


# Sport Involvement and Educational Outcomes of High School Students: A Longitudinal Study

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## Abstract

This study examined the relations among sport involvement and social and personal influences on high school students' educational expectations and attainment, using National Education Longitudinal Survey-88. Athletic engagement, educational expectations of significant others, peer support for academics, parental involvement in academics, and academic and athletic identities were measured in the 10th grade. Educational expectations and attainment were measured in the 12th grade and 8 years after high school. Socioeconomic status, academic ability, and school size were controlled. Results indicated that athletic engagement was related to youths' formation of identities, but only their academic identity was associated with later educational outcomes. Athletic engagement and identity were not adversely related to educational outcomes.

## Keywords

athletic participation, educational expectation, educational attainment, athletic identity, academic identity

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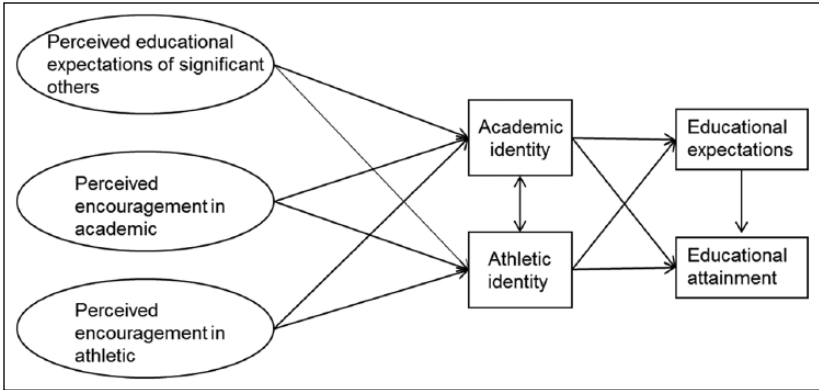
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In the course of development of adolescence, popular extracurricular activities among U.S. teenagers should not be overlooked in terms of their contribution to shaping life philosophies, identities, and expectations (Guest & Schneider, 2003). Among high school extracurricular activities, athletic participation is particularly high. The National Federation of State High School Association (NFHA) reported that more than 7.6 million students (55.5% of all high school students) played sports during the 2010-2011 school year, which is the 22nd consecutive year of increases in sport participation (Koebler, 2011).

In spite of educational values of high school athletic programs (Barron, Ewing, & Waddell, 2000; Eccles & Barber, 1999), research regarding the academic performance of high school athletes has been inconclusive (Eitle & Eitle, 2002). Using nationally representative samples and longitudinal designs, researchers have shown positive correlations between high school sport participation and academic achievement (e.g., Marsh & Kleitman, 2003; K. E. Miller, Melnick, Barnes, Farrell, & Sabo, 2005). In contrast, negative effects of athletic participation on academics also have been found, depending on contextual factors and demographical backgrounds, such as parental involvement, race, gender, and type of sport (e.g., Eide & Ronan, 2001; Goldsmith, 2003). These inconsistencies suggest open questions. Is athletic participation related to educational outcomes, such as expectation and attainment? What other contextual variables, such as parental involvement and socioeconomic status (SES), are related to the association between sport participation and educational outcomes (Lipscomb, 2007; K. E. Miller et al., 2005)? Given the critical periods of forming identity during adolescence (Guest & Schneider, 2003), does identity has a role in mediating contextual variables and educational outcomes?

In this regard, it is important to examine further the relations among high school athletic participation, identity development, and educational outcomes to better understand its nature and clarify the potential complexities of these relations, such as by gender, race, type of sport, and level of participation. Examining the hypothesized mediating chains of these relations longitudinally, using nationally representative data, has the potential to advance our understanding of these processes. Accordingly, we suggested a conceptual model, in which there is a mediating role of identity in the relation between educational outcomes, such as expectation and attainment, and athletic participation and other contextually relevant factors, such as educational expectations and encouragement in athletics and academics from significant others (see Figure 1).



**Figure 1.** A conceptual model.  
Note. Ovals and rectangles indicate the latent constructs and observed variables, respectively.

### Mediating Role of Identity

Because of the chief period of identity development, and the popularity of sport participation during adolescence, many of those involved in athletics are likely to incorporate the role of the athlete into their sense of self. Student-athletes develop what is called an athletic identity. Athletes with a strong and exclusive athletic identity may be focused solely on athletic performance, which some argue can hurt academic performance and may be detrimental to an individual in terms of lowered educational and career expectations (Sandstedt et al., 2004). Others suggest that a well-developed athletic identity does not necessarily hurt academic performance but, rather, is associated positively with educational achievement in certain social contexts (Barber, Eccles, & Stone, 2001; Guest & Schneider, 2003).

