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# Examining the Long-Term Impact of Achievement Loss During the Transition to High School

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Research shows that prior academic achievement is a strong predictor of future academic performance. For some students, the transition from one educational environment to another is associated with academic challenges and achievement loss. This study examined the extent to which achievement loss during the transition from middle school to high school later impacted college outcomes. Using data from the National Educational Longitudinal Study 1988/2000 (NELS: 88/2000), the results from a logistic regression analysis suggest that high-achieving middle school students who experienced achievement loss were more likely to leave their first college than high-achieving students who did not experience achievement loss.

All students encounter educational transitions. Some school configurations include multiple transitions (e.g., elementary to middle school; middle school to high school; and high school to college, work, or the military). Other organizational structures require less transition, such as K–8th grade schools followed by a traditional high school model of 9th–12th grade. Recently, some schools have embraced a 7th–12th-grade model, removing the middle to high school transition, while other schools are using freshman centers to aid in a smooth transition from middle school to high school. The research on educational transitions is limited, but there are studies of the transition to middle school (Akos & Galassi, 2004), the transition to high school (Mizelle, 1999; Schumacher, 1998), and the transition to college (Banning, 1989; Rummel, Acton, Costello, & Pielow, 1999; Strage, 1999). However, no empirical study has examined the impact of one educational transition on a future educational transition. Additionally, few studies have focused on the challenges of educational transitions for high-achieving students, which may be due to several studies finding that previous academic achievement, as measured by class rank, grade point average (GPA), and curriculum intensity, was a strong predictor of future academic success (Adelman, 2006; Ingels et al., 2002).

Overall, high-achieving middle school and high school students perform quite well in the semester following their educational transition to high school and/or college, respectively; however, a subset of high-achieving students experience substantial achievement loss or failure after the transition. Although achievement loss is described as a normative process, the long-term impact of achievement loss in high-achieving students is missing from the literature on educational transitions. The purpose of this study was to examine the impact of one educational transition on a future educational transition. Specifically, I examined the hypothesis that achievement loss in the transition from middle school to high school is associated with college attrition for a nationally representative cohort of high-achieving eighth graders in the United States.

## Middle School to High School Transition

There are several factors associated with academic success in high school including parent involvement, parental expectations, prior achievement, eighth-grade course difficulty, socioeconomic status (SES), and student attitudes toward school (Ingels et al., 2002). In addition to student and family factors, unique attributes of the school structure, such as the number of peers attending the same high school (Schiller, 1999), the quality of teachers (Lankford, Loeb, & Wyckoff, 2002), and the presence of specific transition programs (Smith, 1997) impact the ease of transition and subsequent achievement. For example, a difficult transition from eighth grade to ninth grade has been associated with increased behavior problems (Graber & Brooks-Gunn, 1996) and high school dropout rates (Alspaugh, 1998a; Smith, 1997). Even when peers are supportive, students experience a drop in GPA that researchers have speculated is associated with the distracting nature of peer relationships (e.g., forming cliques and dating) as students enter high school. For example, Isakson and Jarvis (1999) employed a short-term longitudinal study assessing adolescents' adjustments during the transition to high school. Surveys were administered once during the eighth-grade year and twice during the ninth-grade year. Student decreases in GPA following the transition were associated with family, school, or friend stressors. Even when peers were supportive, students experienced achievement loss (Alspaugh & Harting, 1995).

Alspaugh (1998a) described achievement loss as a normative experience during the transition, but noted that the number of transitions and size of schools were factors associated with achievement loss. In an ex post facto study of 48 school districts, he found that students attending school districts with transitions at grade 6 and grade 9 experienced greater achievement loss than students in districts that are configured as a K–8 linear fashion. Seidman, Allen, Aber, Mitchell, and Feinman (1994) coined the former as double jeopardy. The latter schools did not include an elementary to middle school transition. In a separate study of 447 schools districts, Alspaugh (1998b) found that multiple educational transitions, particularly in large schools, were a significant predictor of subsequent high school dropout.

