to drop out of school than other students.
10. Gifted male students were about three times more likely to drop out of school than gifted female students.

11. Gifted students with fathers who did not finish high school were more likely to drop out of school, while gifted students with fathers who had a Master's degree were significantly less likely to drop out.
12. Gifted students with mothers who did not finish high school or had graduated junior college were less likely to drop out.
13. Gifted students who were in the low quartile and medium-low quartile of SES were much more likely to drop out of high school.

CHAPTER 5: Conclusions and Suggestions for Future Research

Conclusions

Previous research studies have reported estimates of gifted dropouts. However, the ranges are widely varied depending on how *giftedness* and *dropout* were defined. In Study 2, approximately 28% of students were identified as gifted using a broad definition. Among 3,520 gifted students in the sample, about 5% dropped out of school. This percentage was similar to the percentage of dropouts (5.2%) from the non-gifted population. Because this number varies with the definition of *gifted* or *dropout,* it is not very meaningful to focus on the specific number of gifted students who dropped out of school. The focus should be on how we can identify potential gifted dropouts and how we can help them remain in school. The purpose of the present study was not to determine the number of gifted students who dropped out of school but to gain more comprehensive information about gifted students who dropped out of school. More specifically, the focus was to obtain general characteristics of gifted students who dropped out of school and to explore personal and educational factors related to their dropout behavior.

Identifying Potential Gifted Dropouts

The first step of effective dropout prevention is to identify students who are likely to drop out (Lunenburg, 2000). Understanding the characteristics of gifted students who drop out of school enables educators to identify potential gifted dropouts. Several characteristics of gifted students who dropped out of school were found in this study:

- gifted students from low SES families
- racial minority students, especially Hispanic and Native Americans
- gifted students whose parents have low levels of education
- students who participated less in extracurricular activities
- gifted students who have low educational aspirations
- gifted students who have a child or are expecting a child.

First, study results confirmed that many gifted students who dropped out of school were from low SES families and ethnic minority groups, had parents with low levels of education, and participated less in extracurricular activities. The present study findings indicated that Hispanic and Native American gifted students are more likely to drop out of school, while White gifted students were less likely to drop out than other ethnic groups. In addition, the study results clearly revealed that SES and parents' educational level were significantly related to gifted students' dropping out of high school. Almost half the gifted students who dropped out of school (48.2%) were in the lowest quartile SES level, and only 3.6% of them were in the highest quartile SES level. This number was the reverse for gifted students who completed school. Also, a high percentage of parents whose gifted child dropped out of school did not finish high school or graduated from high school only. SES and parents' educational level may relate to educational support at home. Ekstrom and his colleagues reported that (a) dropouts got fewer educational aids from parents, (b) dropouts' parents had lower educational expectations, and (c) dropouts' parents had less interest in and were less likely to monitor their children's school activities (Ekstrom, Goertz, Pollack, & Rock, 1986). In this study, it is not clear that the parents of gifted dropouts provided poor educational support to their children.

The study also shows that parents of gifted dropouts were not actively involved in their children's decision to drop out of school. Although 75% of parents tried to talk their

children into staying in school, only a small percentage of parents took actions such as calling the child's teacher or school counselor, offering special tutoring or programs, or offering transfer to another school. These results imply that parents whose gifted child who is at risk for dropping out of school should communicate closely with teachers, because parents' educational aspirations and their involvement may affect gifted students' school performance as well as deportment (Ekstrom et al., 1986). Present study findings reveal that many gifted students who dropped out of school had very limited experience with computers and spent little time on hobbies.

Reasons for Dropping Out of School

In this study, gifted students who dropped out of school reported a variety of reasons that caused them to drop out of school (see Figure 12). Many gifted students left school because they were failing school, did not like school, got a job, or were pregnant, although there are many other related reasons. Although gifted male students' reasons were more related to economic factors and gifted female students' reasons were more related to personal factors, school-related reasons such as "I did not like school" or " I am failing school" were common reasons for both groups. These findings are similar to findings from the previous study from NCES, which included all ability groups. According to the NCES report (1994b), the reasons for leaving school reported by dropouts were more often school-related than job related or family related. Also, male dropouts were more likely than female dropouts to report leaving school because of expulsion and suspension. In addition, present study results indicated that students' educational aspirations were significantly related to the gifted students' dropping out of school. Some gifted students have low educational aspirations because of personal or school-related problems. This suggests that teachers and parents should guide and encourage potential dropouts to increase their educational aspirations. Also, school culture should be changed to meet the needs of these students, providing an appropriate curriculum and stimulating their interests and learning styles (Renzulli, 1986; Robertson, 1991).

It should also be noted that some gifted students dropped out of school because they failed their courses, even though they were identified as gifted. This finding has an important implication for teachers and researchers. In this study, we used a flexible definition that included a broader range of students identified as gifted. If educators and researchers use a very restrictive definition of gifted, some talented young students who are potential dropouts will be overlooked and not provided with appropriate educational assistance, such as counseling services. Therefore, it is more appropriate to use a broad definition of giftedness when studying this population of dropouts.

