Racial/ethnic group and socioeconomic status variation in educational and occupational expectations from adolescence to adulthood ☆

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ABSTRACT

This longitudinal study examined the development of educational and occupational expectations from adolescence to adulthood in relation to racial/ethnic and socioeconomic status (SES) group membership. Hierarchical linear modeling on national data (NELS:88) spanning 12 years yielded several findings: (a) African American participants reported the highest educational expectations, followed by Hispanic and Asian American/Pacific Islander, European American, and American Indian/Alaskan Native participants, (b) African American and Asian American/Pacific Islander participants reported the highest occupational expectations, followed by Hispanic, American Indian/Alaskan Native, and European American participants, (c) racial/ethnic group patterns persisted from adolescence to adulthood, and (d) SES positively predicted expectations. Results highlight the importance of considering SES when examining educational and occupational expectations across racial/ethnic groups.

1. Introduction

Adolescents' educational and occupational expectations have been found to predict both adolescent and adult educational and occupational outcomes (Eccles, Wigfield, & Schiefele, 1998; Schoon, 2001) and may serve as a fruitful area for addressing inequalities in educational and occupational attainment among demographic groups. Such knowledge may be especially useful for research focusing on African American, Hispanic, and low SES youth who have disproportionately low rates of educational and occupational attainment compared to other racial/ethnic and SES groups (Current Population Reports, 2003; National Center for Education Statistics [NCES], 2002a). Unfortunately, extant research has confounded racial/ethnic group membership with SES or has been drawn from data unable to show broad age-related variation. Thus, the purpose of the present study was to examine educational and occupational expectations from adolescence to adulthood across racial/ethnic and SES groups with longitudinal analyses of national data spanning 12 years from ages 14 to 26.

1.1. Research on the development of educational and occupational expectations

Existing research on the development of educational and occupational expectations is limited due to a reliance on studies that include few timepoints and narrow age ranges. For example, researchers have used the National Educational Longitudinal Study of 1988 (i.e., NELS:88; NCES, 2002b) to show changes in expectations between two time-points. In particular, researchers have shown that educational expectations decline from 8th to 10th grade (Kao & Tienda, 1998) and increase from 10th to 12th grade and from

12th grade to 2 years post high school (Mau & Bikos, 2000). In contrast, research has shown that occupational expectations increase from 8th to 10th grade (Schneider, 1994) and from 10th to 12th grade (Mau & Bikos, 2000). However, Rojewski and Yang (1997) reported that occupational expectations were primarily stable across 8th, 10th, and 12th grades. Additionally, analyzing national data from 1980 to 1986 (i.e., High School and Beyond), Hanson (1994) showed that the majority of individuals decreased their educational expectations from the end of high school to six years post high school. In sum, prior research provides some indication of age-related variation in expectations but has been unable to show changes across adolescence or into adulthood. How expectations vary through the period of adolescence and the transition to adulthood is difficult to determine, given the limitations in extant research and the degree to which membership in demographic groups may shape the development of educational and occupational expectations.

1.2. Educational and occupational expectations and socioeconomic status

Research on SES and expectations has consistently shown that SES, defined as parental income, education, and occupation, is positively associated with educational and occupational expectations (Brantlinger, 1992; Dillard & Perrin, 1980; McLoyd & Jozefowicz, 1996; St-Hilaire, 2002). However, extant research has been limited to cross-sectional studies. Brantlinger (1992) used open-ended interviews to examine 40 low SES adolescents' post-school plans. Data indicated that only 35% expected to attend college. One female adolescent participating in the study illustrated how going to college was tied to SES: "Mom told me that they can't send me. We don't have that kind of money" (p. 288). Similarly, in a study of 8th and 9th grade Mexican American adolescents, SES was shown to be a strong and positive predictor of adolescents' educational expectations (St-Hilaire, 2002).

A similar positive association between SES and expectations has been shown in studies with large samples, but analyses have included few time-points. Using NELS:88 data, Trusty and Harris (1999) showed that low SES ascertained in 8th grade was strongly related to a reduction in educational expectations at two years post high school. Marjoribanks (1986) predicted the educational and occupational expectations of 16 year-olds with SES ascertained at age 11. And, in the seminal study by Sewell and Shah (1968) that connected SES to adolescents' expectations, results were based on individuals in their senior year of high school and seven years later.

Other research drawing from the NELS:88 national data set included several time points but examined expectations separately at each wave. For example, Rojewski and Yang (1997) reported that SES positively predicted occupational expectations among individuals in 8th, 10th, and 12th grade. Similarly, Kao and Tienda (1998) showed that SES positively predicted educational expectations among individuals in 8th, 10th, and 12th grade. In sum, research examining the relationship between SES and educational and occupational expectations has consistently shown a positive association, although such research has been cross-sectional or has included only a few time points.