The transition from middle school to high school is not universally negative. For some students, the transition to high school presents new opportunities where students, who previously struggled, get a fresh academic start. Kinney (1993) interviewed and observed students during the transition to high school to see if the new environment provided an opportunity for self-described nerds to find acceptance and to fit into the high school culture. Students described the middle school social experience as limited to a dichotomy of popular students and the rest of the student body. Students in the study who successfully emerged from the transition replaced their middle school nerd identity with the label of normal. For these former nerds, the transition to high school provided more options for entrance and acceptance into a broader range of potential social networks.

Some middle school personnel have recognized the challenges associated with the transition to high school and offer specific transitional programs to aid students in this change. Students who attend schools with an explicit transition program are more likely to experience a smooth transition to high school than students who attend schools without this type of program (Smith, 1997). These programs tend to provide important logistical information but do not reduce students' experiences of disconnect in social, academic, and organizational expectations (Mac Iver, 1990). Morgan and Hertzog (2001) found that high school dropout rates were significantly lower in schools with transition programs that included: (a) a demanding curriculum (e.g., academic rigor of courses); (b) quality facilities (e.g., location of classrooms, restrooms, and the like); (c) safety and discipline (e.g., rules and discipline code); (d) committed teachers, counselors, and administrators; and (e) accurate information (e.g., organization and logistics). According to Mizelle (1999), successful transitional programs must involve collaboration between eighth- and ninth-grade buildings and personnel.

## High School to College Transition

Students enter several types of institutions of higher learning (2-year vocational schools, 4-year public, 4-year private) with varying levels of preparation and understanding of the academic rigor required (Astin, 1993). Students who live at home and attend a local college are likely to experience less disruption in their daily lives. The situation is contrasted for students who leave the state or live on campus far from their home. The transition from high school to college and its subsequent impact on students begins when students select a college. Distance from home, the living arrangements, and attending a school with a friend affect the magnitude of change in students' experiences. To an extent, students understand the changes associated with going to college, but the reality often surprises even the most attuned students (Holmstrom, Karp, & Gray, 2002). Recent research by the Bridge Project at Stanford showed that high school students and teachers knew little about

the transition to college, and secondary school guidance counselors, in general, were not able to provide students with information regarding the academic, social, and organizational differences between high school and college (Kirst & Venezia, 2004).

Academic preparation (i.e., course taking and high school GPA) has been a strong predictor of academic success in college (Adelman, 2006; Ingels et al., 2002; Kern, Fagley, & Miller, 1998). There are also several nonacademic factors associated with academic success at college. The literature on student development has stressed the importance of students making connections to the school and members of the campus community (Tinto, 1993). Some have described this sense of connection in terms of person-institution fit (Banning, 1989; Kuh, 1995). Tinto (1987) found that developing a positive relationship with at least one adult on campus was associated with retention and academic achievement. Pascarella and Terenzini (1980) and Astin (1993) found that active involvement in class and in the larger campus community was related to higher retention rates. Moreover, research has shown that students who are not involved in campus activities feel isolated and are more likely to transfer or to drop out. Gerdes and Mallinckrodt (1994) found that social and emotional adjustment predicted attrition as effectively as academic preparation. Paul and Brier (2001) showed that students who experienced *friendsickness*, or a preoccupation with their precollege friendships, experienced a more difficult transition to college and reported feelings of loneliness during their first semester.

## Orientation and Transition Programs

Students are not left to fend for themselves during the transition to college. Pascarella, Terenzini, and Wolfle (1986) provided evidence that attending a college orientation program was associated with higher retention rates. Since that time, colleges have invested effort and resources into developing and assessing the impact of orientation programs on student satisfaction with and retention at college. These types of programs go beyond a tour of the campus and can include overnight stays and extended presemester social activities. In addition to orientation programs, a number of students participate in specific transition programs like the Freshmen Year Experience (FYE; Keup & Barefoot, 2005; Upcraft & Gardner, 1989). This FYE philosophy, which spawned a course curriculum, is available in many colleges across the country. FYE courses are offered to an entire cohort or a subset of the incoming class who appear to be in need of assistance with the college transition.