Extant theory also supports the relation between athletic participation, identity, and educational outcomes. The *Identification/Commitment Model* (Marsh, 1993; Marsh & Kleitman, 2003) argues that athletic participation in school can enhance one's school identification as a student and athlete, along with involvement and commitment, which leads to positive outcomes in school (i.e., academic achievement and psychological well-being). Moreover, in the *Participation/Identification Model* (Finn, 1989), involvement in school is further emphasized and predicts that positive educational outcomes are maximized if the student "maintains multiple, expanding forms of participation in school-relevant activities" (p. 117). These forms of participation include athletics. However, as Guest and Schneider (2003) note, identification with academics and athletics may depend on the type of school that one

attends. They found that athletic identity, more than mere participation in sports, is associated with higher academic achievement and educational aspirations, but only in lower and middle-class schools. They suggest that "such schools may provide an environment in which sports are both part of a good student's portfolio and are seen as a viable route to social mobility" (p. 103). But, an athletic identity may be detrimental to those in upper class schools, where being seen as an athlete may suggest a lack of seriousness. Thus, social contextual and control variables may be important factors in the role-identity and educational outcomes relation.

### **Hypothesized Predictors in Social Context**

Micro-level actors (i.e., parents, peers, and teachers) may shape adolescents' identities, athletic participation, educational expectations, and attainment (Bosma & Kunnen, 2001). Parents, peers, teachers, and coaches may all hold educational expectations for student-athletes. Educational expectations of significant others may influence an individual's identity development. Parents, for instance, provide the basis for an adolescent's beliefs and values, including education and sports (Bosma & Kunnen, 2001). Educational expectations of student-athletes by significant others have been shown to be internalized and acted upon, which are later strengthened by conceptualizing identities (Stryker & Burke, 2000). Student-athletes who perceive they are expected to attain a degree from a 4-year college may work hard to meet expectations. The investment of hard work in academics may be incorporated into an individual's identity as he or she grows to value academics. This may create a well-rounded identity including both athletic and academic values. Those who are both scholars and athletes demonstrate more positive characteristics in terms of self-esteem and self-control than do those who are exclusively athletes (Snyder & Spreitzer, 1992).

In addition to parents, peers influence one's identity formation (Bosma & Kunnen, 2001). For instance, peers may have varying degrees of influence on one's educational expectations. Schneider and Stevenson (1999) found, through longitudinal research with high school students, that peers hold little influence on a student's educational aspirations. However, because interscholastic sport requires time intensive commitment, with more frequent interaction with team members and more intense social networks than do other extracurricular activities (Broh, 2002), there may be greater peer influence on educational expectations among athletes than nonathletes.

The influence and expectations of significant others also may be related to the amount of time that a student-athlete invests in sport and academics. Time investment in sport and/or academics may influence identity development

and career exploration beyond sporting careers, as well as educational expectations. Marsh and Kleitman (2003) found that sport involvement contributed to identity development throughout childhood.

## Control Variables

SES, academic ability, school size, gender, race, athletic ability, and type of sport played may be important to statistically control for when examining student-athletes' educational expectations and attainment. SES is an important predictor of educational performance and educational expectations, with high SES children being less likely to drop out of school (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999; Rouse & Barrow, 2006).

The positive effects of sports participation have been greater for females than for males (Troutman & Dufur, 2007). Troutman and Dufur (2007), using a national longitudinal data, found that females who engage in interscholastic high school sports are more likely to complete college than their nonathletic counterparts. Some researchers have suggested investigating the interaction between gender and race on sport participation and academic outcomes (K. E. Miller et al., 2005). For instance, Black female adolescents may identify with academics differently than Black male athletes or White females athletes. Eitle and Eitle (2002) suggest that the interaction may have more to do with sport-type. Using a nationally representative sample of high school Black and White male students, Eitle and Eitle found that the relation between sport participation and academic achievement depends, in part, on the sport of the participants. A negative association between participation in basketball/football and academic achievement was found while no association was found with other sports participation. More research is needed to examine these sport variation trends longitudinally at the high school level.

Two additional ascribed variables that have been shown to predict educational expectations and/or attainment are academic and athletic ability. Academic ability is a large factor in the prediction of educational expectations and attainment (Adelman, 1999; Bowen, Chingos, & McPherson, 2009). For example, Adelman (1999) reported that the composite of high school curriculum, test scores, and class rank produced a much steeper curve toward bachelor's degree completion than did SES. Not much research, however, has been conducted on athletic ability and educational expectations/attainment. Most studies look at athletic participation rather than ability. However, because a main focus of this study is to examine the predictive strength of the predictors via academic and athletic identities to educational outcomes, we have controlled for academic ability and examined different structural relations according to level of athletic ability. Future research must

control for these and demographic variables to obtain an accurate picture of the psychosocial and contextual factors (e.g., athletic/academic identity and key predictor variables) that influence educational expectations and attainment among student-athletes.

## **Purpose of the Current Study**

Given the inconsistent findings on athletic participation and educational outcomes, we sought other relevant contextual factors contributing to forming identity and educational outcomes. Based on our literature review on identity development and association between athletic participation and educational outcomes, we developed a conceptual model (Figure 1), and explored the structural relations between the hypothesized factors and educational outcomes via athletic and academic identities among a nationally representative longitudinal panel of high school students. In our conceptual model, the contextual factors predict athletic and academic identities in 10th grade, which, in turn, predict educational expectations in 12th grade and attainment in 8 years after high school. In addition, the different patterns of the structural relations across demographical categories were investigated.