1.3. Educational and occupational expectations and racial/ethnic group

Researchers have suggested that variations in educational and occupational expectations are due to an awareness of barriers to future schooling and work, and that individuals who perceive, anticipate, or experience barriers may *compromise* or reduce their expectations (Gottfredson, 1981, 1996). Similarly, Ogbu (1988) discussed how members of some racial/ethnic minority groups, such as African Americans, American Indian/Alaskan Natives, and Mexican Americans, may anticipate more barriers to future schooling and work, given the way in which these racial/ethnic groups entered the United States. Barriers may include financial support, the availability of education and employment, family obligations, and discriminatory hiring practices (Gottfredson, 1981, 1996; Grotevant & Cooper, 1988; Lent, Hackett, & Brown, 2000). Indeed, research has shown that members of some racial/ethnic minority and low SES groups report a disproportionate amount of barriers to future schooling and work (Gottfredson, 1996). For example, Mexican-American high school students anticipated more discrimination in their future occupation compared to European Americans (McWhirter, 1997).

Unfortunately, research focusing on expectations across racial/ethnic minority groups has confounded racial/ethnic minority group membership with SES. For example, Cook et al. (1996) examined the occupational expectations of African American and European American males in a cross-sectional study of 2nd, 4th, 6th, and 8th grade students. They concluded that beginning in the 2nd grade, inner-city males mirrored existing racial/ethnic group and class differences, with African American males reporting lower occupational expectations than European Americans. However, in this particular study, participants were either African American *and* poor or European American *and* middle-class.

Research has also examined racial/ethnic minority group participants by combining racial/ethnic minority participants into one non-European American group. Using NELS:88 data, Rojewski and Yang (1997) compared the occupational expectations of European Americans and non-European Americans across 8th, 10th, and 12th grade and reported no significant racial/ethnic variation. Similarly, Hanson (1994) examined educational expectations among European Americans and non-European Americans, showing that European Americans were more likely to report lower educational expectations in 12th grade and a decline in educational expectations from that point to six years later compared to their non-European American counterparts, after controlling for SES.

Research that has included information about racial/ethnic minority groups, SES, and expectations has yielded mixed results. For example, analyses of the NELS:88 data have shown that, after controlling for SES, African American 8th graders reported higher educational and occupational expectations than European Americans (Soloranzo, 1992), and that across 8th, 10th, and 12th grades, African American and Hispanic youth report higher educational expectations than their counterparts (Kao & Tienda, 1998). However, studies with smaller data sets have reported conflicting results. A study of 367 African American and European American males from 10th to 12th grade indicated that racial/ethnic variation in expectations was due primarily to differences in SES (Howell, Frese, & Sollie, 1977). In contrast, Cosby's (1974) study of 196 African American and European American 10th and 12th

Table 1
Sample distribution ($N = 10, 282$) by racial/ethnic group and socioeconomic status.

	Socioeconomic status quartile								Total
	Low		Low-mid		Mid-high		High		
Asian American/Pacific Islander	116	17%	120	17%	147	21%	310	45%	693
African American	363	39%	243	26%	176	19%	137	15%	919
American Indian/Alaskan Native	36	35%	29	28%	29	28%	9	9%	103
European American	1,319	18%	1,761	24%	1,996	27%	2,211	30%	7,287
Hispanic	623	49%	296	23%	214	17%	147	11%	1,280
Total	2,457		2,449		2,562		2,814		10,282

Note. Percentages may not add to 100 due to rounding. Socioeconomic status quartile generated by dividing parental socioeconomic status composite variable into quarters.

graders showed that occupational expectations declined more for African Americans than European Americans, even after controlling for SES. Last, Dillard and Perrin (1980) reported that occupational expectations were similar among 194 Puerto Rican, Black, and European American 9th through 12th graders, once controlling for SES. In sum, extant research does not provide a clear picture of the association between racial/ethnic minority group membership and SES.

1.4. The present study

The purpose of the present study was to address limitations in extant research and to contribute to our understanding of how individuals' expectations for their educational and occupational futures change from adolescence to adulthood and vary by membership in important demographic groups. The study focused on three research questions. First, how do individuals' educational and occupational expectations change from age 14 to 26? As the review of the literature on age-related variation and expectations indicates, prior research generally shows an increase in expectations through high school. However, extant research is limited by the inclusion of only a few time points and focus on narrow age ranges. The present study examined expectations across 12 years with individuals aged 14 to 26. Second, how do developmental trajectories of expectations vary by SES? A consistent positive association has been shown between expectations and SES, although prior research has not examined such associations from adolescence to adulthood. Third, how do developmental trajectories of expectations vary by racial/ethnic group, after controlling for SES? Prior research has confounded racial/ethnic minority group with SES. The present study addressed this limitation by including a national data set with racial/ethnic groups of varying SES.

2. Method

2.1. Participants

The data for this study came from the National Education Longitudinal Study (NELS:88/2000 Public use data files; NCES, 2002b) and included individuals in 8th grade who were followed for 12 years: 8th grade (Wave 1, age 14, 1988), 10th grade (Wave 2, age 16, 1990), 12th grade (Wave 3, age 18, 1992), and two (Wave 4, age 20, 1994) and eight years (Wave 5, age 26, 2000) following high school graduation. NELS employed a two-stage sampling design including first schools, then students (NCES, 2003). The base year included a national probability sample of 1,052 public and private schools. Participants in this study attended 983 schools. Within each school, approximately 26 students were randomly selected. Typically, this included 24 regularly sampled students plus oversampling for Hispanic and Asian/Pacific Islander students. The subsequent four waves of data collection included participants who began the study in 8th grade and those who dropped out of high school. Subsampling was used in the third and fourth waves due to budget constraints, thereby reducing the sample size. Participants were retained such that an adequate representation of subpopulations including racial/ethnic minority groups and high school dropouts were included.