Similarly, Educational Opportunities Programs (EOP) and Higher Educational Opportunities Programs (HEOP) provide mandatory summer sessions, where students take classes on study skills, writing, and other academic coursework. Students who participated in high-quality EOP/HEOP programs that included a sustained mentoring component, the hallmark of Federal TRIO programs, demonstrated considerable academic success (McElroy & Armesto, 1998). Research on at-risk students, including students of color, students with disabilities, first-generation college students, students with lower SES, and community college transfer students, has shown that students benefit from attending high-quality transition programs (Olszewski-Kubilius & Laubscher, 1996; Rhine, Milligan, & Nelson, 2000).

## Transition for High-Achieving Students

As stated above, some colleges require all first-year students to enroll in the FYE or transition experience course. Other schools provide transition courses only to students at risk for dropping out. Colleges may offer high-achieving students an honors curriculum or specific honors courses to challenge and discourage them from transferring to a more prestigious college. Another reason for honors courses reflects some faculty members' feelings that honors students are not adequately prepared to meet their expectations. Guerrero and Riggs (1996) asked 128 faculty members from prestigious universities to rate first-year honors students' academic preparation on six skills, including critical thinking, creative thinking, problem solving, research, written and oral communication, and leadership. Half of the faculty respondents indicated that at least 30% of honors students were not adequately prepared in those important skills.

Furthermore, honors students are not a homogenous group and also experience the challenges associated with the transition to a new school environment. Peterson (2000) examined the transition to college for a group of gifted students, categorized in two groups as either gifted achievers or gifted underachievers. Gifted achievers demonstrated a higher graduation rate than gifted underachievers, 83% to 52% respectively. The pattern suggests that achievement is stable in gifted children. But, further analysis revealed that equal numbers of gifted achievers and gifted underachievers improved or remained the same academically. Qualitative data showed that establishing autonomy was a significant challenge for gifted students, regardless of their status as achievers or underachievers. Students in this study cited social and organizational fac-

tors external to academics that made it difficult to adjust to college.

The current study of academic transition is unique in two ways. First, I examine the long-term impact of a previous educational transition from middle school to high school on the next important academic transition to college. Second, I specifically look at the impact of achievement loss for high-achieving students. The research hypothesis is that achievement loss in the transition from middle school to high school is associated with college attrition for a nationally representative cohort of high-achieving eighth graders in the United States.

## Method

Data for the study came from the National Educational Longitudinal Study of 1988, Fourth Follow-Up, 2000 (NELS:88/2000), a longitudinal study conducted by the National Center for Education Statistics in the Department of Education. NELS:88/2000 contains in-depth data for 24,599 students in the nationally representative sample in the base-year (1988). Students, two teachers, parents, and one school administrator completed extensive interviews regarding academic achievement, academic participation, academic motivation, and demographic data. Fewer students participated in the first follow-up (1990), where students, two teachers, parents, and an administrator were also interviewed. The second follow-up (1992), third follow-up (1994), and fourth follow-up (2000) included information elicited from student interviews and information appearing on official high school and college transcripts. Students with complete data in the base-year (1988) and third follow-up (1994) were included in this study. Data for the study came from the restricted-use base-year (1988), the restricted-use transcript data file (1992), and the third follow-up restricted-use data set (1994). The restricted-use transcript file (Ingels et al., 1995) contains individual course-level achievement data. The data set used for the current analysis included 9,230 students. Of that sample, 2,048 were identified as high-achieving middle school students. A weighting variable provided by NCES was used to generalize the findings from the sample to students who were eighth graders in the United States in 1988.

### Identifying High-Achievement

NELS:88/2000 does not include academic transcript data for middle school achievement. Instead, students provided self-reported academic achievement in four major subject areas since sixth grade (i.e., English, math, social studies, and science). An achievement composite combining the self-reported English and math achievement since sixth grade was generated. The composite GPA for all participants was 3.02 on a 4-point scale, with a standard deviation of .72. Students with grades one standard deviation or higher than the mean ($n$ = 2,048) were determined to be high-achieving middle school students. (See Table 1 for complete descriptive statistics.)