## **Method**

### *Participants and Procedures*

Participants were selected from the National Education Longitudinal Survey-88 (NELS-88), a large-scale survey of American high school students, from 1988 to 2000. The focus of the survey was broad, and included extracurricular participation, perceived social support, identities, educational and occupational expectations, and attainment. The NELS-88 was administered to 8th-grade students in 1988, and then subsets of the original sample were resurveyed again in 1990 when participants were in 10th grade, in 1992 when participants were in 12th grade, in 1994 (2 years after high school), and in 2000 (8 years after high school).

The present study used data from the first follow-up survey (F1 wave) conducted in 1990 using 10th-grade students, the second follow-up survey (F2 wave) conducted in 1992 using 12th-grade students, and the fourth follow-up survey (F4 wave) conducted in 2000. These waves were chosen for analysis because the independent variables needed for the study could be found in the F1 wave and the dependent variables needed for the study could be found in the F2 and F4 waves. A total of 12,144 participants, who responded at F1, F2, and F4 waves, were selected in this study. Among them,

Whites consisted of 68.1% ( $n = 8,271$ ), along with Hispanics 13.1% ( $n = 1,593$ ), Blacks 9.5% ( $n = 1,151$ ), Asians 6.8% ( $n = 824$ ), American Indians 1.2% ( $n = 142$ ), and unidentified 1.3% ( $n = 163$ ).

The NELS-88 used a complex sampling design that sampled approximately 25,000 students from more than 1,000 high schools (Curtin, Ingels, Wu, & Heuer, 2002). Unless complex sample design features (i.e., stratification and unequal selection probabilities) are addressed in analyses, inappropriate conclusions likely would be drawn from analyses. This may be addressed in structural equation modeling (SEM) analyses by programs such as *MPlus* (Muthén & Muthén, 2006), which has powerfully and precisely analyzed large-scale survey data in simulation studies (Stapleton, 2006). Thus, *MPlus* was chosen to account for the NELS's complex sampling design, and estimate the parameters in the SEM analyses.

### *Measures of Latent Variables*

Observed variables from NELS-88 were used to operationalize latent constructs and are discussed below for the final measurement model of this study; further details about each variable and descriptive data are provided in Table 1.

*Perceived educational expectations.* This variable was operationalized by what the respondent believed his or her father's, mother's, friends', teacher's, and coach's expectations were for the respondent after high school. The response categories were 1 = *does not apply*, 2 = *go to college*, 3 = *get a full-time job*, 4 = *enter a trade school*, 5 = *enter military*, 6 = *get married*, 7 = *do what they want*, 8 = *they don't care*, 9 = *I don't know*. To use these variables in an ordinal manner, only three of the nine responses were utilized in the study. Selected responses were recoded so that 1 = *get a full-time job*, 2 = *enter a trade school*, and 3 = *go to college*. All other responses and missing data were not included as follows: 17.5% (father), 15.4% (mother), 24.2% (friends), 33.0% (teacher), and 32.2% (coach) of all responses.

*Peer support for academics.* This variable was operationalized by the perception of how important studying and grades were to peers. The response categories were 1 = *not important*, 2 = *somewhat important*, 3 = *very important*.

*Parental involvement in academics.* The following two items operationalized parental involvement in academics: "How often parents check on respondent's homework" and "How often parents help respondent with homework." The response categories were 1 = *often*, 2 = *sometimes*, 3 = *rarely*, 4 = *never*.

**Table 1.** Major Variables and Descriptive Data.

Variables	<i>n</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Father's educational expectation	10,014	2.81 (39.94)	0.42 (14.18)	-3.00 (-1.57)	8.97 (1.34)
Mother's educational expectation	10,274	2.83 (41.05)	0.40 (13.55)	-3.27 (-1.78)	10.89 (2.11)
Peers' educational expectation	9,210	2.78 (37.64)	0.38 (13.68)	-2.99 (-1.16)	9.91 (0.533)
Teacher's educational expectation	8,133	2.92 (43.97)	0.23 (9.34)	-5.21 (-1.71)	33.64 (2.57)
Coach's educational expectation	8,233	2.91 (43.35)	0.23 (9.65)	-4.69 (-1.42)	28.31 (2.85)
Parental homework check	12,144	2.63	0.97	-0.17	-0.86
Parental homework help	12,144	2.34	0.83	-0.02	-0.52
Importance of studying to friends	12,144	2.29	0.57	-0.26	-0.31
Importance of good grade to friends	12,144	2.45	0.56	-0.60	-0.28
Sports lesson	12,144	1.39	0.82	1.21	3.64
Time invested in athletic	12,144	2.35	1.04	0.13	-1.15
Academic identity	12,144	2.20	0.56	-0.08	-0.16
Athletic identity	12,144	1.86	0.67	0.24	-0.81
Educational expectation	12,144	7.58	1.90	-1.35	1.85
Educational attainment	12,144	2.52	1.33	0.21	-1.26

Note. Values in parenthesis for educational expectation from father, mother, peers, teacher, and coach were Box-Cox transformed statistics (raising them to the 5th power and dividing that value by 5).

