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CHAPTER 6: ACADEMIC FUNCTIONING

In this chapter, we first report changes in academic achievement, followed by the results for educational and occupational expectations and aspirations. We then present the results for several different indicators of academic motivational beliefs and perceptions of the school environment, ending with a summary of the findings. Results are shown in Tables 11 and 12 and Figure 3.

Grade Point Average (GPA)

There was a significant negative linear slope moderated by SES and gender (see Table 11). Consistent with our predictions, GPA declined steadily across the school years for the average adolescent (see Figure 3). Higher-SES and female adolescents experienced a smaller decline in GPA than did lower-SES and male adolescents. There were no differences in the slopes according to race/ethnicity, the gender by race/ethnicity interaction, or parents' marital status.

At age 14, adolescents who were higher SES, female, European American, and lived with intact, always-married parents had higher GPAs than did those who were lower-SES, male, African American, and lived in other family types. Taking into account the other covariates, the average GPA of these students ranged from a C to a B. Males began with a B average and dropped to a C by the end of high school; females began with a slightly higher than B average and ended with nearer to a C+.

One of the benefits of this population is to be able to separate out R/E differences from socioeconomic differences. For GPA, both social class and race/ethnicity predicted GPA in the manner typical of most studies in the United States, with European American and high-SES youth having a higher GPA compared to African American and lower-SES youth (see Kao & Thompson, 2003, for a review). It is likely that different processes explain these two effects on school achievement, with SES effects being carried mostly by lack of resources and differences in experiences at home (Davis-Kean, 2005; Gutman et al., 2003; McLoyd, 1998) and the unique effect of race/ethnicity likely reflecting the impact of R/E discrimination in school (see Wong et al. 2003). In this sample, the African American youth reported higher levels of R/E discrimination than did the European American youth, and both Wong et al. (2003) and Chavous et al. (2003) demonstrated that experiences of R/E discrimination in this population predicted declines in GPA over the secondary school years.

Educational Aspirations and Expectations and Occupational Aspirations

Evidence has documented the importance of high occupational aspirations and educational aspirations and expectations for later academic and career success (Clausen, 1993; Schoon, Martin, & Ross, 2007; Mello, 2008; Wigfield et al., 2006). According to Eccles' Expectancy-Value Theory, these beliefs help to guide adolescents' high school course choices and provide an impetus for increased engagement in learning the academic content in these courses (Eccles, 1994). In this way, these beliefs reflect the influence of young people's conceptualization of their own talents, goals, and interests and serve as vehicles through which young people may actualize their emerging identities (Eccles, 1994; Lent, Brown, & Hackett, 1994; Meece, Eccles-Parsons, Kaczala, Goff, & Futterman, 1982;

Savickas, 2005). Here, we examine educational and occupational aspirations, which reflect adolescents' hopes regarding their educational attainment and the social status of their ideal occupation, as well as their expectations regarding the educational level they expect to actually achieve.

Educational Aspirations. Neither the linear nor quadratic slopes were significant at the $p < .01$ level, but the linear slope was moderated by gender (see Table 11). On average, these adolescents' educational aspirations were stable from 12 to 18 years, but there was a slight decline over time for males (see Figure 3). There were no significant differences in the slopes according to adolescents' race/ethnicity, the gender by ethnicity interaction, or parents' SES or marital status.

At 14 years, higher-SES and female adolescents had higher educational aspirations than did lower-SES and male adolescents. There were no significant differences at the intercept according to adolescents' race/ethnicity, the gender by race/ethnicity interaction, or parents' marital status.

On average and controlling for all covariates, these students' educational aspirations were very high, ranging between graduating from a 4-year university and obtaining a master's degree. This level increased over time for some of the participants, such that on average females were close to aspiring to a master's degree by age 18. In contrast, the average aspirations of males dropped closer to graduating from a 4-year college.