### Dependent Variable

Retention in the first college attended was the dependent variable in the study. A dummy code was created to distinguish students who persisted at their first college from those who left. Students not enrolled in the first college they attended at the time of the third follow-up (1994) were scored (0). Students still enrolled at their first college were coded (1). Of the high-achieving middle school students, 71.5 %, or 1,465, remained at their first college, and 20.7%, or 423, left the first college attended prior to earning a degree.

### Independent Variables

Following previous research standards, achievement loss was quantified by a significant decrease in academic achievement from middle school to high school (Alspaugh, 1998a; Schiller, 1999; Smith, 1997). A difference score was created between students' middle school grade composites and their ninth-grade academic achievement composites. The ninth-grade achievement composite was constructed from the transcript data file. The transcript data file provides an achievement score ranging from 1 = A to 13 = F and includes a numeral for plus and minus scores in each course (e.g., a 2 = A-). Ninth-grade course achievement scores from the transcript were converted to a 0–4 scale (0 = F to 4 = A) to allow for comparison with eighth-grade achievement in math and English. The eighth-grade achievement composite was ($M$ = 3.04; $SD$ = .77) and the ninth-grade achievement composite was ($M$ = 2.36; $SD$ = .98). The mean difference score was -.64, with a standard deviation of -.87. Students with achievement difference scores one standard deviation lower than the mean difference score were classified as having experienced achievement loss and coded (0). Students with achievement difference scores less than one standard deviation from the mean difference score did not experience achievement loss and were coded (1). For example, a student whose grade composite was above 3.75 in middle school and their subsequent ninth-grade composite was 2.1 or lower was considered to have experienced achievement loss following

Table 1

**Descriptives**

| Variables | High-Achievers ($N$ = 2,048) | Non-High-Achievers ($N$ = 7,182) |
|---|---|---|
| Gender | | |
| Male | 41% | 49% |
| Female | 59% | 51% |
| Race | | |
| African American | 5% | 10% |
| Asian | 13% | 5% |
| Latino | 7% | 13% |
| Native American | < 1% | 1% |
| White | 74% | 70% |
| School Characteristics | | |
| Public | 77% | 84% |
| Private | 23% | 16% |
| Rural | 31% | 33% |
| Suburban | 44% | 43% |
| Urban | 25% | 24% |
| Parent Characteristics | | |
| HS Degree or Less | 52% | 76% |
| College Degree | 48% | 24% |
| SES (lowest quartile) | 11% | 26% |
| SES (2nd and 3rd quartile) | 44% | 47% |
| SES (highest quartile) | 45% | 22% |
| Married | 89% | 80% |
| Not Married | 11% | 20% |

the transition to high school. In terms of letter grades, the achievement loss experienced equates to earning "A-" in middle school to earning a "C" in ninth grade.

### Control Variables

Dummy variables were created for the following control variables from the base-year survey (reference groups in parentheses): race (White), gender (female), SES quartile (high SES quartile), parents' highest level of education (earned a bachelor's degree), and parental marital status (parents married). Additional dummy variables for the school level data included attending public or private school (private) and school location (suburban). A 3-item parent involvement scale ($\alpha$ = .581) measuring quality of student and parent discussions about school was included as a control variable.

### Analysis

Analyses of panel data collected by the National Center for Education Statistics was conducted in a data analysis software system recommended by NCES called AM. The system accounts for clustering effects associated with the sampling procedure. A logistic regression analysis examining the impact of high school transition on first college retention was conducted for the entire sample. A second analysis focused on whether achievement loss in the transition to high school predicted attrition in the middle school students classified as high achievers.

