

Effects of Extracurricular Participation, Delinquency, and Parental Involvement in School on Grades: Structural Covariance Analysis

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Effects of Extracurricular Participation, Delinquency, and Parental Involvement in School on Grades: Structural Covariance Analysis

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This study uses the theoretical framework of risk and resilience to examine a model in which delinquency, parental involvement, and extracurricular participation predict grades. The sample is comprised of 5,523 adolescents, ranging from 12 to 18 years old, surveyed using the U.S. National Household Education Survey. Results of a structural equation model showed that parental involvement and extracurricular activities positively predict grades and that delinquency, while negatively related to grades, mediates this relationship. The relationships examined were further explored through the computation of indirect and total effects. Full mediation was demonstrated for parental involvement, while partial mediation occurred for extracurricular participation. Mediation was explained using theoretical framework of interactional theory. Results suggest resilience may be improved by increasing extracurricular participation and parental involvement while reducing the risk associated with school-related delinquency.

Keywords: Adolescents, grades, delinquency, parental involvement, extracurricular activities

Research supports the importance of academic success in high school, as high school GPA is positively associated with first-year college grades (Kobrin & Patterson, 2011; Sawyer, 2013; Zwick & Sklar, 2005), college retention (Robbins et al., 2004), and other important subsequent life outcomes, such as increased wages (Miller, 1998). Considering the connection between adolescent grades in school and later success in life (Miller, 1998; Robbins et al., 2004), studying academic achievement measured by school grades, the prevalence and effects of school-related delinquency, the role of parental involvement, and students' participation in extracurricular activities, is of fundamental importance in understanding what underlies the positive development of American youth. In this study, we examine the relations among parental involvement, extracurricular activities, and delinquency, and their direct and indirect effects on grades. Although prior research has shown that extracurricular activities, parental involvement, and delinquency are significantly related to grades (Eccles, Barber, Stone, & Hunt, 2003; Maguin & Loeber, 1996), we seek to expand upon existing research by testing a mediation model in which delinquency mediates the effects of extracurricular activities and parental involvement on grades.

Garnezy (1971) proposed a theory stating that risk and

resilience affect developmental outcomes for youth and adolescents. Risk factors include behaviors that increase maladjustment and negative outcomes, while resilience is defined by successful adaptation despite the presence of adversity and is fostered through meaningful activities and experiences (Schoon, 2006). Previous research suggests that delinquency is linked to negative outcomes for youths later in life, such as crime, alcohol abuse, economic dependency, unemployment, and divorce (Sampson & Laub, 1990). However, research suggests that extracurricular participation can promote resilience by providing students with a more positive sense of self-worth and academic self-concept (Blomfield & Barber, 2011).

Delinquency and Grades

Prior studies have established a negative relationship between juvenile delinquency and academic achievement (Maguin & Loeber, 1996; Meltzer, et al., 1984). For instance, Meltzer and colleagues compared the academic achievement of delinquent and non-delinquent youths and reported that delinquent youths performed more poorly across all subject areas. Moreover, a meta-analysis conducted by Maguin and Loeber (1996) suggests that youths attaining lower academic achievement

commit delinquency more often, persist more in their delinquency, and commit acts of a more serious nature.

High academic failure rates are an important issue in the United States, as approximately 25% of ninth-graders entering high school fail to earn a diploma, with rates as high as 50% in some communities (Stillwell, 2009). Having so many youths at risk of academic failure is not only alarming, but also challenging given that unemployment or underemployment often follow such failures (Caspi, Wright, Moffitt, & Silva, 1998). Thus, identifying protective factors that are associated with a lower incidence of delinquency at school is crucial in mitigating this associated risk.

The Role of Parental Involvement

Previous research has suggested a positive link between parental involvement at school and student academic achievement (Christenson, Rounds, & Gorney, 1992; Fan & Chen, 2001). Jimerson, Egeland, and Teo (1999) examined the academic paths of socioeconomically disadvantaged youth and showed that parental involvement in schooling predicted positive gains in achievement. A meta-analysis conducted by Fan and Chen (2001) revealed that parental involvement yields a small to moderate, but practically meaningful positive relationship with students' academic achievement. Furthermore, Lagacé-Séguin and Case (2010) examined the combined effects of parental involvement and extracurricular participation on academic competence and general well-being in elementary school children. Results showed that parental involvement (support) and extracurricular activities, when paired together, predicted children's well-being and academic competence.

Tan and Goldberg (2009) examined parental involvement in children's education at school and at home. Their results demonstrated that parental involvement in their children's education predicts children's grades and other positive school-related outcomes, such as adaptation to school. However, the direction of the association revealed by their study wasn't always positive, which suggests a complexity in the relations between parental involvement and student's grades that should be further researched. Additionally, differences between ethnic groups in the type and level of parental involvement have been recorded in children who participated in an early childhood longitudinal study (Graves & Wright, 2011). The results from this study revealed that Caucasian parents are more likely to be involved in home-based activities, such as reading and storytelling, while African-American parents are more likely to be involved in school-based activities such as volunteering (Graves & Wright, 2011). Therefore, implementing control procedures for demographic differences when studying

parental involvement may lead to more informative results.

Extracurricular Activities and Grades

Participation in extracurricular activities is a factor that promotes resilience in adolescents (Peck, Roeser, Zarrett, & Eccles, 2008). Extracurricular activities provide several benefits linked to positive development for adolescents, including structured regular schedules, adult supervision, opportunities to develop skills and competencies, and clear feedback (Eccles & Gootman, 2002).

