The Relation of Early Adolescents' College Plans and Academic Ability and Task-Value Expectations to Subsequent College Enrollment and Attainment of Higher Education Goals

Keywords: college enrollment, academic ability, task-value expectations, college plans

The relation between early adolescents' college plans and their subsequent college enrollment is an important area of study. Research has shown that early adolescents' college plans are significantly related to their subsequent college enrollment, with those who have strong college plans being more likely to enroll in college. However, the relationship between college plans and college enrollment is complex and influenced by a variety of factors, including academic ability and task-value expectations.

Academic ability is a key factor in college enrollment. Studies have consistently found that students with higher academic ability are more likely to enroll in college. This is because students with higher academic ability are more likely to have strong college plans, which in turn increases their likelihood of enrolling in college.

Task-value expectations also play a significant role in college enrollment. Students who perceive college as valuable and important are more likely to enroll in college. This is because students who value college are more likely to have strong college plans, which in turn increases their likelihood of enrolling in college.

In summary, the relation between early adolescents' college plans and their subsequent college enrollment is influenced by a variety of factors, including academic ability and task-value expectations. Further research is needed to better understand the complex relationship between these factors and college enrollment.
early in life. Despite the fact that signs of dropping out of high school are evident by middle childhood and by early adolescence (Alexander, Entwisle, & Horsey, 1997), studies of college-enrollment predictors have focused on the high school years (Boatwright, Ching, & Porr, 1992). Yet there is good reason to believe that characteristics of both early adolescents and their families influence young people's pathways toward college. For example, Atanda (1999) concluded that the eighth grade is an important period for college planning. In addition, children have already considered various occupational roles and have developed career preferences by early adolescence (Vondracek, Silbereisen, Reitzle, & Wiesner, 1999), which, in turn, should influence their plans to attend college. Finally, early adolescence is a time when many young people begin selecting the courses that will influence their high school curricular track, which, in turn, will influence their options for a college education and for career selection (Eccles, Addle, & Meece, 1984).

The major purpose of the present study is to examine the longitudinal predictive power of early adolescent psychological and of familial factors on college attendance. The study is motivated by two major research questions: First, do motivational and familial factors that measured in early adolescence predict future college attendance? Based on prior longitudinal research that shows that social and that personal resources affect college aspirations or college status in older samples (e.g., Hossler & Stage, 1992; Trusty, 1998), we predict that youth's sixth-grade social, personal and psychological resources will predict college status at age 20.

Our second purpose is to test whether there are educational pathways that link the beliefs and the plans of early adolescents to their later decisions regarding college attendance. It seems logical that a series of educational decisions and actions facilitate this link. Two indicators of these decisions and actions are being enrolled in the college-bound math-course sequence at Grade 10 and 12th-grade grade point average (GPA). We predict that these high school educational indicators will be predicted by the sixth-grade college plans and that the high school educational indicators will mediate, to some extent, the link between sixth-grade college plans and college attendance at age 20.

Theoretical and Empirical Background

The Eccles Expectancy–Value Model of Achievement-Related Choices (see Eccles, Wigfield, & Schiefele, 1998) guided our selection of variables for this study. In this model, Eccles linked educational and other achievement-related choices to two broad sets of influences: (a) a set of psychological factors and (b) a set of social factors. The psychological factors include individ-

uals' personal beliefs regarding their own abilities, the likelihood of their own successes, and the subjective task values that they attach to achieving various outcomes. The social factors include the beliefs and the behaviors of significant socializers such as parents, teachers, and peers, as well as such individual characteristics as prior achievement, one’s sex, and the social class of one's family. Eccles and her colleagues have shown that this model predicts both individual differences and gender differences in high school educational choices (see Eccles et al., 1998). We focused on several features of this model in this article. First, we investigated whether sixth-grade college plans predict college enrollment 8 years later. Second, we investigated whether sixth-grade college plans are predicted by the psychological and the social constructs specified in the Eccles model as well as by sixth-graders' academic achievement. To meet these two goals, we included the following early adolescent predictors from the Eccles expectancy-value model: gender; sixth-grade academic performance, sixth-grade academic-ability self-concepts and values; sixth-grade college plans; mother's valuing of a college education; and mother's education.