## Results

The overarching hypothesis guiding the study stated that students who experienced achievement loss and later

Table 2

**Logistic Regression on First College Retention for Full Sample**

| Variables | B Value | Standard Error | Odds Ratio | Confidence Intervals | |
|---|---|---|---|---|---|
| | | | | Lower | Upper |
| Demographics | | | | | |
| Male | -.01 | .05 | .99 | .89 | 1.09 |
| African American | .16 | .11 | 1.17 | .96 | 1.38 |
| Asian | .32 | .09 | 1.37*** | 1.19 | 1.55 |
| Latino | -.04 | .09 | .96 | .79 | 1.14 |
| Native American | -.49 | .28 | .61 | .06 | 1.17 |
| School characteristics | | | | | |
| Public | -.14 | .08 | .87 | .71 | 1.03 |
| Rural | -.03 | .05 | .97 | .87 | 1.07 |
| Urban | -.09 | .07 | .92 | .78 | 1.06 |
| Parent characteristics | | | | | |
| College degree | .22 | .08 | 1.24* | 1.08 | 1.41 |
| SES (lowest quartile) | -.25 | .11 | .78* | .56 | 1.00 |
| SES (2nd quartile) | -.11 | .10 | .90 | .70 | 1.09 |
| SES (3rd quartile) | -.01 | .08 | .99 | .87 | 1.16 |
| Married | .11 | .07 | 1.11 | .97 | 1.26 |
| Parent involvement | .07 | .06 | 1.08 | .97 | 1.19 |
| *Independent Variables* | | | | | |
| High-achieving students | .34 | .05 | 1.50*** | 1.38 | 1.59 |
| Achievement loss | -.26 | .06 | .77*** | .66 | .88 |
| Log Likelihood = -.881923.21 | | | | | |

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

went on to college were more likely to leave their first institution than their peers who did not experience achievement loss. The results of two separate logistic regression analyses demonstrate that achievement loss during the transition to high school was associated with attrition at first college for all students in the sample and within the sample of high-achieving students.

## Overall Sample

Demographic variables including socioeconomic status, parents' level of education, and being from Asian descent predicted first college retention for the full sample of eighth graders (see Table 2). Students in the lowest SES quartile experienced significantly higher rates of first college attrition than students in the highest SES quartile (odds ratio = .78). In other words, the odds that a student in the lowest SES quartile would complete a degree at their first college were approximately 60% of the odds that a student in the highest SES quartile would complete a degree at their first college, controlling for other variables in the model. Parent education level was also associated with first college retention. Students who had at least one parent with a bachelor's degree were 1.24 times more likely to remain at their first college than students whose parents were less educated. In terms of racial differences, Asian students were 1.37 times more likely than White students to complete a degree at their first college.

Beyond the demographic indicators, being a high-achieving eighth grader was associated with retention at first college. Middle school achievement was a strong predictor of retention at first college. High-achieving middle school students were 1.50 times more likely to be retained at their first college than their non-high-achieving peers.

Table 3

**Logistic Regression on First College Retention for High-achieving Middle School Students**

| Variables | B Value | Standard Error | Odds Ratio | Confidence Intervals | |
|---|---|---|---|---|---|
| | | | | Lower | Upper |
| Demographics | | | | | |
| Male | -.035 | .09 | .97 | .78 | 1.14 |
| African American | .28 | .19 | 1.32 | .94 | 1.70 |
| Asian | .44 | .15 | 1.56** | 1.26 | 1.85 |
| Latino | -.47 | .21 | .62* | .20 | 1.04 |
| Native American | .74 | .65 | 2.09 | .82 | 3.37 |
| School characteristics | | | | | |
| Public | -.23 | .13 | .80 | .54 | 1.05 |
| Rural | -.17 | .09 | .85 | .67 | 1.02 |
| Urban | -.24 | .13 | .79 | .54 | 1.04 |
| Parent characteristics | | | | | |
| College degree | .15 | .13 | 1.16 | .91 | 1.42 |
| SES (lowest quartile) | -.16 | .19 | .85 | .48 | 1.23 |
| SES (2nd quartile) | -.01 | .15 | .99 | .70 | 1.28 |
| SES (3rd quartile) | .17 | .13 | 1.18 | .93 | 1.43 |
| Married | -.08 | .13 | .92 | .67 | 1.17 |
| Parent involvement | .07 | .06 | 1.08 | .97 | 1.19 |
| *Independent Variables* | | | | | |
| Achievement loss | -.27 | .11 | .76** | .56 | .97 |
| Log Likelihood = -206292.05 | | | | | |

