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Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA,
IRVINE

Person Characteristics Related to Out-of-School Time Participation and Outcomes:

An Examination of Selection, Moderation, and Mediation Effects

DISSERTATION

submitted in partial satisfaction of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

in Education

by

Sabrina Kataoka

Dissertation Committee:
Professor Deborah Lowe Vandell, Chair
Professor George Farkas
Distinguished Professor Jacquelynne Eccles

2016

DEDICATION

To

my loving family,

for their encouragement and unwavering support

through thick and thin

TABLE OF CONTENTS

	Page
LIST OF FIGURES	iv
LIST OF TABLES	v
ACKNOWLEDGMENTS	vi
CURRICULUM VITAE	vii
ABSTRACT OF THE DISSERTATION	viii
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: Person Characteristics as Predictors of Adolescent Intensity of Participation in Out-of-School Contexts	15
CHAPTER 3: Person Characteristics as Moderators of Longitudinal Associations Between Out-of-School Time and Adolescent Outcomes	72
CHAPTER 4: Do Noncognitive Skills Mediate Relations Between Organized Activities in Middle Childhood and Academic Performance in High School?	112
CHAPTER 5: DISCUSSION	144

LIST OF FIGURES

	Page	
Figure 2.1	Cross-lagged structural equation model	63
Figure 2.2	Multiple-group cross-lagged SEM for organized activities	64
Figure 2.3	Multiple-group cross-lagged SEM for sports	65
Figure 2.4	Multiple-group cross-lagged SEM for arts	66
Figure 2.5	Multiple-group cross-lagged SEM for academic clubs	67
Figure 2.6	Multiple-group cross-lagged SEM for nonacademic clubs	68
Figure 2.7	Multiple-group cross-lagged SEM for volunteer	69
Figure 2.8	Multiple-group cross-lagged SEM for religious classes	70
Figure 2.9	Multiple-group cross-lagged SEM for unsupervised time with peers	71
Figure 3.1	Compensatory hypothesis	106
Figure 3.2	Accumulated advantages hypothesis	107
Figure 3.3	Dual risk hypothesis	108
Figure 3.4	Boys' defiance moderates organized activity effect on school attendance	109
Figure 3.5	Boys' defiance moderates unsupervised time effect on school attendance	110
Figure 3.6	Boys' and girls' defiance moderates unsupervised time effect on drug use	111
Figure 4.1	Longitudinal SEM for girls	142
Figure 4.2	Longitudinal SEM for boys	143

LIST OF TABLES

		Page
Table 2.1	Descriptive Statistics Overall and by Gender Subgroup	53
Table 2.2	Statistically Significant Gender Differences in Structural Paths	54
Table 2.3	Organized Activities Results of Multiple-Group Analysis by Gender	55
Table 2.4	Sports Results of Multiple-Group Analysis by Gender	56
Table 2.5	Arts Results of Multiple-Group Analysis by Gender	57
Table 2.6	Academic Clubs Results of Multiple-Group Analysis by Gender	58
Table 2.7	Nonacademic Clubs Results of Multiple-Group Analysis by Gender	59
Table 2.8	Volunteer Results of Multiple-Group Analysis by Gender	60
Table 2.9	Religious Classes Results of Multiple-Group Analysis by Gender	61
Table 2.10	Unsupervised Results of Multiple-Group Analysis by Gender	62
Table 3.1	Descriptive Statistics by Gender	101
Table 3.2	Correlations between Predictors and Outcomes	102
Table 3.3	Noncognitive Moderators Correlated with Predictors and Outcomes	103
Table 3.4	Path Coefficients from Structural Equation Models Relating Out-of-School Experiences Over Two Years, Baseline Oppositional Defiance, and Baseline College Expectations with Youth Functioning in Year 2 for Boys (N = 479)	104
Table 3.5	Path Coefficients from Structural Equation Models Relating Out-of-School Experiences Over Two Years, Baseline Oppositional Defiance, and Baseline College Expectations with Youth Functioning in Year 2 for Girls (N = 545)	105
Table 4.1	Descriptive Statistics	140
Table 4.2	Correlations between Organized Activity Epochs and Youth Development Variables	141

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CURRICULUM VITAE

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ABSTRACT OF THE DISSERTATION

Person Characteristics Related to Out-of-School Time Participation and Outcomes:

An Examination of Selection, Moderation, and Mediation Effects

By

Sabrina Kataoka

Doctor of Philosophy in Education

University of California, Irvine, 2016

Professor Deborah Lowe Vandell, Chair

This dissertation presents three studies that examine the role of person characteristics, primarily noncognitive skills and gender, in the person-context relations of out-of-school experiences and school-related functioning. Using structural equation modeling, I investigate noncognitive skills in three ways: as selection factors predicting participation in out-of-school contexts, as moderators of the associations between out-of-school activity participation and outcomes, and as mediators of the associations between out-of-school activity participation and outcomes.

Multiple-group structural equation models were used to test for gender moderation simultaneously in the analysis of pathway models. The first study modeled the cross-predictive relations between person characteristics (noncognitive skills, behavioral problems, and school grades) and intensity of participation in out-of-school contexts at age 15 and end of high school. Key findings include a positive bidirectional relationship between school grades and intensity of participation in organized activities, and a gender moderated effect in which for boys, but not girls, higher level of noncognitive skills and behavioral problems predicted increased unsupervised time, and more unsupervised time predicted decreased school grades at the end of

high school. The second study modeled two person characteristics (defiance and college expectations) as moderators of relationships between intensity of participation in out-of-school experiences over two years of middle school and school-related and risk-taking outcomes. Moderation effects were consistent with compensatory and dual risk hypotheses, such that organized activities were most compensatory for high defiant boys' school attendance, and unsupervised activities were most risky for high defiant boys' school attendance and high defiant boys' and girls' drug use. The last study of this dissertation modeled a noncognitive skills latent variable (indicated by work orientation, self-reliance, and self-identity) as a mediator of longitudinal associations between consistency of organized activity participation from Kindergarten to Grade 5 and school grades in high school. Noncognitive skills significantly mediated these longitudinal associations for girls. Only a direct, non-mediated model was found for boys. While research often conceptualizes person characteristics as demographic and control variables, the results of this dissertation emphasize the importance of accounting for the selection, moderating, and mediating roles of person characteristics, including gender and non-cognitive competencies, in the developmental process.

CHAPTER 1

Introduction

The prevalence of out-of-school organized activity participation among adolescents has increased over the past decades, with reports estimating participation figures near 10 million annually (Yohalem, Pittman, & Edwards, 2010). Out-of-school organized activities, or organized activities for short, are activities that (a) fall outside the regular school curriculum; (b) are structured with constraints, rules, and goals; (c) are supervised by adults; (d) hold regularly scheduled meetings; and (e) are generally voluntary. Examples include afterschool programs and coached sports.

With a substantial number of youths participating in organized activities, policymakers, practitioners, and researchers alike have developed interest in the consequences of activity participation during the out-of-school hours (Mahoney, Harris, & Eccles, 2006; Vandell, Larson, Mahoney, & Watts, 2015). To understand the developmental outcomes of participation, research has emphasized the study of the context (e.g., quality of activities) or amount of exposure to the context (e.g., intensity of participation). There remains a gap in the literature, however, about how the person-level characteristics of youth relate to organized activity participation and outcomes (Durlak, Mahoney, Bohnert, & Parente, 2010).

The purpose of this dissertation is to examine the role that person characteristics—with particular emphasis on noncognitive skills and gender—play in the dynamic person-context relations of out-of-school experiences and school-related functioning. Following a three-study format, I investigate noncognitive skills in three ways: as predictors, moderators, and mediators. Study 1 examines noncognitive skills as *predictors* of out-of-school activity participation. Study

2 examines noncognitive skills as *moderators* of the relation between out-of-school participation and school-related outcomes. Study 3 examines noncognitive skills as *mediators* of the relation between out-of-school participation and school-related outcomes. In all three studies, I also test for differential effects by gender.

To demonstrate the value of accounting for person characteristics, specifically noncognitive skills and gender, in the aforementioned ways, I begin by discussing the contextual focus taken by current research on out-of-school activities and youth development. Situating development within a bioecological framework, I then explain why person characteristics are important for understanding youth development in out-of-school time.

Current Research on Organized Activities: A Contextual Focus

Research on the study of organized activities and youth development has sought to understand *how* and *why* afterschool contexts affect youth development. These questions have resulted in increased attention to the quality of organized activity settings (i.e., the structural and process features of activities) and the various dimensions of youth involvement in activities (i.e., the multiple ways that involvement in activities can be conceptualized, such as how many hours per week or how many different activity contexts over time).

With regard to the quality of organized activities, quality can differ greatly from activity to activity and many features of activities influence activity effectiveness. Some of these features include supportive relationships, intentional skill-building, and developmentally-appropriate structure. Independent of activity content, high quality features likely to promote positive outcomes in afterschool settings have been hypothesized (Eccles & Gootman, 2002; Yohalem, Pittman, & Wilson-Ahlstrom, 2004).

Research linking activity quality features to school-related outcomes indicates that quality can predict youth development in academic functioning, as well as in additional domains of functioning. Higher quality activities, characterized by such features as supportive relationships and a safe environment, have been linked to better youth outcomes in academic performance; social skills; and behavioral, psychological, and emotional functioning (e.g., Durlak & Weissberg, 2007; Grossman, Campbell, & Raley, 2007; Kataoka & Vandell, 2013; Mahoney, Schweder, & Stattin, 2002; Pierce, Hamm, & Vandell, 1999; Pierce, Bolt, Vandell, 2010; Reisner, White, Russell, & Birmingham, 2004).

With regard to dimensions of involvement in organized activities, several aspects of involvement have been examined. These include how frequently students attend programs (i.e., intensity), how many years they participate (i.e., duration), and how many activity contexts they participate in (i.e., breadth) (Fiester, Simpkins, & Bouffard, 2005; Weiss, Little, & Bouffard, 2005). In their in-depth analysis of dimensions of organized activity involvement, Bohnert, Fredricks, and Randall (2010) report that greater intensity, or more frequent participation, is associated with better academic, psychological, social, and behavioral outcomes. Longer duration of participation in afterschool activity contexts (i.e., two years or more) tends to be associated with better outcomes, particularly academic outcomes, although in sports contexts, longer duration is also associated with engagement in negative outcomes such as higher alcohol use (e.g., Fredricks & Eccles, 2006a). In addition, breadth, or involvement in multiple activity contexts, is related to youth development, especially with regard to academic outcomes; with regard to risk behaviors and psychological outcomes, findings are more variable (Bohnert et al., 2010).

The emphasis in organized activity and youth development research on activity quality and involvement establishes that multiple factors of participation are associated with the developmental and academic outcomes of out-of-school participation. These efforts to distinguish the outcomes of activity participation are limited, however, in that they are predominantly context-focused endeavors. Activity quality focuses on the features and processes of organized activity contexts, and dimensions of attendance focus primarily on the level of exposure youths have to these contexts.

Person Characteristics

Conceptualizing development from a bioecological perspective (Bronfenbrenner & Morris, 2006), the individual is “an active and purposeful agent in the developmental process” (Mahoney, Parente, & Zigler, 2010, p. 380). Associations between activity participation and youth development are based on contextual characteristics of the activities, as well as the person-level characteristics of those who participate in the contexts. To comprehensively understand the developmental consequences of a given context, the individuals participating in it must be considered—developmental outcomes of organized activity participation are partly specific to the individual. Person characteristics include demographics as well as other characteristics reflecting psychosocial, behavioral, and cognitive attributes and skills.

There has been some work highlighting demographic characteristics in organized activity and youth development research (Vandell et al., 2015), focusing on factors of socioeconomic status, such as income level; racial or ethnic characteristics; and gender (e.g., Brown & Evans, 2002; Fredricks & Simpkins, 2011; Gerber, 1996; Mahoney et al., 2006; Riggs, Bohnert, Guzman, & Davidson, 2010). However, demographic characteristics are often included in

research as statistical controls and are less commonly examined as primary variables of interest, for example, as moderators of out-of-school participation effects.

Gender moderation. Although there is a common assumption that participation in organized activities is equally beneficial for girls and boys, a few studies have shown that gender significantly moderates out-of-school participation effects (e.g., Crosnoe, 2002; Hanson & Kraus, 1998; Pierce, Bolt, & Vandell, 2010; Randall & Bohnert, 2012). In the case of sports, for example, only boys' participation associated positively with school grades (Holland & André, 1987; Yin, Katims, & Zapata, 1999) or negatively with externalizing behavior (Fredricks & Eccles, 2006b). Others found that positive associations between organized activities and academic outcomes were moderated by gender in a few cases and, in those cases, the effects were consistently stronger for boys than for girls (Simpkins et al., 2005). Given that relatively few studies have examined interactive effects, more research on gender as a moderator of the effects of organized activities is needed.

In addition to demographic characteristics that influence organized activity participation and school-related outcomes, there are other person-level characteristics that also require attention. Though it is common to account for cognitive person characteristics in the study of school-related outcomes, little attention has been given to the noncognitive skills of youths that can influence organized activity involvement and school-related outcomes.

Noncognitive skills. Noncognitive skills are described as the “academically and occupationally relevant skills and traits that are not specifically intellectual or analytical in nature” (Rosen, Glennie, Dalton, Lennon, & Bozick, 2010, p. 1). They include a broad array of skills such as self-regulation, grit, and sense of responsibility that determine success in education and life (Heckman, 2000). Other examples are persistence, conscientiousness, self-confidence,

self-control, and time management (Browne, 2015). Noncognitive skills have also been variously referred to as “social-emotional skills” and “soft skills” (Browne, 2015).

Examining the role of noncognitive skills in the process of development can be critical. These skills are likened to what Bronfenbrenner and Morris (2006) considered the most likely person characteristics from a bioecological perspective to influence future development, which they termed “force” characteristics. There are developmentally generative (e.g., curiosity) and developmentally disruptive (e.g., explosiveness) characteristics (Bronfenbrenner & Morris, 2006).

Compared to earlier periods of development, adolescence is a period in which individuals are relatively autonomous and can actively influence their own development (Lerner, 2002). During adolescence, the conception of a personal future becomes articulated such that the intention to promote one’s own development plays a more significant role in guiding voluntary activity than in earlier stages of development (Brandtstadter, 1998). Noncognitive processes can motivate and intentionally influence the interactions and experiences that adolescents engage in across the contexts of their daily lives (Bronfenbrenner & Morris, 2006), including out-of-school contexts.

Such processes captured by the characteristics identified as noncognitive skills have been found to be more predictive than cognitive characteristics of improvements in academic outcomes (e.g., Duckworth & Seligman, 2005). However, evaluations of various educational and developmental programs often exclude study of noncognitive skills, narrowly focusing on cognitive outcome measures such as I.Q. or achievement tests (Heckman, 2000).

In this dissertation, I consider three ways in which noncognitive skills play a role in out-of-school participation and school-related outcomes. First, noncognitive skills may influence the

types of activities and intensity of participation in activities that students select into. Second, noncognitive skills may moderate the associations between activity participation and school-related outcomes such that certain out-of-school contexts are linked to better or worse outcomes based on students' noncognitive skills. Third, noncognitive skills may mediate the associations between intensity of participation and developmental outcomes such that greater participation cultivates noncognitive skills in students that, in return, relate to improved academic outcomes. I examine noncognitive skills in these three ways while simultaneously testing for gender moderation and controlling for other person-level characteristics (e.g., demographics, cognitive characteristics).

Overview and Significance of Studies

There is still much research needed to understand why participation in various out-of-school contexts is associated with particular school-related outcomes and for whom. In recognition of the underexplored area of noncognitive skills within the out-of-school research literature, this dissertation presents three studies to examine the role of noncognitive skills in adolescents' decisions surrounding out-of-school activity involvement and in the school-related outcomes of adolescents' out-of-school experiences. In addition, gender has significantly moderated the effects of out-of-school time in some prior studies (e.g., Hanson & Kraus, 1998; Pierce, Bolt, & Vandell, 2010), and further research studying gender's moderating role within the context of the three types of analyses examined herein is needed.

I use two longitudinal datasets: (a) National Institute of Child Health and Human Development Study of Early Child Care and Youth Development (NICHD SECCYD) and (b) Study of Promising After-School Programs. These datasets are well suited for this dissertation because they both include extensive longitudinal data about participants' out-of-school

experiences, school-related outcomes, and person characteristics, including noncognitive skills. Furthermore, the datasets include ample information on family demographics, which are important covariates of adolescents' organized activity participation and developmental functioning. Studies 1 and 3 use the NICHD SECCYD dataset and Study 2 uses the Study of Promising After-School Programs dataset.

Study 1 tests a multiple-group cross-lagged panel design that models the cross-predictive relations between noncognitive skills and intensity of participation in out-of-school contexts at age 15 and end of high school for girls and boys. In addition to noncognitive skills, other person characteristics included in the analysis are behavioral problems, school grades, and demographics. I test whether person characteristics predict future changes in out-of-school participation intensity and whether participation intensity predicts future changes in person characteristics. I hypothesize that noncognitive skills and school grades will both predict increases in intensity of participation in organized activities and decreases in intensity of participation in unsupervised time with peers. I hypothesize that behavioral problems, on the other hand, will predict decreases in intensity of participation in organized activities and increases in intensity of participation in unsupervised time with peers, especially for boys.

Study 2 uses multiple regression analysis to test whether noncognitive characteristics (defiance and college expectations) in middle school (grades 6-8) moderate the relationship between out-of-school experiences and school-related and risk-taking outcomes at the end of two years. Concurrent participation in organized activities and in unsupervised activities is accounted for. The outcomes studied at the end of the two-year period are work habits, school attendance, drug use, and misconduct. I hypothesize that adolescents who are higher functioning in terms of noncognitive skills will experience more positive outcomes from organized activities

and less negative outcomes from unsupervised activities compared to those outcomes for lower functioning adolescents. I further expect these effects to be heightened for boys compared to girls.

Study 3 uses a multiple-group structural equation model that tests whether the longitudinal associations between consistency of organized activity participation from Kindergarten to Grade 5 (K-5) and overall high school grades in math, English, social studies, and science are mediated by the noncognitive skills of work orientation, self-reliance, and identity in Grade 9. I hypothesize that there will be a positive direct relation between consistency of K-5 participation in organized activities and high school grades, and that this relation will be mediated via a positive indirect effect through noncognitive characteristics at Grade 9. I expect greater consistency of K-5 participation in organized activities to predict improved noncognitive skills at Grade 9, which in turn will positively predict school grades at the end of high school.

Examining how noncognitive skills predict participation in out-of-school activities, moderate associations between out-of-school activity participation and adolescent development, and mediate associations between out-of-school activity participation and adolescent development is important for at least three reasons. First, understanding what kinds of adolescents do and do not participate in certain out-of-school contexts is important because the potential for organized activities to promote adolescent development can only be actualized for youths who attend activities in the first place. In addition, it is important to understand whether the characteristics that predict selection into activities are also the characteristics that influence school-related outcomes; if so, reported school-related effects of activity participation may be weaker than expected. Second, studies that account for noncognitive skills as moderators can

further distinguish for whom particular types of out-of-school settings are most developmentally appropriate. By examining noncognitive characteristics as moderators, we recognize that activities are often not “one-size-fits-all” contexts for youths and that different youths can benefit more from certain activity experiences and less from other activity experiences. Third, understanding the mechanisms through which organized activity participation is related to school-related outcomes can help to explain the intermediary character and skills that are cultivated in non-school settings, but that can then potentially affect important in-school academic outcomes. There are likely multiple reasons why organized activity experiences are associated with school-related outcomes, and understanding the noncognitive mechanisms for these associations can clarify how out-of-school experiences may be influencing academic functioning.

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CHAPTER 2

Person Characteristics as Predictors of Adolescent Intensity of Participation in Out-of-School Contexts

Youth participation in organized activities has been linked to an array of positive psychological (e.g., Barber, Eccles, & Stone, 2001; Mahoney, Schweder, & Stattin, 2002), behavioral (e.g., Eccles & Barber, 1999; Mahoney, 2000; Mahoney & Cairns, 1997), and academic (e.g., Bartko & Eccles, 1998; Darling, 2005; Fredricks & Eccles, 2006) outcomes, with greater intensity of participation generally predicting better outcomes (Bohnert, Fredricks, & Randall, 2010). Intensity refers to the average amount of participation in specific units of time, such as hours or days, during a given reference period. Even at the highest intensities of participation, or 20 or more hours per week, positive associations between intensity of activity participation and positive developmental functioning have been found (Mahoney, Harris, & Eccles, 2006). In fact, there is scant evidence in support of the over-scheduling hypothesis, or the concern that increasing amounts of activity participation are associated with poor developmental outcomes, such as psychological distress and poor school achievement (Mahoney et al., 2006; Mahoney & Vest, 2012).

Though research reports that increasing intensity of organized activity participation is associated with positive psychosocial, behavioral, and academic outcomes, it is important to understand who chooses to participate in organized activities in the first place and with what levels of intensity (Simpkins, Ripke, Huston, & Eccles, 2005). Effects of organized activity participation may be due to characteristics of participants and families that are associated with the inclination to participate. It is unclear whether positive developmental outcomes of

participation are partly an artifact of the kind of youth who have selected into those particular types of contexts.

Organized activity participation is likely determined by factors at multiple levels at all ages, but factors at the individual level may be particularly important among adolescent youth. During the period of adolescence compared to childhood, youth typically have increased choices and autonomy in how they spend their time outside of school (Mahoney, Vandell, Simpkins, & Zarrett, 2009). Adolescents can seek out experiences beyond the family's influences and create and choose their environments in different contexts to a much greater extent than can children (Scarr & McCartney, 1983). Adolescents' person characteristics can influence which environments they choose to participate in, how they interact with others, and the quality of experiences they have (Peterson & Peters, 1983). Youth actively seek out environments that they find compatible and stimulating, which is subjectively determined and correlated with their individual characteristics or internal attributes (Scarr & McCartney, 1983). Thus, it is not at random that some youth choose to hang out on the streets during the high-risk afterschool hours while other youth choose to participate in more structured, supervised types of contexts.

The purpose of this study is to assess whether adolescents' person characteristics, namely noncognitive skills, behavioral problems, and school grades, predict intensity of participation in organized activities and time unsupervised with peers, accounting for demographic covariates and gender as a moderator. This study extends past research by focusing on a range of person characteristics beyond demographics and on the intensity of involvement in organized activities versus only a dichotomous measure of participation and nonparticipation. Limited studies that do examine person-level characteristics beyond demographics often consider the risks of person characteristics by examining the lowest levels of youth functioning (e.g., Wimer, Simpkins,

Dearing, & Bouffard, 2008). This study differs in that it considers both positive and negative dimensions of person characteristics and the full range of functioning on these characteristics. Whether adolescents' characteristics, net of family background and demographic influences, can predict their participation is meaningful with regard to understanding youth agency. Are adolescents with higher levels of noncognitive, behavioral, and academic functioning, over and above any family and demographic factors, more likely to be involved in structured, adult-supervised, and skill-building organized activities? Or, are they more likely to be involved in a very different kind of out-of-school context, such as unstructured, unsupervised time with peers? The present study addresses these questions.

Person-Level Predictors of Organized Activity Participation

Studies of individual-level predictors of organized activity participation typically examine demographic characteristics, characteristics that tend to be relatively consistent over developmental stages. For example, ethnicity and gender remain consistent over time and have been linked to differences in organized activity participation (see Vandell, Larson, Mahoney, & Watts, 2015). Overall, rates of participation are highest among European American youth and lowest among Latin American youth. Asian American youth are more likely to participate in lessons than are other race or ethnicity groups (A Child's Day, 2009). Gender predicts intensity of participation in different types of activities such that boys are more likely to participate in sports and girls are more likely to participate in arts, lessons, and clubs (Kleiner, Nolin, & Chapman, 2004; Simpkins et al., 2005).