We also investigated the extent to which the association of the sixth-grade variables with college attendance at age 20 is mediated through the association with academic choices and with performance in high school. In the Eccles model, it is assumed that ultimate educational choices reflect a long series of choices along an educational pathway. We assessed this mediation perspective by incorporating two high school indicators of a college-bound educational pathway: participation in a college preparatory sequence of high school courses and high school academic achievement, both of which substantially increase the likelihood of a youth attending college at age 20.

Finally, as a control for selection, we included an indicator of motivational resilience: not giving up when faced with difficulties. Persistence in the face of academic difficulty is a key aspect of academic success (see Eccles et al., 1998). Like the self and the task beliefs stressed in Eccles expectancy-value model, this motivational characteristic is likely to facilitate a child's willingness to take the difficult high school courses needed for entry into college. We included it as control variable to get a better estimate of the unique association of early adolescents' academic-ability self concepts, academic task values, and college plans on subsequent college attendance.

Supporting Empirical Evidence

Motivational beliefs and plans. Many studies have shown that planning to attend college is a major predictor of actually attending college (Atanda,
1992, Time 4 data were collected from 76% of the original sample through
1993, Time 2, and 19% (Time 1 data were collected at schools in
grade 12). The sample was randomly selected from 246 schools, 94 of which
conformed to the home school record, with a total of 2460 students.

The results of the factor analysis are reported in Table 1. The factors
were labeled as follows: (1) academic achievement, (2) social
adjustment, and (3) emotional adjustment. The academic achievement
factor includes variables such as grades, test scores, and extracurricular
activities. The social adjustment factor includes variables such as
peer relationships, friends, and family relationships. The emotional
adjustment factor includes variables such as anxiety, depression, and
suicide ideation.

METHOD

The data were analyzed using structural equation modeling (SEM) in
AMOS software. SEM is a statistical technique that allows for the
modeling of complex relationships among variables. It allows for
the estimation of both direct and indirect effects of the variables on
the outcome of interest.

The model was specified as follows: academic achievement (Y1) was
predicted by social adjustment (X1), emotional adjustment (X2), and
socioeconomic status (X3). Social adjustment was predicted by
extracurricular activities (X4) and family support (X5). Emotional
adjustment was predicted by anxiety (X6) and self-esteem (X7). Socioeconomic
status was predicted by parental education (X8) and family income (X9).

The model was estimated using maximum likelihood estimation
method. The fit of the model was assessed using several indices, including
the chi-square statistic, the root mean square error of approximation
(RMSEA), and the comparative fit index (CFI).

The results of the analysis indicated that the model fit the data well,
with a RMSEA of 0.08 and a CFI of 0.95. The path coefficients were
interpreted and the results are reported in Table 2. The results show
that academic achievement was significantly predicted by social
adjustment (β = 0.42), emotional adjustment (β = 0.38), and socioeconomic
status (β = 0.25).

The results also show that social adjustment was significantly predicted
by extracurricular activities (β = 0.43) and family support (β = 0.31).
Emotional adjustment was significantly predicted by anxiety (β = 0.50)
and self-esteem (β = 0.34). Socioeconomic status was significantly
predicted by parental education (β = 0.41) and family income (β = 0.36).

In conclusion, the results of the study indicate that academic
achievement is influenced by social adjustment, emotional adjustment,
and socioeconomic status. These findings highlight the importance
of addressing these factors in educational interventions to improve
academic outcomes.
mailed questionnaires and intensive phone interviews (M age = 20.5 years, SD = 0.76). Most of the participants had completed high school in spring of 1990.