These variables were reverse-coded so that higher scores were reflective of greater parental involvement.



*Athletic engagement.* Athletic participation has often been considered a dichotomous variable (e.g., Broh, 2002) rather than the degree of athletic engagement (e.g., time invested in athletics). We have operationalized athletic participation by the degree of involvement in athletics and have labeled this variable *athletic engagement*. We, thereby, can consider the degree of athletic engagement—mediated by athletic and academic identities—as predictive of educational expectations and attainment. Athletic engagement was measured by time invested in athletics (how often the respondent played ball or other sports) and sports lessons (how often respondent takes sports lessons). The response categories were 1 = *rarely or never*, 2 = *less than once a week*, 3 = *once or twice a week*, and 4 = *every day or almost every day*.

### *Measures of Observed Variables*

*Academic/athletic identity.* There were no questions on the NELS-88 that asked the respondents directly whether they thought of themselves as being athletic or being a good student. Thus, academic identity was measured by a statement (other students think of respondent as a good student) and athletic identity was measured by a statement (other students think respondent is athletic). The participants responded by indicating the degree to which they agreed with the statement on a 3-point scale (1 = *very*, 2 = *somewhat*, 3 = *not at all*). These categories were also reverse-coded so that a higher score reflected a stronger identity. Snyder and Spreitzer (1992) have used similar variables from the High School and Beyond Study as measures of athletic and academic identity. In addition, Guest and Schneider (2003) used similar variables from the Teenage Life Questionnaire within the Alfred P. Sloan Study of Youth and Social Development.

*Student educational expectations.* The outcome variable of educational expectations was measured by a question: How far in school the respondent thinks he or she will get. Response categories were 1 = *less than high school*, 2 = *high school graduation only*, 3 = *less than 2 years of trade school*, 4 = *2 or more years of trade school*, 5 = *trade school degree*, 6 = *less than 2 years of college*, 7 = *2 or more years of college*, 8 = *finish college*, 9 = *master's degree*, and 10 = *PhD or MD*.

*Student educational attainment.* The outcome variable of educational attainment was measured using highest postsecondary degree attained as of 2000. Because Wave 4 of NELS occurred 8 years after high school, nearly all participants would have attained their highest degree by Wave 4. Response categories were 1 = *some postsecondary education, no degree attained*,

2 = certificate/license, 3 = associate's degree, 4 = bachelor's degree, 5 = master's degree, 6 = PhD or a professional degree.

### Control Variables

**SES.** SES was measured using a constructed composite of SES that took parental educational level, parental occupational level, and family income into account by surveying participants' parents. The composite was standardized using Z-score. The range was from  $-2.84$  to  $2.76$  with a mean of  $-0.042$  ( $SD = 0.78$ ).

**Academic ability.** This variable was computed as the mean of standardized test scores of reading and math ( $M = 51.17$  and  $SD = 9.62$ ), ranging from 30.30 to 71.82.

**School size.** This variable (entire school enrollment) was reported by a school administrator. School size was divided into nine categories coded in the following manner: 1 = 1-399 students; 2 = 400-599 students; 3 = 600-799 students; 4 = 800-999 students; 5 = 1,000-1,199 students; 6 = 1,200-1,599 students; 7 = 1,600-1,999 students; 8 = 2,000-2,499 students; 9 = 2,500 students or more. School size was thought to be an important control variable in the study to account for smaller schools, which tend to have fewer students competing for spots on athletic teams, and large schools, which tend to have fewer opportunities for athletic participation as more students compete for limited spots on a team ( $M = 4.71$  and  $SD = 2.37$ ).

### Grouping Variables

**Athletic ability.** Participation on a varsity sport at the 10th-grade level was regarded as an indication of advanced athletic ability for the purpose of this study. Tenth-grade participants who indicated that they participated on a varsity team or were a captain/co-captain on a sport at school were coded as 2 and represented 11.9% ( $n = 1,351$ ) of the total sample. A recoded "1" was given to the responses "school does not have," "did not participate," "intra-mural sports," and "junior varsity team," which represented 9.4% ( $n = 1,139$ ) of the total sample; 79.5% ( $n = 9,654$ ) were unidentified.

**Type of sports.** All variables on sport participation were recoded to identify the type of sport. A recoded "1" was used to indicate that the player had participated in a sport that is considered revenue generating at the collegiate level, such as football and basketball. Nonrevenue sport participants were

recoded as “2.” Some research shows that athletes in revenue producing sports are less prepared for college than athletes in nonrevenue sports and nonathletes, as measured by lower high school ranks and GPAs, and SAT/ACT scores (Keil & Robst, 2000). In our sample, 8.2% ( $n = 993$ ) participated in one of the revenue sports while 5.8% ( $n = 706$ ) did not; 86% ( $n = 10,445$ ) were unidentified.