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

Conversely, experiencing achievement loss was associated with dropping out of first college. For instance, the odds of retention for students who experienced achievement loss were one half of the odds of students who did not experience achievement loss in the transition from middle school to high school, controlling for all other variables in the model (odds ratio = .77).

## High-Achieving Student Sample

High-achieving students represented a more homogeneous group. The vast majority were White (74%) came from mid- to high-SES families, and their parents were more likely to have a bachelor's degree: 48% compared to 24% in the non-high-achievers group.

The results of a logistic regression analysis using the same independent and control variables in the previous model revealed that achievement loss was associated with first college retention for high achievers (see Table 3). The odds that a high-achieving student who experienced achievement loss would remain enrolled in his or her first college were approximately 25% less than the odds of a high-achieving student who did not experience achievement loss. Factors such as gender, parent involvement, parent marital status, parental education, and type and location of school were not associated with first college retention for high-achieving students. In terms of ethnicity, Asian students were more likely than White students to remain at first college, and Latino students were significantly less likely to graduate from their first college. There were no differences in the odds that high-achieving African American and White students remained in the first college, controlling for all other variables in the model.

## Discussion

Unlike other studies of transition that focus on the individual attributes associated with educational transition, the current study focused on the extent to which a negative academic transition at one point in time is related to a subsequent academic transition. The results of the study revealed that achievement loss during the transition from middle school to high school was associated with first college attrition for a nationally representative sample of high-achieving eighth graders in the United States. Although high-achieving students were less likely to leave their first college than the non-high-achieving students in the overall sample, achievement loss in high school transition was a strong predictor of high-achieving students subsequently leaving college. The findings point to the importance of understanding academic transitions. While there are few studies of the impact of one transition on another, the results of the current study are informed by Alspaugh's (1998, 1998b) examination of the impact of school organization on achievement loss and drop out. He found that students who attended school districts that involved multiple transitions experienced higher drop outs and higher levels of achievement loss than students attending K–8 schools. To extend the logic, one needs to consider that the experience of one transition informs how students approach the next major educational transition. The transition may be particularly challenging for high-achieving students who may uniquely struggle with the academic, social, and organization changes. For example, Plucker and Yecke (1999) found that gifted students who moved during high school experienced short-term transition academic and social difficulties. Although difficulties did not persist or have long-term effects, the phenomenon of school-to-school transition experience for high-achieving students needs to be further explored.

### Implications for Practice

Additional support systems are needed to assist students during these important transitions. The challenge for high schools and institutions of higher education is to identify the high-achieving students and to provide the appropriate resources to assist in their transition to college. The results provide high school and college faculty, staff, and administrators with important information about educational transitions for all students and particularly high-achieving students. In addition to transition programs and college orientation programs, critical information and services are needed to assist students in the transition to a new educational environment. High schools need to revisit the quality and efficacy of their transition programs (Mizelle, 1999). Parents and students need to receive a realistic message about normative achievement loss (Alspaugh, 1998a), and particularly for high-achieving students, they need to be aware of resources and supports for the new academic challenges in high school (Akos & Galassi, 2004).

In terms of the college transition, institutions allocate a significant amount of money to recruit students yet spend considerably less in direct retention initiatives. Programs such as the Freshmen Year Experience (FYE) that view the transition to college as a semester or year-long process should not exclude high-achieving students (Keup & Barefoot, 2005; Upcraft & Gardner, 1989). These courses are most effective when they discuss the factors associated with a smooth college transition, sharpen students' research and writing skills, and allow students to think about and articulate the purpose of higher education in their future education and career (Banning, 1989). High schools can adopt similar transition programs that help students understand the nuances of the academic and organizational differences between middle school and high school (Kirst & Venezia, 2004).