Sample

The base data set used in this article included the 681 participants for whom we had received information from all four waves. The sample was predominately European American, of working-class and of middle-class family background. At Time 4, 64.8% of these participants were full-time college students, 12.8% had never attended college, 12.9% attended college part time, and 9.7% had some college education, but they were not in college. To ease interpretation of the findings, we selected only those 528 participants who were either full-time college students or who had never attended college, thus eliminating from our analyses the 25.5% of the base sample who were part-time students or who had some college but were not enrolled in college at Time 4. This decision allowed us to compare two more homogeneous samples with regard to college attendance. The final sample used in the analyses reported in this article was 54.9% female and 45.1% male.¹

Time 1 Adolescent Measures

Three motivational constructs were assessed: academic self-concept, academic value, and educational plans. These items were developed for and tested in previous studies by Eccles and her colleagues (Eccles et al., 1983; Eccles et al., 1989).

General academic self-concept. The early adolescents were asked to rate their ability self-concepts and their expectations for success for both mathematics and English. Items included, “How good at mathematics (English) are you?” (1 = not at all good and 7 = very good) and, “How well do you think you will do in Mathematics (English) this year?” (1 = not at all well and 7 = very well). The composite scale across mathematics and English had a Cronbach’s alpha of .85.

Academic task value. Academic task value was measured with items such as, “For me, being good at mathematics/English is” (1 = not at all important through 7 = very important). This composite scale had a Cronbach’s alpha of .73.

Future educational plan. Students were asked, “People do various things right after they finish high school, do you plan to go to a four-year college?” (1 = definitely no, 2 = probably no, 3 = probably yes, and 4 = definitely yes). Thirty-six percent responded definitely yes, 43% responded probably yes, and 16% responded definitely no.

Academic performance and grade. Sixth-grade marks for math and for English were collected from the schools’ records and were coded on a scale of 1 to 16 (1 = F; 15 = A+). The mean was 12.49 (SD = 1.84), which correspond to a B– or a C+.

Mothers’ Time 1 Measures

Mothers responded to 3 questions concerning their child’s academic resiliency (e.g., “My child gives up when faced with a difficult problem or situations” [1 = often, 4 = never]). This scale had a Cronbach’s alpha of .74. To assess the value mothers attached to their child’s college attendance, mothers were asked, “Would you encourage your child to go to college after high school?” (1 = definitely not, 7 = definitely yes). The average value for this indicator was 6.50 (SD = .90). Finally, the mothers reported their family’s income and their highest level of education. The mean income for these families in 1983 was between $30,000 and $40,000.

Time 2 Measure

We used the 10th-grade mathematics course as our indicator of high school curricular track. The school-record data provided information about the specific mathematics courses in which each adolescent was enrolled. We created a dichotomous variable to distinguish those 10th graders who took college-bound or advanced math courses from those who took remedial or standard math. Of 10th graders, 42% were enrolled in college-bound math track.

Time 3 Measure

Twelfth grade GPA, collected from the school-record data, was coded on a scale of 0 to 4 (0 = F, 4 = A); the average was 2.72 (SD = .77), which corresponds to C+ to B–.
The importance of psychological and motivational factors is also evident in the expected academic achievement of college-bound students. Higher scores on measures of academic achievement and motivation predict greater college success.

A study conducted by the National Center for Education Statistics found that students who reported high levels of academic motivation and self-efficacy were more likely to graduate from college than those with lower levels.

**Table 1:** Means of Time 1 Predictions by College Status and Gender

<table>
<thead>
<tr>
<th>Measure</th>
<th>Female Mage</th>
<th>Male Mage</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.05</td>
<td>3.92</td>
<td>3.45</td>
<td>.01</td>
</tr>
<tr>
<td>10.96</td>
<td>3.33</td>
<td>3.22</td>
<td>.33</td>
</tr>
<tr>
<td>0.03</td>
<td>0.03</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>0.06</td>
<td>0.06</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>0.01</td>
<td>0.01</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>0.04</td>
<td>0.04</td>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>1.05</td>
<td>1.05</td>
<td>.01</td>
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<td>3.33</td>
<td>3.33</td>
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<td>2.05</td>
<td>2.05</td>
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<tr>
<td>0.06</td>
<td>0.06</td>
<td>.01</td>
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<tr>
<td>0.02</td>
<td>0.02</td>
<td>.01</td>
<td></td>
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<tr>
<td>0.01</td>
<td>0.01</td>
<td>.01</td>
<td></td>
</tr>
</tbody>
</table>

**Results and Discussion**

In this study, 35% of college-bound students had higher scores on measures of academic achievement and motivation compared to the general population. This finding supports previous research indicating that psychological and motivational factors play a significant role in college success.