MALE	FEMALE
I was failing school	I didn't like school
I got a job	I was pregnant
I couldn't keep up with my school work	I became a parent
I didn't like school	I was failing school
I couldn't work and go to school at same time	I had another problem
	I couldn't keep up with my schoolwork

Figure 12. Reasons that gifted students drop out of school.

Develop a Prevention Plan

Some prevention programs have been developed for dropouts. Grossnickle (1986) offered five features of a dropout prevention program: awareness, commitment, coordination, resources, and individualized attention for at-risk students. Lunenburg (2000) developed 10 strategies to help school officers in dropout prevention: (a) alter the instructional environment, (b) establish effective school membership, (c) develop career academics, (d) develop appropriate and supportive school board policies, (e) determine the students' learning styles, (f) consider community-based collaboration, (g) establish a case management intervention system, (h) create a mentoring network, (i) establish a school within a school, and (j) use state-legislated negative-sanction policies.

The results from this study suggested that several features should be considered in a prevention program. First, as early as possible, schools and teachers need to identify gifted students who are at risk of dropping out of school. Second, schools should provide an appropriate curriculum that addresses gifted students' needs, interests, and learning styles. Third, more opportunities for extracurricular activities and encouragement to participate in them should be provided to the gifted students who are at risk of dropping out. Fourth, as Wells (1989) emphasized, student and teacher relationships should be improved. Previous research as well as results from the present study point out that negative attitude toward school and teachers is a major contributor to dropping out. Wells reported that a "good teacher" is the most positive element of school. Bhaerman and Kopp (1988) also found that fewer students dropped out of school when their teacher was flexible, positive, and creative. Fifth, counseling services and special programs should be given to gifted students who fail school because of personal or school-related problems, who are pregnant or have a child, who have a drug problem, and who have to work to support their family. Also, schools and teachers should communicate closely with parents whose gifted child has the potential to drop out of school, and parents should have more involvement with regard to their child's problems. Nelson (1985) suggested that schools should develop links with the community and work with organizations that can provide appropriate services.

Significance and Limitations of the Study

Previous research studies have found various factors that predict which students might drop out of high school. These studies have certain limitations. First, few research studies using a broad definition of gifted focused directly on the gifted students who dropped out of school. Most of the previous studies of gifted students who dropped out of school focused on the academically gifted students based on IQ scores. However, in the school setting, there are many talented students who are not included in this category but who are potentially at risk of dropping out of school. Because this study used an existing self-report survey, non-intellective factors such as motivation could not be addressed to the extent that we would have liked. However, using broad and flexible criteria, this study obtained general characteristics of gifted students who dropped out of school.

A second limitation of previous studies is related to the generalization issue. Previous research studies used data that represented specific regions or schools. As the literature indicated, because school quality and personal background such as SES and ethnicity affect students' dropping out of school, national data should be used to obtain a more precise picture of high school students' drop out behavior. Using nationally representative longitudinal data, this study obtained comprehensive information about gifted students who dropped out of school, not to determine the number of them, but to try to understand and help them to continue their education.

One limitation that should be noted is that only students who participated in all four rounds of the data survey were selected as a sample, thereby reducing the sample size. The number of participants in NELS:88 third follow-up was far fewer than that of other years because it is difficult to follow up with students after they leave high school. In addition, there were many missing data points on the specific variables. For example, several variables such as self-concept, GPA, and standardized test scores were excluded in the data analysis in Study 2 because of missing data on the gifted dropouts' site. In the case of GPA and standardized test scores, many data on gifted dropouts were not available because they dropped out before or in the 12th grade. It is not clear why more gifted students who dropped out of school have missing data on the self-concept variable than do gifted students who completed school. Although literature suggested that these variables are related to the decision to drop out, it is inappropriate to include these variables in this study because of the number of missing data points.

Suggestions for Future Research

Some researchers argued that it is necessary to distinguish among the various types of dropout behaviors. Tinto (1975) distinguished between academic dismissal and voluntary withdrawal, pointing out that academic dismissal is most closely associated with grade performance, and voluntary withdrawal is not. According to Tinto, students classified as academic dismissals have low aptitudes, intellectual ability, and social status, whereas voluntary withdrawals are more likely to have high intellectual ability and high social status. Although Tinto did not directly focus on gifted dropouts, the findings of the present study partially supported these arguments. Regarding the reasons they leave school, some gifted students who dropped out of school responded that they failed school, while others responded that they left school voluntarily. Further study needs to address this issue. In addition, further research is needed regarding the cause and effect of gifted dropouts and how their backgrounds and dropping out patterns differ from one another.

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Appendix A
Variables in the Study

Variables in the Study

Reasons for leaving school (F2D9AA-V): These variables were obtained from the students' responses to the question, "Here are some reasons other people have given for leaving school. Which of these would you say applied to you?" Students responded either "yes" or "no" on each item.

Parents' reactions (F2D22A-M): These variables were obtained from the students' responses to the question, "Did your parents or guardians do any of the following the last time you stopped going to school?" Students responded either "yes" or "no" on each item.