Educational Expectations. A quite similar pattern emerged for adolescents' educational expectations (see Table 11). As shown in Figure 3, on average, educational expectations were stable from 12 to 18 years. There were no significant differences in the

linear and quadratic slopes at the $p < .01$ level, and the slopes were not moderated by SES, gender, race/ethnicity, the gender by race/ethnicity interaction, or parents' marital status.

There were significant differences for SES and gender at the intercept but no differences according to race/ethnicity, the gender by race/ethnicity interaction, or parents' marital status. At age 14, higher-SES and female adolescents had higher educational expectations than did lower-SES and male adolescents.

As expected, the mean levels were lower for educational expectations than for educational aspirations. Taking into account the other covariates, the average adolescent expected to obtain slightly less than a bachelor's degree. Both higher-SES and female adolescents expected to obtain more than a bachelor's degree, whereas lower-SES and male adolescents expected to obtain between an associate's degree and a bachelor's degree.

Occupational Aspirations. As with Educational Aspirations, there were no significant changes in the linear and quadratic slopes for the average adolescent (see Table 11). As shown in Figure 3, on average these adolescents' occupational aspirations had the same status level from early to late adolescence. There also were no significant differences in the slopes according to the demographic variables.

There were, however, significant mean-level group differences at the intercept. At age 14, higher-SES and African American adolescents aspired to higher status occupations than did lower-SES and European American adolescents. There were no significant differences according to gender, the gender by race/ethnicity interaction, or parents' marital status.

In terms of the actual ratings, taking into account the other covariates, the average adolescent aspired to a career in a mid-level managerial or professional position. At age

14, African American youth aspired to higher status occupations (at the level of accountants, auditors, or supervisors of police and detectives, mean = 85) than did European American youth (police officers, health care practitioners, editors, or public relations specialists, mean = 80).

Academic Motivational Beliefs

Motivational psychologists have stressed the importance of task- and self-related beliefs as influences on academic engagement and educational aspirations and expectations. Eccles, Wigfield, and their colleagues (Eccles et al., 1993; Wigfield & Eccles, 2002); Marsh and his colleagues (Marsh, 1992; Marsh & Craven, 2006; Marsh & Shavelson, 1985); and Bandura (1977, 1997) have stressed the importance of beliefs related to task importance and domain-specific self-efficacy. There is now considerable evidence (Wigfield et al., 2006) that these sets of beliefs predict levels of school engagement during the secondary school years, secondary school course choice, and longer-term educational and occupational aspirations. In this monograph, we included one measure of task-related beliefs and one reflecting self-related beliefs.

Academic Importance. In keeping with the idea that it is the relative importance of various tasks that influence behavioral choice, we measured perceived academic importance in relative terms: how important school subjects are to the person in comparison to other things. Consistent with existing literature, we found a significant negative linear slope (see Table 11). On average, the relative importance these adolescents attached to academic subjects declined across their secondary school years (see Figure 3). This linear slope was moderated by SES. Lower-SES youth experienced a sharper decline in academic importance across the school years compared to higher-SES youth. Although we believe this may be the first study to

document a more rapid decrease in the importance attached to school subjects for lower- than higher-SES students, this finding is consistent with both (a) studies showing higher drop-out rates and declining academic achievement among lower-SES youth (Eccles, 2012; Rumberger, 1985) and (b) the other SES differences we report in this section. The quadratic slope was also moderated by a gender by race/ethnicity interaction: European American male adolescents experienced a sharper decline in perceived academic importance compared to the other groups as they approached the end of high school.

In terms of the intercept, there was a significant race/ethnicity effect. At age 14, African American adolescents, on average, rated academics as more important than did European American adolescents. There were no significant differences according to SES, gender, the gender by race/ethnicity interaction, or parents' marital status. With regard to the means of their responses, controlling for the covariates, the youth in this sample, like the youth in other studies (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002), attached quite high relative importance to school subjects at age 12, averaging close to 5.5 on a 7-point scale, with 7 being "much more important to me than other things". These initially high levels then showed a steady decline across adolescence to 4.5, meaning academics were seen as only slightly more important than other things.