Potential participants for this study included 10,827 individuals who were in all five waves of data collection (see Table 1). The sample was reduced due to missing values for racial/ethnic group membership ($n = 100$) or academic achievement ($n = 458$). The final sample was 10,282 and included 5,482 females (53%) and the following racial/ethnic groups: African American (9%), American Indian/Alaska Native (1%), Asian American/Pacific Islander (7%), European American (71%), and Hispanic (12%). The Asian American/Pacific Islander subgroups included Chinese, Filipino, Japanese, Korean, Southeast Asian, Pacific Islander, South Asian, West Asian, and Middle Eastern and the Hispanic subgroups included Mexican, Mexican American, Chicano, Cuban, and Puerto Rican. It was important for the purposes of the present study to include racial/ethnic group participants of varying SES. As shown in Table 1, although SES was unequally distributed across racial/ethnic groups, racial/ethnic minority groups of high SES and racial/ethnic majority groups (European Americans) of low SES were included.

2.2. Measures

2.2.1. Educational expectations

In Waves 1 through 3, educational expectations were ascertained by the question, "As things stand now, how far in school do you think you will get?" In Wave 4, the question was "What is the highest level of education you ever expect to complete?" and in

Wave 5, the question was "When you are age 30, what level of education do you plan to hold?" Items were recoded to a six-point scale to establish comparability across waves and were categorized as follows: less than high school = 1, high school completion/GED = 2, trade school = 3, some college/Associate's Degree = 4, college completion = 5, or graduate school including M.A., Ph.D., M.D. = 6. Each point represented about two years of completed schooling. In Wave 4 a response option of no further education planned/no higher degree anticipated was included. If participants endorsed this response option, their highest educational attainment at that time (age 20) was used as their educational expectation. Means (and *SD*s) for expectations across waves and racial/ethnic groups are available from the corresponding author.

2.2.2. Occupational expectations

In Wave 1, occupational expectations were ascertained by the question, "What kind of work do you expect to be doing when you are 30 years old?" In Waves 2 and 3, the question was "Which of the categories below comes closest to describing the job or occupation that you expect to have when you are 30 years old?" Over 20 response options were provided (NCES, 2003). In Wave 4, the question was "What job or occupation do you expect or plan to have when you are 30 years old?" In Wave 5, the question was "What job or occupation do you plan to have when you are age 30?" For Waves 4 and 5, participant verbatim responses were matched to occupational categories (NCES, 2003). Due to variation in the response options across waves and similar to previous analyses of these data (e.g., Schneider, 1994), occupational expectations were recoded into a dichotomous variable indicating a professional or nonprofessional occupation (professional occupation = 1 and non-professional occupation = 0). Examples of professional occupations include business owner, school teacher, and engineer, and nonprofessional occupations include sales/clerical, technician, and service.

2.2.3. Socioeconomic status (SES)

SES was ascertained in Wave 1 and was a composite variable including fathers' and mothers' education level, fathers' and mothers' occupation level, and family income. Education included the following values: did not finish high school = 1, high school graduate or GED = 2, graduated high school and less than four-year degree = 3, college graduate = 4, M.A. or equivalent = 5, Ph.D., M.D. = 6. Occupation was coded using the Duncan Socioeconomic Index (Duncan, 1961). Family Income values ranged from 0 to 15: 0 = 1, less than $1000 = 2, $1000–$2999 = 3, and up to $200,000 or more = 15. Responses to each SES item were standardized with a mean of 0 (*SD* = 1). Nonmissing standardized components were then averaged to yield a SES composite for each participant. For purposes of presentation, developmental trajectories were estimated for high, middle, and low SES groups. SES groups correspond to SES values of 1 standard deviation above the mean, the mean, and 1 standard deviation below the mean, respectively.

2.2.4. Control variables

Standardized achievement, grade point average (GPA), and drop out status were included in analyses as control variables to account for the well-documented association between educational and occupational expectations and academic achievement (e.g., Eccles & Wigfield, 2002). Including such control variables enabled the comparison of expectations among individuals with similar academic achievement. Standardized achievement was a composite of measures of reading and math (*M* = 51.90, *SD* = 10.10). GPA consisted of self-reported grades for English, mathematics, science, and social studies and was generated by converting the response categories to a five-point scale (mostly As = 4, Bs = 3, Cs = 2, Ds = 1, mostly below *D* = .5), taking the mean of nonmissing values, and rounding to one decimal place (*M* = 2.99, *SD* = 0.73). Standardized achievement and GPA were ascertained in Wave 1 (age 14). Drop out status was a dichotomous variable indicating if the participant had ever dropped out of high school. In this study, 11% of the sample (*n* = 1141) had ever dropped out of high school.