Although demographic characteristics are significant predictors of activity participation and should not be ignored, other person characteristics can also influence selection into out-of-school contexts, particularly in adolescence when youth tend to have greater freedom to select

their activities outside of school. Relatively little empirical attention has been given to person characteristics (beyond demographics) as predictors of participation in out-of-school contexts. Extant studies that have examined such person characteristics demonstrate that they are important factors to consider. For example, adolescents with a higher sense of self-worth and more positive attributional style have been found to exhibit increased involvement in organized activities during high school, whereas more negative cognitions have been found to predict less organized activity involvement (Bohnert, Martin, & Garber, 2007). Participation in unstructured activities was found to be more common among antisocial adolescents (Mahoney, Stattin, & Lord, 2004), whereas participation in organized activities was found to be more likely among youth with less risks, such as internalizing and externalizing problems (Wimer et al., 2008). The limited research on non-demographic person characteristics as predictors of involvement in various out-of-school contexts suggests that youth who choose to participate with greater intensity in organized activities—where they can find supportive adults and resources for skill-building—differ from youth who choose to participate with lower intensity in such activities.

Furthermore, understanding whether the beneficial effects associated with participation in out-of-school contexts are artifacts of selective participation is critical. Past research has reported significant associations between increased participation in organized activities and aspects of noncognitive, behavioral, and academic functioning, such as positive development of identity, reduced delinquency, and increased school achievement (e.g., Eccles & Barber, 1999; Larson, 2000; Vandell & Posner, 1999); however, it is possible that adolescents who are functioning better on these developmental dimensions participate more intensively in organized activities. This means that the positive developmental outcomes associated with activity

participation may be due to better adjusted adolescents being over-represented in organized activity contexts (McNeal, 1998).

Testing for potential bidirectional relationships between participation and developmental functioning is necessary to separate selection effects from participation effects. There are only a few studies that have tested such bidirectional relationships during the high school period, and they have tended to find evidence for the bidirectionality of effects between participation and adjustment. For example, Denault, Poulin, and Pedersen (2009) found that school grades predicted increased participation in performance and fine arts across the high school years (i.e., effect of selection), and that performance and fine arts participation in grade 9 also predicted increased school grades in the subsequent year (i.e., effect of participation). Darling and colleagues (2005) found some bidirectional effects, but they were few in number and did not fully account for the participation effects in that study. The researchers reported that significant developmental outcomes of organized activity participation are not the spurious result of self-selection into particular out-of-school contexts by better adjusted youths. Controlling for prior adjustment, they concluded that participation in extracurricular activities is truly related to improved adjustment, such as better school grades.

Present Study

The present study extends prior studies on person characteristics as selection factors in organized activity participation. One approach to examine person characteristics in this way has been to create a cumulative risk index at the individual level as a predictor of participation or nonparticipation in organized activities (see Wimer et al., 2008). In that study, the risk index was associated with lower likelihoods of future activity participation (Wimer et al., 2008). Risk factors have been defined as “biological or psychosocial hazards that increase the likelihood of a

negative developmental outcome” (Werner, 1990, p. 97). Although this approach that researchers have used to account for potential selection factors at the individual level has its strengths, there are also weaknesses in this approach. The partly arbitrary reduction of multiple measures into a single composite index can result in significantly decreased predictive power (Sameroff, Seifer, Baldwin, & Baldwin, 1993). Also, because the definition, and thus computation, of any risk or strength can vary greatly, there is high potential for idiosyncratic results across studies.

The current study differs from the Wimer et al. (2008) study in that it assesses *intensity* of organized activity participation instead of simply participation versus nonparticipation in activities. Also, the focus regarding factors that predict activity participation at the individual level differs in that it utilizes the full variance of each person characteristic examined and studies both positive and negative characteristics: noncognitive skills, behavioral problems, and school grades. Desired outcomes of activities in the non-school hours are not just a reduction in problematic functioning, but also the development of skills and characteristics necessary for successful adulthood (Pittman & Cahill, 1991). Moreover, this study accounts for the potential bidirectional relationship between activity participation (in both organized contexts and unsupervised contexts) and person characteristics by separating selection effects and participation effects during the high school period.

Accounting for adolescent and family demographics, I test noncognitive, behavioral, and academic characteristics as predictors of relative changes in out-of-school context participation intensity across time (from age 15 to the end of high school) and, simultaneously, test participation intensity as a predictor of changes in person characteristics across time. I hypothesize that adolescents with more positive levels of functioning on these dimensions can be

differentiated from adolescents with lower levels of functioning in terms of their relative change in intensity levels of participation in various out-of-school contexts. Specifically, those who have higher noncognitive skills and school grades, and lower behavioral problems, may choose to participate with higher levels of intensity in organized activities and with lower levels of intensity in unsupervised time with peers, and, in so doing, further promote their positive development. I expect the results to indicate a bidirectional relationship such that noncognitive skills, behavioral problems, and school grades predict participation in out-of-school contexts but also are improved by organized activities and worsened by unsupervised time with peers. Furthermore, multiple studies have found that activity participation is associated with different developmental outcomes for girls and boys (e.g., Crosnoe, 2002; Hanson & Kraus, 1998); thus, this study tests whether the analysis of bidirectional effects is moderated by gender.

Organized activities can be categorized into several types of activities, such as sports (baseball, track and field, etc.) and arts (drama, band, arts lessons, etc.). There is some evidence that different patterns of predictors and outcomes are associated with specific types of activities (e.g., Denault & Poulin, 2009; Denault, Poulin, & Pedersen, 2009; McNeal, 1995; Pedersen, 2005). However, in some cases, aggregating across types of activities predicts outcomes whereas examining types of activities separately does not (e.g., Zaff, Moore, Papillo, & Williams, 2003). This study aggregates intensity of participation across all types of organized activities, but also examines specific types of activities separately.

This study focuses on intensity of participation and not on other conceptualizations of participation such as breadth. There is evidence that as youths age from childhood through adolescence, there is a tendency to move away from participating in a broader range of activities to specializing in a fewer number of activities (Eccles & Barber, 1999). Given the pattern

characterized by decreasing breadth of activities during adolescence, it is possible that there is more variation in the intensity of activities among adolescents compared to the breadth of their activities. Thus, the focus of this study is to examine the overall rates of participation in different out-of-school contexts during adolescence.

Method

Sample

I use data from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD) for this study. SECCYD data were collected from birth (in 1991) to the end of high school. Subjects were U.S. children and their families from ten sites in nine states (Little Rock, AR; Orange County, CA; Lawrence, KS; Boston, MA; Pittsburgh, PA; Philadelphia, PA; Charlottesville, VA; Seattle, WA; Morganton, NC; and Madison, WI). Families with full-term, healthy newborns were recruited from designated hospitals at these ten sites, following a conditionally random sampling plan to reflect the demographic diversity of the sites and to include both mothers who planned to stay at home with their child in the first year and mothers who planned to go to school or to work full or part time. After recruitment, 1,364 families who participated in the one-month home visit were enrolled in the study. The sample is economically and geographically diverse, though not nationally representative. Additional information on the SECCYD, including further details about recruitment and exclusionary criteria, is described in NICHD Early Child Care Research Network (2000) and the SECCYD web site (<http://secc.rti.org/>).

The analysis sample for this study consists of youth who participated in the Phase V data collection at the end of high school ($N = 782$). Sample characteristics include 49% male and 85% White. Sixteen percent of youth were from low-income families (i.e., families with an

income-to-needs ratio less than or equal to 1.80). Descriptive statistics for the analysis sample overall and by gender subgroup are presented in Table 2.1.

Measures

Person characteristics. Person characteristics that have consistently been reported as outcomes of out-of-school activity participation are studied, as they may also be predictors of participation in these contexts in the first place. These characteristics are aspects of noncognitive, behavioral, and academic functioning. Person characteristics were assessed at two time points: age 15 and end of high school.

Noncognitive skills. At age 15 and end of high school, adolescents responded to questions regarding three characteristics reflecting noncognitive skills (work orientation, self-reliance, and identity) using the *Psychosocial Maturity Inventory* (Greenberger, 2001). A sample item for *identity* is “I change the way I feel and act so often that I sometimes wonder who the ‘real’ me is” [reflected]. A sample item for *self-reliance* is “Luck decides most things that happen to me.” A sample item for *work orientation* is “I hate to admit it, but I give up on my work when things go wrong” [reflected]. There were 30 items total, 10 for each of the three measures of noncognitive skill. Responses were made on a 4-point scale (1 = strongly disagree, 4 = strongly agree). The three subscales had moderate internal reliability at age 15 (alpha = .77, .71, .78 for work orientation, self-reliance, and identity, respectively) and at the end of high school (alpha = .84, .75, .81 for work orientation, self-reliance, and identity, respectively). The three subscales are significantly correlated with one another, with correlations ranging from .45-.73 at both age 15 and end of high school.

Behavioral problems. At age 15 and the end of high school, youth completed the 119-item Youth Self-Report (YSR; Achenbach & Rescorla, 2001), a questionnaire about adolescent

behavioral and emotional functioning. Adolescents reported how well an item described him or her currently or within the last six months, using a 3-point scale (0 = Not True, 2 = Very true or often true). Eight Syndromes were assessed by the YSR: Withdrawn, Somatic Complaints, Anxious/Depressed, Social Problems, Thought Problems, Attention Problems, Delinquent Behavior, and Aggressive Behavior. Three Total scales are based on combinations of the eight Syndromes: Internalizing (Withdrawn, Somatic Complaints, and Anxious/Depressed Syndromes), Externalizing (Delinquent Behavior and Aggressive Behavior Syndromes), and Total Problems (all eight Syndromes). The Total Problems score was computed as the sum of 101 item scores (16 of the YSR items were socially desirable items and were not included in the Total Problems score). Cronbach's alpha was .94 at age 15 and .95 at the end of high school.

Academic performance. At age 15, schools provided copies of official school transcripts for each student enrolled in 9th grade. Grade point averages (GPAs) earned in math, science, English, and social studies were extracted from the student transcripts. GPA was reported on a 4.0 scale, with possible GPAs ranging from 0.0 to 4.0. Correlations among math, science, English, and social studies GPAs were statistically significant and ranged from .55-.66.

At the end of high school, adolescents completed a survey that included questions about their academic performance in high school. Students were asked, "What best describes the typical grades you received in high school?" Students responded using an 8-point scale (1 = Mostly A's, 8 = Mostly below D's). The scale was reverse coded so that higher scores would reflect better grades (1 = Mostly below D's, 8 = Mostly A's). Observed scores ranged from 1-8. Youths' self-reports of grades are highly correlated with school transcripts of grades (e.g., Steinberg, 1996).

Intensity of participation in out-of-school contexts. Adolescents completed the *Things I Do After School or on Weekends* questionnaire (Vandell & Pierce, 2002) at age 15 and end of high school, which assessed their involvement in out-of-school activities over the past year of school. Questions were asked about organized sports; music, dance, or art activities; academic clubs; nonacademic clubs or groups; volunteer or community service work; religious services, classes, or groups; and time with other kids (not siblings) with no adults around. There were eight questions, several of which had multiple parts. Youth proceeded to complete all parts of a question if they answered “yes” to the first part of a question that asked whether or not they participated in certain type of activity (e.g., sports). Sample items include “During the past year, did you do any organized sports (teams or activities) after school or on weekends?” and (if yes) “During a typical week in the past year, how many days did you play organized sports? This includes both practices and games.” Using the items from this measure, variables were created for intensity of participation across types of organized activities and in separate activity types. For the organized activities composite, the number of days in a typical week that youth participated in any organized activities was summed. For example, an adolescent who reported typically participating 4 days per week in sports and 4 days per week in lessons was given a participation intensity score of 8. Those who reported no participation were given an intensity score of 0 days per week.

Students were also asked about unsupervised time with peers. A question asked adolescents to report how many days they spent at least 30 minutes in the afternoon or evening after school during a typical week with other kids such as friends or neighbors (not siblings) without an adult around. Adolescents reported on a scale of none to 5.

Based on these computations of intensity scores, 59% of boys and 51% of girls reported participating in organized sports teams or activities during their last year in high school, indicating its popularity among both boys and girls at this age as the most common type of organized activity. Indeed, adolescents spend the most amount of their free time in this activity type (Larson & Seepersad, 2003). Other studies of high school students (e.g., McNeal, 1998) have reported similar percentages of sports participation and have found sports, relative to other organized activities, to have the highest rates of participation. With the exception of organized sports, girls in the present sample participated more in all other types of organized activities compared to boys, which is consistent with gender differences in participation figures reported using other high school samples (e.g., Eccles & Barber, 1999; McNeal, 1998). As for unsupervised time with peers, boys in the present sample participated more than girls did: at least 30 minutes of unsupervised time with peers was experienced more days per week among boys ($M = 3.09$ days, $SD = 1.83$) than among girls ($M = 2.96$ days, $SD = 1.76$) at the end of high school.

Family and adolescent demographic covariates. There are demographic characteristics that have been linked to participation in organized activities. For example, children from poor families have been found less likely to participate in organized activities (Mahoney, Lord, & Carryl, 2005). Maternal education has been found to predict participation such that youth with mothers who do not graduate from high school are significantly less likely to participate in organized activities (A Child's Day, 2009; Vandell et al., 2009). Adolescents from single-parent households are less likely than adolescents from two-parent homes to participate in organized activities (e.g., Harrison & Narayan, 2003). Moreover, race or ethnicity can predict some differences in patterns of organized activity participation (Vandell et al., 2015). Therefore,

income-to-needs ratio, maternal education, single-parent household, and race/ethnicity are included as covariates in this study.

When the child was age 1 month, mothers reported on demographic characteristics, including child gender, ethnicity, and maternal education. Students in the sample had mothers with an average of 14.71 years of education. When the child was age 15 years, mothers reported annual household income and household size, from which income-to-needs ratio was calculated. Mothers also reported whether a spouse or partner lives in the household. The sample consisted of 21% of students from single-parent households.

Analytic Plan

A series of multiple-group cross-lagged structural equation models (SEMs) are examined in Stata version 13, with each model including intensity of participation in a different out-of-school context and all models using gender as the grouping variable. The SEM examines whether there are significant bidirectional relations between noncognitive, behavioral, and academic person characteristics and participation intensity over time. I test whether person characteristics at age 15 predict changes in the intensity of activity participation at the end of high school, and whether activity participation at age 15 predicts changes in non-cognitive skills at the end of high school. Covariates are modeled to predict the end of high school dependent variables. Exogenous variables are modeled to covary, as are the error variables. Figure 2.1 displays the base SEM, excluding covariates and covariances for presentation purposes.

The age 15 measure of the end of high school outcome was controlled for in each SEM. This allows for an estimate of the extent to which the person characteristics predict change in intensity of participation in the out-of-school context and also controls for selection factors that predicted participation in the out-of-school context at age 15, reducing potential omitted variable

bias. In other words, this analytic strategy controls for the potentially numerous unmeasured self-selection variables that influenced an adolescent to participate in a particular context previously at age 15.

To account for possible non-independence of observations within research site, I used Huber-White standard error adjustments with clustered standard errors by research site. Missing data are handled using Full-Information Maximum Likelihood procedures based on all youths who reported intensity of participation in the activity context under study within each model.

Results

First I examined intensity of participation in all organized activities grouped together. Next I examined intensity of participation in organized activities separately by activity type, using six categories: sports, arts, academic clubs, nonacademic clubs, volunteer, and religious classes. I then examined intensity of participation in unsupervised time with peers.

Regardless of the out-of-school context being examined, the following steps were taken. First I fit the unconstrained model, which refers to a model wherein the two groups—girls and boys—were estimated simultaneously with no equality constraints across groups. That is, all parameters were allowed to differ for the two groups. Next, I tested for group invariance of the parameters for the unconstrained solution. Results indicated that the invariance constraint for several parameters were statistically significant, reflecting a significant gender difference for those parameters. Table 2.2 presents the structural path parameters (the stable and cross-lagged components) with statistically significant gender differences for each out-of-school context.

Based on the results for group invariance of parameters, I refit the model with structural parameters that did not statistically differ by gender constrained to be equal across groups, which I refer to as the constrained solution. A summary of results for the unconstrained solution and

constrained solution for each out-of-school context is presented in Tables 2.3-2.10. Note that although unstandardized values of constrained parameters are identical for girls and boys, standardized values can differ slightly unless variances for the two groups are also identical (Acock, 2013). The constrained models are the final models that interpretations are based on. Figures 2.2-2.9 show the cross-lagged model for each out-of-school context displaying statistically significant standardized estimates, which correspond to effect-size estimates, from the constrained solution.

Researchers have used various statistics to evaluate the fit of models to data. The present study reports two widely used measures of model fit: root mean squared error of approximation (RMSEA) and comparative fit index (CFI). RMSEA accounts for the amount of error for each degree of freedom. RMSEA values of no more than 0.05 indicate good fit and as high as 0.08 indicate reasonable fit. CFI compares the analyzed model with a baseline model that assumes no relationship among all variables, indicating percent improvement from the null model (Acock, 2013). Values close to 1.00 indicate good fit. The more stringent recommended cutoff value for CFI is 0.95 (i.e., 95% improvement from the null model), but 0.90 is also recognized as an acceptable cutoff value (Acock, 2013).

Following is a presentation of results by out-of-school context, beginning with organized activities all together, moving onto organized activities separated by type of activity, and ending with unsupervised time with peers. Although correlational, not causal, relations are estimated, causal language (e.g., effect) is used for heuristic purposes. “Selection effect” is employed to refer to significant cross-lagged paths from person characteristics at age 15 to out-of-school participation intensity at the end of high school. On the other hand, “participation effect” is

employed to refer to significant cross-lagged paths from out-of-school participation intensity at age 15 to person characteristics at the end of high school.

Organized Activities

The constrained solution for organized activities (aggregated across type) was not significantly worse in terms of model fit compared to the unconstrained solution, $\chi^2_{\text{diff}}(29) = 30.59, p = 0.39$. The RMSEA also improved in the constrained solution, meeting the recommended RMSEA maximum cutoff value of 0.05 for good fit (Acock, 2013). The CFI was 0.97, which exceeds the 0.95 minimum standard of good fit (Acock, 2013).

Results indicated a bidirectional relationship (i.e., there was evidence of selection and participation effects) between school grades and intensity of participation in organized activities. A selection effect indicated that school grades at age 15 predicted relative increases in organized activity intensity at the end of high school ($\beta = 0.20, p = 0.00$). At the same time, a participation effect indicated that organized activity intensity at age 15 predicted relative increases in school grades at the end of high school ($\beta = 0.09, p = 0.00$). The “selection effect” was more than twice as large as “the participation effect,” although both were statistically significant. These relations were not moderated by gender.

Specific Types of Activities

Next I examined relations between specific types of activities and adolescent outcomes.

Sports. The constrained model fit for sports was not significantly worse than the unconstrained model fit, $\chi^2_{\text{diff}}(29) = 30.79, p = 0.38$. Both RMSEA and CFI standards of good fit were met by the constrained model.

Selection effects were found for school grades ($\beta = 0.14, p = 0.00$), behavioral problems ($\beta = -0.09, p = 0.04$), and noncognitive skills ($\beta = -0.08, p = 0.00$). Higher grades at age 15 were

associated with spending more time in sports at the end of high school. Higher level of behavioral problems at age 15 predicted spending less time in sports at the end of high school. Higher level of non-cognitive skills at age 15 predicted less involvement in sports at the end of high school. Also, a bidirectional relationship was found between school grades and sports intensity. Schools grades predicted relative increases in sports intensity ($\beta = 0.14, p = 0.00$) and, at the same time, sports intensity predicted relative increases in school grades ($\beta = 0.07, p = 0.02$).

Arts. The constrained model fit for arts was not significantly worse than the unconstrained model fit, $\chi^2_{\text{diff}}(29) = 21.56, p = 0.84$. The RMSEA of the constrained model also decreased to 0.04, meeting the 0.05 standard of good fit.

Selection effects were found for behavioral problems and school grades. Behavioral problems at age 15 predicted relative increases in arts intensity at the end of high school ($\beta = 0.11, p = 0.00$). School grades at age 15 also predicted relative increases in arts intensity at the end of high school ($\beta = 0.10, p = 0.00$). Participation in arts at age 15 did not predict youth outcomes at the end of high school.

Academic clubs. The constrained model fit for academic clubs was not significantly worse than the unconstrained model fit, $\chi^2_{\text{diff}}(27) = 35.76, p = 0.12$. The RMSEA also decreased to 0.06 in the constrained model, which indicates a reasonably close fit based on the 0.08 standard (Acock, 2013).

A selection effect for noncognitive skills indicated that higher noncognitive skills at age 15 was linked to increases in the intensity of participation in academic clubs at the end of high school ($\beta = 0.06, p = 0.04$). A selection effect for school grades was also found, but was moderated by gender. For girls (but not boys), grades at age 15 predicted increases in the

intensity of participation in academic clubs at the end of high school ($\beta = 0.15, p = 0.00$).

Intensity of participation in academic clubs at age 15 was not related to the three adolescent outcomes measured at the end of high school.

Nonacademic clubs. As shown in Table 2.2, two structural paths differed statistically by gender in the unconstrained model for nonacademic clubs. Allowing only these two paths to vary by gender did not result in adequate model fit. Unconstraining an additional path between the maternal education covariate and end of high school grades improved the model fit. This model, with three constrained parameters, is the constrained model used for nonacademic clubs.

The constrained model fit for nonacademic clubs was not significantly worse than the unconstrained model fit, $\chi^2_{\text{diff}}(27) = 39, p = 0.06$. The RMSEA also improved to 0.06 in the constrained model, which can be interpreted as a reasonably close fit (Acock, 2013), whereas the RMSEA for the unconstrained model was 0.09, which meets neither the standard for good fit (0.05) nor the standard for reasonably close fit (0.08).

A statistically significant participation effect moderated by gender was found such that only boys' intensity of participation in nonacademic clubs at age 15 predicted relative increases in school grades at the end of high school ($\beta = 0.10, p = 0.00$). There was no evidence of youth characteristics at age 15 predicting intensity of nonacademic clubs at the end of high school.

Volunteering. The constrained model fit for volunteer activities was not significantly worse than the unconstrained model fit, $\chi^2_{\text{diff}}(29) = 26.55, p = 0.60$. The RMSEA also decreased to 0.04 in the constrained model, indicating good fit.

There were three significant participation effects of volunteering. Intensity of participation in volunteer activities at age 15 predicted relative increases in noncognitive skills ($\beta = 0.08, p = 0.046$) and school grades ($\beta = 0.06, p = 0.02$) at the end of high school. Intensity of

participation in volunteer activities at age 15 predicted relative decreases in behavioral problems at the end of high school ($\beta = -0.07, p = 0.04$). There was no evidence of selection:

Noncognitive skills, behavioral problems, and grades at age 15 did not predict participation in volunteer or service activities at the end of high school.

Religious classes. The constrained model fit for religious classes was not significantly worse than the unconstrained model fit, $\chi^2_{\text{diff}}(28) = 22.17, p = 0.77$. The RMSEA also improved to 0.04 in the constrained model, indicating good fit.