Academic Self-Concept. Our measure captures both an absolute confidence in one's academic abilities and a social-comparative assessment of one's academic abilities relative to other students. Consistent with other studies (Eccles et al., 1993; De Fraine et al., 2007; Gniewosz et al., 2012), we found a significant negative linear slope for this construct (see Table 11). For the average adolescent, self-perceptions of their academic skills significantly declined

from early to late adolescence (see Figure 3). Importantly, this slope was not moderated by any of the other demographic characteristics.

Consistent with the SES difference in GPA, higher-SES adolescents had a higher self-concept of their academic skills than did lower-SES adolescents at the intercept (age 14). In contrast to previous studies (Dotterer et al., 2014; De Fraine et al., 2007), there were no significant effects for race/ethnicity or gender, perhaps because this construct assessed ability self-concepts across math and other school subjects rather than focusing on specific academic domains. Taking this broad approach would average across the typical gender differences for math and English academic self-concepts. Consistent with widely reported SES differences in school achievement, higher-SES youth reported higher academic self-concepts than did lower-SES youth (Eccles, 2012). As noted earlier, one of the advantages of this sample is our ability to unconfound race/ethnicity with SES. Clearly, in this case, SES is a more powerful predictor of individual differences than race/ethnicity. Like academic importance, mean levels of Academic Self-Concept started quite high – at 5.5 on a 7-point scale (controlling for the covariates) – and decreased over time to slightly above 4.5.

Positive School Identification

We end this section with our results on the adolescents' perceptions of positive school identification. Motivational psychologists have argued that having a positive general identification with one's school should increase the likelihood of attending and being positively engaged with the school's agenda (Eccles & Roeser, 2011; Finn, 1989; Fredericks, Blumenfeld, & Paris, 2004; Voelkl, 1997). Scholars concerned with school drop-out and school disengagement have stressed the importance of a lack of identification with one's school as an institution (Fine, 1986; Finn, 1989; Rumbauer, 2001). Finally, scholars

have also argued that the drops in achievement across the middle school and high school transition result, in part at least, from declines in one's general sense of fit with the social context (Eccles et al., 1993; Eccles & Midgley, 1989; Gutman & Midgley, 2000). However, there have been very few studies looking at longitudinal changes in school identification among different demographic groups of adolescents.

We found a significant negative linear slope and a significant positive quadratic slope (see Table 11). On average, these adolescents' positive identification with their school environment resembled a concave-shaped trajectory (see Figure 3). Adolescents experienced a decrease in their identification with their school from age 12 to 15 followed by an increase from ages 16 to 18. This pattern did not vary according to SES, gender, race/ethnicity, the gender by race/ethnicity interaction, or parents' marital status.

There were no significant differences in demographic variables at the intercept at the $p < .01$ level. Taking into account the covariates, on average these adolescents' scores ranged from 3 to 3.5, with 3 equal to "neither agree nor disagree," to 4, with 4 equal to "agree." Thus, despite the slight dip during the transition to high school, most of our adolescents agreed somewhat but not strongly that their school was good, they liked their school, and they would recommend their school to other students.

Summary of Academic Functioning

With the exception of adolescents' aspirations and expectations, the developmental trajectories of academic functioning supported our hypotheses, showing a significant but slight decline across junior and senior high schools. Our findings are comparable to the general literature, which has shown that declines in academic functioning tend to occur during the early adolescence years as these youth move through junior high school and

then, again, during the transition into senior high school (Anderman, Maehr, & Midgley, 1999; Barber & Olson, 2004; Benner & Graham, 2009; Eccles et al., 1993; Eccles & Roeser, 2010; Gutman & Midgely, 2000; Juvonen, Le, Kaganoff, Augustine, & Constant, 2004; Rumberger, 2001; Roeser, Eccles, & Freedman-Doan, 1999; Wigfield, Eccles, & Pintrich, 1996). Our young people experienced declines in their feelings of both academic importance and scholastic competence from early to late adolescence. They also experienced a decrease in their generally positive feelings about school during junior high school and in the first few years of senior high school. More worrisome is that their GPAs dropped as they moved through high school – a full grade point in some cases. Despite these changes, our youth remained on the positive side of the midpoints of our scales. Academic beliefs related to the future, including educational expectations and aspirations and occupational aspirations, remained quite high from early to late adolescence.