3. Results

3.1. Analytic strategy

Hierarchical Linear Modeling (HLM; Raudenbush & Bryk, 2002) was used for analyses, given that it is an appropriate statistical technique for data that are hierarchical or "nested." In the present study, variables were nested in two ways: individuals were measured repeatedly over time and individuals resided in schools. Nested data violate the OLS assumption that errors are independent of one another and can bias estimates. HLM produces accurate estimates by separating the error associated with each level such as within-individuals across time (level 1), between-individuals (level 2), and between schools (level 3). For this study, Level 1 included repeated observations of educational and occupational expectations, estimated in separate models, from age 14 to age 26; Level 2 included racial/ethnic group, SES, and control variables; Level 3 included participants' schools. Linear multi-level modeling was used for analyses on educational expectations given that it was a continuous variable. In contrast, logistic multi-level modeling was used with occupational expectations because it was a dichotomous variable. Population-average estimates were reported. Logistic coefficients were log odds and were transformed to odds ratio and probabilities.

To determine the shape of the developmental trajectory of educational and occupational expectations from age 14 to 26 years, growth terms were examined sequentially for significance, direction, and fit. Including higher-power growth terms increases the complexity of the shape of the developmental trajectory (Singer & Willett, 2003). The data for this study had five time points and permitted analysis of linear, quadratic, and cubic growth terms. Repeated observations were treated with a metric of time calculated in school years including values 0, 2, 4, 6, and 12, which corresponded to ages 14, 16, 18, 20, and 26, respectively. Racial/ethnic group membership was dummy coded with European American set as the reference group. Finally, SES, standardized achievement, and GPA were grand mean centered.

Table 2
Developmental trajectories of educational expectations from adolescence to adulthood by socioeconomic status and racial/ethnic group ($N = 10,282$).

	Model 1		Model 2		Model 3		Model 4	
	Coef.	SE	Coef.	SE	Coef.	SE	Coef.	SE
Intercept								
Intercept	4.66 ***	0.02	4.66 ***	0.01	4.65 ***	0.02	4.62 ***	0.01
Socioeconomic status			0.50 ***	0.01			0.31 ***	0.01
African American					0.13 **	0.04	0.48 ***	0.04
American Indian/Alaskan native					−0.45 **	0.15	−0.01	0.13
Asian American/Pacific Islander					0.39 ***	0.04	0.19 ***	0.04
Hispanic					−0.19 ***	0.04	0.22 ***	0.04
Academic (GPA)							0.32 ***	0.01
Academic (SND)							0.20 ***	0.01
School drop out							−0.36 ***	0.04
Linear change								
Intercept	−0.12 ***	0.01	−0.12 ***	0.01	−0.12 ***	0.01	−0.10 ***	0.01
Socioeconomic status			0.04 ***	0.01				
African American					−0.002	0.03	0.04	0.03
American Indian/Alaskan native					0.04	0.12	0.11	0.12
Asian American/Pacific Islander					0.08 *	0.03	0.05	0.03
Hispanic					−0.03	0.03	0.02	0.03
Academic (GPA)							0.01	0.01
Academic (SND)							0.04 **	0.01
School drop out							−0.32 ***	0.04
Quadratic change								
Intercept	0.04 ***	0.00	0.04 ***	0.00	0.04 ***	0.00	0.04 ***	0.00
Socioeconomic status			−0.01 ***	0.00				
African American					−0.002	0.01	−0.01	0.01
American Indian/Alaskan native					−0.01	0.03	−0.02	0.03
Asian American/Pacific Islander					−0.02 **	0.01	−0.01	0.01
Hispanic					0.01	0.01	0.0003	0.01
Academic (GPA)							−0.005	0.00
Academic (SND)							−0.01 **	0.00
School drop out							0.06 ***	0.01
Cubic change								
Intercept	−0.003 ***	0.000	−0.003 ***	0.000	−0.003 ***	0.000	−0.003 ***	0.000
Socioeconomic status			0.001 ***	0.000				
African American					0.0002	0.000	0.001	0.000
American Indian/Alaskan native					0.0005	0.002	0.001	0.002
Asian American/Pacific Islander					0.001 **	0.000	0.001 *	0.000
Hispanic					−0.001	0.000	−0.00003	0.000
Academic (GPA)							0.0003 *	0.000
Academic (SND)							0.0004 **	0.000
School drop out							−0.003 ***	0.001
Variance Components	Variance	SD	Variance	SD	Variance	SD	Variance	SD
Intercept	0.89	0.94	0.74	0.86	0.88	0.94	0.53	0.73
Linear change	0.19	0.44	0.19	0.44	0.19	0.44	0.19	0.43
Quadratic change	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10
Cubic change	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Within individual	0.50	0.71	0.50	0.71	0.50	0.71	0.50	0.71

Note. Coef. = coefficient; *SE* = Standard error (robust); *SD* = Standard deviation; SES = Socioeconomic Status Composite; Academic-GPA = Grade Point Average; Academic-SND = Standardized Academic Achievement; School drop out = participant ever dropped out of high school.
*$p<.05$. **$p<.01$. ***$p<.001$.