Several researchers have suggested that participation in extracurricular activities on a regular basis is positively related to desirable academic outcomes. For instance, longitudinal research has shown that engagement in extracurricular activities predicted enrollment in college for vulnerable youths (Peck et al., 2008). Catterall (1998) showed that student's involvement in school and community-based activities successfully predicts recovery from low academic performance for at-risk youths. Finally, Eccles and colleagues reported a positive relationship between extracurricular participation and educational outcomes, such as high school GPA (Eccles et al., 2003).

Himelfarb, Lac and Baharav (2014) examined the relationships between school-related delinquency, extracurricular activities, and academic achievement for adolescents. In that study, participation in the arts, sports, clubs, tutoring and volunteering predicted grades received at school even when the sample's demographic differences and school-related delinquency were controlled. Participation in the arts, sports, clubs, and volunteering was associated with an increase in grades.

Participation in extracurricular activities may promote healthy adolescent behavior and better academic outcomes because extracurricular activities offer support and opportunities that are of developmental value to youth, including physical and psychological safety, appropriate structure, supportive relationships, opportunities to belong, positive social norms, support for efficacy, opportunities for skill building, and the integration of family, school, and community efforts (Eccles & Gootman, 2002). In this study we further examine extracurricular activities, parental involvement, and delinquency and examine the direct and indirect relationships of these variables with grades in school.

The Role of Delinquency as a Mediator

Several studies have defined behavioral control or monitoring as an aspect of parental involvement, and have explored its relation to delinquency. For example, Brody (2003) presented longitudinal data supporting the finding that maternal

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monitoring is a significant factor in predicting lower levels of adolescent delinquency in the early years of adolescence. Barnes and colleagues (Barnes et al., 2006) showed that increases in parental monitoring were associated with decreases in delinquency and alcohol misuse.

Research further suggests that adolescents engaged in extracurricular activities are less likely to engage in delinquent behavior. For instance, Landers and Landers (1978) showed that rates of delinquency were highest for students that engaged in no extracurricular activities while rates of delinquency were lowest for students involved in both athletic activities and service-leadership activities. A study conducted by Agnew and Petersen (1989) reported that delinquency for adolescents was negatively related to participation in noncompetitive sports and organized leisure activities (such as drill team or participation in the school newspaper, for example).

Prior research has shown that participation in extracurricular activities is negatively related to delinquency (Landers & Landers, 1978). An inverse relationship between parental involvement and delinquency is also supported by research (Barnes et al., 2006; Brody, 2003). In addition, the negative relationship between delinquency and grades has been supported by empirical evidence (Maguin & Loeber, 1996). However, although these studies, among others, have shown that extracurricular activities, parental involvement, and delinquency all account for variability in grades, no research we are aware of to date has specified and tested a mediation model in which delinquency mediates the effect of extracurricular activities and parental involvement on grades. As prior research suggests that increases in parental involvement (e.g., Brody, 2003) and increased engagement in extracurricular activities (e.g. Landers & Landers, 1978) are associated with decreases in delinquency; it is conceivable that the positive relationship these factors tend to display with grades (Eccles et al., 2003) occurs, at least in part, because this relationship is mediated by delinquency.

An additional rationale for the role of delinquency as a mediator of the relationships between parental involvement, extracurricular activities, and grades stems from Interactional Theory (Thornberry, 1987). This theory posits that the basic cause of delinquency is a weakened bond between the individual and society. The theory suggests that adolescents form bonds with society via relationships with parents and peers. Thus, according to this theory, adolescents who are monitored by and involved with their parents are less likely to engage in delinquent behavior. Similarly, adolescents who participate in extracurricular activities have less time to engage

in delinquent behavior. In accordance with Interactional Theory, we hypothesize that parental involvement and extracurricular participation precede delinquency. As prior research (Carroll et al., 2009) has positioned delinquency as a fundamental factor predicting academic achievement, and Interactional Theory posits that extracurricular participation and parental involvement predict delinquency, we posit that delinquency will mediate the relationship between these two antecedents and grades.

Drawing on the theoretical paradigm of risk and resilience and Interactional Theory, and considering previous research findings, in this study, we examine how parental involvement in school and participation in extracurricular activities affect student grades directly and indirectly when delinquency serves as a mediator. Using a structural equation model (SEM), we specify and test a model that explains relationships between the main predictors while controlling for demographic characteristics of the sample. We hypothesize that delinquency, a risk factor, will be negatively related to grades. On the other hand, we hypothesize that parental involvement and extracurricular activities will predict higher grades. For the purpose of testing the model, parental involvement in school was specified as a latent factor indicated by five observed variables— participation in school meetings, school or class events, volunteering at school, school fundraising, and serving on a school committee. Extracurricular participation was specified as a latent factor indicated by possible participation in five extracurricular activities—music classes, religious classes, organized sports, scouting, and the arts. Finally, delinquency was specified as a latent factor indicated by out-of-school suspension, in-school suspension (i.e. when students are detained at school, outside of their usual class schedule), expulsion from school, and the requirement to change schools as a result of delinquent behavior.