**Gender and race.** Gender was coded “1” to indicate male and “2” to indicate female. Females totaled 6,326 (52.1%), while males totaled 5,725 participants (47.1%) and .93 participants did not indicate their gender. For race, only three major groups were considered, White 68.1% ( $n = 8,271$ ), Hispanics 13.1% ( $n = 1,593$ ), and Blacks 9.5% ( $n = 1,151$ ). Other races were not included in the analysis because of low number of participants. There may be a potential confounding effect of gender and race on the relation between sport participation and academic outcomes (K. E. Miller et al., 2005).

### *Missing Data and Normality*

The expectation maximization (EM) algorithm, a method of maximum likelihood, was used to account for missing data with continuous and ordinal variables using the missing values analysis module of SPSS 17.0. With this method, expected values are imputed for missing values based on the other parameter values (Allison, 2003; Schafer & Graham, 2002). Methods of maximum likelihood appear to be one of the best ways to account for missing data. Missing values were imputed only for continuous and ordinal variables using EM imputation, which yields more precise estimates of missing values in longitudinal designs than in cross-sectional designs because earlier waves of data inform imputed values for later waves of data (Graham, 2003). All SEM analyses were carried out under full information maximum likelihood (FIML) conditions, which entailed that all available data points were used in analyses (Allison, 2003).

In addition, data were screened for outliers, influential cases, and nonnormality because of the adverse impact of skewness and kurtosis on SEM analyses (West, Finch, & Curran, 1995). All five indicators of the latent construct, *perceived educational expectation of significant others*, were negatively skewed and exceeded rubrics for moderate normality (skewness  $> 2$  and kurtosis  $> 7$ ) specified by Flora and Curran (2004) for SEM analyses. West et al. (1995) suggested that a Box-Cox transformation would be the most appropriate for negatively skewed data. Accordingly, the five variables (i.e., father's, mother's, peers', teacher's, and coach's educational expectation) were Box-Cox transformed (raising them to the 5th power and dividing that value by 5)

to reduce normality to below the thresholds suggested by Flora and Curran (2004). Furthermore, the adverse effects of skewness and kurtosis are attenuated in SEM analyses with large sample sizes (West et al., 1995) and when using SEM estimators designed for categorical variables (i.e., weighted least squares with robust standard error, mean and variance adjusted [WLSMV]; Flora & Curran, 2004). Descriptive data for all variables are presented in Table 1.

## Results

Data analysis was conducted in a two-step process (Anderson & Gerbing, 1988; Kline, 2010). A confirmatory factor analysis (CFA) was first performed to explore the measurement model by examining the relations between indicators and their latent constructs. Then, the hypothesized paths were specified in a structural model, using *MPlus* (Version 4.21; Muthén & Muthén, 2006).

To estimate parameters and test model fit for both steps, the WLSMV estimator was used because of both continuous and categorical variables in the model (Flora & Curran, 2004; Yu, 2002). Rather than fixing the value of the first indicator of each latent construct to one, the variance of each latent construct was fixed to one and the first indicator was allowed to freely estimate for model identification purposes (Muthén & Muthén, 2006). The chi-square statistic was not used to assess model fit because it is overly sensitive to sample size (i.e., the larger the sample size, the more likely the rejection of the model, usually larger than 200) and susceptible to deviations from multivariate normality and model complexity (Hu & Bentler, 1999). Instead, other fit indices such as root mean square error of approximation (RMSEA), comparative fit index (CFI), and Tucker–Lewis index (TLI; also known as Non-Normed Fit Index [NNFI]) were used for evaluating model fit. RMSEA represents closeness of fit where values less than .05 indicate a good fit, and CFI and TLI values larger than .95 are indicative of good fit (Kline, 2010).

**Measurement model.** A baseline measurement model (refer to Figure 1) was first examined with a CFA with three latent constructs (italicized in the following passage), *perceived educational expectation of significant others*—indicated by father’s, mother’s, peers’, teacher’s, and coach’s expectation; *perceived encouragement in academics*—indicated by parental homework checking and help as well as importance of studying and good grades to friends; and *perceived encouragement in athletics*—indicated by sports lessons and importance of playing sports to friends. Model fit for the baseline measurement model was not acceptable, CFI = .84, TLI = .92, and RMSEA = .08.

To improve the measurement model's fit, factor loadings were further scrutinized. This scrutiny suggested that the latent construct, *perceived encouragement in academics*, needed to be separated into two latent constructs: *parental involvement in academics* and *peer support for academics*. In addition, we eliminated importance of playing sports to friends as an indicator of *perceived encouragement in athletics*, added the indicator, time invested in athletics, and then relabeled the latent construct, *athletic engagement*. These changes resulted in a very good-fitting measurement model: CFI = .99, TLI = .99, RMSEA = .02. Table 2 describes the loadings of indicators onto latent constructs in the final measurement model. The measurement model was generally good, reflected by indicators having significant loadings greater than .50 in magnitude for each latent construct, supporting the operationalization of latent constructs with these indicators in the measurement model.