As we predicted, there were significant gender differences in academic functioning. Consistent with other studies (Gutman & Schoon, 2012; Mello, 2008; Schoon et al., 2007, Voyer & Voyer, 2014), females had higher educational aspirations and expectations and achieved higher GPAs than did males. There were several gender differences in the shape of trajectories. First, males experienced a greater decline in their school grades than did females from early to late adolescence. Second, females experienced an increase while males experienced a slight decrease in educational aspirations. Contrary to other research (De Fraine et al., 2007; Dotterer, Lowe, & McHale, 2014), however, there were no gender differences in the trajectories of academic motivational beliefs.

In line with our expectations, African American adolescents, particularly females, reported being more academically motivated than did European American adolescents,

especially compared to European American males who reported a sharp decline in the importance they attached to academics as they neared the end of high school. African American adolescents also reported having higher occupational aspirations and viewed academics as more important than did European American adolescents. Nevertheless, African American adolescents had lower GPAs than did European American adolescents, highlighting the persistence of the Black-White achievement gap, even among middle- and upper-class populations (Kao & Thompson, 2003; Magnuson & Waldfogel, 2008). Together, these findings suggest there is an attitude-achievement paradox in our sample, as the African American adolescents reported more positive attitudes toward education yet had lower academic achievement, despite having similar SES backgrounds to the European American adolescents (Mickelson, 1990).

As is true in many studies, SES also predicted developmental changes in academic functioning. Lower-SES adolescents were at risk of having lower mean intercept levels and more negative trajectories compared to higher-SES adolescents. In line with previous research (Kao & Tienda, 1998; Schoon et al., 2007), lower-SES adolescents reported lower educational and occupational aspirations, educational expectations, and self-concepts of academic skills. Lower-SES adolescents had a lower average GPA than did higher-SES adolescents at age 14, and they also experienced a greater linear decrease in their GPA across the school years. Furthermore, their perceptions of academic importance had a greater decline across the school years compared to higher-SES adolescents. These findings present a consistent picture of greater disengagement from education among lower-SES than higher-SES adolescents.

For parents' marital status, there was only one statistically significant difference. Adolescents of intact, never-divorced parents had a higher GPA than did adolescents of other family types. In comparison to SES, there were also fewer significant effects of parents' marital status highlighting the fact that family configuration has little impact on educational outcomes once its association with SES is taken into account.

Overall, the majority of the variation in academic functioning was attributable to differences between individuals rather than between groups or ages. Of the systematic group differences, between 4% (Positive School Identification) and 30% (GPA) was due to age. The demographic variables explained between 2% and 31% of the variance in the intercepts (see Table 12), with the greatest variance explained in Educational Expectations (22%) and GPA (31%) and up to 40% of the variance in the linear slope, with the greatest variance explained for GPA (40%).