One significant selection effect was found such that higher noncognitive skills at age 15 predicted relative decreases in the intensity of participation in religious classes at the end of high school ($\beta = -0.12, p = 0.01$). Two significant participation effects were also found, with one moderated by gender. The intensity of participation in religious classes at age 15 predicted relative increases in school grades for both girls and boys ($\beta = 0.08, p = 0.047$) and relative decreases in behavioral problems for girls only ($\beta = -0.10, p = 0.03$).

Unsupervised Time with Peers

The constrained model fit for unsupervised time with peers was not significantly worse than the unconstrained model fit, $\chi^2_{\text{diff}}(26) = 28.85, p = 0.32$. The RMSEA also met the 0.05 standard of good fit in the constrained model.

There was a statistically significant bidirectional relationship between noncognitive skills and unsupervised intensity, which was also moderated by gender. Noncognitive skills at age 15 predicted relative increases in unsupervised intensity at the end of high school for boys only ($\beta = 0.19, p = 0.00$) and, at the same time, unsupervised intensity at age 15 predicted relative increases in noncognitive skills at the end of high school for both girls and boys ($\beta = 0.08, p = 0.045$).

For behavioral problems, a selection effect was found for boys. Boys' behavioral problems at age 15 was associated with relative increases in unsupervised intensity at the end of high school ($\beta = 0.16, p = 0.00$).

For school grades, a participation effect was found for boys. Boys' unsupervised intensity at age 15 predicted relative decreases in school grades at the end of high school ($\beta = -0.09, p = 0.01$).

Follow-Up Analysis

Given that prior studies examining adolescent behavior have tended to study internalizing behavior and externalizing behavior separately, the constrained models were rerun to aid with comparison of the present study's results with prior studies' findings. In the follow-up analysis, internalizing and externalizing subscales were included in the SEMs instead of the Total Problems composite. The Total Problems composite was correlated with the internalizing subscale at age 15 and end of high school ($r = 0.86, p = 0.00$), as well as with the externalizing subscale at age 15 ($r = 0.82, p = 0.00$) and end of high school ($r = 0.84, p = 0.00$). Internalizing and externalizing subscales were correlated with each other at age 15 ($r = 0.52, p = 0.00$) and end of high school ($r = 0.55, p = 0.00$).

RMSEA and CFI values of the follow-up model were no different from those of the constrained models and met the minimum standards of fit. Parameter estimates from the constrained solutions largely remained similar when rerun in the follow-up analysis in terms of whether results were statistically significant (no differences between constrained and follow-up models) and the magnitude of effect sizes (differences of 0.03 standardized units at most). One exception was with the arts, which is described below.

The follow-up analysis was able to indicate whether the behavioral problems involved in either a selection effect or participation effect in the constrained solution was being accounted for by internalizing or externalizing problems. Interestingly, either internalizing or externalizing accounted for each effect, not both. For sports, greater *internalizing* behavior at age 15 predicted relative decreases in intensity of sports participation at the end of high school ($\beta = -0.10$, $SE = 0.05$, $p = 0.04$). For volunteer activities, greater intensity of participation at age 15 predicted relative decreases in *internalizing* behavior at the end of high school ($\beta = -0.08$, $SE = 0.02$, $p = 0.00$). For religious classes, greater intensity of participation at age 15 predicted relative decreases in *externalizing* behavior at the end of high school among girls ($\beta = -0.11$, $SE = 0.05$, $p = 0.04$). For unsupervised time with peers, greater *externalizing* behavior at age 15 predicted relative increases in the intensity of participation in unsupervised time with peers at the end of high school among boys ($\beta = 0.13$, $SE = 0.03$, $p = 0.00$).

For arts, the selection effect of behavioral problems on relative increases in arts intensity was nonsignificant in terms of both internalizing and externalizing behaviors. On the other hand, a participation effect of arts intensity was found for *internalizing* behavior such that higher intensity of participation in the arts at age 15 predicted relative increases in *internalizing* behaviors at the end of high school for both girls and boys ($\beta = 0.06$, $SE = 0.02$, $p = 0.01$).

Discussion

The present study addressed the question of whether noncognitive, behavioral, and academic participation effects associated with out-of-school activities are bidirectional such that the noncognitive, behavioral, and academic characteristics of adolescent participants also predict participation in out-of-school activities. This is an important question, especially with regard to adolescent development because as children move through the period of adolescence, they tend

to be granted more autonomy with how they spend their time outside of school. This study also addressed the question of whether noncognitive, behavioral, and academic selection and participation effects are moderated by gender.

Net of the stable components of person characteristics and participation intensity over time and net of demographic covariates, this study finds evidence for person characteristics predicting relative changes in intensity of out-of-school activity participation and vice versa. However, patterns of effects differed by the out-of-school contexts studied and, sometimes, by adolescent gender.

Selection, Participation, and Bidirectional Effects

Arguably, “organized activities” is one of the most common of the categorizations of out-of-school activities (Eccles & Gootman, 2002; Vandell et al., 2015). These activities have been grouped together because they share some features in common: they (a) fall outside the regular school curriculum; (b) are structured with constraints, rules, and goals; (c) are supervised by adults; (d) hold regularly scheduled meetings; and (e) are generally voluntary. In my first set of analyses, I first considered this broad conceptualization of organized activities. I then turned to consideration of specific types of activities.

The present study suggests that both adolescent girls and boys experience this benefit of organized activity participation during the high school years. Organized activities, when studied altogether as a single context, have been found to be promotive for academic functioning. The findings are in line with prior studies documenting the academic benefits for adolescents of participation in organized activities (e.g., Bohnert, Fredricks, & Randall, 2010; Darling, 2005; Darling, Caldwell, & Smith, 2005; Fredricks & Eccles, 2006). However, this study extends prior work by assessing gender moderation and by simultaneously accounting for the effects of

selection, using three kinds of person characteristics (noncognitive, behavioral, and academic), and the effects of participation. The results indicate that selection and gender are also significant factors to understanding the relation between organized activity participation and school grades.

The selection effect of school grades at age 15 on intensity of participation in organized activities at the end of high school was just over double in size of the participation effect of intensity of participation on future school grades, even though both were statistically significant. From the first to last year of high school, there was a normative decline in the intensity of sports participation, but those students with better school grades at age 15 showed less decline in intensity of participation compared to students performing worse academically. In addition to performance criteria (e.g., tryouts, auditions) and high commitment levels of many activities (e.g., daily training and practice sessions for sports teams), schools usually have academic performance requirements (e.g., no pass-no play) such that students need to maintain a minimum grade point average to qualify for participation in many extracurricular activities (Joekel, 1985). Academic barriers to participation is one explanation for why those who have higher academic functioning, compared to their lower achieving peers, are participating more in organized activities during the high school years and conceivably benefiting further in their school performance in a reciprocal sequence.

The developmental effects of organized activities have also been studied separately by activity type (e.g., Denault & Poulin, 2009; Denault et al., 2009; McNeal, 1995; Pedersen, 2005). The present findings for the developmental outcomes of different types of out-of-school activities are generally consistent with prior work. For example, Eccles and colleagues (2003) found that sports predict increases in school grades over the high school years and that involvement in volunteer/religious activities predict increases in school grades and decreases in

risky behaviors during high school. The present findings indicate similar relations, with the finding for sports being bidirectional. The positive selection effect between school grades at age 15 and sports intensity at the end of high school was twice the effect size of the positive participation effect between sports intensity at age 15 and school grades at the end of high school. This difference in effect sizes between the selection and participation effects resembles the difference in effect sizes for the bidirectional relation between school grades and organized activities aggregated across type. Also, whereas many prior studies combine volunteer and religious activities, the present study separated volunteer activities from religious activities and was able to find more specific results (in terms of behavioral problem subscales and gender differences) for the negative association between volunteer/religious activity participation and behavioral problems reported in the literature. In addition, the present result that intensity of arts participation predicted increases in internalizing behavior is consistent with prior research that found that tenth grade participation in performing arts was positively associated with indicators of later internalizing behavior, namely subsequent suicide attempts and psychologist visits (Barber et al., 2001).

The results for volunteering and academic clubs were especially noteworthy. Volunteering predicted desirable changes in all three person characteristics studied, regardless of adolescent gender. Though effect sizes were relatively small, there were no significant selection effects due to prior levels of these person characteristics. The fact that many high schools have mandatory community service requirements may explain the lack of selection effects predicting volunteer participation. At the same time, this study examined the *intensity* of participation in volunteer activities rather than a yes or no dichotomous measure of participation in order to assess differences beyond participation that may be due to mandatory requirements.

Interestingly, volunteer activities was the only out-of-school context studied that yielded effects on all three dimensions of person characteristics (noncognitive, behavioral, and academic) in the desired directions for positive functioning, suggesting that school policy requiring volunteer hours for graduation may be beneficial for the development of adolescents—as adolescents participate in service to society, their service also nurtures their own development.

Interestingly, academic clubs, on the other hand, did not show any significant participation effects and only showed significant selection effects of person characteristics. Higher level of noncognitive skills predicted increased participation in academic clubs at the end of high school. For girls (but not boys), higher school grades also predicted increased participation in academic clubs at the end of high school. Such findings suggest that the other types of organized activities that are not academically-oriented may have more significant academic consequences than academic activities do themselves. To highlight this point, intensity of participation in the academic clubs category in this study did not yield any improvements in academic or other developmental outcomes, while almost all other types of activities yielded increases in academic grades, at minimum. Ironically, many schools and districts increase academic activities and eliminate or reduce nonacademic activities based on the belief that activities without an academic focus are dispensable for students' academic development (McNeal, 1998).

Unsupervised Time with Peers

In addition to organized activities as a single context and as separate types of activities, unsupervised time with peers is another common out-of-school experience that has been studied and linked to developmental outcomes, such as higher substance use and misconduct, and lower academic performance (Galambos & Maggs, 1991; Levine Coley, Morris, & Hernandez, 2004;

Pettit, Bates, Dodge, & Meece, 1999; Posner & Vandell, 1999; Richardson et al., 1989; Shulman, Kedern, Kaplan, Sever, & Braja, 1998). In this study, for boys (but not girls), higher levels of noncognitive skills and behavioral problems predicted increased unsupervised time at the end of high school. Higher intensity of unsupervised time also predicted decreased school grades at the end of high school for boys. For both boys and girls, higher intensity of unsupervised time predicted increased noncognitive skills at the end of high school.

The undesirable outcome of unsupervised time found in this study resulted from participation in unsupervised time with peers for boys and their school grades, though participation in this context was higher among boys reporting greater noncognitive skills and behavioral problems to begin with. Research has shown that activity settings are associated with characteristically different peer networks, also described as “leisure cultures” (Eckert, 1989). Participation in organized activities generally predicts having a more academically-oriented group of friends, whereas nonparticipation in organized activities generally predicts having fewer academically-oriented friends (Eccles et al., 2003). These context or activity-based peer cultures can influence development by way of positive or negative socialization. Interestingly, Persson and colleagues (2004) reported that attending unstructured Swedish youth recreation centers, characterized by little supervision and no structure, was not problematic in and of itself. Person characteristics predicted participation in these youth centers (i.e. a selection effect), but those who exhibited the highest normbreaking were those who attended *and* got heavily involved with peers in that context (Persson, Kerr, & Stattin, 2004). In the present sample, the negative peer socialization within unsupervised activities may have contributed negatively to boys’ academic engagement and performance, even if person characteristics also predicted selection into this context.

Contrary to what was hypothesized, selection effects of noncognitive skills at age 15 on intensity of participation in organized activities at the end of high school tended to be negative, except for academic clubs, which was positive. Noncognitive skills was predictive of increased unsupervised time with peers in boys with an effect size roughly double that of the reciprocal negative effect of unsupervised intensity on reduced school grades for boys. Also contrary to what was hypothesized, unsupervised time with peers predicted increases in noncognitive skills for both boys and girls. The noncognitive skills measure was made up of questions related to work orientation, self-reliance, and identity. Such characteristics as identity and self-reliance may reflect how seemingly more mature adolescents gravitate toward settings that are not supervised or structured by adults as a way of exhibiting their perceived sense of maturity (Richardson et al., 1989). This may particularly be the case for boys who are more likely than girls to exhibit externalizing behavior and, in combination with a perceived sense of maturity, find unsupervised time with peers an attractive context. In turn, self-care situations can cause adolescents to perceive themselves as more mature and capable of making decisions that adults may not approve of (Richardson et al., 1989).

Though an increase in unsupervised time with peers over the high school years is normative for high school samples, as it was in the current sample, unsupervised time with peers for which parents know of adolescents' whereabouts may have very different consequences from those of unsupervised time with peers for which parents are unaware of adolescents' activities. In the present study, adolescents reported on their unsupervised time with other kids such as friends or neighbors (not siblings) without an adult around; the survey question also stated that if they were out in the neighborhood, this meant that no adult at home knew what he or she was doing. In other words, the present study's measure of unsupervised time described a context that

involved peers and lacked adult supervision, structure, and even parental knowledge of whereabouts. Further research on unsupervised time with peers and parental knowledge and monitoring is needed to understand the negative effect of unsupervised time with peers on school grades among boys.

Gender Moderation

Child gender has been found to moderate the effects of out-of-school time in prior research (e.g., Hanson & Kraus, 1998; Pierce, Bolt, & Vandell, 2010; Simpkins et al., 2005). I tested whether gender moderated both selection and participation effects related to the intensity of participation in various out-of-school contexts. Several selection effects and participation effects were significantly moderated by gender.

However, compared to the total number of statistically significant selection and participation effects, gender moderated effects were relatively few. Nonetheless, for the unsupervised context, gender moderated the majority of effects. The direction of effects is congruent with the direction of reported effects in the literature, but the present study found that most of the effects related to the unsupervised context applied only to boys. These findings demonstrate that gender should not be dismissed as a moderator of out-of-school time effects. Examining how boys and girls differ in the ways they spend unsupervised time with peers or, in other words, what unsupervised activities boys and girls tend to engage in and with what kinds of peers (i.e., peer culture) could help to elucidate these moderated findings.

General Discussion

The findings from the current study are noteworthy because of evidence indicating that person characteristics such as noncognitive skills, behavioral problems, school grades, and gender have implications for which youth participate in organized activities and in unsupervised

time with peers. The longitudinal analyses also found participation in activities were linked to adolescent outcomes over time. These findings, then, are consistent with a bidirectional relationship between person characteristics and participation. Person characteristics predict participation and, over and above these influences, participation predicts development in person characteristics.

What can be concluded from the present findings? The most consistent finding across all significant associations was the positive link between intensity of organized activities and school grades. For two types of activities (arts and academic clubs), better school grades was only a significant predictor of participation, and not an outcome of participation, but for other types of activities better school grades was either an outcome of participation or was involved in a bidirectional relation such that better school grades was both a significant indicator and outcome of participation.

A strength of this study is that it examined bidirectional effects, examining selection and participation effects. Results showed that multiple effects were indeed bidirectional such that both significant selection effects and participation effects were found. The bidirectional results indicate that although selection effects are present based on person characteristics and covariates, there are still benefits of out-of-school activity contexts beyond these selection processes. Interestingly, the bidirectional effects found were roughly consistent with regard to the difference in size between selection and participation effects. Specifically, the selection effect of person characteristics on subsequent out-of-school participation was about twice the size of the out-of-school participation effect on subsequent change in person characteristics.

A second strength is that overall organized activities, as well as specific activities, were examined. By investigating overall organized activities, followed by specific types of activities,

a clearer understanding of the overall effects was gained. For example, when examining overall organized activities, a bidirectional relationship was found between school grades and intensity of organized activities. Analyses by type of activity indicated that the selection effect of school grades on increased organized activity participation was found primarily for three types of activities: sports, arts, and academic clubs. On the other hand, the participation effect of intensity of organized activity participation on school grades was found primarily for four types of activities: sports, nonacademic clubs, volunteering, and religious classes. Effect sizes when analyzing overall activities and specific types of activities were roughly similar in most cases, and there were no contradictory findings that indicated any type of activity predicted decreased school grades. Nonetheless, by separating overall activities into specific types, there were interesting implications such as how academic benefits result not from academic organized activities, but rather from many other types of nonacademic activities including sports, nonacademic clubs, volunteering, and religious classes.

Though this study found the most consistent participation effects for academic outcomes and fewer participation effects for behavioral and noncognitive outcomes, participation at one time point, age 15, was the predictor of end of high school outcomes. It is possible that examining participation in other ways and for longer periods of time can reveal more participation effects on behavioral and noncognitive dimensions, in addition to academic dimensions.

Studies that have reported significant links between out-of-school time activities and behavioral problems have often examined indicators of internalizing and externalizing behavior problems separately (e.g., Bohnert & Garber, 2007; Denault, Poulin, & Pedersen, 2009; Pierce, Hamm, & Vandell, 1999). In these cases, the effects predicting relative change in internalizing

problems can be different in magnitude and significance from the effects predicting relative change in externalizing problems. For example, Bohnert and Garber (2007) found that higher levels of organized activity participation predicted decreases in externalizing behavior but had no effect on internalizing behavior. Internalizing and externalizing behaviors describe different types of problems that also can determine different outcomes. Thus, a follow-up analysis was conducted in the present study to examine behavioral problems as internalizing and externalizing subscales. Indeed, when the two subscales were included in the same analysis, only one or the other subscale was statistically significant for each model. The findings are consistent with prior work (e.g., Wimer et al., 2008), such that higher internalizing or externalizing problems predicted lower participation in various types of organized activities and predicted more unsupervised time with peers. Further research should assess the subscales of behavior problems in addition to total behavior problems when possible.

The results of this study should be interpreted with an understanding of its limitations. The present study utilized longitudinal covariate methods and cross-lagged designs to test bidirectional relations between person characteristics and out-of-school context participation intensity, which is an improvement to studies using cross-sectional designs (e.g., Harrison & Narayan, 2003; Mahoney et al., 2002). Nevertheless, work using alternative methods, such as propensity score matching, could strengthen the interpretations made from current findings. Even better, to truly understand causal pathways, interventions or randomized trials would be helpful. Another limitation is that the present study examined only two time points, age 15 and end of high school. To the extent that participation fluctuates throughout the high school years, examining more time points would better identify trajectories of participation and adjustment (Denault et al., 2009). Also, the sample was predominantly White and middle income, limiting

the generalizability of the findings. Results may be different with samples consisting of much different racial, socioeconomic, and at-risk profiles. Finally, data were reported primarily by students, with the exception of school grades at age 15, which were acquired from school transcripts. By controlling for prior participation in out-of-school contexts and prior levels of person characteristics, it is likely that common source variance was reduced, but this does not completely eliminate the bias. Despite these limitations, the present examination suggests the importance of noncognitive, behavioral, academic, and gender characteristics for studying the bidirectional relations that describe out-of-school time selection and participation effects.

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Table 2.1

Descriptive Statistics Overall and by Gender Subgroup

Variable	Overall (N = 782)			Girls (n = 402)			Boys (n = 380)		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
Intensity of Participation in Out-of-School Contexts									
<i>Organized Activities (All)</i>									
A15	751	8.25	4.46	388	8.54	4.57	363	7.93	4.33
EHS	759	5.92	4.38	395	6.26	4.52	364	5.55	4.20
<i>Sports</i>									
A15	761	3.67	2.42	392	3.47	2.42	369	3.88	2.39
EHS	768	2.50	2.62	400	2.31	2.59	368	2.70	2.64
<i>Arts</i>									
A15	761	1.82	2.29	392	1.99	2.21	369	1.63	2.35
EHS	770	1.25	2.10	401	1.37	2.12	369	1.12	2.07
<i>Academic Clubs</i>									
A15	761	0.34	0.95	391	0.39	0.98	370	0.30	0.91
EHS	768	0.40	0.98	399	0.51	1.08	369	0.28	0.83
<i>Nonacademic Clubs</i>									
A15	762	0.39	1.01	392	0.46	1.04	370	0.32	0.96
EHS	766	0.39	0.99	399	0.48	1.07	367	0.30	0.89
<i>Volunteer</i>									
A15	759	0.92	1.38	390	1.10	1.50	369	0.72	1.22
EHS	769	0.77	1.24	400	0.91	1.31	369	0.62	1.15
<i>Religious Classes</i>									
A15	759	1.10	1.39	391	1.14	1.42	368	1.05	1.36
EHS	765	0.67	1.18	398	0.73	1.22	367	0.60	1.12
<i>Unsupervised Time with Peers</i>									
A15	758	1.93	1.87	389	1.80	1.84	369	2.07	1.89
EHS	764	3.02	1.79	397	2.96	1.76	367	3.09	1.83
Child Selection Factors and Developmental Outcomes									
<i>Noncognitive Skills</i>									
A15	752	3.34	0.34	386	3.36	0.35	366	3.32	0.33
EHS	762	3.39	0.41	399	3.43	0.36	363	3.35	0.46
<i>Behavioral Problems</i>									
A15	752	48.98	10.05	386	49.29	9.87	366	48.65	10.23
EHS	766	49.40	10.82	400	48.52	10.00	366	50.36	11.57
<i>School Grades</i>									
A15	589	3.11	0.68	308	3.24	0.65	281	2.97	0.67
EHS	775	6.42	1.47	401	6.70	1.31	374	6.11	1.57
Covariates									
White	782	85%		402	86%		380	84%	
Black	782	8%		402	8%		380	9%	
Other Race/Ethnicity	782	7%		402	6%		380	7%	
Single Parent Household	763	21%		391	23%		372	19%	
Income-to-Needs Ratio	730	5.46	5.47	370	5.64	5.64	360	5.28	5.28
Maternal Education (Years)	782	14.71	2.42	402	14.79	2.40	380	14.63	2.43

Note. School grades at age 15 were obtained from school transcripts and reported on a 4.0 scale. Typical high school grades were self-reported at the end of high school on an 8-point scale (*1 = mostly below D's, 8 = mostly A's*). A15 = age 15; EHS = end of high school.