**Structural model.** Hypothesized structural relations were specified. The four latent constructs (i.e., educational expectations from significant others, parental involvement in academics, peer support in academics, and athletic engagement) were specified as predictors of athletic and academic identities in 10th grade, which were, in turn, specified as predictors of educational expectation in 12th grade and educational attainment later 8 years after high school. These latent and observed variables were regressed onto the control variables (i.e., SES, academic ability, and school size). The obtained model was judged to be a good fit to the data, CFI = .988, TLI = .989, and RMSEA = .019. The obtained structural model and standardized coefficients for each direct effect are depicted in Figure 2.

As can be seen in Figure 2, 10th-grade athletic identity was significantly predicted by *athletic engagement* ( $\beta = .82$ ) and *peer support for academics* ( $\beta = .06$ ), and negatively predicted by *parental involvement in academics* ( $\beta = -.12$ ). *Athletic engagement* ( $\beta = .11$ ), *perceived importance of academics* ( $\beta = .35$ ), and *parental involvement in academics* ( $\beta = .06$ ) were significant predictors of academic identity. In addition to these predictive relations, *athletic engagement* was significantly correlated with *parental involvement in academics* (.26) and academic and athletic identities were significantly correlated (.07).

Tenth-grade academic identity was a significant predictor of 12th-grade educational expectations ( $\beta = .18$ ) and educational attainment 8 years after high school graduation ( $\beta = .10$ ). In turn, educational expectations significantly predicted educational attainment ( $\beta = .41$ ). In addition, the mediated path from academic identity to educational attainment through educational expectations was significant (.07). Moreover, although the mediating effects

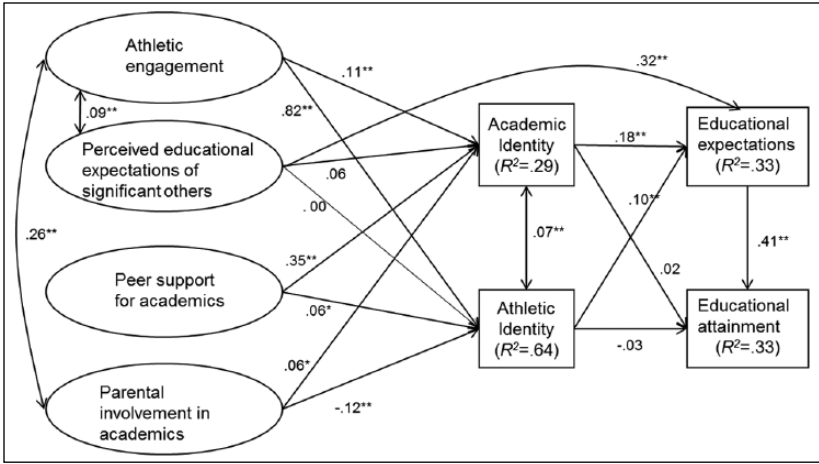
**Table 2.** Loadings of the Final Measurement Model.

Latent variables	Unstandardized estimate	SE	Estimate/SE	Standardized estimate
<i>Perceived educational expectation of significant others</i>				
Father	1.554	.155	10.018***	.841
Mother	1.885	.220	8.579***	.883
Peers	1.512	.144	10.529***	.834
Teacher	2.813	.639	4.402***	.942
Coach	1.562	.210	7.430***	.842
<i>Parental involvement in academics</i>				
Parent homework check	1.167	.154	7.581***	.759
Parent homework help	1.498	.254	5.896***	.832
<i>Peer support for academics</i>				
Importance of studying to friends	2.398	.848	2.829**	.923
Importance of good grade to friends	1.705	.317	5.372***	.863
<i>Athletic engagement</i>				
Sports lessons	.547	.168	3.260**	.480
Time invested in athletic	.525	.190	2.765**	.465

Note. Latent variables are italicized. Unstandardized and standardized estimates represent the loading of a particular indicator on the latent construct. The fourth column (the ratio of estimate to the standard error) can be treated as Z statistic, indicating the value greater than 1.96, 2.58, and 3.29 may be interpreted as statistically significant at the .05, .01, and .001, respectively, which are marked \*, \*\*, and \*\*\*.

of both identities from the latent predictors to educational expectations and attainment were examined, only some of the mediating effects of academic identity were significant, but quite small. *Peer support for academics* indirectly predicted educational expectation (.06) and attainment (.04) through academic identity. *Athletic engagement* indirectly predicted educational expectation (.02) and attainment (.01) through academic identity. *Parental involvement in academics* also indirectly predicted educational expectation (.02) through academic identity. Athletic identity did not significantly predict either educational expectations or attainment. *Perceived educational expectations of significant others* did not predict academic or athletic identity, but directly predicted educational expectation ( $\beta = .32$ ).