Table 11

Growth Models for Academic Functioning

	GPA	Educational Aspirations	Educational Expectations	Occupational Aspirations	Academic Importance	Academic Self-Concept	Positive School Identification
For Intercept							
Intercept	3.04***	7.77***	6.87***	8.34***	5.38***	5.18***	3.36***
SES	.16***	.37***	.51***	1.85**	.07	.15***	-.02
Gender	.26***	.42***	.40***	2.11*	-.03	-.00	.08
Ethnicity	.19***	-.23*	-.04	-2.84***	-.29***	.02	-.07
GXE	-.04	-.07	.11	1.19	-.01	.00	.21*
Single	-.05	-.01	.23	.35	.15	.17	-.06
Intact	.15***	-.08	.15	.57	-.11	-.04	.02
Age	-.02	-.08	-.15	1.56	.21**	.02	.06
Age ²	.00	.01	.03	-.02	-.07*	.01	-.02
For Linear slope							
Intercept	-.07***	.04	.04	-.22	-.15***	-.07***	-.05**
SES	.03**	.04	.03	.09	.09***	.00	.00
Gender	.05***	.08**	.05	.33	.03	.02	.03
Ethnicity	.00	-.05	-.01	-.16	-.04	-.01	-.02
GXE	.00	-.04	-.07	-.91	-.02	.03	.06
Single	.02	.02	.01	-.41	.04	-.02	.02
Intact	.00	-.06	-.01	-.38	-.01	-.02	-.02
For Quadratic slope							
Intercept	-.00	-.03*	-.03*	.00	-.01	-.01	.02**
SES	-.01	.01	.02	.00	-.02	-.00	.00
Gender	-.01	-.01	.03	.00	.03	-.01	.00
Ethnicity	-.01	-.01	-.03	.00	-.03	-.00	.01
GXE	.00	.02	.00	.01	.05**	-.01	-.03
Single	.02	.02	-.03	.00	-.01	-.00	-.02
Intact	-.01	.02	-.01	.00	.03	.01	.01

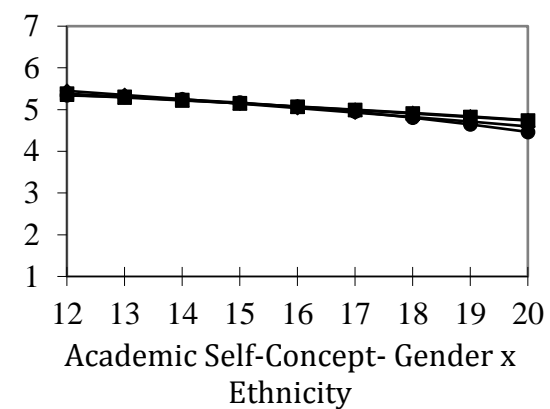
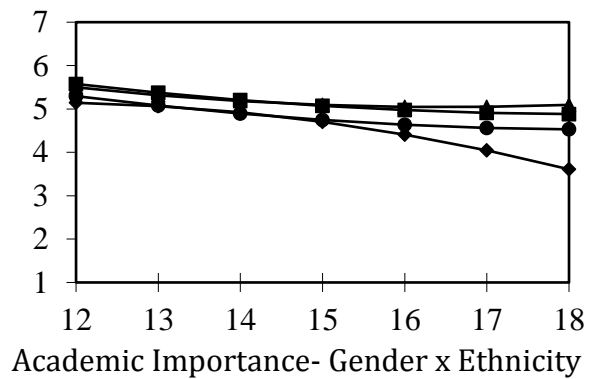
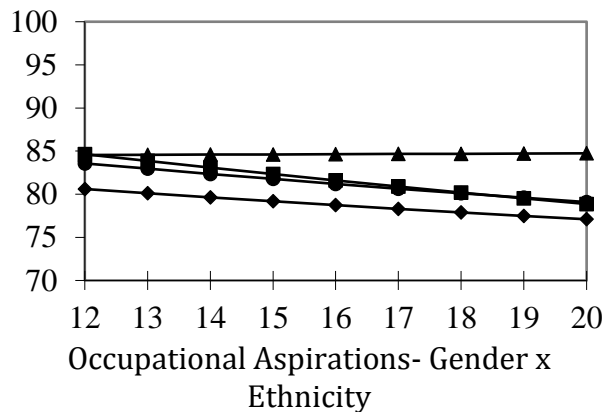
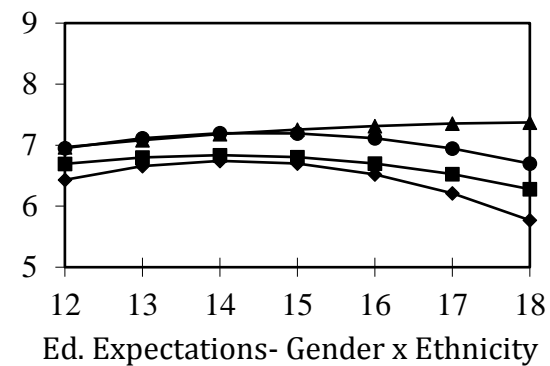
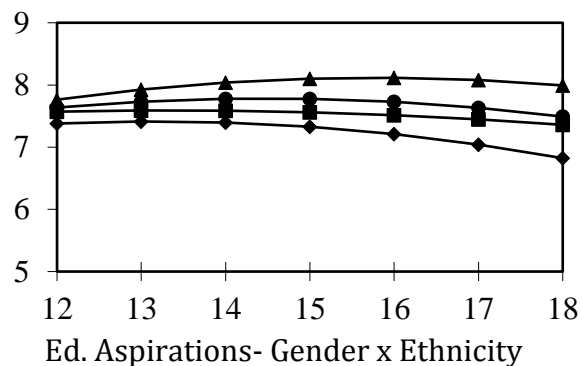
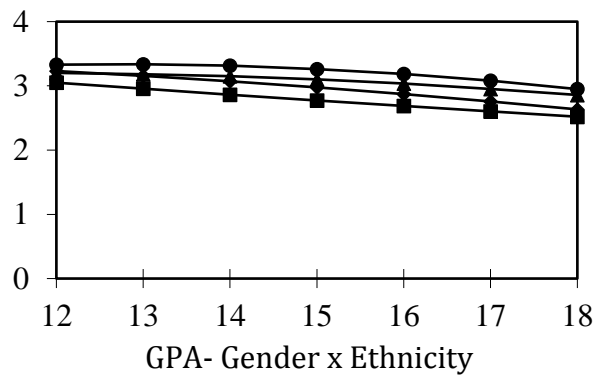
Note.*** $p < .001$, ** $p < .01$, * $p < .05$.