3.2. Analyses

3.2.1. Educational expectations

Significant linear, quadratic, and cubic growth terms indicated that the developmental trajectory of educational expectations was characterized by a slight decline ($b = -0.12$, $p<.001$), increase ($b = 0.04$, $p<.001$), and a decline ($b = -0.003$, $p<.001$). The shape of the population average developmental trajectory of educational expectations was determined by examining the addition of increasingly complex growth terms to the null model. The significant deviance statistic, $\chi^2(df = 16) = 138,059.67$, $p<.001$, and the relatively small deviance value compared to models including fewer growth terms (i.e., 138059.67 versus 140361.74) indicated that the model including linear, quadratic, and cubic growth terms best fit the data (see Table 2, Model 1). However, the magnitude of change was small with average educational expectations ranging from attending through completing college.
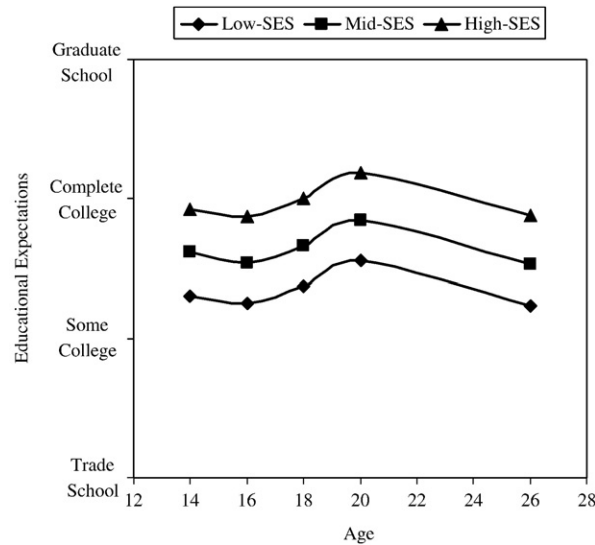
Fig. 1. Predicted developmental trajectories of educational expectations from age 14 to 26 by socioeconomic status, controlling for academic achievement ($N=$ 10,282). *Note*. SES = Socioeconomic Status. Low-, Mid-, and High-SES groups reflect estimates for participants of average and $+/-$ one standard deviation of the socioeconomic status composite with average academic achievement and for those who did not drop out of high school. Figure scale excludes values for less than high school and completed high school.

SES was positively associated with an increase in average levels of educational expectations and with growth rates, although SES was most predictive with average levels of expectations. SES variation in developmental trajectories of educational expectations was examined by adding the SES composite variable to the null model (see Table 2, Model 2). Next, control variables were added to the model (see Table 2, Model 4). The multivariate hypothesis test indicated that SES contributed significantly to the overall model $\chi^2(df=4)=1093.61$, $p<.001$, but that the shape of the developmental trajectory of educational expectations did not vary by SES, $\chi^2(df=3)=5.86$, $p>.05$. Thus, SES was not included in the portion of the final model estimating the shape of the developmental trajectories of educational expectations. Fig. 1 shows how SES was positively and strongly associated with average levels of educational expectations, after controlling for academic achievement variables.

African Americans and Asian American/Pacific Islanders had higher educational expectations than European Americans, who, in turn, had higher educational expectations than Hispanic and American Indian/Alaskan Natives (see Table 2, Model 3). Growth rates indicated that Asian Americans varied from other racial/ethnic groups with a shallower initial decline and in quadratic and cubic growth rates compared to European Americans, although the magnitude of the coefficients indicated that the difference is small. Next, control variables were added to the model (see Table 2, Model 4). The multivariate hypothesis test indicated that racial/ethnic group contributed significantly to the overall model, $\chi^2(df=16)=434.468$, $p<.001$, and that the shape of the developmental trajectories of educational expectations significantly varied by racial/ethnic group $\chi^2(df=12)=43.46$, $p<.001$. Fig. 2 shows that racial/ethnic group variation in developmental trajectories was observed primarily in average levels of
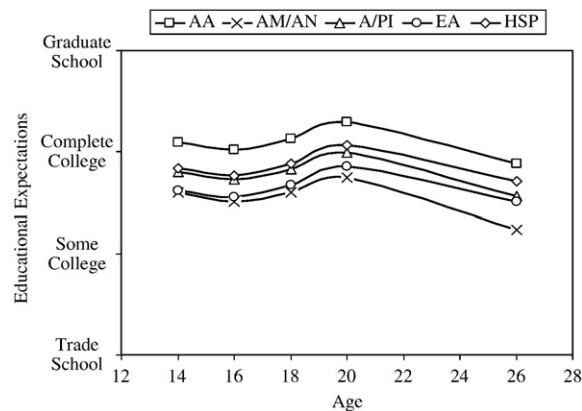

Fig. 2. Predicted developmental trajectories of educational expectations from age 14 to 26 by racial/ethnic group, controlling for SES and academic achievement ($N=10,282$). *Note*. AA = African American; AM/AN = American Indian/Alaskan Native; A/PI = Asian American/Pacific Islander; EA = European American; HSP = Hispanic. Figure scale excludes values for less than and completed high school. Estimated developmental trajectories are predicted values of racial/ethnic groups with average academic achievement and those who did not drop out of high school.

Table 3
Developmental trajectories of occupational expectations from adolescence to adulthood by socioeconomic status and racial/ethnic group ($N = 10,282$).