Table 2.2

Statistically Significant Gender Differences in Structural Paths

Out-of-School Context	Structural Path	χ^2	<i>p</i>
Organized Activities	Noncognitive Skills A15 → Noncognitive Skills EHS	4.29	.038
Sports	Noncognitive Skills A15 → Noncognitive Skills EHS	4.88	.027
Arts	Noncognitive Skills A15 → Noncognitive Skills EHS	5.28	.022
Academic Clubs	Noncognitive Skills A15 → Noncognitive Skills EHS	4.25	.039
	School Grades A15 → Academic Clubs EHS	3.88	.049
	Academic Clubs A15 → Academic Clubs EHS	9.98	.002
Nonacademic Clubs	Noncognitive Skills A15 → Noncognitive Skills EHS	4.69	.030
	Nonacademic Clubs A15 → School Grades EHS	19.14	.000
Volunteer	Noncognitive Skills A15 → Noncognitive Skills EHS	4.13	.042
Religious Classes	Noncognitive Skills A15 → Noncognitive Skills EHS	5.15	.023
	Religious Classes A15 → Behavioral Problems EHS	5.24	.022
Unsupervised Activities with Peers	Noncognitive Skills A15 → Noncognitive Skills EHS	4.72	.030
	Noncognitive Skills A15 → Unsupervised EHS	5.00	.025
	Behavioral Problems A15 → Unsupervised EHS	9.04	.003
	Unsupervised A15 → School Grades EHS	4.01	.045

Table 2.3

Organized Activities Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 395)			Boys (<i>n</i> = 364)			Girls (<i>n</i> = 395)			Boys (<i>n</i> = 364)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Organized Intensity EHS												
← Noncognitive Skills A15	-1.19	-0.09	(0.08)	0.30	0.02	(0.04)	-0.53	-0.04	(0.04)	-0.53	-0.04	(0.04)
← Behavioral Problems A15	-0.03	-0.06	(0.07)	0.01	0.02	(0.06)	-0.01	-0.02	(0.05)	-0.01	-0.02	(0.05)
← School Grades A15	1.57***	0.22***	(0.05)	1.37***	0.23***	(0.06)	1.42***	0.20***	(0.04)	1.42***	0.23***	(0.04)
← Organized Intensity A15	0.37***	0.37***	(0.03)	0.28***	0.29***	(0.06)	0.33***	0.34***	(0.02)	0.33***	0.33***	(0.03)
Noncognitive Skills EHS												
← Organized Intensity A15	0.00	0.02	(0.05)	0.00	0.04	(0.05)	0.00	0.03	(0.05)	0.00	0.02	(0.04)
← Noncognitive Skills A15	0.38***	0.37***	(0.05)	0.57***	0.42***	(0.03)	0.39***	0.38***	(0.06)	0.56***	0.42***	(0.03)
Behavioral Problems EHS												
← Organized Intensity A15	-0.12	-0.06	(0.04)	0.05	0.02	(0.06)	-0.07	-0.03	(0.05)	-0.07	-0.03	(0.04)
← Behavioral Problems A15	0.49***	0.50***	(0.04)	0.60***	0.55***	(0.05)	0.53***	0.53***	(0.03)	0.53***	0.50***	(0.03)
School Grades EHS												
← Organized Intensity A15	0.02**	0.06**	(0.02)	0.04***	0.12***	(0.03)	0.03***	0.09***	(0.01)	0.03***	0.08***	(0.01)
← School Grades A15	1.27***	0.62***	(0.05)	1.17***	0.53***	(0.04)	1.23***	0.59***	(0.03)	1.23***	0.57***	(0.05)
<i>R</i> ² by gender	0.72			0.72			0.72			0.69		
χ^2 by gender	24.20, <i>df</i> = 6, <i>p</i> = 0.00			20.02, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	44.22, <i>df</i> = 12, <i>p</i> = 0.00						74.81, <i>df</i> = 41, <i>p</i> = 0.00					
CFI	0.97						0.97					
RMSEA	0.08						0.05					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

** *p* < .01. *** *p* < .001.

Table 2.4

Sports Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 400)			Boys (<i>n</i> = 368)			Girls (<i>n</i> = 400)			Boys (<i>n</i> = 368)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Sports Intensity EHS												
← Noncognitive Skills A15	-0.79*	-0.11*	(0.05)	-0.33	-0.04	(0.03)	-0.59***	-0.08***	(0.02)	-0.59***	-0.07***	(0.02)
← Behavioral Problems A15	-0.02	-0.09	(0.07)	-0.02	-0.09	(0.05)	-0.02*	-0.09*	(0.04)	-0.02*	-0.09*	(0.04)
← School Grades A15	0.53	0.13	(0.07)	0.61*	0.16*	(0.07)	0.59***	0.14**	(0.05)	0.59***	0.16**	(0.05)
← Sports Intensity A15	0.50***	0.47***	(0.05)	0.48***	0.43***	(0.05)	0.49***	0.45***	(0.03)	0.49***	0.44***	(0.04)
Noncognitive Skills EHS												
← Sports Intensity A15	0.01	0.04	(0.05)	0.00	0.02	(0.03)	0.01	0.03	(0.04)	0.01	0.03	(0.03)
← Noncognitive Skills A15	0.37***	0.37***	(0.05)	0.58***	0.43***	(0.03)	0.39***	0.38***	(0.06)	0.56***	0.42***	(0.03)
Behavioral Problems EHS												
← Sports Intensity A15	-0.19	-0.05	(0.05)	-0.06	-0.01	(0.04)	-0.14	-0.03	(0.03)	-0.14	-0.03	(0.02)
← Behavioral Problems A15	0.49***	0.50***	(0.04)	0.60***	0.54***	(0.05)	0.53***	0.53***	(0.03)	0.53***	0.50***	(0.03)
School Grades EHS												
← Sports Intensity A15	0.02	0.04	(0.04)	0.07**	0.11**	(0.04)	0.04*	0.07*	(0.03)	0.04*	0.06*	(0.03)
← School Grades A15	1.29***	0.62***	(0.05)	1.19***	0.53***	(0.04)	1.25***	0.59***	(0.03)	1.25***	0.58***	(0.05)
<i>R</i> ² by gender	0.73			0.75			0.75			0.72		
χ^2 by gender	22.96, <i>df</i> = 6, <i>p</i> = 0.00			21.59, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	44.55, <i>df</i> = 12, <i>p</i> = 0.00						75.34, <i>df</i> = 41, <i>p</i> = 0.00					
CFI	0.97						0.97					
RMSEA	0.08						0.05					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Table 2.5

Arts Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 401)			Boys (<i>n</i> = 369)			Girls (<i>n</i> = 401)			Boys (<i>n</i> = 369)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Arts Intensity EHS												
← Noncognitive Skills A15	-0.09	-0.01	(0.04)	0.32	0.05	(0.03)	0.07	0.01	(0.03)	0.07	0.01	(0.03)
← Behavioral Problems A15	0.02	0.09	(0.06)	0.03***	0.15***	(0.04)	0.02**	0.11**	(0.03)	0.02**	0.11**	(0.04)
← School Grades A15	0.43***	0.13***	(0.04)	0.28	0.09	(0.05)	0.34***	0.10***	(0.02)	0.34***	0.11***	(0.02)
← Arts Intensity A15	0.43***	0.45***	(0.08)	0.38***	0.42***	(0.05)	0.40***	0.43***	(0.06)	0.40***	0.45***	(0.06)
Noncognitive Skills EHS												
← Arts Intensity A15	-0.01	-0.06	(0.05)	-0.01	-0.03	(0.06)	-0.01	-0.05	(0.05)	-0.01	-0.04	(0.04)
← Noncognitive Skills A15	0.37***	0.37***	(0.05)	0.58***	0.43***	(0.03)	0.39***	0.38***	(0.05)	0.57***	0.42***	(0.03)
Behavioral Problems EHS												
← Arts Intensity A15	0.17	0.04	(0.03)	0.18	0.04	(0.04)	0.14	0.03	(0.02)	0.14	0.03	(0.02)
← Behavioral Problems A15	0.49***	0.50***	(0.04)	0.60***	0.54***	(0.05)	0.53***	0.53***	(0.03)	0.53***	0.50***	(0.03)
School Grades EHS												
← Arts Intensity A15	-0.00	-0.01	(0.04)	-0.01	-0.02	(0.05)	-0.00	-0.01	(0.03)	-0.00	-0.01	(0.03)
← School Grades A15	1.30***	0.62***	(0.05)	1.23***	0.56***	(0.04)	1.27***	0.60***	(0.03)	1.27***	0.58***	(0.05)
<i>R</i> ² by gender	0.72			0.75			0.74			0.72		
χ^2 by gender	22.39, <i>df</i> = 6, <i>p</i> = 0.00			22.29, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	44.68, <i>df</i> = 12, <i>p</i> = 0.00						66.24, <i>df</i> = 41, <i>p</i> = 0.01					
CFI	0.97						0.98					
RMSEA	0.08						0.04					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Table 2.6

Academic Clubs Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 399)			Boys (<i>n</i> = 369)			Girls (<i>n</i> = 399)			Boys (<i>n</i> = 369)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Acad. Clubs Intensity EHS												
← Noncognitive Skills A15	0.31*	0.10**	(0.04)	0.12	0.05	(0.05)	0.19	0.06*	(0.03)	0.19	0.08*	(0.04)
← Behavioral Problems A15	0.00	0.02	(0.03)	0.00	0.03	(0.08)	0.00	0.02	(0.03)	0.00	0.03	(0.05)
← School Grades A15	0.28**	0.17**	(0.06)	0.02	0.02	(0.06)	0.25**	0.15**	(0.05)	0.03	0.03	(0.06)
← Acad. Clubs Intensity A15	-0.02	-0.01	(0.03)	0.26***	0.27***	(0.07)	-0.00	-0.00	(0.03)	0.26***	0.27***	(0.06)
Noncognitive Skills EHS												
← Acad. Clubs Intensity A15	0.02	0.04	(0.04)	0.03**	0.06*	(0.03)	0.02	0.05	(0.03)	0.02	0.04	(0.02)
← Noncognitive Skills A15	0.38***	0.37***	(0.05)	0.57***	0.42***	(0.03)	0.39***	0.38***	(0.05)	0.56***	0.41***	(0.03)
Behavioral Problems EHS												
← Acad. Clubs Intensity A15	-0.59	-0.06	(0.04)	0.35	0.03	(0.04)	-0.32	-0.03	(0.02)	-0.32	-0.03	(0.02)
← Behavioral Problems A15	0.49***	0.51***	(0.04)	0.60***	0.54***	(0.05)	0.53***	0.54***	(0.03)	0.53***	0.50***	(0.03)
School Grades EHS												
← Acad. Clubs Intensity A15	-0.06	-0.04	(0.04)	0.03	0.02	(0.04)	-0.02	-0.02	(0.03)	-0.02	-0.01	(0.02)
← School Grades A15	1.32***	0.64***	(0.05)	1.22***	0.55***	(0.03)	1.28***	0.61***	(0.03)	1.28***	0.59***	(0.05)
R^2 by gender	0.67			0.70			0.68			0.66		
χ^2 by gender	25.71, <i>df</i> = 6, <i>p</i> = 0.00			22.10, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	47.81, <i>df</i> = 12, <i>p</i> = 0.00						83.57, <i>df</i> = 39, <i>p</i> = 0.00					
CFI	0.97						0.96					
RMSEA	0.09						0.06					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Table 2.7

Nonacademic Clubs Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 399)			Boys (<i>n</i> = 367)			Girls (<i>n</i> = 399)			Boys (<i>n</i> = 367)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Nonacad. Clubs Intensity EHS												
← Noncognitive Skills A15	0.15	0.05	(0.07)	0.17	0.07	(0.06)	0.19	0.06	(0.03)	0.19	0.07	(0.05)
← Behavioral Problems A15	-0.01	-0.06	(0.05)	0.00	0.03	(0.08)	-0.00	-0.01	(0.05)	-0.00	-0.01	(0.06)
← School Grades A15	0.14	0.08	(0.08)	0.02	0.02	(0.06)	0.05	0.03	(0.04)	0.05	0.04	(0.06)
← Nonacad. Clubs Intensity A15	0.12	0.11	(0.07)	0.39*	0.41**	(0.15)	0.27*	0.26**	(0.09)	0.27*	0.29**	(0.11)
Noncognitive Skills EHS												
← Nonacad. Clubs Intensity A15	0.00	0.00	(0.06)	0.04**	0.08*	(0.03)	0.01	0.04	(0.05)	0.01	0.03	(0.04)
← Noncognitive Skills A15	0.37***	0.37***	(0.05)	0.57***	0.42***	(0.03)	0.39***	0.38***	(0.05)	0.56***	0.42***	(0.03)
Behavioral Problems EHS												
← Nonacad. Clubs Intensity A15	0.65	0.07	(0.04)	-0.05	-0.00	(0.04)	0.35	0.04	(0.03)	0.35	0.03	(0.03)
← Behavioral Problems A15	0.49***	0.50***	(0.04)	0.60***	0.54***	(0.05)	0.53***	0.53***	(0.03)	0.53***	0.50***	(0.03)
School Grades EHS												
← Nonacad. Clubs Intensity A15	0.02	0.01	(0.02)	0.19***	0.11***	(0.01)	0.02	0.02	(0.03)	0.16***	0.10***	(0.01)
← School Grades A15	1.29***	0.62***	(0.05)	1.21***	0.55***	(0.04)	1.26***	0.61***	(0.03)	1.26***	0.57***	(0.05)
<i>R</i> ² by gender	0.66			0.74			0.69			0.69		
χ^2 by gender	23.89, <i>df</i> = 6, <i>p</i> = 0.00			21.08, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	44.97, <i>df</i> = 12, <i>p</i> = 0.00						83.97, <i>df</i> = 39, <i>p</i> = 0.00					
CFI	0.97						0.96					
RMSEA	0.09						0.06					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Table 2.8

Volunteer Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 400)			Boys (<i>n</i> = 369)			Girls (<i>n</i> = 400)			Boys (<i>n</i> = 369)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Volunteer Intensity EHS												
← Noncognitive Skills A15	0.11	0.03	(0.06)	0.14	0.04	(0.10)	0.13	0.03	(0.08)	0.13	0.04	(0.08)
← Behavioral Problems A15	-0.01	-0.04	(0.08)	-0.00	-0.03	(0.11)	-0.00	-0.03	(0.07)	-0.00	-0.04	(0.08)
← School Grades A15	0.06	0.03	(0.07)	0.13	0.08	(0.05)	0.10	0.05	(0.03)	0.10	0.06	(0.04)
← Volunteer Intensity A15	0.10*	0.12*	(0.05)	0.19*	0.21*	(0.10)	0.14***	0.16***	(0.04)	0.14***	0.15***	(0.05)
Noncognitive Skills EHS												
← Volunteer Intensity A15	0.01	0.06	(0.04)	0.03	0.08	(0.05)	0.02*	0.08*	(0.04)	0.02*	0.05*	(0.02)
← Noncognitive Skills A15	0.37***	0.37***	(0.05)	0.57***	0.42***	(0.03)	0.39***	0.38***	(0.05)	0.56***	0.41***	(0.03)
Behavioral Problems EHS												
← Volunteer Intensity A15	-0.49**	-0.08*	(0.03)	-0.42	-0.05	(0.04)	-0.46*	-0.07*	(0.03)	-0.46*	-0.05*	(0.02)
← Behavioral Problems A15	0.49***	0.50***	(0.04)	0.59***	0.54***	(0.05)	0.53***	0.53***	(0.03)	0.53***	0.50***	(0.03)
School Grades EHS												
← Volunteer Intensity A15	0.07*	0.08*	(0.04)	-0.00	-0.00	(0.03)	0.05*	0.06*	(0.03)	0.05*	0.04**	(0.02)
← School Grades A15	1.31***	0.63***	(0.05)	1.23***	0.56***	(0.04)	1.27***	0.61***	(0.03)	1.27***	0.58***	(0.05)
R^2 by gender	0.66			0.70			0.68			0.65		
χ^2 by gender	22.26, <i>df</i> = 6, <i>p</i> = 0.00			21.70, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	43.96, <i>df</i> = 12, <i>p</i> = 0.00						70.51, <i>df</i> = 41, <i>p</i> = 0.00					
CFI	0.97						0.97					
RMSEA	0.08						0.04					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Table 2.9

Religious Classes Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 398)			Boys (<i>n</i> = 367)			Girls (<i>n</i> = 398)			Boys (<i>n</i> = 367)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Religious Intensity EHS												
← Noncognitive Skills A15	-0.55	-0.16	(0.08)	-0.31**	-0.09**	(0.03)	-0.43**	-0.12**	(0.05)	-0.43**	-0.13**	(0.05)
← Behavioral Problems A15	-0.01	-0.06	(0.05)	0.00	0.01	(0.04)	-0.00	-0.02	(0.03)	-0.00	-0.03	(0.03)
← School Grades A15	0.11	0.06	(0.07)	0.11	0.07	(0.07)	0.11	0.05	(0.05)	0.11	0.07	(0.06)
← Religious Intensity A15	0.33***	0.38***	(0.04)	0.34***	0.41***	(0.06)	0.34***	0.39***	(0.05)	0.34***	0.41***	(0.05)
Noncognitive Skills EHS												
← Religious Intensity A15	-0.00	-0.00	(0.05)	-0.01	-0.02	(0.02)	-0.00	-0.01	(0.04)	-0.00	-0.01	(0.03)
← Noncognitive Skills A15	0.38***	0.37***	(0.05)	0.59***	0.43***	(0.03)	0.39***	0.39***	(0.06)	0.56***	0.42***	(0.03)
Behavioral Problems EHS												
← Religious Intensity A15	-0.69**	-0.10*	(0.04)	0.22	0.03	(0.07)	-0.67**	-0.10*	(0.04)	0.17	0.02	(0.07)
← Behavioral Problems A15	0.49***	0.50***	(0.04)	0.60***	0.55***	(0.05)	0.53***	0.53***	(0.03)	0.53***	0.50***	(0.03)
School Grades EHS												
← Religious Intensity A15	0.06	0.06	(0.04)	0.10	0.09	(0.05)	0.08*	0.08*	(0.04)	0.08*	0.07*	(0.03)
← School Grades A15	1.27***	0.61***	(0.05)	1.20***	0.54***	(0.04)	1.24***	0.59***	(0.03)	1.24***	0.57***	(0.05)
R^2 by gender	0.71			0.74			0.74			0.70		
χ^2 by gender	24.63, <i>df</i> = 6, <i>p</i> = 0.00			21.51, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	46.14, <i>df</i> = 12, <i>p</i> = 0.00						68.31, <i>df</i> = 40, <i>p</i> = 0.00					
CFI	0.97						0.98					
RMSEA	0.09						0.04					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Table 2.10

Unsupervised Time with Peers Results of Multiple-Group Analysis by Gender

	Unconstrained Solution						Constrained Solution					
	Girls (<i>n</i> = 397)			Boys (<i>n</i> = 367)			Girls (<i>n</i> = 397)			Boys (<i>n</i> = 367)		
	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)	<i>B</i>	β	(<i>SE</i>)
Unsupervised Intensity EHS												
← Noncognitive Skills A15	-0.08	-0.02	(0.09)	0.92***	0.17***	(0.04)	-0.12	-0.02	(0.08)	1.03***	0.19***	(0.05)
← Behavioral Problems A15	0.00	0.02	(0.05)	0.03**	0.16**	(0.05)	0.00	0.02	(0.06)	0.03**	0.16**	(0.06)
← School Grades A15	-0.26*	-0.09*	(0.05)	-0.17	-0.07	(0.05)	-0.20	-0.07	(0.04)	-0.20	-0.08	(0.04)
← Unsupervised Intensity A15	0.18***	0.19***	(0.05)	0.28***	0.29***	(0.04)	0.22***	0.23***	(0.04)	0.22***	0.23***	(0.03)
Noncognitive Skills EHS												
← Unsupervised Intensity A15	0.01	0.07	(0.05)	0.02	0.09	(0.06)	0.02*	0.08*	(0.04)	0.02*	0.07*	(0.03)
← Noncognitive Skills A15	0.38***	0.38***	(0.05)	0.58***	0.43***	(0.03)	0.40***	0.39***	(0.05)	0.57***	0.42***	(0.03)
Behavioral Problems EHS												
← Unsupervised Intensity A15	-0.18	-0.03	(0.05)	-0.21	-0.04	(0.04)	-0.21	-0.04	(0.04)	-0.21	-0.04	(0.04)
← Behavioral Problems A15	0.50***	0.51***	(0.04)	0.60***	0.55***	(0.05)	0.54***	0.54***	(0.03)	0.54***	0.51***	(0.03)
School Grades EHS												
← Unsupervised Intensity A15	-0.00	-0.00	(0.04)	-0.06*	-0.07*	(0.03)	0.00	0.00	(0.04)	-0.07**	-0.09**	(0.03)
← School Grades A15	1.28***	0.62***	(0.06)	1.19***	0.54***	(0.04)	1.24***	0.60***	(0.04)	1.24***	0.57***	(0.05)
R^2 by gender	0.68			0.72			0.70			0.68		
χ^2 by gender	25.63, <i>df</i> = 6, <i>p</i> = 0.00			22.36, <i>df</i> = 6, <i>p</i> = 0.00			a			a		
χ^2 overall	47.99, <i>df</i> = 12, <i>p</i> = 0.00						76.84, <i>df</i> = 38, <i>p</i> = 0.00					
CFI	0.97						0.97					
RMSEA	0.09						0.05					

Note. A15 = age 15; EHS = end of high school.

a Group-level χ^2 not reported because of constraints between groups.

* *p* < .05. ** *p* < .01. *** *p* < .001.

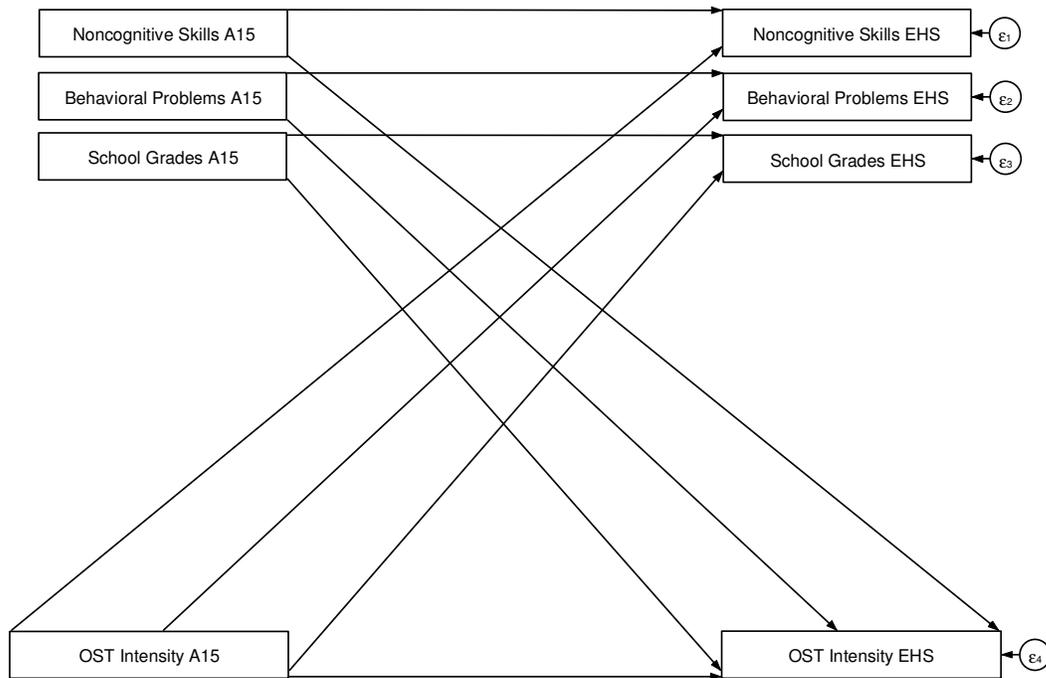


Figure 2.1. Cross-lagged structural equation model. A15 = age 15; EHS = end of high school.