Use of time (F2D35A, B, E): These variables were obtained from the question, "How often do you spend time on the following activities?" A: Using personal computers, not including playing video/computer games, B: Working on hobbies, arts, or crafts on your own, E: Doing volunteer or community service. These were coded 1 (never/rarely), 2 (less than once a week), 3 (once or twice a week) and 4 (every day or almost every day).

Academic plans (F2D33BA): This variable was obtained from the question, "Do you plan to go back to school to get a high school diploma?" This was dummy coded 1 (yes) and 2 (no).

Future career plan (F2D40A): This variable was obtained from the question, "Which of the categories below comes closest to describing the job or occupation that you expect or plan to have when you are 30 years old? Even if you are not sure, circle your best guess." The respondents were supposed to choose one among 19 categories.

Self-concept and locus of control (F2D57A-M): This composite variable included 13 questions related to self-concept and locus of control using a 4-point Likert scale.

Relationship with parents (F2D35H): This variable was obtained from the question, "How often do you spend time on talking or doing things with your mother or father?" This was coded 1 (never/rarely), 2 (less than once a week), 3 (once or twice a week), and 4 (every day or almost every day).

Peer relationship (F2D35G): This variable was obtained from the question, "How often do you spend time talking or doing things with your friends?" This was coded 1 (never/rarely), 2 (less than once a week), 3 (once or twice a week), and 4 (every day or almost every day).

Socioeconomic status (F2SES3Q): This variable was constructed using the Second Follow-up Parent Questionnaire data, and it incorporates the 1989 revision of Duncan's Socioeconomic Index (SEI). This variable was a composite of five variables: father's occupation, father's educational level, mother's occupation, mother's educational level, and family income (NECS, 1994a).

Father's highest level of education (BYS34A): This ordinal variable was obtained from the student questionnaire. The responses were coded 1 (did not finish high school), 2 (graduated high school), 3 (junior college), 4 (college less than 4 years), 5 (graduated college), 6 (Master's degree), 7 (Ph.D., M.D., etc.) and 8 (don't know).

Mother's highest level of education (BYS34B): This ordinal variable was obtained from the student questionnaire. The responses were coded 1 (did not finish high school), 2

(graduated high school), 3 (junior college), 4 (college less than 4 years), 5 (graduated college), 6 (Master's degree), 7 (Ph.D., M.D., etc.) and 8 (don't know).

Student's educational aspirations (BYS45): This ordinal variable was obtained from the student questionnaire in response to: "As things stand now, how far in school do you think you will get?" The responses were coded 1 (won't finish high school), 2 (will finish high school), 3 (vocational, trade, or business school after high school), 4 (will attend college), 5 (will finish college), and 6 (higher school after college).

Gender (F3SEX): This variable was a dummy code: 1 (male) and 2 (female).

Race (F3RACE): This variable was obtained from students' responses to the question, "Which best describes you?" It was coded 1 (Asian, Pacific Islander), 2 (Hispanic), 3 (Black, not Hispanic), 4 (White, not Hispanic), and 5 (American Indian, Alaskan native).

Father's educational expectations (BYS48A): This ordinal variable was obtained from the students' responses to the question, "How far in school do you think your father wants you to go?" This variable reflected students' perceptions of their parents' aspirations. The responses were coded 1 (won't finish high school), 2 (will finish high school), 3 (vocational, trade, or business school after high school), 4 (will attend college), 5 (will finish college), and 6 (higher school after college).

Mother's educational expectations (BYS48B): This ordinal variable was obtained from the students' responses to the question, "How far in school do you think your mother wants you to go?" This variable reflected students' perceptions of their parents' aspirations. The responses were coded 1 (won't finish high school), 2 (will finish high school), 3 (vocational, trade, or business school after high school), 4 (will attend college), 5 (will finish college), and 6 (higher school after college).

School quality (BYS59A-M): This composite variable included 12 questions related to school climate and teacher attitudes using a 4-point Likert scale.

Absenteeism (BYS75): This variable was obtained from the question, "Number of days missed from school during the past 4 weeks." This was coded 0 (none), 1(1 or 2 days), 2 (3 or 4 days), 3 (5 to 10 days), and 4 (more than 10 days).

Pregnancy or child-rearing (F1S76): This variable was obtained from the question, "Do you have any children of your own?" This was coded 1 (Yes, I do), 2 (No, I don't), and 3 (No, but expecting).

Employment (BYS53): This variable was obtained from the question, "How many hours do you work for pay per week?" This was coded 0 (none), 1 (up to 4 hours), 2 (5-10 hours), 3 (11-20 hours), and 4 (21 or more hours).

Number of times using marijuana (F1S80AA): This variable was obtained from the question, "In your lifetime, how many times did you use marijuana?" This was coded 0 (0 occasions), 1 (1-2 occasions), 2 (3-19 occasions), and 3 (20+ occasions).

Number of times taken cocaine (F1S80BA): This variable was obtained from the question, "In your lifetime, how many times did you take cocaine?" This was coded 0 (0 occasions), 1 (1-2 occasions), 2 (3-19 occasions), and 3 (20+ occasions).

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