	Model 1		Model 2		Model 3	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
For intercept						
Intercept	0.36 ***	0.03	0.39 ***	0.02	0.34 ***	0.03
Socioeconomic status			0.56 ***	0.03		
African American					0.08	0.08
American Indian/Alaskan native					−0.45	0.24
Asian American/Pacific Islander					0.58 ***	0.09
Hispanic					−0.14	0.08
For linear change						
Intercept	0.33 ***	0.02	0.35 ***	0.02	0.35 ***	0.02
Socioeconomic status			0.01	0.03		
African American					−0.07	0.07
American Indian/Alaskan native					−0.004	0.22
Asian American/Pacific Islander					−0.06	0.09
Hispanic					−0.03	0.07
For quadratic change						
Intercept	−0.06 ***	0.00	−0.06	0.01	−0.06 ***	0.01
Socioeconomic status			−0.002	0.01		
African American					0.01	0.02
American Indian/Alaskan native					0.01	0.05
Asian American/Pacific Islander					0.02	0.02
Hispanic					−0.001	0.02
For cubic change						
Intercept	0.003 ***	0.00	0.003	0.00	0.003 ***	0.00
Socioeconomic status			0.0000	0.00		
African American					−0.001	0.00
American Indian/Alaskan native					−0.0005	0.00
Asian American/Pacific Islander					−0.001	0.00
Hispanic					0.000	0.00

Variance	Model 1		Model 2		Model 3	
	Variance	SD	Variance	SD	Variance	SD
Intercept	1.01	1.00	0.93	0.97	0.99	1.00

Note. SE = Standard error (robust); SD = Standard deviation.
***$p < .001$.

educational expectations, rather than in the shape of the developmental trajectory. At age 14, African Americans had the highest average estimated educational expectations, followed by Hispanics and Asian American/Pacific Islanders, European Americans, and American Indian/Alaskan Natives.

3.2.2. Occupational expectations

Coefficients indicate that the population average developmental trajectory of expecting a professional occupation in adulthood was characterized by an increase ($b = .33$, $p < .001$) and a shallow decline ($b = −0.06$, $p < .001$). The shape of the developmental trajectory of occupational expectations from age 14 to 26 was determined by examining the addition of increasingly complex growth terms to the null model. The variance components for the linear, quadratic, and cubic growth terms were small in magnitude and not statistically significant ($p > .05$). However, the growth terms were significant in the fixed effects portion of the model. Thus, the final model retained the growth terms, but did not include variance components (see Table 3, Model 1).

SES was strongly and positively associated with average occupational expectations at age 14 ($b = .56$, $p < .001$; see Table 3, Model 2), but was not associated with the growth rate of occupational expectations. Next, SES variation in developmental trajectories of occupational expectations was examined, after controlling for academic achievement variables. As shown in Table 3, a one-unit increase in SES increased the log odds of expecting a professional occupation by 0.35 ($p < .001$). The multivariate hypothesis test indicated that SES contributed significantly to the overall model $\chi^2(df = 4) = 398.72$, $p < .001$, although the shape of the developmental trajectories of occupational expectations did not significantly vary by SES $\chi^2(df = 3) = 1.49$, $p > .05$. Thus, SES was not included in the growth term portion of the final model (Table 4). As shown in Fig. 3, SES was strongly and positively associated with average levels of expecting a professional occupation from age 14 to 26.

Racial/ethnic group differences in developmental trajectories of occupational expectations were examined by adding racial/ ethnic terms to the null model (see Table 3, Model 3). Coefficients indicate that, at age 14, Asian American/Pacific Islanders had estimated odds of 1.79 times European American participants in expecting a professional occupation ($b = .58$, $p < .001$). African American, American Indian/Alaskan Native, and Hispanic participants did not significantly differ from European Americans in

Table 4
Developmental trajectories of occupational expectations from adolescence to adulthood by socioeconomic status and racial/ethnic group, after controlling for academic achievement ($N = 10,282$).

	Coef.	SE	Odds ratio
For intercept			
Intercept	0.28 ***	0.03	–
Socioeconomic status	0.35 ***	0.02	1.42
African American	0.54 ***	0.05	1.71
American Indian/Alaskan native	0.16	0.13	1.17
Asian American/Pacific Islander	0.50 ***	0.06	1.65
Hispanic	0.31 ***	0.05	1.36
Academic (GPA)	0.35 ***	0.03	1.43
Academic (SND)	0.30 ***	0.03	1.36
School drop out	− 0.06	0.08	0.94
For linear change			
Intercept	0.39 ***	0.02	–
For quadratic change			
Intercept	− 0.07 ***	0.01	–
For cubic change			
Intercept	0.003 ***	0.00	–
Variance			
		Variance	SD
Intercept		0.76	0.87

Note. Coef. = Coefficient; SE = Standard error (robust); SD = Standard deviation; Academic GPA = Grade point average, Academic SND = Standardized achievement test scores, School drop out = participant ever dropped out of high school. Academic variables included in linear, quadratic, and cubic growth terms (values not shown).
***$p < .001$.

expecting a professional occupation. Next, racial/ethnic group variation in developmental trajectories of occupational expectations was examined, after controlling for SES and achievement (see Table 4). The multivariate hypothesis test indicated that racial/ethnic group significantly contributed to the overall model $\chi^2(df = 16) = 180.78$, $p < .001$), although the shape of the developmental trajectories of occupational expectations did not vary by racial/ethnic group $\chi^2(df = 12) = 14.40$, $p > .05$. Thus, racial/ethnic growth term variables were not retained in the final model (see Table 4). Fig. 4 shows that occupational expectations were highest among African American and Asian American/Pacific Islanders, followed by Hispanics, American Indian/Alaskan Native, and European American.