Method

Data

Overview. The dataset is publically available from NCES. The data were collected from January 2 through May 6, 2007. Information about the students was collected via random digit dial telephone surveys in the United States. To avoid legal issues associated with obtaining permission for interviewing minors over the phone, the interviews were conducted with the parent or an adult family member. Trained interviewers conducted computer-assisted telephone interviews. The selected respondent was asked a battery of questions about the children, and the responses were recorded.

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Sampling. The households were selected using a stratified list-assisted method, a technique used in telephone surveys, which utilizes information from the directory listings to produce a simple random sample. (Tucker, Lepkowski, & Piekarski, 2002). Implementing a list-assisted method increases the response rate by eliminating nonworking or nonresidential telephone numbers. To limit the burden on a respondent within a household, procedures were developed to select only one child per household— in households with children younger than 20, children were enumerated, then the sampling algorithm was implemented to choose an adolescent within a specific household. Only one eligible child was selected for the survey (Hagedorn, Roth, O'Donnell, Smith, & Mulligan, 2008, p. 17). If a household contained any children enrolled in K-12 who were not homeschooled, one of these children was selected to be the subject of the interview. The interviews with household members were conducted during the same phone call as the screening procedures. Follow-up calls were made to complete the interviews that were not completed on the first attempt (Hagedorn, Roth, O'Donnell, Smith, & Mulligan, 2008, p. 8). There was no incentive offered to participate in the interview.

In order to produce a reliable nationally-representative sample, NCES used stratification to select phone numbers to include in the final sample. In the first phase, a sample of telephone numbers was drawn from the areas with high percentages of African-American and Hispanic residents. In the second phase, to see if the number corresponds to a household, telephone numbers within each minority stratum were stratified according to whether they matched with a mailing address (Hagedorn, Roth, O'Donnell, Smith, & Mulligan, 2008, p. 32).

The focus of this study included school-related delinquencies; therefore, to increase the number of student who may have experienced delinquencies, we selected adolescents ranging in age from 12 to 18.

Weighting. The data collected by NCES were intended for person-level analyses; therefore, person-level weights, available in the dataset, were applied in all analyses to ensure the representativeness of the data (Hagedorn, Roth, O'Donnell, Smith, & Mulligan, 2008).

Missing Responses. The item response rate for the survey was high (median response rate of 99.3%). The overall response rate (the percentage of targeted households) to the survey was 78.8% (Hagedorn, Roth, O'Donnell, Smith, & Mulligan, 2008, p. 9). Reasons for missing responses included respondents not knowing the answer to the question asked by the interviewer, reluctance to respond to a question, and

unexpected interruptions during the interview, which left responses to items near the end of the interview blank.

Data Preparation. To prepare the data set for statistical analyses, variables were re-coded to account for the skip patterns, and to ensure that higher values assigned to the variables corresponded to higher values on the construct.

Participants

This study used a sample drawn from data collected by the National Household Educational Survey (NHES), which was assembled by the National Center for Education Statistics (NCES, 2007). The sample was comprised of 5,523 adolescents ranging in age from 12 to 18 years old ($M = 14.9$, $SD = 1.9$). Participants were almost equally divided between males (51.2%) and females (48.7%). The majority of the adolescents (63.6%) were Caucasian, 16.9% were Hispanic (Latino), 11.3% were African American, and 8.2% were of other ethnicities. More than a half of the parents (64.3%) reported a total annual household income of above \$50,000, while 4.5% of the sample came from households earning below \$25,000 annually. Approximately a quarter of parents (26.3%) reported an annual household income of between \$50,000 and \$100,000. Descriptive statistics for the sample are presented in Table 1.

Measures

Grades. The response to the following question constituted the main outcome variable in the study: "Now I would like to ask you about (your child's) grades during this school year. Overall, across all subjects (he/she) takes in school, does he/she get mostly A's, B's, C's, D's or F's?" The responses were mapped to a 4.0 grade point average (GPA) scale and received the following coding: 1 = "D's or lower" (3.9%), 2 = "C's" (15.2%), 3 = "B's" (37.4%), and 4 = "A's" (43.5%).

Delinquency. Four types of delinquency were assessed by the survey: 1. "Has the child ever had an out-of-school suspension?" 2. "Has the child ever had an in-school suspension, not counting detentions?" 3. "Has the child ever been expelled?" 4. "Has the child ever been required to change schools because of behavior problems?" If the respondent reported that the child experienced a particular delinquency, the response was coded 1 (yes); otherwise, the response was coded 0 (no). Twenty-one percent of the sample were reported as having at least one delinquency.

Parental Involvement. The survey involved eight questions that assessed parental involvement in school. We initially considered all eight items to be included in the statistical

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analysis; however, after preliminary investigation, we kept only five items through which we assessed parental involvement. One of the reasons for item exclusion was redundancy of the items, which would be problematic at the factor analysis stage. The responses to the following five items were included: 1. "Since the beginning of this school year, have/has you or any adult in your household attended a general school meeting, for example, an open house, or a back-to-school night?" 2. "Attended a school or class event, such as a play, dance, sports event, or science fair because of the child?" 3. "Served as a volunteer in child's classroom or elsewhere in the school?" 4. "Participated in fundraising for the school?" 5. "Served on a school committee?" The "yes" responses to these questions were coded as 1, while "no" responses were coded as 0.