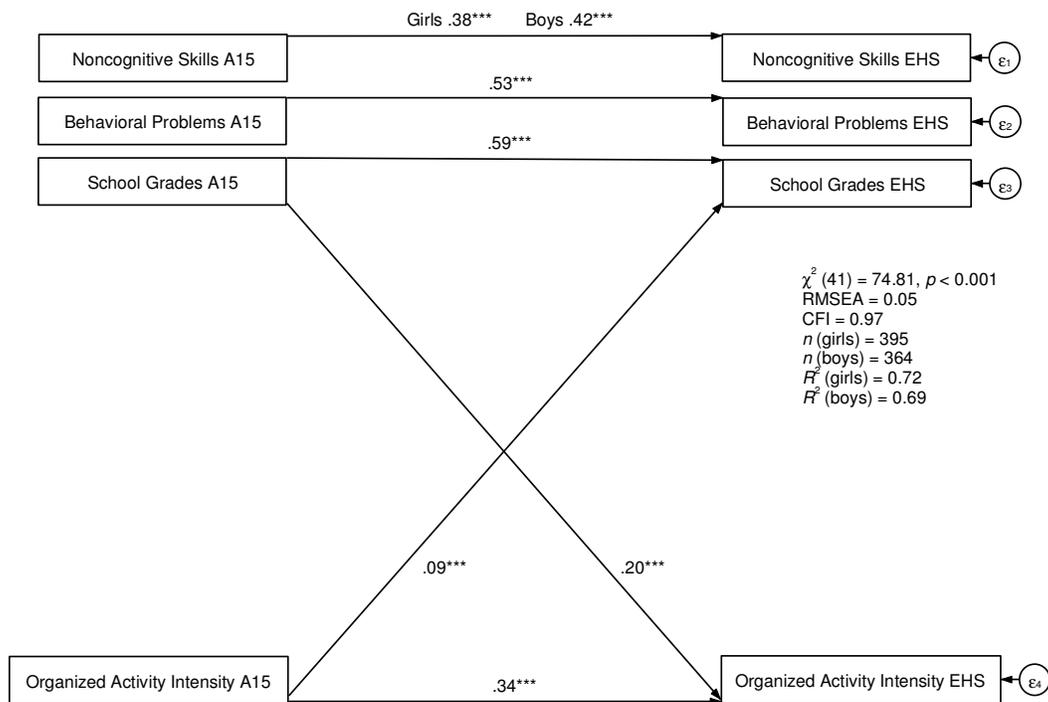


Figure 2.2. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in organized activity intensity at the end of high school and (b) age 15 organized activity intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school.
 *** $p < .001$.

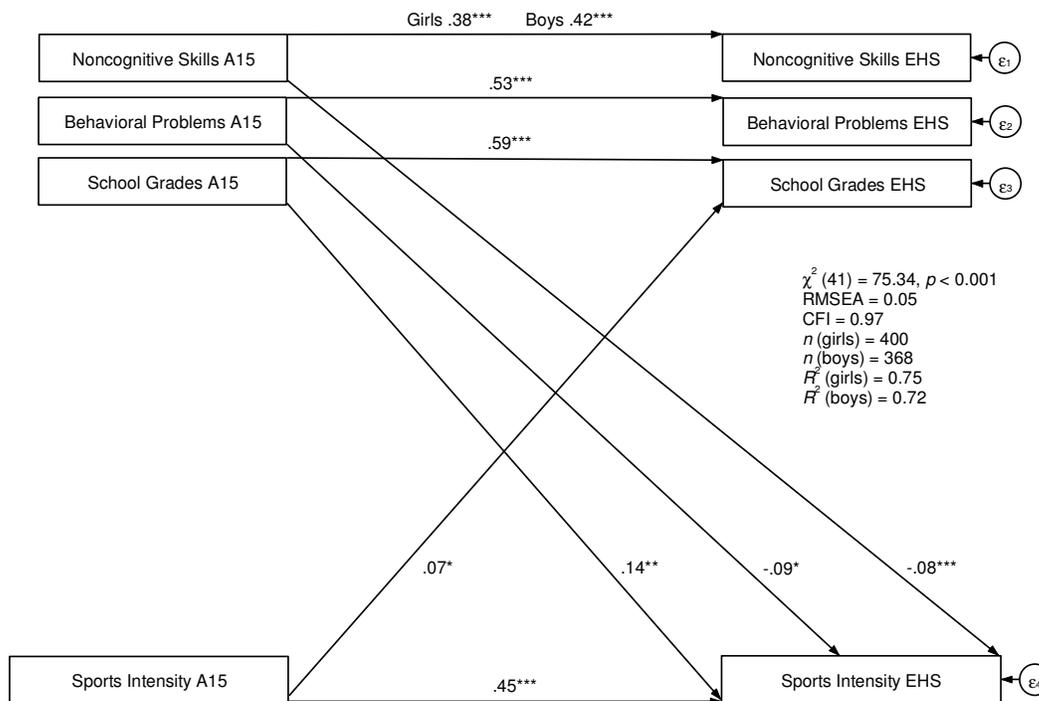


Figure 2.3. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in sports intensity at the end of high school and (b) age 15 sports intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

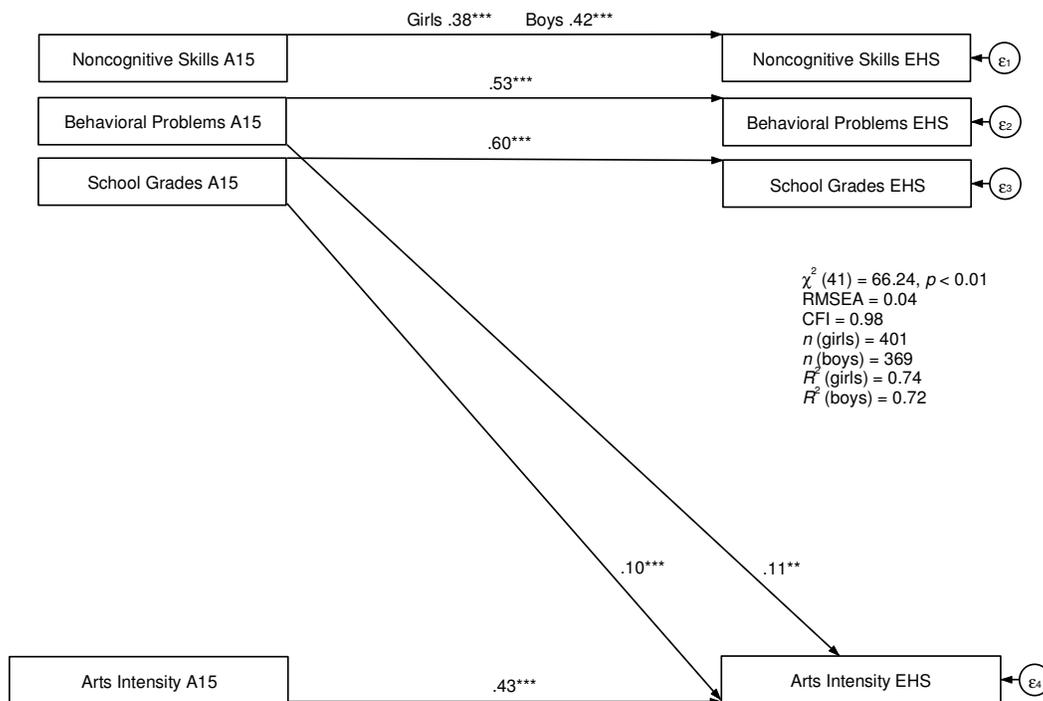


Figure 2.4. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in arts intensity at the end of high school and (b) age 15 arts intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school. ** $p < .01$. *** $p < .001$.

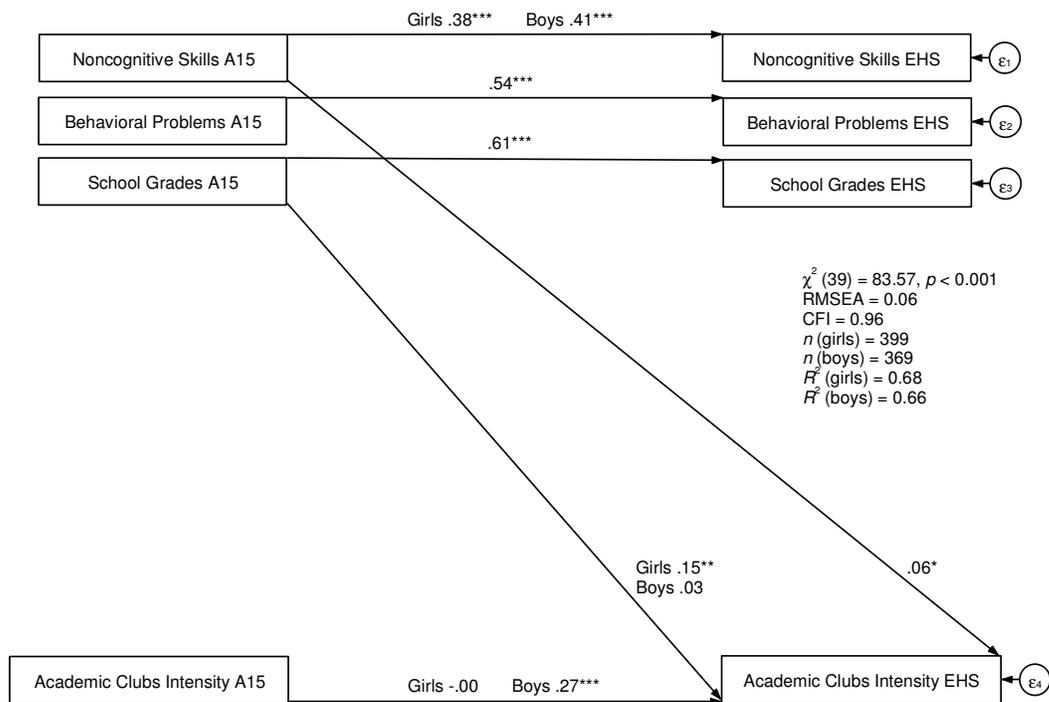


Figure 2.5. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in academic clubs intensity at the end of high school and (b) age 15 academic clubs intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school.

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

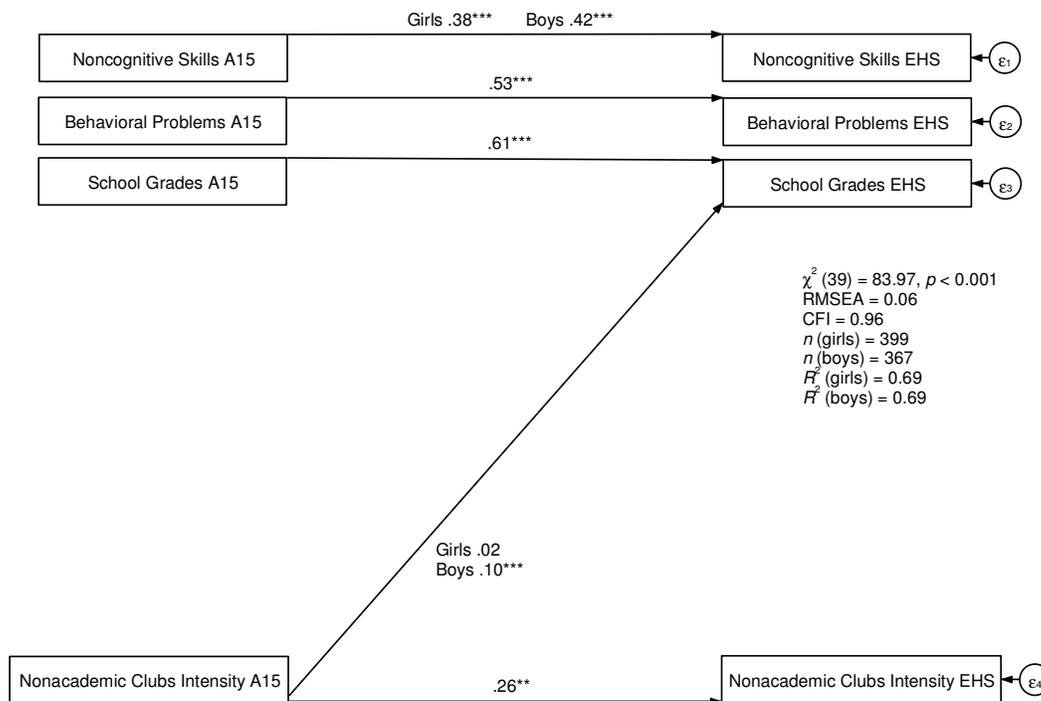


Figure 2.6. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in nonacademic clubs intensity at the end of high school and (b) age 15 nonacademic clubs intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school.

** *p* < .01. *** *p* < .001.

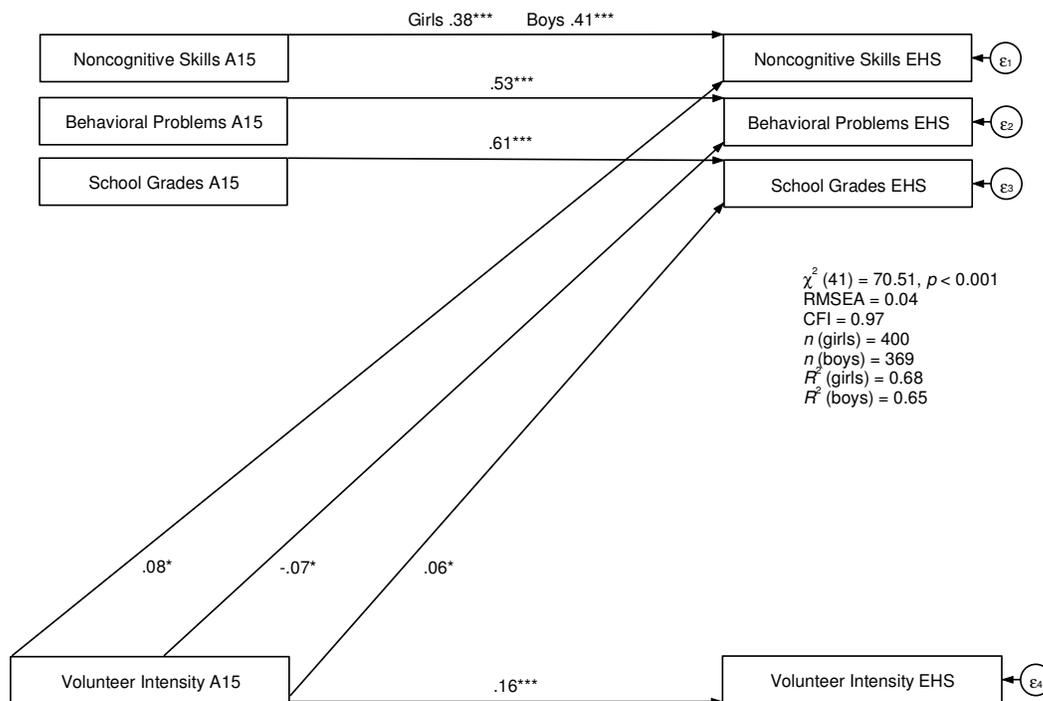


Figure 2.7. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in volunteer intensity at the end of high school and (b) age 15 volunteer intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school.

* $p < .05$. *** $p < .001$.

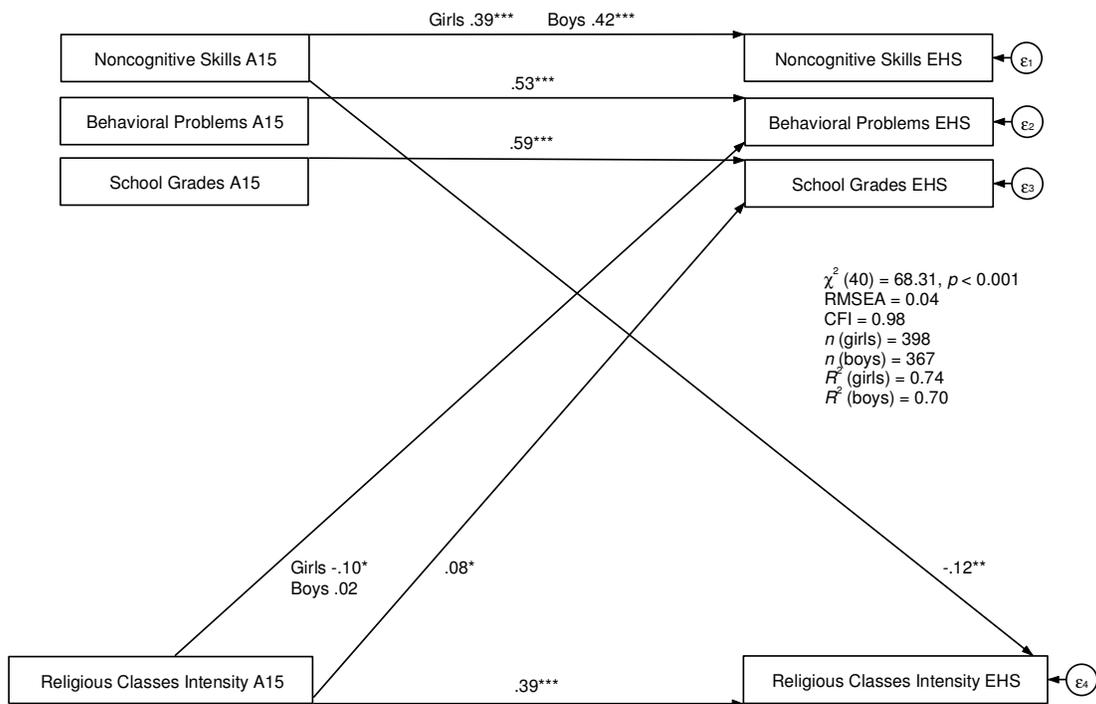


Figure 2.8. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in religious classes intensity at the end of high school and (b) age 15 religious classes intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school.

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

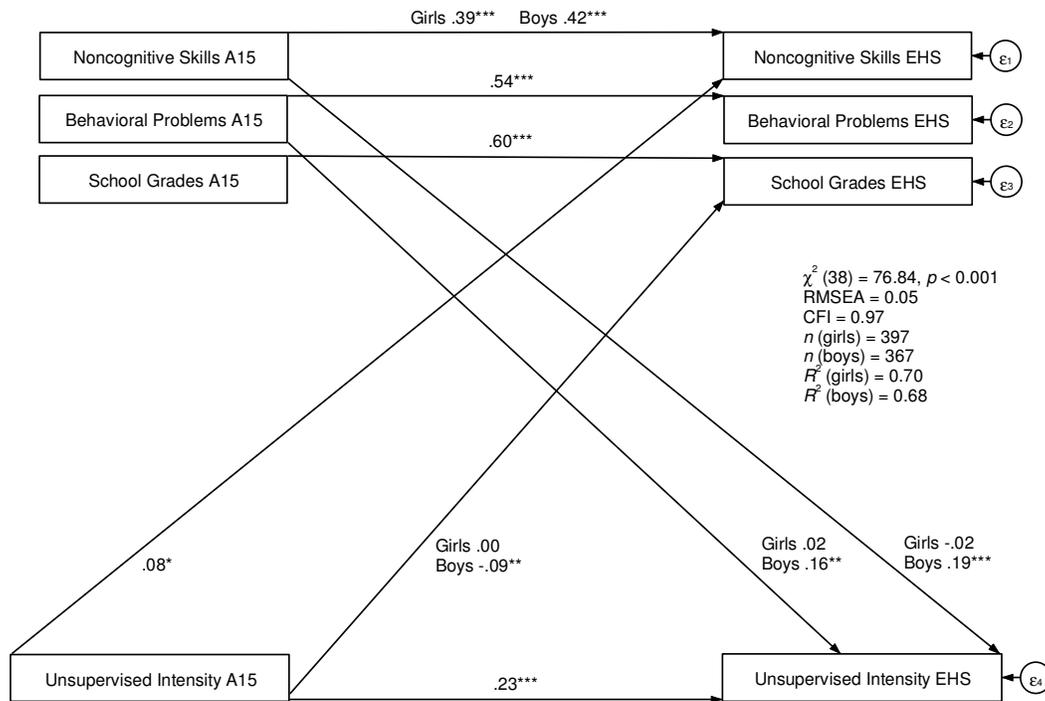


Figure 2.9. Multiple-group cross-lagged structural equation model of (a) age 15 person characteristics predicting relative changes in unsupervised with peers intensity at the end of high school and (b) age 15 unsupervised with peers intensity predicting relative changes in person characteristics at the end of high school. Gender is the grouping variable. Covariates include race or ethnicity, maternal education level, single-parent household, and income-to-needs ratio at age 15. Only statistically significant standardized paths are displayed. A single estimate (estimate for girls) is shown for paths that do not statistically differ by gender. Two estimates—one for girls and one for boys—are shown for paths that do statistically differ by gender. A15 = age 15; EHS = end of high school.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

CHAPTER 3

Person Characteristics as Moderators of Longitudinal Associations Between Out-of-School Time and Adolescent Outcomes

The developmental consequences of organized and unsupervised out-of-school contexts have been a topic of interest for many, including developmentalists, educators, policymakers, and parents. One set of studies has focused on out-of-school organized activities, such as afterschool programs, youth clubs, and coached sports. These activities have been related to positive school functioning and reductions of problem behaviors in adolescents (Eccles & Gootman, 2002). Among other benefits, organized activity contexts offer opportunities for adolescents to interact with positive adult role models who support social norms associated with school success and positive behaviors (Galbo, 1989). The positive role that out-of-school organized activities can play in adolescent development is especially significant when considering the potentially negative role of an alternative experience, unsupervised time, which includes activities either alone (e.g., idle television watching) or with peers (e.g., “hanging out” with friends).

Prior research has linked participation in organized activities and unsupervised activities to school-related and risk-taking outcomes, as positive or negative average effects, respectively. On average, participation in organized activities has been associated positively with school-related outcomes and negatively with a range of risk-taking outcomes (e.g., Springer & Diffily, 2012; White, Reisner, Welsh, & Russell, 2001). Involvement in unsupervised out-of-school contexts, on the other hand, has been linked to the low academic performance and school attendance and increased engagement in crime and risk-taking behaviors (e.g., Galambos &

Maggs, 1991; Levine Coley, Morris, & Hernandez, 2004; Shulman, Kedern, Kaplan, Sever, & Braja, 1998).

Studying “average” effects of organized and unsupervised activities, however, does not provide understanding of which of these contexts is most supportive or risky for which groups of adolescents. Some youths may experience significantly larger or smaller developmental changes from these two contexts, while others may be less impacted. Differences in the person characteristics of participating adolescents, particularly their noncognitive skills and gender, may bring to light differential effects of out-of-school experiences. Despite their potential importance to development, little research thus far has focused on how these characteristics moderate out-of-school experiences. In the present study, I address this need by examining how out-of-school experiences are moderated by noncognitive person characteristics and gender, while controlling for other demographic person characteristics. Specifically, I test for differential associations between out-of-school experiences in middle school and school-related and risk-taking outcomes two years later, as a function of oppositional defiance and college expectations as noncognitive moderators and gender as a demographic moderator.

Noncognitive Characteristics as Moderators of Out-of-School Experiences

Noncognitive characteristics refer broadly to the “academically and occupationally relevant skills and traits that are not specifically intellectual or analytical in nature” (Rosen, Glennie, Dalton, Lennon, & Bozick, 2010, p. 1). They encompass the thought, feeling, and behavior patterns of individuals (Borghans, Duckworth, Heckman, & Weel, 2008) and are not fixed traits of the personality (Economic Policy Institute, 2014). Noncognitive characteristics have been referred to by a number of terms such as behavioral skills, soft skills, noncognitive abilities, character, and socio-emotional skills (Economic Policy Institute, 2014).

Research on the developmental consequences of organized and of unsupervised contexts has seldom studied moderation effects due to noncognitive characteristics of adolescents.

Adolescents have noncognitive differences, in addition to demographic differences, that can influence how they respond to different types of contexts. Noncognitive characteristics are comparable to “force” characteristics, theorized as the most likely person characteristics from a bioecological framework to influence future development (Bronfenbrenner & Morris, 2006). Some characteristics are developmentally disruptive and others are developmentally generative.

Among others, two noncognitive factors that have been shown to predict both school-related and risk-taking outcomes are oppositional defiance (developmentally disruptive) and positive future expectations (developmentally generative) (e.g., Schmid et al., 2011; Snyder et al., 2002). Oppositional defiance, or noncompliant behavior, is described as “negativism for its own sake,” which is distinguished from self-assertion or “realistic negativism” (Wenar, 1982). Oppositional defiance can negatively affect students’ engagement in school, classroom learning, and work orientation (Wentzel, 1993). Longitudinal studies demonstrate that defiant students are also at risk for adolescent delinquency (e.g., Caspi & Moffitt, 1995).