4. Discussion

This longitudinal study examined the development of educational and occupational expectations from adolescence to adulthood by racial/ethnic and SES group. Results from a national data set (i.e., NELS) and HLM analyses indicate that (a)
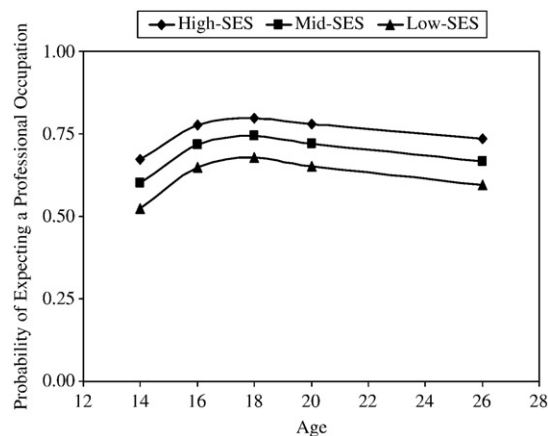

Fig. 3. Predicted developmental trajectories of occupational expectations from age 14 to 26 by socioeconomic status, controlling for academic achievement ($N = 10,282$). *Note.* SES = Socioeconomic Status. Low-, Mid-, and High-SES groups reflect estimates for participants of average and $+/−$ one standard deviation of the socioeconomic status composite with average academic achievement and for those who did not drop out of high school.
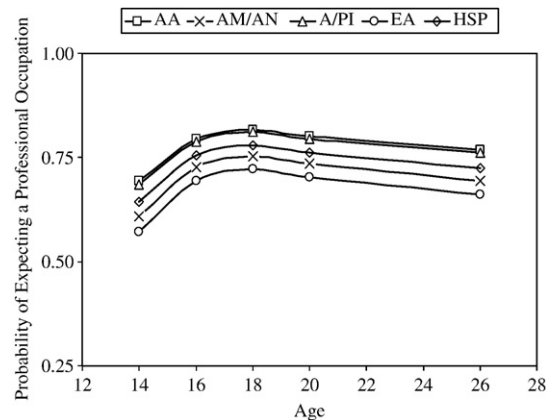
Fig. 4. Predicted developmental trajectories of occupational expectations from age 14 to 26 by racial/ethnic group, controlling for SES and academic achievement (*N* = 10,282). *Note.* AA = African American; AM/AN = American Indian/Alaskan Native; A/PI = Asian American/Pacific Islander; EA = European American; HSP = Hispanic. Figure scale excludes value for zero probability. Estimated developmental trajectories are predicted probabilities of racial/ethnic groups with average academic achievement and those who did not drop out of high school.

educational and occupational expectations were generally high and stable from age 14 to 26, (b) SES was positively associated with average levels of educational and occupational expectations, after controlling for academic achievement, and (c) racial/ethnic group differences were observed in levels of educational and occupational expectations, after controlling for SES and academic achievement. Results are discussed in light of research on variation in expectations by racial/ethnic and SES groups.

4.1. Development of educational and occupational expectations

Developmental trajectories of educational and occupational expectations were primarily stable from age 14 to 26. This pattern of development suggests that individuals' ideas about their future schooling and work that are established in adolescence are largely maintained to adulthood. The overall stability in educational and occupational expectations observed in this study varies from prior work that has shown a sharp reduction in individuals' educational expectations between the senior year in high school and six years later (Hanson, 1994). The discrepancy may stem from differences in item wording or the historical period under study. The timing of these studies may have contributed to the variation in results. Participants in the present study were surveyed from 1988 to 2000 compared to 1980 and 1986. Since that time, educational and occupational attainment has increased in salience (Arnett, 2000). Changes in labor force requirements have been associated with increases in educational expectations between 1955 and 1992 (Schneider & Stevenson, 1999) and may be continuing to shape individuals' educational and occupational expectations upward.

4.2. Educational and occupational expectations by socioeconomic status

Consistent with prior cross-sectional research (Brantlinger, 1992; St-Hilaire, 2002), SES was positively and strongly associated with average levels of educational and occupational expectations from adolescence to adulthood, after controlling for academic achievement variables. In particular, low SES participants expected to attain some college, in contrast to high SES participants, who expected to complete college. Similarly, low SES participants were much less likely to expect a professional occupation in adulthood relative to their high SES counterparts. The findings of this study suggest that SES variation in educational and occupational expectations observed at age 14 is maintained to age 26. Divergence in expectations by SES may occur prior to the developmental period of adolescence. Researchers have discussed how children are capable of recognizing their SES (Harter, 1998). Empirical research has also shown that disparities in expectations by SES appear in individuals as young as the 2nd grade (e.g., Cook et al., 1996). For example, low SES individuals aged 5 to 13 have reported fewer career opportunities and more concerns for the future (Weinger, 1998). A child from Weinger's study described the thoughts of a child living in a low SES household: "What will happen to me when I grow up? Will I graduate and who will I be when I grow up?" (p. 107).