Connecting with one adult on campus is a predictor of retention, and this connection may be especially important for high-achieving students (Astin, 1993; Tinto, 1987). The availability of honors courses, taught in small classrooms with selective faculty, can serve to challenge the intellectual curiosity of high-achieving, first-year students. Faculty members who recognize weaknesses in college preparation for high-achieving students (Guerrero & Riggs, 1996) can incorporate those skills into first-year courses and point out the importance of those skills in being successful in college. Mentoring programs that connect incoming honor students with current honor students and the faculty members teaching honors curriculum can also serve to assist students with the high school to college transition.

Quality academic advising is another valuable asset in assisting with educational transitions (Gordon & Habley, 2000). Going beyond simply providing students with accurate academic information about courses, majors, and general education, effective advisors are caring, supportive individuals whose job is to thoughtfully engage students in dialogue about academic and personal decision-making (Smith & Downey, 2003). Good advisors get to know their students so they can assist them with important decisions as students develop in the context of the college experience (Kuh, 1997). If academic advisors have access to ninth-grade academic achievement data in student transcripts, they can determine if the student experienced achievement loss during the transition in high school. Armed with the knowledge, advisors can discuss

the earlier transition and recommend services to assist in the college transition that are specific to the student's transitional needs. Guidance counselors, coaches, extracurricular activity advisors, and teachers can serve as the connecting adult in high school. Additional professional development that focuses on a mentoring model can help adults make positive connections with students. If high-achieving students experience achievement loss in the first quarter or semester, these mentors can provide support by being there for the student and by referring the student for academic assistance.

Finally, many colleges have initiated prematriculation surveys of academic and social motivation to identify students at risk for retention (Smith, 2005; Strahil, 2000). The inventories are particularly helpful for students with high SAT, ACT, and high school GPAs who might fall under the advisor's radar screen. Using the student-specific information obtained from the inventories, advisors can quickly identify areas and resources to assist the student with the transition to college. High schools can adopt similar inventories that measure students' academic motivation and self-regulatory skills. Similar to the college advisors, teachers and counselors can use the information to develop transition curriculum or to identity appropriate services or resources to address individual student needs.

## Limitations

There are limitations to consider when interpreting the results of this study. NELS: 88/2000 provides a wealth of information on individual students and their academic achievement, but some information is simply not available. For example, there is no transcript data for the eighth-grade academic achievement, so researchers must rely on students' self-reports of their middle school academic achievement. The mean achievement for self-reported middle school achievement was significantly higher than the mean ninth-grade composite derived from the ninth-grade transcripts. However, there is considerable variation in both composites. Comparing middle school self-report achievement with ninth-grade transcript data in NELS: 88/2000 is consistent with previous research on high school transition (Schiller, 1999; Smith, 1997).

A second challenge is the development of a high school achievement composite using the restricted-use transcript data. Each student transcript has generated a grade for every subject, in every year, resulting in some 750,000 cases (Ingels et al., 1995). It is difficult to ensure a one-to-one correspondence for each student, each year. Accurately coding of ninth-grade science and social studies courses could be accomplished for only two thirds of transcripts. Therefore, the middle school composite and ninth-grade composite contained information about English and math achievement. Over 97% of the students in the sample had complete and verifiable data in these subject areas for both composites. The limitations identified are common among secondary data sources where there is no control over the types of data collected or the format in which it is organized.

## Conclusion

High schools and colleges need to do more to assist all students in transition from high school to college. With limited resources and time, schools and colleges must make difficult decisions about allocating resources to assist with the transition. It is possible that high-achieving students are sometimes taken for granted, in the sense that it is assumed that academic achievement serves as a safeguard, protecting students from transitional challenges. Better understanding of how high-achieving students cope with the stresses of educational transitions is needed in addition to further research examining overall trends within and across educational transitions.

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