Extracurricular Activities. The survey assessed participation in six different extracurricular activities: music lessons, religious classes, organized sports, scouting, preparation to college exams, and participation in arts. The following question was asked by the interviewer: "During this school year, has the child participated in any of the following activities outside of school? How about..." 1. "Regular music lessons (from someone other than a homeschooling parent?" 2. "Church or temple youth group or religious classes?" 3. "Organized sports that are supervised by an adult?" 4. "Scouting, 4H, or other group or club activities?" 5. "Programs to prepare the child for college entrance exams?" 6. "Performing arts or other arts?" The participation in preparatory programs for college examinations is mostly applicable to older children, and had a lower response rate compared to all other activities; thus, we excluded this item from further consideration. Responses were coded as 1 (yes) for participation and as 0 (no) for non-participation.

Analytic Plan

To consider the protective effects of parental involvement and extracurricular activities as well as the effect of the risk factor, delinquency, on grades obtained in school, structural equation modeling (SEM) was employed. In comparison to other methods such as path analysis or multiple regression, models with latent variables are advantageous in that each latent factor captures the shared variance of the corresponding indicators and considers all endogenous variables in one model.

The model was constructed and evaluated employing a two-step approach (Anderson & Gerbing, 1992). In the first step, a confirmatory factor analysis (CFA) model was specified to test the measurement component of the model.

CFA is a useful technique for testing how well measured variables represent a specific construct. CFA allows researchers to specify models indicating which measured variables are related to which factors. In the second step, structural paths were added to the measurement component, creating a full SEM model that predicted grades.

The CFA was conducted in *Mplus* 7.11 (Muthén & Muthén, 1998-2013) using CFA procedures for binary or categorical items (Christofferson, 1975; Muthén, 1996), and was tested using the first half of the sample. To evaluate the statistical fit of the CFA model, fit indices were evaluated. Following the recommendation of Hu & Bentler (1999), fit indices included the root mean square error of approximation (RMSEA; MacCallum, Browne, & Sugawara, 1996), the comparative fit index (CFI; Bentler, 1990), and normed fit index (TLI; Tucker & Lewis, 1973). Considering the binary coding of the items, a robust weighted least square with adjusted mean and variance (WLSMV) estimator was used.

For the CFA model, the binary indicators were assumed to load on factors that were hypothesized to represent items' shared variability: parental involvement, extracurricular participation, and delinquency, and interfactor correlations were allowed. After establishing the appropriate psychometric properties for the measurement model, we proceeded with the second step in which the structural model was constructed. For the structural model, direct and indirect effects of parental involvement, extracurricular activities and delinquency on grades were estimated while controlling for the sample's demographic characteristics, such as age, gender, ethnicity, and income. Cutoff values of standardized loadings above .4 were used to evaluate the factorial structure of the CFA model. The sample was randomly split so that CFA and SEM could be conducted on statistically independent samples. Both samples were similar in terms of demographic covariates.

Results

Bivariate Relations between Variables

First-order correlations were estimated between the variables included in the study. Grades were negatively related to all delinquencies but positively related to all variables representing parental involvement and all variables representing extracurricular participation, except religious classes. The indicators of delinquencies were interrelated, along with the indicators of parental involvement and extracurricular participation. The correlation estimates ranged from $r = .15$ ($p < .001$) to $r = .37$ ($p < .001$) for delinquencies; from $r = .11$ ($p < .001$) to $r = .27$, ($p < .001$) for parental

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Table 1
Descriptive Statistics for Key Variables

Variable	<i>Mean (SD)</i>	<i>% Yes</i>	<i>% No</i>	<i>N</i>
Grade Point Average	3.2 (0.8)	--	--	5523
Age	14.9 (1.9)	--	--	5523
Gender				
Male	--	51.2	--	2831
Female	--	48.7	--	2692
Ethnicity				
White	--	63.6	--	3513
African American	--	11.3	--	624
Hispanic	--	16.9	--	931
Other	--	8.2	--	455
Income	10.5 (3.8)	--	--	5523
Delinquencies				
Out-of-School Suspension	--	12.8	87.2	5523
In-School Suspension	--	11.5	88.5	5523
Expelled	--	2.2	97.8	5523
Changed Schools	--	1.9	98.1	5523
Parental Involvement				
General School Meeting	--	84.2	15.8	5523
School/Class Events	--	71.1	28.9	5523
Volunteering	--	34.6	65.4	5523
Fundraising	--	60.7	39.3	5523
School Committee	--	15.1	84.9	5523
Extracurricular Activities				
Music	--	16.4	83.6	5523
Religious Classes	--	56.7	43.3	5523
Organized Sports	--	41.1	58.9	5523
Scouting	--	20.8	79.2	5523
Arts	--	21.6	78.4	5523

Note : Percentages are given for binary variables. Means and *SD*'s are given for ordinal variables

involvement, and from $r = .05$ ($p = .02$) to $r = .12$ ($p < .001$) for extracurricular participation. The correlations are presented in Table 2.

Confirmatory Factor Analysis

The three-factor CFA model, which included factors for delinquency, parental involvement, and extracurricular participation, produced an adequate fit to the data,

$\chi^2(74) = 435.13, p < .001$; CFI = .97; TLI = .96; RMSEA = .03, 90% CI = (.02, .03). The item loadings for the three factors ranged from .51 to .94, and were all statistically significant, ($p < .001$). The significant relations between the latent factor and its indicators suggest that items load as hypothesized.