Table 12

Residual Variance for Academic Functioning

	Unconditional Means Model	ICC	Unconditional Growth Model	Level 1 R ²	With Level 2 Predictors	% Explained
GPA		.39		.30		
Level 1	.257		.180			
Intercept	.166***		.178***		.123***	31%
Linear Slope			.020***		.012***	40%
Educational Aspirations		.44		.14		
Level 1	1.226		1.056			
Intercept	.945***		1.008***		.885***	12%
Linear Slope			.034***		.031***	9%
Educational Expectations		.46		.09		
Level 1	1.419		1.285			
Intercept	1.200***		1.237***		.971***	22%
Linear Slope			.025***		.020**	20%
Occupational Aspirations		.28		.17		
Level 1	260.221		215.591			
Intercept	101.845***		113.566***		107.960***	5%
Linear Slope			5.344***		5.167***	3%
Quad Slope			.001***		.001***	<1%
Academic Importance		.23		.15		
Level 1	1.376		1.168			
Intercept	.406***		.458***		.418***	9%
Linear Slope			.029***		.024***	17%
Academic Self- Concept		.41		.20		
Level 1	.745		.595			
Intercept	.518***		.543***		.534***	2%
Linear Slope			.018***		.018***	<1%
Quad Slope			.000*		.000*	<1%
Positive School Identification		.25		.04		
Level 1	.442		.425			
Intercept	.144***		.149***		.145***	3%
Linear Slope			.002		.002	<1%

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





Note. The x-axis represents age in years, whereas the y-axis represents the mean of the scale, controlling for the covariates. For the gender and race/ethnicity growth curves, European-American females are represented by the circle, European American males are represented by the diamond, African American females are represented by the triangle, and African American males are represented by the square.

Figure 3. Growth Curves for Academic Functioning.