With regard to the realm of positive future expectations, such characteristics as college aspirations have been linked positively to school-related outcomes and negatively to risk-taking outcomes. For example, students who dropped out of school retrospectively reported having lower college aspirations when in school compared to their peers who graduated (Peng, Lee, Wang, & Walberg, 1992). Dropouts also rated the importance of attending college significantly lower than graduates did (Worrell & Hale, 2001) and were found to be less optimistic than graduates were (Fine, 1991). When examining their afterschool student experiences, such school dropouts spent less time in organized activities and more time out of school with at-risk peers,

often correlating with negative school-related outcomes and also engagement in risky behaviors (Worrell & Hale, 2001).

Building on prior research and addressing the need to account for adolescents' noncognitive characteristics, I examine whether the relationships between the intensity of out-of-school experiences and relative changes in school-related and risk-taking outcomes at the end of two years are moderated by oppositional defiance and college expectations.

Hypotheses of Noncognitive Moderation Effects

Noncognitive factors are hypothesized to moderate the effects of out-of-school contexts in three ways. In the context of this study, a *compensatory hypothesis* posits that organized activities will have the largest impacts on students with the highest defiance (i.e., students with most disadvantage). This is because these students are hypothesized as the most at risk for poor adjustment and, therefore, the most in need of the support, guidance, and opportunities that are provided by supervised and structured contexts, such as organized activities. Conversely, adolescents who are already functioning well may obtain few additional developmental benefits from organized activities. Figure 3.1 illustrates a hypothetical example of a compensatory effect for a risk-taking outcome.

There is some evidence for the compensatory effects of organized activities in adolescence. Mahoney and Cairns (1997), for example, found that organized activity involvement resulted in the largest reduction to high school dropout for middle school students lowest in academic and behavioral competence. The reduction in school dropout from organized activity involvement was marked among those who had low competence, but more modest among those judged to be competent or highly competent.

The *accumulated advantages hypothesis* posits that adolescents who have high college expectations (i.e., positive factor #1) and at the same time experience a more positive environment, such as supervised, organized activities (i.e., positive factor #2), will experience especially favorable developmental outcomes. Developmentally generative characteristics such as high college expectations can be considered positive factors, or factors that have the potential to improve developmental outcomes in person-context interactions. Figure 3.2 illustrates a hypothetical example of an accumulated advantages effect for a positive school-related outcome.

Whereas the compensatory and accumulated advantages hypotheses are relevant to participation in organized activities, the *dual risk hypothesis* of moderation is relevant to unsupervised time. The dual risk hypothesis posits that those who are more defiant (i.e., risk #1) and at the same time experience a more negative environment, such as unsupervised time (i.e., risk #2), will experience especially poor developmental outcomes. Figure 3.3 illustrates a hypothetical example of a dual risk effect for a risk-taking outcome.

Developmentally disruptive characteristics such as oppositional defiance can be viewed as risk factors, which are “biological or psychosocial hazards that increase the likelihood of a negative developmental outcome” (Werner, 1990, p. 97). Given that the hours after school can present social conditions that encourage unsupervised youths to engage in crime and risky behaviors (Mahoney & Parente, 2009), unsupervised time can be particularly unfavorable for those who have higher risk. Indeed, for adolescents with preexisting behavior problems (i.e., adolescents with high risk), unsupervised and unstructured time have been cross-sectionally associated with socialization with deviant peers and participation in risky activities (Richardson et al., 1989).

Gender as a Moderator of Out-of-School Experiences

Gender is also used as a demographic moderator because some research has reported that boys and girls can experience different developmental outcomes associated with out-of-school time (Denault & Poulin, 2009; Fredricks & Eccles, 2006; Gore, Farrell, & Gordon, 2001). For example, in one study, some of the positive associations between organized activities and academic outcomes were moderated by gender and, in those cases, the effects were consistently stronger for boys than for girls (Simpkins, Ripke, Huston, & Eccles, 2005). In another study, boys showed more apparent associations between various aspects of out-of-school program experiences and school and behavioral outcomes than girls did (Pierce, Hamm, & Vandell, 1999). Due to reported gender differences with regard to school and risk-taking outcomes, I test for statistical differences between boys and girls.

In the present study, I predict results to be consistent with the three plausible hypotheses discussed: compensatory, accumulated advantages, and dual risk. I test whether associations between out-of-school experiences and school-related and risk-taking outcomes, namely work habits, school attendance, drug use, and misconduct, are moderated by two noncognitive person characteristics, oppositional defiance and college expectations. I also test gender as a demographic moderator and expect stronger associations, consistent with the abovementioned hypotheses, for boys than for girls.

Method

Participants

Data are from a two-year longitudinal study of out-of-school contexts conducted in eight U.S. states (CA, CO, CT, MI, MT, NY, OR, and RI) (Vandell & Reisner, 2003). The sample consists of 1024 youths who were in either grade 6 (58%) or grade 7 (42%) in the first year of

the study. Sample characteristics include 53% female, 66% students of color (47% Hispanic; 12% African American; 7% other ethnicity) and 73% eligible for free or reduced price lunch. Students attended sixteen schools, with the number of participants at each school varying from 36 to 100 ($M = 69.88$; $SD = 21.24$). Nearly all students were between the ages of 11 and 13 years at the beginning of Year 1; less than 1% of the sample was aged 10 or 14 years.

Procedures

Surveys were administered to students in their school day classrooms and to parents via take-home surveys. Students reported their participation in organized activities (e.g., sports teams, music lessons), time spent without adult supervision, college expectations, work habits, drug use, and misconduct. Parents reported child oppositional defiance and family demographics on surveys that were sent home and returned to school when completed. Programs and schools provided afterschool program attendance and school attendance data respectively.

Measures are described in the following order: (a) experiences after school, (b) noncognitive moderators, (c) school-related and risk-taking outcomes, and (d) covariates.

Afterschool Experiences

Participation in programs and other organized activities. Afterschool program records at the middle schools indicated how many days students attended the school-based programs. Program attendance ranged from 0 to 345 days across two years, with 40% of the sample never attending the afterschool programs. Mean attendance days for those who attended at least one day was 80.41 days over the two-year period.

Students also reported their participation in other organized afterschool activities, such as coached sports, school-based activities, and lessons. Youths responded on a 4-point scale (1 = *not at all/once or twice*, 4 = *4 or more days a week*). Items include “Played on an organized

sports team (e.g., soccer or basketball team) after school,” “Taken part in after-school activities at your school such as band, choir, drama, yearbook, STEP, drill team, or cheerleading,” and “Taken lessons in music, art, dance, sports, or some other activity after school.”

These reports were collected at three occasions: fall of year 1, spring of year 1, and spring of year 2. In the fall, students responded about their participation since the start of the school year; in the spring, they responded about their participation since January of that year. The three reports were averaged to create a two-year organized activity intensity mean score. Observed mean scores ranged from 1 to 4. All organized activities were grouped together due to inadequate cell counts for different types of organized activities after separating by gender and level of defiance or college expectations.

Mean participation days in the school-based afterschool programs and mean intensity of participation in other organized activities were standardized and then added together to create a two-year organized activity intensity score for each student.

Youth self-reports of participation in afterschool activities were significantly correlated with parent reports ($r = .31-.60, p < .001$) and afterschool program attendance records ($r = .43-.60, p < .001$). I used youths' reports of afterschool experiences because they reported on their afterschool experiences at three time points, providing more information than parents did, who reported participation in these experiences at only two time points.

Time spent unsupervised by adults. Students were asked three questions about time spent unsupervised by adults on a 4-point scale (1 = *not at all/once or twice*, 4 = *4 or more days a week*). Items include “Been home alone after school without an adult there,” “Taken care of a sister or brother after school without an adult there,” and “Hung out with friends after school without an adult there.” Youths' reports of these experiences were collected at three times (fall

of year 1, spring of year 1, spring of year 2) and averaged over the three points to create a two-year unsupervised intensity mean score. Observed mean scores ranged from 1 to 4.

Noncognitive Moderators

Oppositional defiance. In the fall of year 1, parents reported youths' oppositional defiant behavior using an adapted version of the *Child Adjustment Scale* (Santrock & Warshak, 1979). Parents responded to three items regarding how often their child exhibited defiance toward adults. The items were "Talks back to adults," "Is hard to discipline," and "Disobeys adults." Responses were made on a 5-point scale (1 = *hardly ever*, 5 = *almost always*). A defiant score was computed as the mean of the item scores. The observed range of mean scores was 1-5 and the alpha coefficient was .75.

College expectations. In fall of year 1, students reported expectations about going to and finishing college. The two items asked "How sure are you that you will go to college?" and "How sure are you that you will finish college?" Responses were made on a 4-point scale (1 = *not at all sure*, 4 = *very sure*). A mean score was created by averaging scores on the two items (alpha = .91). Observed mean scores ranged from 1 to 4.

School-Related and Risk-Taking Outcomes

Work habits. In the fall of year 1 and spring of year 2, students reported their work habits using an adapted version of the *Mock Report Card's* (Pierce et al., 1999) Work Habits scale. Students responded to six items using a 4-point scale (1 = *not at all true*, 4 = *really true*). Sample items include "I finish my work on time" and "I follow the rules in my classroom." A mean score (alpha = .75) was computed and ranged from 1-4 in fall of year 1 and 1.33-4 in spring of year 2.

School attendance. School records provided the number of days students were in attendance each year. The number of attended days in a school year was divided by the number of days the school was in session to compute each student's proportion of school attendance days. The school year prior to initiation of the study was used as the baseline measure of proportion of school attendance days. In the baseline year, the observed range was .64-1.0. In Year 2, the observed range was .49-1.0.

Drug use. Four items of the *Self-Reported Behavior Index* (Brown, Clasen, & Eicher, 1986), with a modified reference period and response scale, were used to measure students' drug use in the fall of year 1 and spring of year 2. In the fall of year 1 administration, the reference period was from the start of the school year to present day. In the spring year 2 administration, the reference period was from January of the same year to present day. Students were given four items, such as "Used marijuana (pot)" and "Used other drugs (such as inhalants, cocaine, LSD, heroin, steroids)," and responded with how many times they used such substances during the reference period. Students responded on a five-point scale (0 = never, 4 = 4 or more times a week). A mean score (alpha = .79) was computed and ranged from 0-4.

Misconduct. Students reported their level of misconduct using the *Misconduct Scale*, an adaption of the *Self-Reported Behavior Index* (Brown et al., 1986). Sample items include "broken something on purpose" and "skipped school without permission." Students responded on a five-point scale (0 = never, 4 = 4 or more times a week). The reference period for youths in the fall of year 1 was "since school started this year;" in the spring of year 2, it was "since January of the same year." To avoid asking only about negative behaviors, four positively worded filler items were included. Mean item scores ranged from 0-4, and the alpha was .83.

Covariates

Several child and family covariates are used. School student records and parent reports provided information on child gender, race/ethnicity, age, whether receiving free or reduced-price lunch (a poverty indicator), maternal education level, and baseline measures of the school-related and risk-taking outcomes. Baseline for work habits, drug use, and misconduct was assessed in the fall of year 1. Baseline for the proportion of school attendance was assessed in the school year prior to initiation of the study.

Analytic Plan

I estimated a series of multiple linear regressions as Structural Equation Models (SEMs) using Stata 13. I ran multiple regressions as SEMs due to the ability of SEM programming to handle missing data through full-information maximum likelihood estimation, which is proven to be exceptional to other methods such as mean substitution and data deletion (Wothke, 1998). To account for possible non-independence of observations within schools, I used Huber-White standard error adjustments with clustered standard errors by school. SEMs predicted each outcome (e.g., work habits) separately and included as independent variables baseline functioning, child and family demographics, intensity of organized activity participation over two years, intensity of unsupervised time over two years, oppositional defiance at baseline, college expectations at baseline, the interactions of organized activity intensity with oppositional defiance and college expectations, and the interactions of unsupervised intensity with oppositional defiance and college expectations. The fall of year 1 served as baseline for oppositional defiance and college expectations. Oppositional defiance and college expectations had a relatively low correlation coefficient of $-.12$; thus, the moderators were included in the same, rather than separate models. In addition, each SEM was conducted as a multi-group

analysis using gender as the grouping variable, which estimates separate regression coefficients for boys and girls.

Results

Preliminary Analyses

Descriptive statistics are shown in Table 3.1. Bivariate correlations among the predictors, moderators, and outcomes are displayed in Tables 3.2 and 3.3. I first examined whether intensity of participation in organized activities and intensity of unsupervised time were correlated. There was no significant correlation between participation in these two contexts ($r = 0.01, p = .71$). Next, levels of baseline oppositional defiance and college expectations were correlated with intensity of out-of-school experiences to assess the degree of selection into activities that could be attributed to these person characteristics. Parent-reported oppositional defiance at baseline was modestly correlated with unsupervised intensity ($r = 0.11, p = .00$) and not correlated with organized activity intensity. In contrast, college expectations at baseline was modestly correlated with organized activity intensity ($r = 0.11, p = .00$) and not correlated with unsupervised intensity.

I also tested for gender differences in oppositional defiance, college expectations, and participation in out-of-school experiences. The level of oppositional defiance was significantly higher in boys ($M = 2.01, SD = .96, n = 413$) than in girls ($M = 1.88, SD = .88, n = 495$), $t(906) = -2.15, p = .03$. College expectations were significantly lower in boys ($M = 3.46, SD = .80, n = 468$) than in girls ($M = 3.60, SD = .72, n = 540$), $t(1006) = 2.94, p = .00$. Participation in afterschool programs over two years was higher for boys ($M = 53.87, SD = 76.67, n = 479$) than for girls ($M = 43.54, SD = 74.00, n = 545$), $t(1022) = -2.19, p = .03$, but there were no statistically significant differences by gender for intensity of participation in other organized

activities and in unsupervised time. Due to different patterns of correlations for boys and girls, I ran the substantive analysis as a multi-group SEM, with gender as the grouping variable, to account for potential differential effects by gender.

Substantive Analyses

Tables 3.4 and 3.5, for boys and girls respectively, display standardized results from SEM regression analyses, which function as effect sizes. Huber-White standard errors, adjusted for school, are shown in parentheses. Structural paths that statistically differed by gender at $p < .05$ level were allowed to vary by gender; all other paths were constrained to be equal between groups.

Boys. Statistically significant main effects indicated that higher intensity of organized activity participation was associated with relative increases in school attendance ($\beta = .10$). Unsupervised time was associated with relative decreases in work habits ($\beta = -.09$) and relative increases in drug use ($\beta = .20$) and misconduct ($\beta = .27$) over two years. Greater oppositional defiance was associated with relative decreases in work habits ($\beta = -.13$) and school attendance ($\beta = -.09$), and relative increases in drug use ($\beta = .08$) and misconduct ($\beta = .14$). Higher college expectations were associated with relative increases in school attendance ($\beta = .07$) and decreases in drug use ($\beta = -.14$).

There were three significant interactions between out-of-school experiences and level of oppositional defiance for boys. Consistent with a compensatory hypothesis, organized activity intensity was associated with larger relative increases in school attendance over two years as the level of defiance increased in boys ($\beta = .09$). Consistent with a dual risk hypothesis, the intensity of unsupervised time was associated with larger relative decreases in school attendance as the level of defiance increased in boys ($\beta = -.21$). The intensity of unsupervised time was also

associated with larger relative increases in drug use as the level of defiance increased, which is consistent with a dual risk hypothesis ($\beta = .16$). Figures 3.4-3.6 display these interactions, with intensity of out-of-school experiences and level of oppositional defiance dichotomized for illustrative purposes.

Girls. Statistically significant main effects were the same as those reported for boys (no gender moderation), with the exception of one effect between college expectations and drug use. For boys, college expectations predicted decreases in drug use over two years, but for girls, there was no significant protective effect of college expectations on drug use. The two statistically significant interaction effects found for boys predicting school attendance were not found for girls, indicating gender moderation of these interactions. However, the interaction between the intensity of unsupervised time and level of oppositional defiance for the outcome of drug use was significant for both boys and girls, indicating no gender moderation of this interaction ($\beta = .16$). Figure 3.6 displays this interaction that applies to both boys and girls, with intensity of unsupervised time and level of oppositional defiance dichotomized for illustrative purposes. Consistent with a dual risk hypothesis, increased intensity of unsupervised time was associated with larger relative increases in drug use over two years as the level of adolescents' defiance increased.

For both boys and girls, there were no significant interactions between the intensity of out-of-school experiences and college expectations for any of the outcomes.

Follow-up Analyses

Following the primary analysis, unsupervised time was examined more closely to understand whether high defiant and low defiant students were involved in particular types of unsupervised time more often than others. Students were asked to report how often they (a) were

home alone after school without an adult there, (b) took care of a sibling after school without an adult there, and (c) hung out with friends after school without an adult there. The three types of unsupervised time (home alone, sibling care, and peer hangout) were compared for low defiant and high defiant youths. For this comparison, low defiant youths were defined as those reported by parents at baseline as “hardly ever” or “sometimes” defiant (mean score of 1-2 on a 1-5 scale). High defiant youths were those reported by parents at baseline as “usually” or “almost always” defiant (mean score of 4-5 on a 1-5 scale).

First, I compared unsupervised experiences across the high and low defiant groups of students. Among those who reported being unsupervised after school at least once or twice and up to four or more days a week, the frequency of home alone experiences was significantly higher in high defiant students ($M = 2.09, SD = 1.15, n = 132$) than in low defiant students ($M = 1.82, SD = 1.09, n = 625$), $t(755) = -2.55, p = .01$. There was no significant difference in the frequency of sibling care for high defiant students ($M = 1.52, SD = 1.07, n = 96$) and low defiant students ($M = 1.54, SD = 1.03, n = 440$), $t(543) = 0.11, p = .92$. The frequency of peer hangouts was significantly higher in high defiant students ($M = 2.05, SD = 1.13, n = 133$) than in low defiant students ($M = 1.81, SD = 1.08, n = 591$), $t(722) = -2.34, p = .02$.

Next, I compared unsupervised experiences within the high and low defiant groups of students. During unsupervised time, high defiant students were more likely to have been staying home alone ($M_{difference} = -0.86, SD_{difference} = 1.32, n = 150$), $t(149) = -7.99, p = .00$ or hanging out with friends ($M_{difference} = -0.84, SD_{difference} = 1.46, n = 150$), $t(149) = -7.08, p = .00$ than taking care of siblings. High defiant students were just as likely to have been staying home alone as hanging out with friends ($M_{difference} = -0.02, SD_{difference} = 1.33, n = 150$), $t(149) = -0.15, p = .88$. This pattern of results was consistent for both high defiant boys and high defiant girls.

During unsupervised time, low defiant students were also more likely to have been staying home alone ($M_{\text{difference}} = -0.65$, $SD_{\text{difference}} = 1.23$, $n = 706$), $t(705) = -14.06$, $p = .00$ or hanging out with friends ($M_{\text{difference}} = -0.56$, $SD_{\text{difference}} = 1.40$, $n = 706$), $t(705) = -10.58$, $p = .00$ than taking care of siblings. This pattern of results was consistent for low defiant boys and low defiant girls. In addition, low defiant girls were more likely to have been staying home alone than hanging out with friends ($M_{\text{difference}} = -0.19$, $SD_{\text{difference}} = 1.16$, $n = 388$), $t(387) = -3.17$, $p = .00$ when unsupervised. In other words, low defiant girls, when unsupervised, were staying home alone more frequently than they were engaging in other kinds of unsupervised time. However, low defiant boys, like high defiant boys and high defiant girls, were equally likely to have been hanging out with friends as staying home alone ($M_{\text{difference}} = 0.02$, $SD_{\text{difference}} = 1.41$, $n = 318$), $t(317) = 0.22$, $p = .83$.

Discussion

The goal of this study was to understand whether the effects of organized activities and unsupervised time are moderated by three person characteristics: oppositional defiance, college expectations, and gender. Several prior studies have analyzed gender as a moderator of out-of-school experience outcomes (e.g., Crosnoe, 2002; Hanson & Kraus, 1998; Pierce, Bolt, & Vandell, 2010; Randall & Bohnert, 2012), but few have considered noncognitive characteristics as such. Ironically, noncognitive characteristics are examples of “force” characteristics, theorized as the most likely person characteristics to influence future development in person-context interactions (Bronfenbrenner & Morris, 2006). The present study adds to the literature by examining the moderating role of noncognitive characteristics, in addition to gender, in school-related and risk-taking outcomes longitudinally associated with out-of-school experiences.

The findings demonstrate that consideration of moderating influences of noncognitive characteristics and gender in developmental processes can help to elucidate (a) for whom organized activity contexts are most compensatory and linked to more positive developmental functioning and (b) for whom unsupervised activity contexts are most risky and linked to more problematic outcomes. Moderation effects were consistent with compensatory and dual risk hypotheses, such that organized activities were most compensatory for high defiant boys' school attendance, and unsupervised activities were most risky for high defiant boys' school attendance and high defiant boys' and girls' drug use.

A plausible explanation for the compensatory moderation effect is that most of the afterschool programs in this study were school-based and, to some degree, sought to align with school instruction, influencing high defiant boys, who may otherwise be “hanging out” unsupervised with peers, to further connect with school and a peer and adult network that reinforces school values. On the other hand, lower levels of unsupervised time were associated with more favorable developmental outcomes in highly defiant boys and girls. Thus, organized activities, as well as increased supervision, may help to compensate for developmental deficits in boys with higher levels of oppositional defiance. Research on gender socialization processes indicates that school environments serve more of a social than educational function for boys and that these social influences can significantly affect the school engagement of boys in particular (Adler, Kless, & Adler, 1992). Boys' participation in organized activities may help them develop a peer social network that connects them more strongly to school, whereas participation in unsupervised time with peers may lead them to develop a peer social network that weakens their connection to and engagement in school.

The dual risk moderation effect indicated that youths with higher oppositional defiance (i.e., higher risk) experienced especially adverse outcomes from unsupportive environments. The dual risk framework describes how children who are “vulnerable” based on their individual characteristics develop poorly especially when there is at the same time a risk from the environmental context. In prior work, this dual risk effect was found for adolescents in self-care: only those high in behavior problems in grade 6 showed poorer subsequent adjustment in grade 7 as an outcome of unsupervised time with peers (Pettit, Laird, Bates, & Dodge, 1997). Thus, certain contexts, such as unsupervised peer activity, were found to pose special risks for youths with preexisting problems, which is congruent with the present study’s findings. Viewing oppositional defiance as an individual risk factor and unsupervised time as an environmental risk, the dual risk contributed by both the individual and environment could explain why youths who were more defiant showed especially poor developmental functioning as the intensity of unsupervised time increased. More studies like these focused on the adolescent period are needed.

As for youths who were low in oppositional defiance, noteworthy increases or decreases in school attendance or drug use over two years were not observed for different intensity levels of organized activities or unsupervised time. One exception was with the relation between unsupervised time and school attendance in boys. For boys who were low in oppositional defiance, there was an unexpected increase in the proportion of school attendance as the intensity of unsupervised time increased. This calls to question the kinds of experiences low defiant boys have and with whom in their time spent unsupervised.

Follow-up analyses indicated that low defiant boys, similar to high defiant boys and girls, were equally likely to be hanging out with peers as staying home alone when unsupervised.