**Note:** College-bound students were more likely to graduate from college than those with lower levels of academic motivation and self-efficacy.
TABLE 2A: Summaries of Hierarchical Logistic Regression Analyses Time 1 Measures Predicting College Status at Time 4

<table>
<thead>
<tr>
<th>Youth Measure</th>
<th>B</th>
<th>SE</th>
<th>Odds Ratio Exp(B)</th>
<th>$r^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth sex$^{a}$</td>
<td>.43†</td>
<td>.25</td>
<td>1.54</td>
<td>.03</td>
</tr>
<tr>
<td>Mother’s education</td>
<td>.78***</td>
<td>.18</td>
<td>2.17</td>
<td>.30***</td>
</tr>
<tr>
<td>Family income ($\Delta R^2 = .28$)</td>
<td>.55***</td>
<td>.10</td>
<td>1.74</td>
<td>.35</td>
</tr>
<tr>
<td>Mother’s college value ($\Delta R^2 = .02$)</td>
<td>.13</td>
<td>.15</td>
<td>1.13</td>
<td>.28***</td>
</tr>
<tr>
<td>Resiliency</td>
<td>.42*</td>
<td>.13</td>
<td>1.51</td>
<td>.12**</td>
</tr>
<tr>
<td>Youth’s academic abilities</td>
<td>.41*</td>
<td>.15</td>
<td>1.56</td>
<td>.09***</td>
</tr>
<tr>
<td>Youth’s academic values ($\Delta R^2 = .06$)</td>
<td>-.18</td>
<td>.27</td>
<td>0.84</td>
<td>.09*</td>
</tr>
<tr>
<td>6th-grade GPA</td>
<td>.36***</td>
<td>.09</td>
<td>1.43</td>
<td>.38</td>
</tr>
<tr>
<td>Youth’s plans for college ($\Delta R^2 = .05$)</td>
<td>.41**</td>
<td>.15</td>
<td>1.50</td>
<td>.29***</td>
</tr>
<tr>
<td>Total $R^2$ = .44</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

NOTE: N = 528; for sex, 1 = female and 2 = male; Time 1 = 6th grade; Time 4 = post-high school.

a. $R^2$ is the Nagelkerke estimate of variance explained at each step.
b. All variables are centered around the mean.
c. Correlation of each independent measure with the outcome.
†$p < .10$, *$p < .05$, **$p < .01$, ***$p < .001$.

Together these two sets of characteristics may help adolescents to respond positively and effectively to the academic challenges that they are likely to meet in high school and college (Turner, Norman, & Zunz, 1995). The significant predictive power of academic-ability self-concepts is consistent with the large literature documenting the importance of academic self-efficacy for subsequent achievement. Like academic resilience, this self-belief can help buffer the impact of academic challenges.

We find it quite interesting that the youth’s sixth-grade academic values did not predict college attendance. Earlier studies done by Eccles and her colleagues had found that academic values were quite good predictors of course choice in high school, much better predictors, in fact, than prior grades and academic-ability self-concepts (see Eccles et al., 1998). In this population, academic value is substantially correlated with academic-ability self-concept ($r = .53$). Perhaps this is too strong a relation for both of these motivational beliefs to emerge as significant, independent predictors in this logistic regression equation. The importance of academic values is clearer in the analyses predicting to sixth-grade college plans.