The model was further tested by grouping participants into athletic ability (i.e., low vs. high), type of sport (i.e., revenue vs. nonrevenue sports), race (i.e., Whites, Blacks, or Hispanics), and gender groups. For athletic ability,



**Figure 2.** The full model obtained.

Note. All values are standardized coefficient. Latent predictors and academic and athletic identity were measured in 10th grade. Educational expectation was measured in 12th grade. Educational attainment was measured in 8 years after high school.  $\chi^2(26, N = 12,144) = 136.90^{**}$ , CFI = .988, TLI = .989, and RMSEA = .019.

\* $p < .05$ . \*\* $p < .01$ .

only the lower athletic ability group showed a significant correlation between academic and athletic identity (.17), and between *athletic engagement* and *parental involvement in academics* (.25). *Athletic engagement* significantly predicted athletic identity ( $\beta = .82$ ), and *peer support for academics* predicted academic identity ( $\beta = .35$ ) for the higher athletic ability group. However, some direct effects were larger in the lower athletic ability group; the direct effect of perceived educational expectations of significant others on educational expectation ( $\beta = .35$ ) and direct effect of academic identity on educational expectation ( $\beta = .27$ ) and educational attainment ( $\beta = .21$ ).

For type of sport, only the nonrevenue sport group had a significant correlation between academic and athletic identity (.12), direct effect of *athletic engagement* on athletic identity ( $\beta = .46$ ), and direct effect of *perceived educational expectations of significant others* ( $\beta = .37$ ) on educational expectations. Most interestingly among the nonrevenue sports, *perceived educational expectations of significant others* negatively predicted academic identity ( $\beta = -.34$ ) and positively correlated (.26) with *athletic engagement*. Other effects showed similar patterns to the obtained full model.

For gender, only males showed a positive correlation between academic and athletic identities (.07), and significant relation between *perceived*

*educational expectations of significant others* and academic identity ( $\beta = .11$ ). Interestingly, *parental involvement in academics* had negative influences on athletic identity in males ( $\beta = -.21$ ), whereas they had a positive influence in females ( $\beta = .13$ ). Other relations were similar to the obtained full model.

With respect to race, *athletic engagement* was a significant predictor of both academic and athletic identities for Whites ( $\beta = .10$  and  $.80$ ) and Hispanics ( $\beta = .26$  and  $.81$ ). *Parental involvement in academics* was a positive predictor for academic identity ( $\beta = .06$ ), and a negative predictor for athletic identity ( $\beta = -.20$ ) only for Whites. Athletic identity was a negative predictor for educational attainment ( $\beta = -.14$ ) only for Hispanics. A positive correlation between both identities was not found in these groups.

## Discussion

The present study examined, longitudinally, the role of academic and athletic identities of 10th-grade students on their educational expectations in the 12th grade and their educational attainment 8 years after high school. Hypothesized sources of each identity (i.e., *educational expectations from significant others*, *parental involvement in academics*, *peer support in academics*, and *athletic engagement*) were also examined, while controlling for SES, school size, and academic ability. This study contributes to the literature by examining the longitudinal unfolding of these processes among a nationally representative sample of youth, empirically illuminating how developmental contexts contribute to youths' formation of identities and later educational attainment. Although other studies have used the NELS-88 to examine the relation between sports participation and academic outcomes (e.g., Broh, 2002; Marsh & Kleitman, 2003), they did not specifically include proxy measures of athletic and academic identity as potential mediators of athletic engagement on academic outcomes.

Interestingly, youths' engagement in athletics had little relation to their later educational outcomes. One might expect that youth actively involved in athletics have less time for their studies or develop an athletic identity that excludes academic concerns; alternatively one might presume that youth involved in athletics learn some of the "soft skills" (i.e., discipline, focus, time management) that contribute to educational success.

In the current study, youths' engagement in athletics was associated with formation of an athletic identity and with the formation of an academic identity, but only academic identity had a significant relation to youths' educational expectations and to their eventual educational attainment. However, athletic engagement and the formation of an athletic identity were not



*adversely* related to educational outcomes, calling into question the perspective that time spent in athletic participation presupposes educational achievement. Rather, sport participation was related to the formation of an academic identity in this study, which was predictive of both youths' educational expectations and attainment. However, only White and Hispanics showed this positive association between sport participation and academic identity. These findings support the argument that sports participation promotes a stronger identity with one's school and academic achievement objectives, at least for Whites and Hispanics (Barber et al., 2001; Broh, 2002; Guest & Schneider, 2003).

A complex relation between athletic and academic identity emerged in these fine-grained analyses. Successful integration of both roles is important because it implies that students are better able to experience academic success and psychological well-being in school (Killeya-Jones, 2005). Reviewing Figure 2, academic and athletic identities were significantly correlated in the full population of participants, suggesting that the formation of each identity is not mutually exclusive in young people. This relation held for youth with less athletic ability; however, their relation was not significant for youth with greater athletic ability. This suggests that more athletically gifted youth do not engage in a process of constructing nuanced and multidimensional identities (P. S. Miller & Kerr, 2003) and aligns with popular notions of the "jock" who is less connected to academics. Similarly, perhaps youth with an awareness of their limited athletic ability do not envision professional sports as a potential role for them and instead engage with school as a pathway to their future.