Although relative levels of participation in different kinds of unsupervised contexts were similar for high and low defiant boys, the structure of experiences, specific activities, and peers involved may have differed. Some researchers argue that unsupervised time spent with peers, as opposed to other forms of unsupervised time, presents the greatest potential for problematic behavior (Osgood & Anderson, 2004) and there seems to be evidence in support of this. Flannery and colleagues (1999) found that adolescents who spent unsupervised time with peers reported the highest levels of problematic functioning, such as substance use, delinquency, and susceptibility to peer pressure, compared to adolescents who were home alone, spent time with adults or participated in school activities after school. Nonetheless, it is possible that the risk of unsupervised time with peers is lower for low defiant boys who may choose lower risk experiences when unsupervised and, when spending time with peers, do so with other low defiant youths. If this is the case, it is plausible that unsupervised time spent “hanging out” with peers results in increased peer support and school attitudes for low defiant boys. Positive peer relationships have longitudinally predicted prosocial goal pursuits at school, connection to school, and school engagement, among other outcomes (e.g., Perdue, Manzeske, & Estell, 2009; Wentzel, 1998).

The likelihood that students select their out-of-school contexts (and activities within those contexts) to some degree highlights the importance of considering selection bias. Noncognitive characteristics can predict an increased likelihood to participate in more unsupervised activities or more organized activities. Many adolescents have some choice about what type of setting to participate in and what activities to engage in during the out-of-school hours. Research is needed on how to recruit highly defiant youths away from unsupervised contexts, which are contexts that can pose heightened risk for such youths. Further,

understanding mechanisms by which organized activities and unsupervised activities are associated with school and risk-taking outcomes is needed to inform such recruitment efforts. It is unclear whether the link between participation in organized activities and increased school attendance in highly defiant boys is due primarily to the structure provided by organized activities, to other process or structural features of the organized activity context, to the imparting of adult-oriented values or to the sense of belonging to school or change in peer networks fostered via participation.

Though highly defiant youths experienced a desirable outcome from increased participation in organized activities (i.e., increased school attendance in boys) and adverse outcomes from more unsupervised time (i.e., decreased school attendance in boys and increased drug use in boys and girls), defiant and similarly “troubled” youths are often the types of youths prohibited from participation in supervised, structured afterschool activities. Activities often require minimal academic performance or good behavior records to be eligible for participation, especially as youths age into middle and high school. Policies are needed to challenge such access barriers that serve a gatekeeping function and that treat involvement in organized activities as an earned privilege, excluding many who can potentially benefit the most from organized, supervised out-of-school contexts. In the current study, the level of oppositional defiance was positively correlated ($r = .11$) with the intensity of unsupervised time. In addition to the effect of self-selection, this could, in part, reflect the reality of some youths being prohibited from participation in organized activities and experiencing higher amounts of unsupervised time instead.

Whereas oppositional defiance was a significant moderator of developmental outcomes in this study, college expectations did not moderate relations between out-of-school experiences

and school-related and risk-taking outcomes. Expectations about college attendance and graduation tend to be high and inflated among youths. In the current study sample, youths on average reported being somewhat sure to very sure that they will both go to and graduate from college, resulting in inflated scores. A more global construct of expectations that may provide greater variability in responses across youths, such as positive future expectations, optimism or hope, should be examined in future work as potential moderators of relations between out-of-school time and school and risk-taking outcomes.

Another consideration with regard to college expectations is expectancy-value theory (Fishbein & Ajzen, 1974). Students' desire to perform tasks related to meeting an expectation they have is influenced by the value they place on that achievement (Eccles (Parsons) et al., 1983). It is possible that students expect to attain the outcomes of college attendance and completion without aspiring to these outcomes. In the current study, students who had high college expectations were assumed to value those outcomes as well as the intermediate tasks that lead to that achievement, including those in accord with adult standards such as succeeding in school and refraining from risky behavior. However, if students expect to go to college but do not value it highly, it is possible that the college expectation itself would not motivate them do well in school, academically or behaviorally. Although it could not be examined in this data set, understanding how valuable college attendance and completion are to students and then testing these aspirations—not just expectations—as moderators of out-of-school time outcomes could be more informative. It is important to note, nonetheless, that college expectations in the present study did predict increases in school attendance in boys and girls and decreases in drug use in boys, indicating the importance of accounting for such noncognitive characteristics in the study of school-related and risk-taking outcomes.

Gender significantly moderated effects in the present study, although the number of moderated effects relative to the number of unmoderated effects by gender was few. This has been the case in other studies examining gender as a moderator of out-of-school time effects (Eccles & Barber, 1999; Fredricks & Eccles, 2006; Simpkins et al., 2005). However, relatively few studies have actually tested for interactive effects, so little is known about how associations between out-of-school time and developmental outcomes vary by gender (Mahoney, Larson, & Eccles, 2005). The interactive effects that have been found are informative to the literature and should not be dismissed. Also, the pattern of significant gender interactions across studies is intriguing. In many studies of interactive effects by gender, stronger effects have been found for boys than for girls (Fredricks & Eccles, 2006; Pierce, Hamm, & Vandell, 1999; Simpkins et al., 2005). This study was no exception. Small to moderately sized statistically significant effects in boys were approximately zero and nonsignificant in girls. Why out-of-school time effects may favor boys is a question that merits further investigation.

A notable strength of this study is that, while the literatures on organized activities and on unsupervised activities have developed fairly independently, this work considered youths' participation in both organized and unsupervised activities simultaneously. Students can be involved in both contexts concurrently and participate in each of them at different levels of intensity. Failing to account for concurrent participation in organized activity contexts and unsupervised contexts could thus confound any findings. Another strength of the study is its use of four sources of data: parent reports, youths reports, school records, and program records.

A limitation of the study is levels of parental monitoring were not assessed. Youths who are directly or indirectly monitored by parents during their unsupervised time are predicted to be at a lower risk for developing negative outcomes than are those who are not monitored (Osgood,

Anderson, & Shaffer, 2005). Studies confirm that youths who are consistently monitored by their parents are significantly less likely to engage in problem behavior, such as delinquency and substance use, than their less monitored peers (Steinberg, 2014). Adolescents' perceptions of parental monitoring and parental knowledge of their whereabouts have also predicted reduced delinquency in the afterschool hours (Levine Coley, Morris, & Hernandez, 2004). Interestingly, Borawski and colleagues (2003) found that gender moderated the effect of parental monitoring such that parental monitoring was a protective factor against risk behavior for males, but had no effect on female behavior. Future work can account for the role of parental monitoring, along with gender, in the multifaceted relations among unsupervised time, defiance, and school-related and risk-taking outcomes.

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Table 3.1

Descriptive Statistics by Gender

Variable	Boys (<i>n</i> = 479)			Girls (<i>n</i> = 545)		
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
<i>Afterschool Experiences Over Two Years</i>						
Participation in Programs (# Days)	479	53.87	76.67	545	43.54	74.00
Participation in Other Organized Activities (Intensity)	479	0.83	0.54	545	0.79	0.47
Time Spent Unsupervised (Intensity)	479	1.36	0.90	545	1.28	0.95
<i>Noncognitive Moderators</i>						
Oppositional Defiance ^b Fall Year 1	413	2.01	0.96	495	1.88	0.88
College Expectations ^a Fall Year 1	468	3.46	0.80	540	3.60	0.72
<i>School-Related Functioning</i>						
Work Habits ^a Fall Year 1	474	3.06	0.62	541	3.34	0.50
Work Habits ^a Spring Year 2	325	3.01	0.54	395	3.26	0.46
School Attendance (Proportion) Baseline Year	396	0.95	0.04	459	0.95	0.05
School Attendance (Proportion) Year 2	291	0.94	0.07	317	0.94	0.07
<i>Risk-Taking</i>						
Drug Use ^a Fall Year 1	477	0.11	0.42	544	0.05	0.25
Drug Use ^a Spring Year 2	327	0.15	0.43	393	0.12	0.37
Misconduct ^a Fall Year 1	475	0.64	0.62	544	0.44	0.47
Misconduct ^a Spring Year 2	326	0.72	0.59	393	0.55	0.52
<i>Covariates</i>						
White	153	32%		192	35%	
Hispanic	238	50%		240	44%	
Black	60	12%		69	13%	
Other Race/Ethnicity	28	6%		44	8%	
Age	361	11.73	0.73	407	11.59	0.68
Free/Reduced-Price Lunch (Yes = 1)	390	73%		434	73%	
Parent Education Level	399	3.40	1.61	481	3.35	1.50

Note. Response scales are as follows: Participation in other organized activities 1-4, Time spent unsupervised 1-4, Oppositional Defiance 1-5, College Expectations 1-4, Work Habits 1-4, Drug Use 0-4, Misconduct 0-4, and Parent Education Level 1-6. Free/Reduced-Price Lunch is a dummy variable coded 1 if student received free or reduced-price lunch in at least one year of the study.

^aYouth Report. ^bParent Report.

Table 3.2

Correlations between Predictors and Outcomes

	<i>Outcomes in Spring of Year 2</i>			
	Work Habits	School Attendance	Drug Use	Misconduct
<i>Predictors over Two Years</i>				
Organized Activity Intensity	0.07	0.16 ^{***}	0.02	0.06
Unsupervised Intensity	-0.13 ^{***}	-0.05	0.22 ^{***}	0.36 ^{***}

^{***} $p < 0.001$.

Table 3.3

Noncognitive Moderators Correlated with Predictors and Outcomes

	<i>Predictors over Two Years</i>		<i>Outcomes in Spring of Year 2</i>			
	Organized Activity Intensity	Unsupervised Intensity	Work Habits	School Attendance	Drug Use	Misconduct
<i>Noncognitive Moderators at Baseline</i>						
Oppositional Defiance	0.01	0.11 ^{***}	-0.22 ^{***}	-0.14 ^{***}	0.15 ^{***}	0.27 ^{***}
College Expectations	0.11 ^{***}	-0.04	0.20 ^{***}	0.11 ^{**}	-0.10 ^{**}	-0.10 ^{**}

** $p < 0.01$. *** $p < 0.001$.

Table 3.4

Path Coefficients from Structural Equation Models Relating Out-of-School Experiences Over Two Years, Baseline Oppositional Defiance, and Baseline College Expectations with Youth Functioning in Year 2 for Boys (N = 479)

	<u>Boys' Youth Functioning at End of Year 2</u>			
	Work Habits ^a β	School Attendance β	Drug Use ^a β	Misconduct ^a β
<i>Independent Variables</i>				
Intensity of Organized Activity (OA) Time (Over Two Years)	0.06 (0.06)	0.10* (0.04)	0.08 (0.06)	0.02 (0.04)
Intensity of Unsupervised Time (Over Two Years)	-0.09** (0.03)	0.02 (0.04)	0.20*** (0.04)	0.27*** (0.04)
Oppositional Defiance (Parent Report at Baseline)	-0.13*** (0.02)	-0.09* (0.04)	0.08** (0.02)	0.14*** (0.04)
College Expectations (Youth Report at Baseline)	0.03 (0.03)	0.07* (0.03)	-0.14* (0.07)	-0.02 (0.02)
<i>Interactions</i>				
Organized Activity x Oppositional Defiance	-0.00 (0.03)	0.09** (0.03)	0.11 (0.07)	-0.03 (0.03)
Organized Activity x College Expectations	0.02 (0.03)	-0.02 (0.02)	-0.00 (0.05)	0.03 (0.04)
Unsupervised x Oppositional Defiance	-0.02 (0.03)	-0.21* (0.11)	0.16*** (0.04)	0.08 (0.04)
Unsupervised x College Expectations	0.01 (0.03)	-0.01 (0.03)	-0.26 (0.15)	-0.13 (0.10)

Note. Models include as covariates child race/ethnicity, age, whether receiving free/reduced-price lunch, parent education level, and a baseline measure of the outcome being predicted. Coefficients are standardized. Huber-White standard errors adjusted for school are shown in parentheses.

^aYouth Report.

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

Table 3.5

Path Coefficients from Structural Equation Models Relating Out-of-School Experiences Over Two Years, Baseline Oppositional Defiance, and Baseline College Expectations with Youth Functioning in Year 2 for Girls (N = 545)

	<u>Girls' Youth Functioning at End of Year 2</u>			
	Work Habits ^a β	School Attendance β	Drug Use ^a β	Misconduct ^a β
<i>Independent Variables</i>				
Intensity of Organized Activity (OA) Time (Over Two Years)	0.06 (0.06)	0.10* (0.04)	0.00 (0.04)	0.02 (0.04)
Intensity of Unsupervised Time (Over Two Years)	-0.09** (0.03)	0.02 (0.04)	0.20*** (0.04)	0.27*** (0.04)
Oppositional Defiance (Parent Report at Baseline)	-0.13*** (0.02)	-0.09* (0.04)	0.08** (0.02)	0.14*** (0.04)
College Expectations (Youth Report at Baseline)	0.03 (0.03)	0.07* (0.03)	-0.01 (0.03)	-0.02 (0.02)
<i>Interactions</i>				
Organized Activity x Oppositional Defiance	-0.00 (0.03)	-0.04 (0.03)	-0.11 (0.06)	-0.03 (0.03)
Organized Activity x College Expectations	0.02 (0.03)	-0.02 (0.02)	-0.00 (0.05)	0.03 (0.04)
Unsupervised x Oppositional Defiance	-0.02 (0.03)	-0.01 (0.04)	0.16*** (0.04)	0.08 (0.04)
Unsupervised x College Expectations	0.01 (0.03)	-0.01 (0.03)	0.07 (0.04)	0.08 (0.06)

Note. Models include as covariates child race/ethnicity, age, whether receiving free/reduced-price lunch, parent education level, and a baseline measure of the outcome being predicted. Coefficients are standardized. Huber-White standard errors adjusted for school are shown in parentheses.

^aYouth Report.

** $p < .01$. *** $p < .001$.

***Compensatory Hypothesis:
Risk-Taking Outcome***

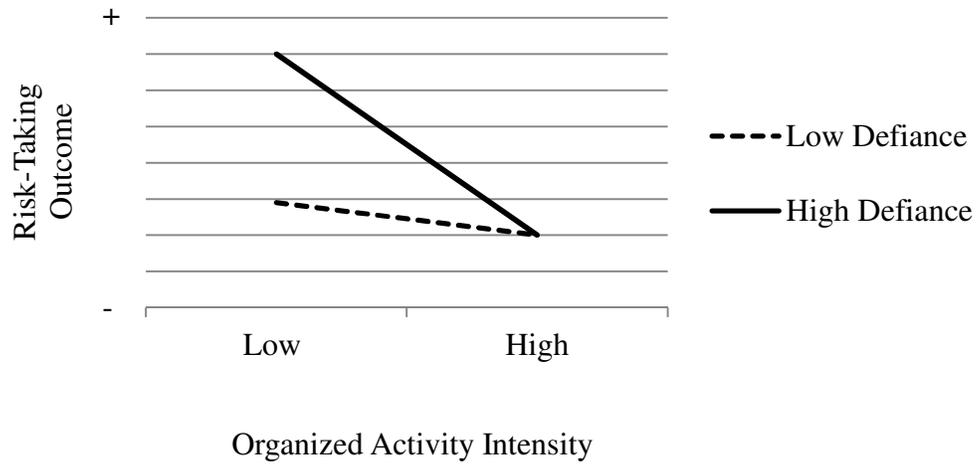


Figure 3.1. Hypothetical graphical display of a compensatory moderation effect of organized activities on risk-taking outcomes.

*Accumulated Advantages Hypothesis:
School-Related Outcome*

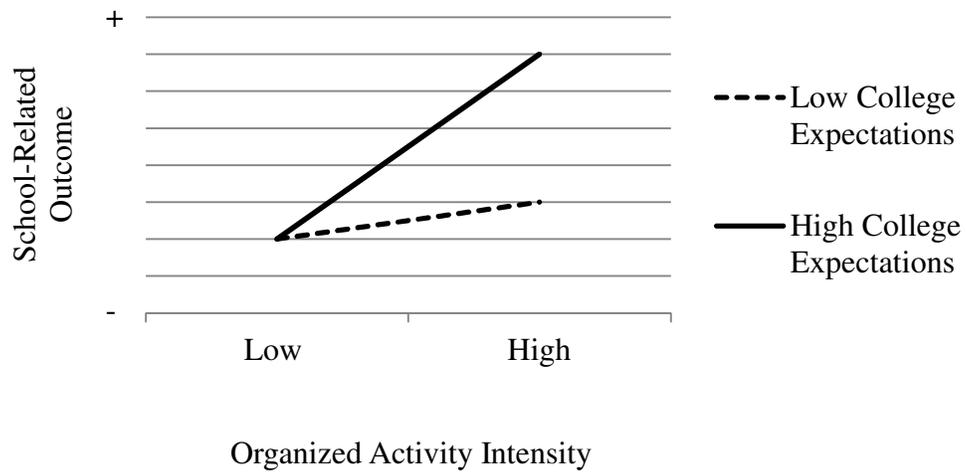


Figure 3.2. Hypothetical graphical display of an accumulated advantages moderation effect of organized activities on positive school-related outcomes

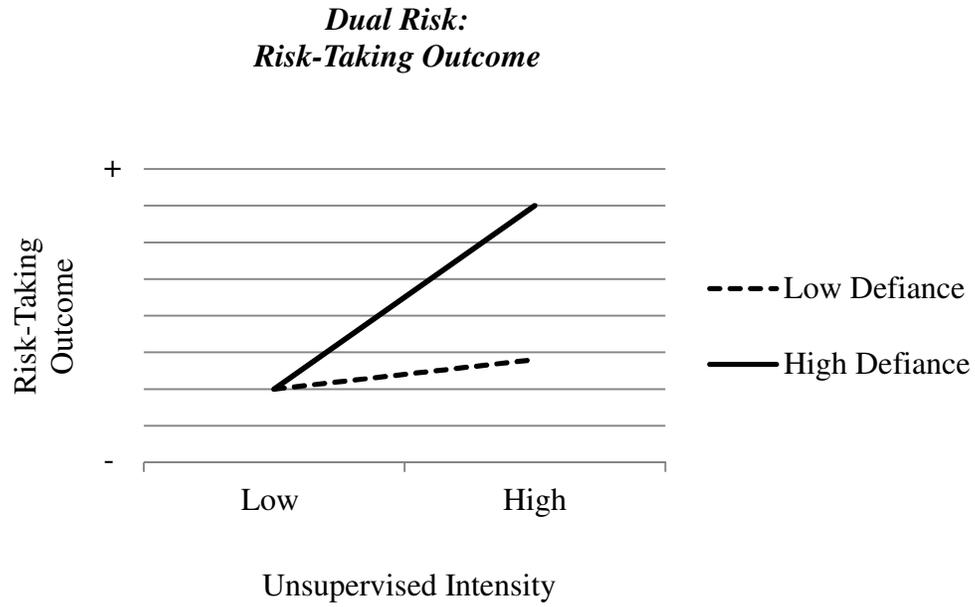


Figure 3.3. Hypothetical graphical display of a dual risk moderation effect of unsupervised time on risk-taking outcomes.

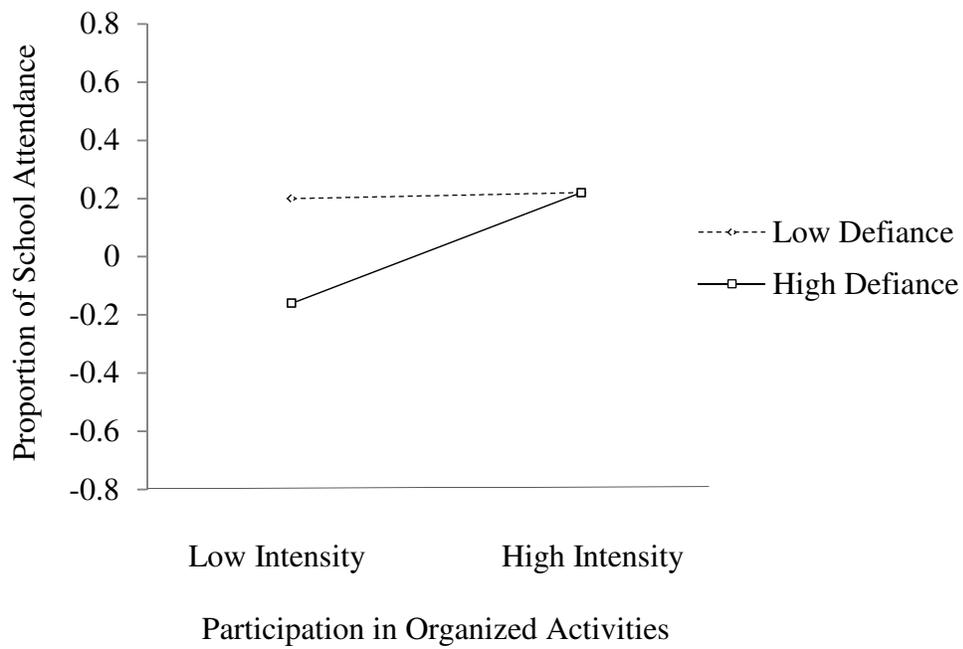


Figure 3.4. Graph illustrating oppositional defiance as a moderator of the relation between boys' organized activity intensity and relative change in standardized proportion of school attendance over two years. This interaction was found for boys but not for girls.

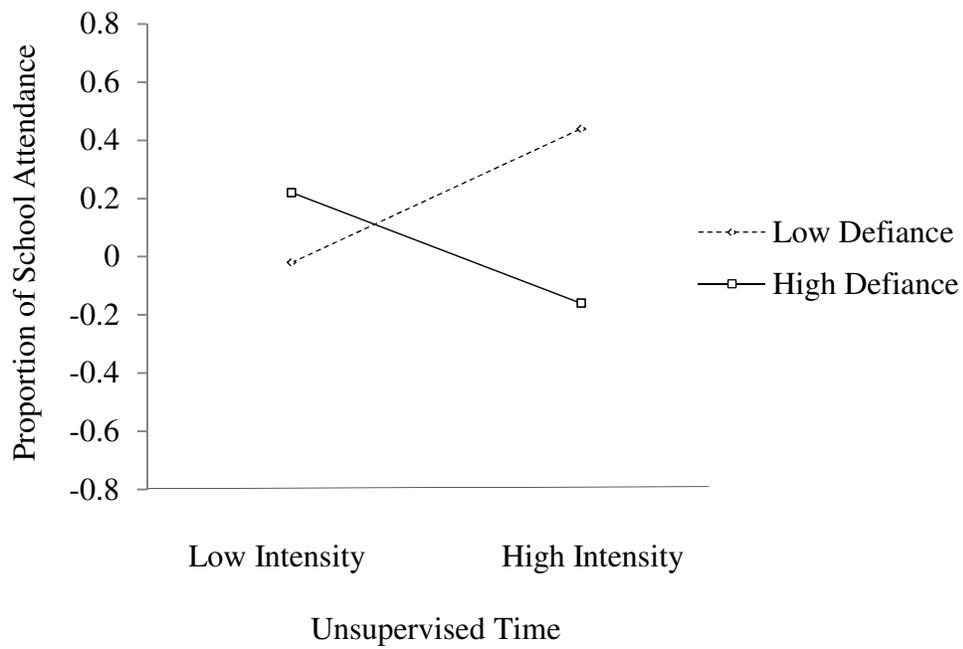


Figure 3.5. Graph illustrating oppositional defiance as a moderator of the relation between boys' unsupervised intensity and relative change in standardized proportion of school attendance over two years. This interaction was found for boys but not for girls.