The relationships among factors were evaluated by estimating interfactor correlations. Delinquency was negatively related to extracurricular participation ($r = -.32, p < .001$), and to parental involvement, ($r = -.36, p < .001$). Parental involvement was positively correlated with extracurricular participation, ($r = .73, p < .001$). The standardized coefficients for the CFA model are presented in Table 3, and the model is diagrammed in Figure 1.

Structural Model

The three latent factors tested in the CFA model were linked with grades to specify a full structural equation model, which was tested using the second half of the sample. The measurement component of the SEM repeated the model specified in the CFA. All factor loadings in the measurement part of the structural model were of acceptable magnitude and were statistically significant (see Table 3).

The structural model controlled for the effects of demographic characteristics by specifying predictive paths from age, gender, income, and ethnicity to the three latent factors and grades. The model displayed adequate fit to the data,

$\chi^2(151) = 1077.91, p < .001$; CFI = .96; TLI = .95; RMSEA = .04, 90% CI = (.03, .04). The estimates of standardized coefficients for the structural model are presented in Table 4. These estimates constitute a one standardized (in the units of standard deviation) unit change in the dependent variable as a function of one-standardized unit change in the independent variable under consideration while controlling for all other independent variables included in the model. The model is diagrammed in Figure 2.

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Table 2
Correlations Between Grades, Delinquencies, Parental Involvement, and Extracurricular Activities

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Grades	--	-.28	-.26	-.15	-.16	.08	.05	.16	.15	.10	.16	.04	.11	.12	.13
2.Out-of-School Suspension	-.27	--	.37	.27	.29	-.07	.01	-.10	-.07	-.07	-.04	-.03	-.04	-.07	-.06
3.In-School Suspension	-.25	.37	--	.16	.21	-.07	-.01	-.11	-.07	-.07	-.03	-.02	-.03	-.04	-.06
4.Expelled	-.15	.27	.15	--	.22	-.05	.00	-.06	-.06	-.05	-.02	.02	-.01	-.01	-.03
5.Changed Schools	-.16	.28	.20	.22	--	-.05	.00	-.05	-.06	-.01	-.02	.00	-.02	-.05	-.03
6.General School Meeting	.07	-.07	-.07	-.06	-.05	--	.27	.19	.18	.11	.06	.11	.10	.08	.10
7.School/Class Events	.04	.01	-.01	-.01	-.00	.27	--	.23	.19	.20	.04	.10	.09	.10	.08
8.Volunteering	.15	-.10	-.11	-.06	-.05	.18	.20	--	.35	.41	.10	.12	.17	.12	.17
9.Fundraising for School	.14	-.07	-.07	-.06	-.07	.18	.19	.35	--	.26	.10	.18	.16	.09	.11
10.School Committee	.10	-.07	-.07	-.05	-.00	.11	.21	.41	.27	--	.11	.11	.11	.12	.08
11.Music	.15	-.04	-.04	-.04	-.02	.06	.04	.10	.09	.10	--	.10	-.04	.07	.30
12.Religious Classes	.04	-.03	-.02	-.02	-.01	.11	.10	.12	.18	.11	.10	--	.09	.11	.05
13.Organized Sports	.11	-.04	-.03	-.01	-.02	.10	.09	.17	.16	.11	-.04	.09	--	.09	.05
14.Scouting	.12	-.07	-.03	-.01	-.05	.08	.10	.12	.09	.12	.07	.11	.09	--	.09
15.Arts	.13	-.06	-.06	-.03	-.03	-.10	.08	.17	.11	.08	.30	.05	.05	.09	--

Note: The lower matrix presents CFA correlation matrix ($n = 2761$); the upper matrix presents SEM correlation matrix ($n = 2762$)

Values between |.04| and |.05| are significant at $p < .05$; values of |.06| and above are significant at $p < .01$

Table 3
Confirmatory Factor Analysis Standardized Coefficients

Factor	Indicator	Factor Loadings	
		CFA ($n = 2761$)	SEM ($n = 2762$)
Delinquency	Out-of-School Suspension	.94	.94
	In-School Suspension	.76	.76
	Expelled	.87	.87
	Changed Schools	.78	.79
Parental Involvement	General School Meeting	.58	.59
	School/Class Events	.80	.81
	Volunteering	.88	.88
	Fundraising for School	.67	.67
	School Committee	.82	.82
Extracurricular Participation	Music	.73	.72
	Religious Classes	.51	.51
	Organized Sports	.53	.52
	Scouting	.51	.51
	Arts	.63	.63