Future research in this area may examine SES variation in educational and occupational expectations among individuals in childhood. Understanding at what age SES might shape the anticipation of completed schooling and work would provide a more comprehensive understanding of this area. Another direction of potential future research concerns the examination of the components of SES. In this study, SES was treated as a composite variable including parental education, occupation, and income. Research would benefit from examining if such SES factors differentially predict educational and occupational expectations.

4.3. Educational and occupational expectations by race/ethnicity

An important focus of this study was to examine the development of educational and occupational expectations by racial/ethnic group, after controlling for SES. Researchers have emphasized the role of barriers in adversely shaping individuals'

educational and occupational expectations. Barriers are thought to negatively influence some racial/ethnic minority groups' expectations (i.e., African American, Hispanic, & American Indian/Alaskan Natives; Gottfredson, 1981, 1996; Lent et al, 2000; Ogbu, 1988). However, extant literature has confounded racial/ethnic group with SES. Some prior research has shown that after controlling for SES, some racial/ethnic minority groups have higher expectations than their counterparts (Alexander, Entwisle, & Bedringer, 1994; Kao & Tienda, 1998; Soloranzo, 1992; Stevenson, Chen, & Uttal, 1990), whereas other research has shown that expectations are similar across racial/ethnic groups, after considering SES (Dillard & Perrin, 1980; Howell et al., 1977).

Results from the present study focusing on racial/ethnic group variation in the development of educational and occupational expectations were provocative and warrant detailed discussion. The findings show that racial/ethnic minority groups do not have lower or *deficient* expectations for future schooling and work. Rather, after controlling for SES and academic achievement variables, some racial/ethnic minority groups reported higher expectations than their counterparts. In particular, African American participants had the highest educational expectations followed by Hispanic, Asian American/Pacific Islander, American Indian/Alaskan Native, and European Americans. For occupational expectations, African American and Asian American/Pacific Islander participants reported the highest occupational expectations, followed by Hispanic, American Indian/Alaskan Natives, and European Americans. This result is similar to analyses showing that African Americans are more likely than European Americans to complete college, after controlling for SES and academic achievement (Jencks & Phillips, 1998).

One explanation of the relatively high educational and occupational expectations among African American and Hispanic groups is that such expectations reflect an emphasis on educational and occupational attainment within racial/ethnic minority and immigrant families. Researchers have discussed how education, in particular, is emphasized as an important mechanism of upward mobility in immigrant and ethnic minority families (Cooper et al., 1994; Fulgini & Hardway, 2004; Stevenson et al., 1990). Ethnographers have also described how African American families stress the importance of education with their adolescent children (Clark, 1984; MacLeod, 1995). Drawing from this research, it is possible that the relatively high educational and occupational expectations reported by African American and Hispanic youth reflect familial messages regarding the importance of education.

Another explanation for the relatively high expectations among African American and Hispanic participants is that this result may be due to the degree to which expectations accurately capture individuals' anticipation of schooling and work, given their racial/ethnic minority group. Specifically, schooling attitudes have been discussed as including concrete and abstract dimensions, in which concrete attitudes reflect an awareness of barriers related to one's demographic group and abstract attitudes reflect mainstream notions of schooling (Mickelson, 1990). Thus, the results of this study may be capturing more abstract ideas of schooling and work for African American and Hispanic groups, rather than concrete expectations that include the anticipation of barriers to future schooling and work. Research may further examine this finding by investigating the relationship between individuals' perceptions of barriers due to racial/ethnic minority group membership and educational and occupational expectations.

4.4. Study limitations

Limitations of the present study center on two important measurement issues. First, the wording of items varied across waves. With educational expectations the question changed from "highest ever expected to complete" to "level of education planned to hold" and with occupational expectations the wording changed from "expect" to "plan." It is possible that such variation in wording across items may have contributed to the slight change in the shape of the developmental trajectories of educational and occupational expectations. Second, similar to prior research (e.g., Schneider, 1994), occupational expectations were included as a dichotomous variable due to changes in the response options across waves. Age-related variation in occupational expectations may be more likely to be observed with an occupational expectation variable that has more variance than the one employed in this study.

4.5. Conclusions and future directions

The results of this study extend our understanding of the association between the anticipation of completed schooling and work in adulthood and demographic group membership. They also highlight the importance of considering SES when examining variation in educational/occupational expectations across racial/ethnic groups.

Future research is needed that addresses topics such as age, factors related to race/ethnicity, and attainment. Longitudinal studies that include participants in childhood and into adolescence may explain racial/ethnic group variation in expectations. Factors could include adolescent- and parent-reports of parental expectations and perceptions and/or experiences of barriers to schooling adolescence would be useful to understand how expectations for schooling and work are age-related. An equally important area of future research involves the systematic examination of factors such as racial/ethnic discrimination, and interviews with adolescents about their future, given their racial/ethnic group membership. This area of research would also greatly benefit from studies that connect educational and occupational expectations with *actual* educational and occupational attainment in adulthood.

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