A similarly nuanced relation was found by type of sport participation. Youth in nonrevenue generating sports (i.e., swimming, cross-country) held more nuanced athletic and academic identities, while youth in revenue generating sports (i.e., basketball, football) did not. Examining athletic ability and type of sport participation in this way yielded a more nuanced understanding of these processes and supports other nationally represented studies on this issue (e.g., Eitle & Eitle, 2002). Finally, and surprisingly, young women did not form multidimensional identities while young men did. This runs counter to studies suggesting that sport participation has more beneficial academic outcomes for young women than young men (Troutman & Dufur, 2007).

Consistent with previous literature (Bowen et al., 2009; Furstenberg et al., 1999), the expectations of significant others predicted youths' educational expectations, which in turn were predictive of youths' later educational attainment. Similarly, parents who emphasized academics and were involved in their children's academic lives had positive impacts on youths' formation of an academic identity and later educational expectation (Fredricks,

Blumenfeld, & Paris, 2004). These findings echo support for the importance of parental involvement for youths' academic outcomes (Mandara, Varner, Greene, & Richman, 2009).

The effects of parental influence notwithstanding, the strongest predictor of academic identity was peer support in academics (i.e., peer's valuing of academic success), which, in turn, was associated with higher educational expectations and attainment. This result indirectly supports the historical work of McDill and Coleman (1965), as well as Picou and Carter (1976) who found that peer influences exceed parental influences in terms of educational expectations. Some recent research, however, has found that peer interactions, generally, hold little influence on students' educational expectations (Schneider & Stevenson, 1999). But, among extracurricular activities, athletic participation has been found to develop tight bonds and a pro-school subculture that leads to more peer interactions (Broh, 2002; McNeal, 1995; Schneider & Stevenson, 1999). Schneider and Stevenson (1999) found that when peer groups talk about the future and future goals, conversation tends to be more competitive than encouraging. However, it is possible that this competitive talk may be perceived as a challenge to students, and therefore encouraging of productive behaviors such as academic attainment. Follow-up research is necessary to determine the specific pathways of interactions among peers, perhaps using social network analysis. Furthermore, peer influences were stronger in higher athletic ability and revenue sport groups as compared with the corresponding groups in this study. These stronger peer influences may be because of tighter bonds in a particular group. Team sports participation may lead to more social ties with peers (social capital) more than individual sports (Broh, 2002). Participation in higher level and more competitive sports may create a more cohesive team culture, in which team members positively influence each other toward their educational goals. Furthermore, these student-athletes hold higher status and become more popular in the school, which may create more opportunities for them to get help from other students and teachers (Vannatta, Gartstein, Zeller, & Noll, 2009; Wentzel, 2005).

Positive predictors of athletic identity were athletic engagement and peer support for academics, whereas, parental involvement in academics was a negative predictor. It is not surprising that more engagement in athletics is associated with higher athletic identity; however, peer support for academics was also positively associated. Interestingly, in the female group, peer support for academics predicted athletic identity, which in turn, significantly predicted educational expectation as compared to the male group. However, young women's formation of an athletic identity was not predictive of academic identity formation for the female participants, suggesting a complex

pattern of associations. The results for peer support for academics as a predictor of athletic identity are puzzling, but the coefficient was small (.06) and may not be meaningful.

The negative association between parental involvement in academics and athletic identity in the full model applied only to males. The results imply that males who receive more help from parents in academics may feel less athletic; however, for females, academic help from parents is positively associated with being perceived as athletic and is a contributor to educational expectation through increased athletic identity.

## **Limitations and Directions for Future Study**

By utilizing the preexisting NELS-88 database with its large, nationally representative sample and longitudinal data, the findings of the present study can be generalized to all U.S. high school students. However, some limitations do arise in the use of the NELS database. One limitation is that the latent constructs used in the study were formed by a CFA with the most closely related available NELS variables, as described in greater detail previously. Future research should collect data more specifically related to the constructs to enhance the content validity of the study and to consider other constructs that may be important.

Another limitation of the NELS database is that it is now somewhat dated. The social and economic landscape in the U.S. has changed a great deal over the past two decades. An argument can be made that the focus of high school sport has greatly changed over the past 20 years, as well. Children are now being identified at earlier ages as potential athletic stars by parents and coaches, which may lead to an earlier and greater identification with the athletic role and an increased desire to reach high levels of athletic achievement. More research should be conducted to reflect the changes of today's high school students in the educational aspirations and attainment.

## **Summary and Conclusion**

In sum, we found that youths use contextual factors, such as significant others' expectations, parental involvement, and peer support in academics, and athletic engagement, to form their academic and athletic identities, which are influential to later educational expectations and attainment. One of the key findings is that athletic participation does not have a negative influence on educational outcomes; rather, it is positively associated with forming an academic as well as athletic identity, which, in turn, has positive impacts on their educational outcomes. Thus, we agree with Marsh and Kleitman (2003) that

strategies that foster identification with academic and school-related values for student-athletes will strengthen their academic identity while keeping the benefits of sports participation.

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