Note: All loadings are statistically significant, $p < .01$

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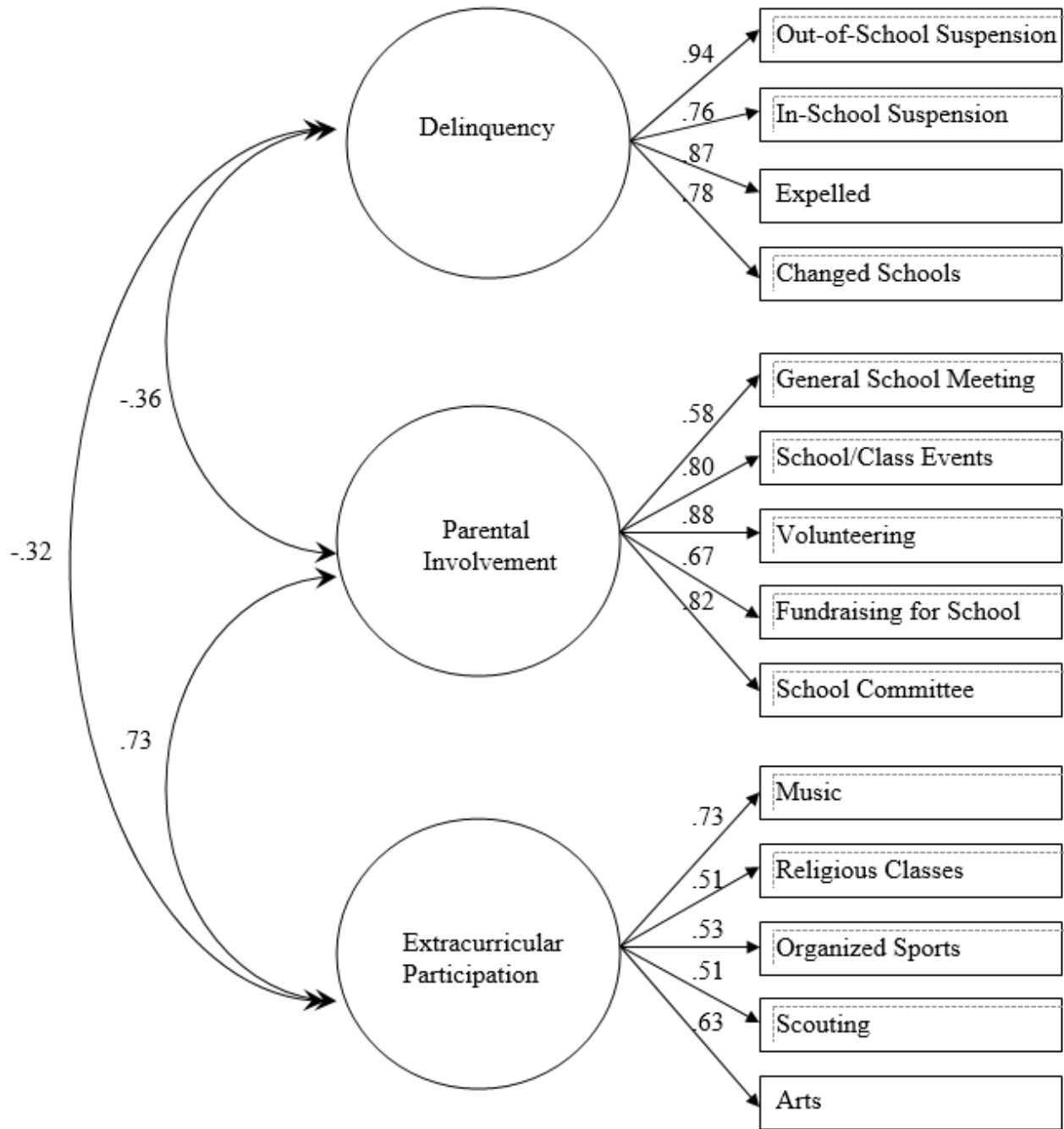


Figure 1. Confirmatory factor analysis of delinquency, parental involvement, and extracurricular participation. Standardized coefficients are presented. All paths are significant at $p < .01$ ($n = 2761$).

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Table 4
Standardized Coefficients, Structural Model ($n = 2762$)

Outcome	Predictor	β	SE
Grades	Age	.04**	.01
	Male	-.08**	.01
	Income	.07**	.02
	African-American	-.05**	.01
	Hispanic	-.01	.02
	Other Ethnicity	.03	.02
	Delinquency	-.37**	.03
	Parental Involvement	-.04	.03
	Extracurricular Participation	.30**	.03
Delinquency	Age	.09**	.02
	Male	.23**	.02
	Income	-.11**	.03
	African-American	.21**	.02
	Hispanic	.03	.02
	Other Ethnicity	.04	.02
	Parental Involvement	-.17**	.03
	Extracurricular Participation	-.14**	.04
	Parental Involvement	Age	-.07**
Male		-.05*	.02
Income		.35**	.02
African-American		-.05*	.02
Hispanic		-.12**	.02
Other Ethnicity		-.02	.02
Extracurricular Participation		Age	-.15**
	Male	-.08**	.03
	Income	.34**	.03
	African-American	.05*	.02
	Hispanic	-.09**	.03
	Other Ethnicity	.03	.02