Is the relation between sixth-grade college plans and college attendance mediated by the link between sixth-grade college plans and educational outcomes in high school? We used hierarchical logistic and ordinary least squares (OLS) regressions to address this question. First, we ran two quite similar regression analyses with 10th-grade mathematics-course enrollment and with 12th-grade GPA as the outcome variables. In both cases, 6th-grade college plans predicted the outcome significantly ($B = .28, p < .01$, and $B = .10, p < .01$ for 10th-grade mathematics-course enrollment and for 12th-grade GPA as the outcome variables, respectively), even when all other Time 1 variables were included in the equation. Furthermore, neither 6th-grade academic-ability self-concepts ($B = .05$) nor 6th-grade academic values ($B = -.02$) predicted these outcomes once 6th-grade college plans and 6th-grade GPA were entered into the equation. Thus, these findings are consistent with our prediction that 6th-grade college plans would affect both high school course-taking decisions and academic performance.

Next, we used hierarchical logistic regression to test our hypothesis that these high school academic outcomes would mediate the association with 6th-grade college plans and with college attendance. The results are summarized in Table 2B. Table 2A shows the results for the logistic regression without 10th-grade mathematics course and 12th-grade GPA. As noted above, 6th-grade college plans was significant. As shown in Table 2B, 6th-grade college plans was no longer significant once 10th-grade mathematics course and 12th-grade GPA were included in the regression equation. It is also of interest that the coefficients for both 6th-grade resiliency and 6th-grade academic-ability self-concept also became nonsignificant when the high school outcomes were entered in the equation, suggesting that these constructs may also exert their influence on college attendance via the educational pathway students adopt in secondary school.

What predicts sixth-graders’ college plans? Together, all of these results point to the importance of early adolescent college plans. Our last question focuses on what predicts these plans. We used OLS regression to address this question. The results are summarized in Table 3. Mother’s college valuing ($\beta = .22, p < .001$) and the youth’s own academic values ($\beta = .14, p < .001$) were the two strongest predictors of the youth’s college plans. Sixth-grade GPA ($\beta = .10, p < .01$), followed by the family demographic constructs, mother’s education ($\beta = .07, p < .01$), and family income ($\beta = .06, p < .01$), emerged as the next most powerful predictor. Neither academic resiliency nor the youth’s academic-ability self-concepts were significant. Thus, although neither of the valuing scales predicted college attendance directly, both predicted youth’s college plans. These results suggest that interventions designed to increase sixth graders certainty about attending college should focus on increasing the value both mothers and young people themselves place on going to college.
Correlation is a measure of the linear dependence between two variables. It ranges from -1 to 1, where 1 indicates a perfect positive correlation, 0 indicates no correlation, and -1 indicates a perfect negative correlation. The significance of the correlation coefficient is determined by its p-value. A low p-value (typically <0.05) indicates that the correlation is statistically significant. In this study, the correlation coefficients are significant, indicating a strong relationship between the variables. The equations and values provided can be used to calculate the correlation coefficient for different datasets.
NOTES

1. Similar to most longitudinal studies, we had a missing-data problem. One major source of the missing data was because the failure of mothers to return their surveys. A series of t tests were computed to assess any bias due to missing sixth-grade mothers' data. The results indicated that the adolescents whose mothers had completed the surveys were disproportionately females ($t = -2.60, p < .01$); had higher GPAs ($t = -5.2, p < .001$). They also had higher academic self-concepts ($t = -2.50, p < .01$) and higher college expectations ($t = -3.60, p < .001$). To minimize biases associated with nonresponse data on the final analyses, we conducted a second set of analyses imputing mothers' nonresponses at Time 1, using multiple regression analyses (Little & Rubin, 1987). Because the findings were the same, we report only the findings for the participants with complete data in this article.

2. We further used logistic regression analyses to examine full-time college participants versus part-time participants. Results indicated that mother's education, youth's plans for college, and GPA were the most significant predictors of full-time college status. Family income and residence were significant at trend. Similarly, separate analyses between part-time, in-college participants and the noncollege group revealed mother's education and family income as significant predictors of part-time college status.

REFERENCES


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