Note: * $p < .05$; ** $p < .01$

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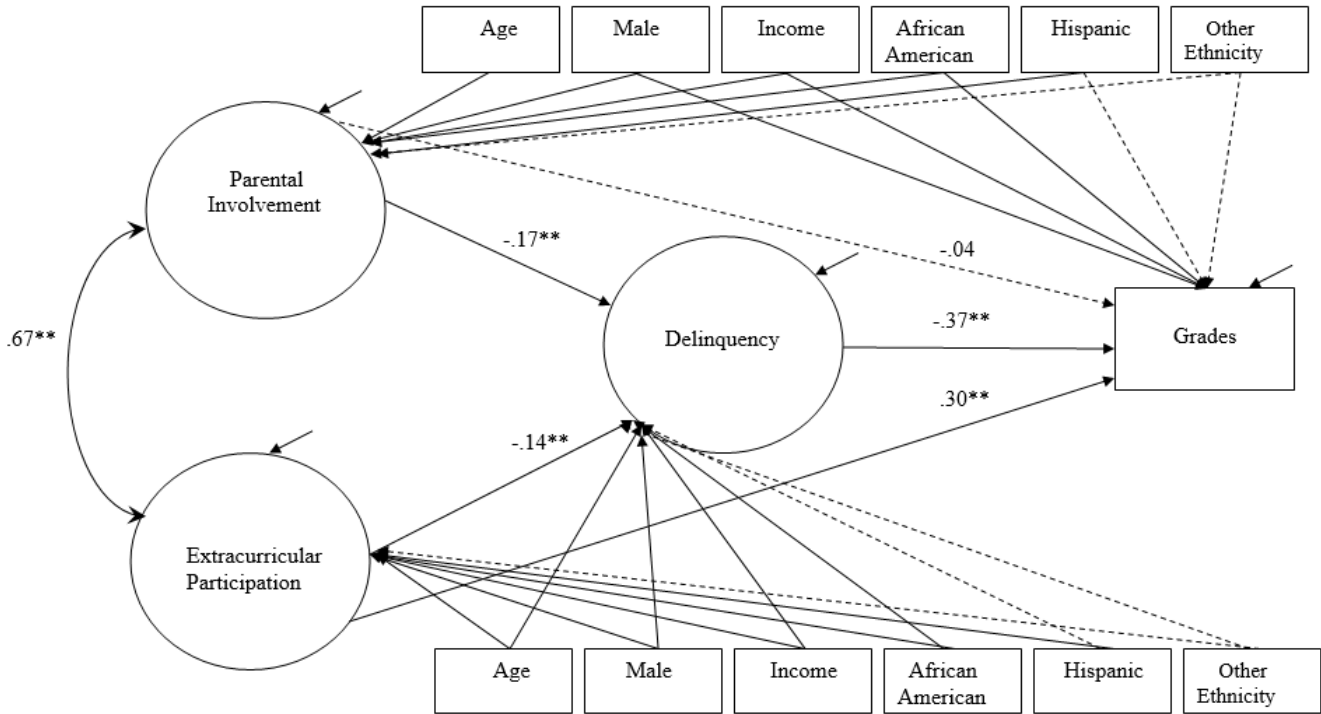


Figure 2. Structural model. Standardized coefficients are presented. For diagrammatic clarity, coefficients for demographic covariates are not presented; however, all paths represented by solid lines are significant at $*p < .05$; $**p < .01$. Demographic covariates were entered in the model only once, but are pictured twice for the clarity of the diagram ($n = 2762$). Reference group for race is Caucasian. Arrows pointing into endogenous variables represent disturbances.

Mediation

The specified structural model tests a mediation process from parental involvement and extracurricular participation (the exogenous factors in the model) to grades (the endogenous outcome) via delinquency, the hypothesized mediator. We tested these mediation processes for statistical significance through the decomposition of indirect and total effects for SEM models with latent variables. The decomposition of effects along with the test of statistical significance is presented in Table 5. The outcome of the test confirmed that parental involvement and extracurricular participation each indirectly predicted grades through delinquency, the mediator. The computations were performed using following formulas:

$$Effect_{indirect} = ab$$

$$Effect_{total} = c + ab$$

$$Sobel\ Test\ z = \frac{ab}{\sqrt{(b^2 SE_a^2) + (a^2 SE_b^2)}}$$

where a is the regression coefficient between the independent variable and the mediator, b is the regression coefficient between the mediator and the dependent variable, c is the regression coefficient between the independent variable and the dependent variable; SE_a SE_a is the standard error associated with a , and SE_b SE_b is the standard error associated with b . The 95% CI for indirect mediation effect was computed using the following formula:

$$CI = AB \pm z_{1-\alpha/2} SE_{AB}$$

where AB is the indirect mediation effect, z is a standard normal score, α is the probability of Type I error, and SE_{AB} SE_{AB} is the standard error associated with the indirect mediation effect. The variance of the indirect effect was computed in the following way:

$$\sigma^2 = a^2 SE_b^2 + b^2 SE_a^2 \sigma^2 = a^2 SE_b^2 + b^2 SE_a^2$$

(Sobel, 1982).

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Table 5

Indirect Effects and Total Effects From Predictors to Grades in the Predictive Model ($n = 2762$)

Variable	Standardized Indirect Effect	Standardized Total Effect	Sobel Test	95% CI
Parental Involvement	.06	.02	5.15*	(.04, .09)
Extracurricular Participation	.05	.35	4.16*	(.02, .08)

Note: * $p < .001$

To examine the strength of the mediation effect, we removed the mediator from the model and estimated the effects of parental involvement and extracurricular participation on grades without the mediator. The direct effects were $\beta = .24$ ($p < .001$) for parental involvement and $\beta = .35$ ($p < .001$) for extracurricular participation. According to the criteria specified by Baron and Kenny (1986), full mediation had occurred for parental involvement, while partial mediation occurred for extracurricular participation.

Discussion

As indicated in previous research, and reaffirmed by our study, poor academic performance is related to the prevalence of delinquency—higher scores on delinquency predict lower grades (Himelfarb, Lac, & Baharav, 2014; Maguin & Loeber, 1996). Further, findings show that greater extracurricular participation was associated with higher grades. Fredrick (2012) examined a large sample of American high school students to study whether over involvement in extracurricular activities is associated with negative consequences for youth functioning. She found that, on average, 10th graders participated in 2 to 3 activities for about 5 hours per week. Based on her findings, the participation in extracurricular activities was positively related to math achievement test scores, and educational expectations at 12th grade.

Additionally, Im, Hughes, Cao, and Kwok (2016) investigated the effect of extracurricular participation in sports and performance arts and found that the participation was beneficial in terms of academic outcomes. Furthermore, they found that the benefits of participation were similar across gender and ethnicity; however, Latino youth were least likely to participate in extracurricular activities.

Our findings suggest that there may be two main pathways predicting grades from extracurricular activity participation in adolescents. First, a direct effect of extracurricular participation on grades was statistically significant, suggesting that greater participation in extracurricular activities predicts higher grades. Second, the significant indirect effect of extracurricular participation on grades via delinquency suggests that delinquency statistically mediates the relation-

-ship between extracurricular participation and grades: Higher extracurricular participation is associated with lower levels of delinquency. Furthermore, even after we controlled for the effect of extracurricular activities, parental involvement was negatively related to delinquency. Parental involvement had an indirect, but not direct, effect on grades, suggesting that parental involvement is effective in reducing the number of delinquencies. Although the direct relationship between parental involvement and grades was not statistically significant, it is not always necessary for an independent variable to exert a significant direct effect on a dependent variable for mediation to occur (MacKinnon & Fairchild, 2009). However, when delinquency was removed from the model, parental involvement was significantly positively related to grades.

Income was the strongest significant predictor of parental involvement and participation in extracurricular activities—adolescents with higher annual family income and tended to have parents more involved in school tended to participate more in extracurricular activities. This is logical, as parents often have to pay for out-of-school extracurricular participation. Furthermore, income was a significant predictor of grades and delinquency. Adolescents from more affluent backgrounds received higher grades, while adolescents with lower family income were more likely to have increased delinquency.

Although prior work has demonstrated that extracurricular activities, parental involvement, and delinquency are all significantly related to grades (Eccles et al., 2003), as far as we are aware, we are the first to examine a mediation model in which delinquency mediates the effects of extracurricular participation and parental involvement on grades. Our findings confirmed the hypothesized mediation. The model specified suggests that parental involvement and engagement in extracurricular activities may be distal antecedents that primarily affect grades through their effect on delinquency, which may be a more proximal predictor of grades. As such, efforts to directly reduce delinquency in adolescents may be beneficial in resulting in increased grades in high school that are in turn associated with improved college retention

(Robbins et al., 2004), and increased wages (Miller, 1998). However, we must caveat that the research reported here is cross-sectional and that longitudinal research would be best equipped to provide evidence for this causal pattern of relationships. Future research may benefit from longitudinal designs examining the relationship between parental involvement, extracurricular activities, and grades.

Results from this study align with Interactional Theory (Thornberry, 1987). In line with Interactional Theory, we hypothesized that parental involvement and extracurricular participation would predict delinquency, and that delinquency would predict grades. Our hypotheses were supported, providing further evidence to support Interactional Theory and extend prior research testing this theory (e.g., Thornberry, Lizotte, Krohn, Farnworth, & Jang, 1994), through our operationalization of adolescents' bonds to society via reported parental involvement and adolescents' engagement in extracurricular activities.

The findings of the current study call for greater parental involvement in general school meeting, school and classroom events, volunteering, fundraising, and serving on school committees alongside with participation in extracurricular activities in order to counterbalance the effects of school-related delinquencies on grades.

Limitations and Future Directions

The findings presented in this study should be interpreted in light of potential limitations. The majority of the adolescents sampled in this study participated in some type of extracurricular activity. In this study we did not distinguish between different types of extracurricular activities, but modeled their shared variance as a latent factor. However, in reality, various extracurricular activities may have different effects on delinquency and grades. Moreover, this study relied on a publicly available dataset, which included information on a limited number of delinquencies, and items indicating parental involvement and extracurricular activities. As a result, we were limited by the variables available in the dataset in the evaluation of our hypotheses—four variables loading on delinquency, five variables loading on parental involvement, and five variables loading on extracurricular activities. A broader investigation including more types of delinquency, parental involvement, and extracurricular activities may be beneficial for future research. Finally, because this study relied on a publically available data set, we were unable to examine the impact of additional constructs on the variables we examined here. For instance, future research may examine how including cognitive ability as a covariate may affect the relationships with grades observed in this investigation.

Methodologically, our study's design involved a non-experimental approach evaluating cross-sectional variables. Thus, causal relationships may not be established between the predictors and the outcomes. Additionally, measures included in this study were completed by the parents of adolescents or their guardians, who may have engaged in socially desirable responding (Crano, Brewer, & Lac, 2014). For instance, we cannot rule out the possibility that parents may have overstated their involvement in school or adolescents' school grades, potentially biasing our results with respect to parental involvement and grades.

Despite the limitations, we believe that our study provides valuable information on the joint effects of parental involvement, extracurricular activities and delinquency on grades. While adolescents who experience delinquency may be at risk of inadequate academic achievement, being involved in extracurricular activities, and having parents involved in school may help adolescents reduce the risk associated with delinquency and obtain higher grades. Using the theoretical model of risk and resilience, findings suggest that even after controlling for a host of demographic variables, higher availability of extracurricular activities in schools with students at risk may serve as a protective factor against adolescent delinquency. Furthermore, involving parents in different forms of school activities, such as school or class events, volunteering, and raising money for the school may help to reduce the risk of delinquency for adolescents.

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