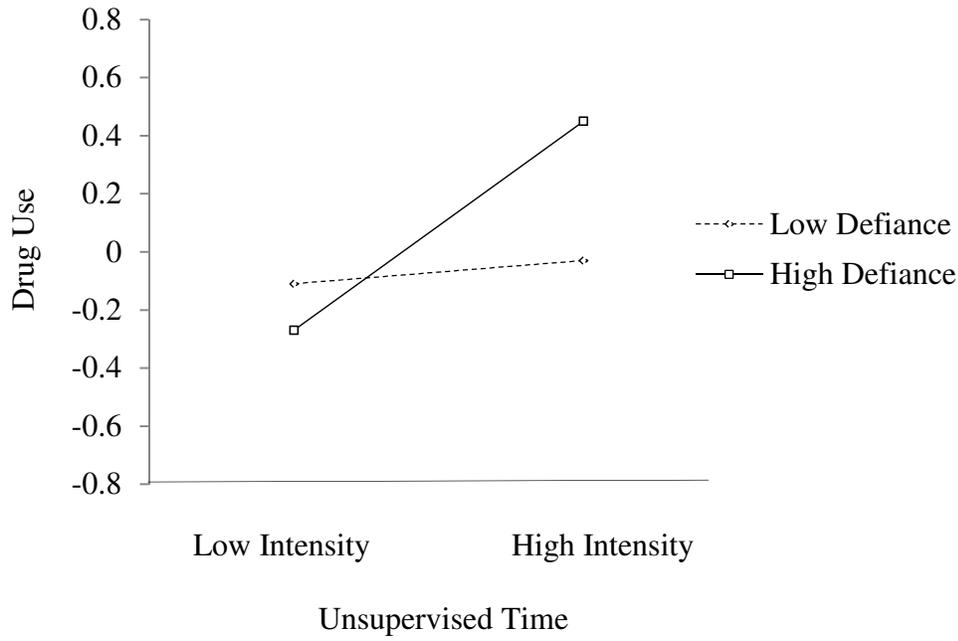


Figure 3.6. Graph illustrating oppositional defiance as a moderator of the relation between youths' unsupervised intensity and relative change in standardized drug use over two years. This interaction effect was found in both boys and girls (i.e., the effect was not moderated by gender).

CHAPTER 4

Do Noncognitive Skills Mediate Relations Between Organized Activities in Middle Childhood and Academic Performance in High School?

Prior research has reported a positive association between organized activity involvement and academic functioning, including grades and educational expectations (Bohnert, Fredricks, & Randall, 2010; Darling, Caldwell, & Smith, 2005). However, it is unclear what the mechanisms are through which participation in organized activities might impact academic functioning. One possibility is that the organized activity context is a supportive place in which youth develop noncognitive skills such as work orientation and personal responsibility that, in turn, can affect academic performance. Indeed, noncognitive skills are malleable across the lifespan and subject to the influences of contextual factors (Heckman, 2000; Park & Peterson, 2008), as well as associated positively with improvements in academic outcomes (e.g., Duckworth & Seligman, 2005; Zimmerman, Phelps, & Lerner, 2008).

Supportive activity contexts that nurture noncognitive skills should, theoretically, “help youth become more active producers of their own positive development” (Ramey & Rose-Krasnor, 2012, p. 86). Though research that examines noncognitive skills as a mechanism through which organized activities relates to academic functioning is rare, noteworthy is one study by Covay and Carbonaro (2010), who found that the association between extracurricular activities and academic achievement in middle childhood is partially mediated by the development of noncognitive skills. Building on their study, of primary interest in the present study is whether the noncognitive skills of work orientation, self-reliance, and identity mediate the relation between time in organized activity contexts and later academic functioning.

A second interest is whether these relations differ by gender. Past research has found gender differences in developmental outcomes associated with organized activities (Hanson & Kraus, 1998; Pierce, Bolt, & Vandell, 2010; Pierce, Hamm, & Vandell, 1999). In one study of organized sports, for example, participation was more protective with regard to academic functioning for girls than for boys (Crosnoe, 2002). Therefore, the twofold purpose of this study is (a) to test whether relations between organized activities during middle childhood and later academic functioning are mediated by the development of noncognitive skills, measured by work orientation, self-reliance, and identity, and (b) to examine potential differences by gender.

Linking Consistency of Participation in Organized Activities to Academic Outcomes

Compared to other developmental contexts such as the school classroom and unstructured time with peers, the organized activity context may provide exceptional, even unique, experiences that serve the developmental interests and needs of adolescents (Larson, 2000). For example, although adolescents tend to desire increases in autonomy and decision-making, it can be difficult in the school classroom to provide adolescents with such opportunities given the constraints and obligations of traditional schools (Eccles et al., 1993). Increasing evidence suggests that the organized activity context, on the other hand, has the potential to afford youth with experiences characterized by greater levels of autonomy and choice (Vandell, Larson, Mahoney, & Watts, 2015).

Prior research has reported a positive association between the consistency of involvement in organized activities from year to year and academic functioning (see Bohnert et al., 2010). Some adolescents participate in organized activities consistently every year, whereas others are more inconsistent and participate at some point in one year, then do not the next year, and may start to participate again in a future year. Some studies have reported that more consistent

participation in organized activities over time is linked to more positive adjustment. For example, Zaff and colleagues (2003) studied adolescents' consistency of extracurricular activity participation across three waves (8th, 10th, and 12th grades) and found that adolescents who participated in at least one extracurricular activity in each wave showed better academic and civic outcomes two years after high school compared to those who participated occasionally across the waves (i.e., in one or two, but not all three waves) or those who did not participate during any wave. Those who participated in every wave (i.e., consistently participated) were 50% more likely to attend college than were those who participated inconsistently across the waves. Those who never participated were nearly 60% less likely to attend college than were those who participated inconsistently.

Another study of high school students reported the same pattern of findings such that over a two year period, adolescents who participated in at least one extracurricular activity in both year 1 and year 2 exhibited the most positive adjustment compared to those who participated in only year 2 or did not participate at all (Darling et al., 2005). Similarly, in an eight-year longitudinal study, greater consistency of organized activity participation across adolescence predicted higher educational status in young adulthood (Mahoney, Cairns, & Farmer, 2003).

Linking Noncognitive Person Characteristics to Academic Outcomes

Bronfenbrenner and Morris (2006) posited under their bioecological theory of development that certain kinds of person characteristics are most likely to influence future development, which they termed "force" characteristics. There are developmentally generative (e.g., curiosity) and developmentally disruptive (e.g., explosiveness) characteristics (Bronfenbrenner & Morris, 2006). These characteristics are likened to what scholars (Heckman,

2000; Heckman & Rubinstein, 2001) have described as noncognitive characteristics that include skills such as self-regulation, grit, sense of responsibility, and work orientation, and refer generally to the “academically and occupationally relevant skills and traits that are not specifically intellectual or analytical in nature” (Rosen, Glennie, Dalton, Lennon, & Bozick, 2010, p. 1).

Evidence shows that noncognitive skills developed in earlier periods of the life cycle can raise both cognitive and noncognitive skills in subsequent periods (Cunha & Heckman, 2008), or in other words, skill begets skill (Heckman, 2000). Processes of noncognitive development, such as self-regulation, are believed to undergo significant developmental change, and thus be particularly relevant, during the adolescent period as well (Gestsdottir & Lerner, 2008). Compared to basic cognitive skills, noncognitive skills can be developed more successfully and at later ages (Heckman, 2000).

Besides differences attributable to academic abilities or demographic factors such as social class, noncognitive skills underlie successful academic functioning and can differentiate more successful from less successful students (Heckman & Rubinstein, 2001). This may be particularly true in adolescence because youth are expected to take greater responsibility for self-management and their academic endeavors as they move through the adolescent years (Steinberg, Elmen, & Mounts, 1989). Multiple studies have found that intentional self-regulation is associated positively with subsequent improvements in academic competence and achievement outcomes (e.g., Gestsdottir et al., 2009; Zimmerman et al., 2008). Duckworth and Seligman (2005) found a related characteristic, self-discipline, to predict students’ yearly improvement in academic functioning outcomes, including school attendance, grades, and standardized achievement test scores. In that study, self-discipline accounted for more than twice as much

variance as IQ in the academic outcomes (Duckworth & Seligman, 2005). Whereas intellectual talent (IQ) did not predict improvement in grades over the school year, self-discipline did (Duckworth & Seligman, 2005).

Research on how the consistency of organized activity participation predicts the development of noncognitive person characteristics is less prevalent than research on academic outcomes, but the studies that have been conducted are promising. As an example, Riggs and colleagues (2010) found that Latino youth who consistently attended an afterschool program showed significant growth in emotion regulatory skills compared to those who attended less consistently. Though not related specifically to consistency of participation, other research reported that in organized activities, youth tend to experience high levels of both intrinsic motivation and concentration, often in pursuit of a goal over time, which are activity experiences that foster the noncognitive development of initiative (Larson, 2000). Involvement in organized activities offers youth experiences that are likely to foster other developmentally supportive noncognitive characteristics, in addition to initiative. Indeed, youths have been found to report positive developmental experiences related to noncognitive skill development (e.g., experiences related to strengthening emotional regulation and teamwork skills) to take place significantly more often in various types of organized activities than in the school classroom or experiences hanging out with peers, for example (Hansen, Larson, & Dworkin, 2003; Larson, Hansen, & Moneta, 2006).

Research reporting that the consistency of organized activity participation is positively related to academic improvement and to the development of noncognitive characteristics is congruent with developmental affordances theory. From a developmental affordances perspective (Busseri & Rose-Krasnor, 2009), organized activities can afford opportunities and

experiences that support adolescents' intra- and inter-personal growth, such as learning and strengthening skills, finding and developing supportive relationships with adults, and developing friendships. Optimizing these developmental affordances requires commitment and sustained involvement (Lerner, Freund, De Stefanis, & Habermas, 2001), making the *consistency* of involvement over time an important factor in developmental outcomes. As the consistency of involvement in organized activities increases, the growth-enhancing, skill-developing opportunities available to youth are expected to increase; thus, developmental benefits associated with involvement are more likely when involvement is sustained over time (Fredricks, 2011; Roth, 2006).

Differential Effects by Gender

There is some evidence indicating significant gender differences in the effects of organized activities (e.g., Hanson & Kraus, 1998; Pierce et al., 2010; Simpkins, Ripke, Huston, & Eccles, 2005). For example, Simpkins and colleagues (2005) found that positive associations between organized activities and academic outcomes were moderated by gender in some cases, with effects stronger for boys than for girls. In another study, boys showed more apparent associations than girls did between out-of-school program experiences and school and behavioral outcomes (Pierce, Hamm, & Vandell, 1999). Despite such gender moderated findings in the out-of-school time literature, there is still little known about the moderating effects of gender because relatively few studies have actually tested for this interaction.

Present Study

Taking the research on organized activities, academic functioning, and noncognitive and gender person characteristics together, I hypothesize that growth in noncognitive skills explains some of the relation between sustained participation in organized activities and improved

academic functioning, and that the mediated relation may be moderated by gender.

Noncognitive person characteristics are conceptualized as being internal to the individual, and thus are likely to transcend the organized activity context and affect individuals' decisions and behaviors in other contexts (Lerner et al., 2005). This explains why developing noncognitive skills in the organized activity context can, in turn, affect academic functioning in school.

Noncognitive skills are examined because they capture multiple aspects of individuals' patterns of thoughts, feelings, and behaviors (Borghans, Duckworth, Heckman, & Weel, 2008), which significantly affect individuals' decisions and daily functioning (Gestsdottir & Lerner, 2007). Noncognitive skills involve the ability to control impulses, resist peer influence, and consider longer-term consequences of decisions and how those decisions affect others (Caffman & Steinberg, 2000; Steinberg & Caffman, 1996). Furthermore, intentional self-regulation processes, which are reflected in noncognitive characteristics such as work orientation, are believed to undergo significant developmental change, and thus be particularly relevant, in adolescence (Gestsdottir & Lerner, 2008). In addition, successful academic functioning requires many noncognitive skills such as the ability to delay gratification, responsible self-management, strong work orientation, and the consideration of longer-term consequences.

Research that considers the development of noncognitive person characteristics as a mechanism through which organized activities relates to academic functioning is rare. One study, however, tested noncognitive skills as a mediator of the association between extracurricular activities and academic achievement during elementary school, and found that much of the relationship between extracurricular activities and achievement is explained by the development of noncognitive skills (Covay & Carbonaro, 2010). Another noteworthy study is by Mueller et al. (2011), which found that Grade 8 intensity of participation in youth

development programs positively predicted changes in Grade 9 intentional self-regulation skills, and these skills, in turn, positively predicted Grade 10 academic competence and other indicators of positive youth development. Whereas one study focused on elementary school-aged children and the other study focused on adolescents in Grades 8 to 10, the present study extends these two studies by examining the full range of years from Kindergarten to the end of high school.

I test whether three important noncognitive skills (work orientation, self-reliance, and identity) that develop during middle childhood and adolescence are a pathway through which proportion of time in organized activities from Kindergarten to Grade 5 (K-5) predicts changes in academic performance at the end of high school. I hypothesize that Grade 9 noncognitive skills will positively mediate the longitudinal relation between proportion of time in organized activities and academic performance. I also test whether these relations are moderated by gender, a demographic person characteristic which has been shown in past research to moderate out-of-school outcomes.

Method

Sample

Data are from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD) and were collected from children's birth (in 1991) to the end of high school. Subjects were U.S. children and their families from ten sites in nine states (Little Rock, AR; Orange County, CA; Lawrence, KS; Boston, MA; Pittsburgh, PA; Philadelphia, PA; Charlottesville, VA; Seattle, WA; Morganton, NC; and Madison, WI). Families with full-term, healthy newborns were recruited from designated hospitals at these ten sites, following a conditionally random sampling plan to reflect the demographic diversity of the sites and to include both mothers who planned to stay at home

with their child in the first year and mothers who planned to go to school or to work full- or part-time. After recruitment, 1,364 families who participated in the one-month home visit were enrolled in the study. Additional information on the SECCYD, including further details about recruitment and exclusionary criteria, is described in NICHD Early Child Care Research Network (2000) and the SECCYD web site (<http://secc.rti.org/>).

The analysis sample for this study consists of all youth who participated in the Phase V data collection at the end of high school ($N = 782$). Sample characteristics include 49% male, 85% White, and 16% percent low-income (i.e., families with an income-to-needs ratio less than or equal to 1.80).

Measures

Measures are described in the following order: organized activity involvement during middle childhood, noncognitive skills, academic functioning, and covariates. Participation in organized activities from Kindergarten through Grade 5 was reported by mothers; non-cognitive skills were reported by different respondents from early childhood through high school; and grades in math, science, English, and social studies were reported by schools and students.

K-5 organized activities. From Kindergarten to Grade 5, mothers reported child participation in organized activities two to three times per year (14 total reports or epochs). In Kindergarten and Grades 1 and 2, mothers were interviewed in the fall and spring and asked whether their child participated in organized activities outside of school hours, between 7 AM and 7 PM on weekdays, during the past week. The amount of time spent in activities across the week was recorded. In Grades 3, 4, and 5, mothers reported the child's after-school arrangements from school dismissal until 6 PM on weekdays during a typical week. Mothers were interviewed three times per year in Grades 3 and 4, and two times in Grade 5. Participation

in organized activities was coded yes if the reported after-school arrangements included participation in any of the following: an interest group or club, team or individual sports; art, music, or performance lessons; academic enrichment or tutoring; or religious service or class. Trained and certified interviewers were monitored by a master coder throughout data collection. Agreement between interviewers and the master coder ranged from 75% to 100%, with a mean of 98.5%.

From the mother reports of children's activity participation, a dichotomous score (1 = participated) was created for each of the 14 epochs (see Pierce, Auger, & Vandell, 2014) and then the percentage of epochs that each child participated in organized activities from Kindergarten through Grade 5 was computed ($M = 47.95\%$, $SD = 30.71$, range = 0–100%). The greater the percentage of epochs participated, the more consistent the child's involvement in organized activities. The percentage of epochs children were involved in organized activities from Kindergarten through Grade 5 was correlated with this same measure calculated from Kindergarten through Grade 3 ($r = 0.94$, $p = 0.00$). Percentage of epochs of participation in organized activities was greater among girls ($M = 53.84\%$) than among boys ($M = 41.70\%$) ($M_{difference} = 12.14$, $SD_{difference} = 2.16$, $n = 782$), $t(780) = 5.63$, $p = .00$).

Noncognitive mediators. At Grade 9 and end of high school, youth responded to questions regarding three aspects of noncognitive competency (work orientation, self-reliance, and identity) using the *Psychosocial Maturity Inventory* (Greenberger, 2001). A sample item for *identity* is "I change the way I feel and act so often that I sometimes wonder who the 'real' me is" [reflected]. A sample item for *self-reliance* is "Luck decides most things that happen to me." A sample item for *work orientation* is "I hate to admit it, but I give up on my work when things go wrong" [reflected]. There were 30 items total, 10 for each subscale of noncognitive

competency. Responses were made on a 4-point scale (1 = strongly disagree, 4 = strongly agree). The three subscales had moderate internal reliability in Grade 9 (alpha = .77, .71, .78 for work orientation, self-reliance, and identity, respectively) and at the end of high school (alpha = .84, .75, .81 for work orientation, self-reliance, and identity, respectively). The three subscales are significantly correlated with one another, with correlations ranging from .45-.73 in both Grade 9 and at the end of high school.

Academic outcomes. At the end of Grade 9, schools provided copies of official school transcripts for each student enrolled in 9th grade. Grade point averages (GPAs) earned in math, science, English, and social studies were extracted from the student transcripts. GPA was reported on a 4.0 scale, with possible GPAs ranging from 0.0 to 4.0 in each subject. Correlations among math, science, English, and social studies GPAs were statistically significant and ranged from .55-.66.

At the end of high school, youth completed a survey that included four questions about their grades in the specific subject areas of math, science, English, and social studies. For math, students were asked, “What best describes the grades you received in high school, on average, in math?” Math was replaced with science, English, and social studies in subsequent questions. Students responded using an 8-point scale (1 = Mostly A’s, 8 = Mostly below D’s). The scale was reverse coded so that higher scores would reflect better grades (1 = Mostly below D’s and 8 = Mostly A’s). Observed scores ranged from 1-8 in all subjects. Correlations among the subjects ranged from .35 between math and English to .67 between social studies and English. Youths’ self-reports of grades are highly correlated with school transcripts of grades (e.g., Steinberg, 1996).

Covariates. Mothers reported child gender, race or ethnicity, and maternal education when children were 1 month old. Race or ethnicity was reported as White, Black/Afro-American, Asian/Pacific Islander, American Indian, or other ethnicity. Only 7% of children were reported as either Asian/Pacific Islander, American Indian, or other ethnicity; thus, they were grouped into a single category called Other for this study. Mothers provided their level of education by reporting the number of years of school they completed from several options (e.g., 12 = High school grad or GED, 21 = More than one master's degree or a doctoral degree, etc.). If less than 12 years of school was completed, mothers were asked to indicate how many years they completed. Mean maternal education was 14.71 years, with a standard deviation of 2.42.

Mothers also reported information about household composition and family income in Grades 1, 3, and 5. The ratio of family income to the poverty threshold for household size defined income-to-needs ratio. A cumulative income-to-needs ratio was then computed for this study as the average of Grade 1, Grade 3, and Grade 5 income-to-needs ratios.

The mother report of the Social Skills Rating System (SSRS; Gresham & Elliott, 1990) was used as a measure of prior noncognitive adjustment when the child was 4 ½ years. Mothers reported how often a social behavior occurs on a 3-point scale (0 = never, 1 = sometimes, 3 = very often). The SSRS measures behaviors on four subscales: Cooperation, Assertion, Responsibility, and Self-Control. Cooperation measures behaviors such as using time appropriately and helping household members. Assertion measures initiating behaviors, such as starting conversations. Self-control includes behaviors that emerge in conflict situations, such as responding or speaking in an appropriate way. Responsibility measures behaviors that demonstrate regard for work and property as well as the ability to communicate with adults. Each subscale consists of 10 items, and the Total Social Skills score is the composite of the four

subscale items (40 items). Cronbach's alphas for all subscales and the total score at age 4 ½ years ranged from .63-.88 (Cooperation = .72, Assertion = .74, Responsibility = .63, Self-Control = .79, Total Social Skills = .88). In addition, the SSRS has strong content, criterion, and construct validity (Gresham and Elliot, 1990). In this study, I use the standard scores of the Total Social Skills composite, which has a mean of 100 and a standard deviation of 15.

As a measure of prior academic functioning in the fall of Kindergarten, I use the classroom teacher report of academic competence from the Social Skills Rating System (SSRS; Gresham & Elliott, 1990). The Academic Competence scale consists of nine items measuring the teacher's judgment of a child's academic or learning behaviors in the classroom (reading and math performance, motivation, parental support, and general cognitive functioning). Classroom teachers rated each item on a 5-point scale that corresponds to a child's competence relative to other students in the class (1 = lowest 10%, 5 = highest 10%). Reliability was high (alpha = .95), and strong content, criterion, and construct validity have been documented (Gresham & Elliot, 1990). In this study, I use the Academic Competence standard scores, which are based on a mean of 100 and a standard deviation of 15. The standard scores range from 60-115, with scores over 100 indicating that the raw score was greater than the mean score of similar students with whom the instrument was standardized.

Analytic Plan

A multi-group cross-lagged structural equation model (SEM), grouped by gender, is tested using full-information maximum likelihood, based on data for all 782 youth who participated in the end of high school data collection wave. To account for any non-independence of observations within research site, standard errors are estimated using Huber-White adjustments for research site. The SEM examines various pathways relating proportion of

organized activity epochs from Kindergarten to Grade 5 to noncognitive skills and school grades in Grade 9 and end of high school. Noncognitive skills is a latent variable that consists of work orientation, self-reliance, and identity as indicators. School grades is a latent variable that consists of grades in math, science, English, and social studies as indicators. Covariates include race or ethnicity, income-to-needs ratio, maternal education, and both social skills adjustment at 4 ½ years and academic competence in the fall of Kindergarten as measures of prior adjustment.

This SEM tests whether there is a significant indirect pathway (i.e., mediating pathway) through Grade 9 noncognitive skills from K-5 organized activities to high school grades, while simultaneously modeling the indirect pathway through school performance in Grade 9. In other words, it examines the extent to which Grade 9 noncognitive skills mediates the relation between K-5 organized activities and high school academic performance, over academic performance in Grade 9. The SEM also models cross-lagged paths that test whether, and the extent to which, (a) Grade 9 noncognitive skills predict changes in academic performance from Grade 9 to end of high school and (b) Grade 9 academic performance predicts changes in noncognitive skills from Grade 9 to end of high school. The SEM was analyzed as a multiple-group model, with gender as the grouping variable, given that prior research has found significant gender differences in the effects of out-of-school time (e.g., Hanson & Kraus, 1998; Pierce et al., 2010; Simpkins et al., 2005).

Results

Descriptive statistics are presented in Table 4.1. Time 1 refers to early childhood, or pre-Kindergarten (4 ½ years) to fall of Kindergarten. Time 2 refers to middle childhood, or Kindergarten to Grade 5. Time 3 refers to Grade 9 or age 15 years. Time 4 refers to the end of high school. Table 4.2 presents correlations between the consistency of organized activity

participation and both academic performance and noncognitive variables. Proportion of organized activity epochs and high school grades in math, science, English, and social studies were significantly correlated. Organized activity epochs and indicators of noncognitive skills (work orientation, self-reliance, and identity) were also significantly correlated.

First, I ran multiple linear regression on the full sample to test whether there was an overall effect between the main independent variable (proportion of K-5 organized activity epochs) and main dependent variable (high school grades). Accounting for all covariates, results indicated that consistency of activity participation during middle childhood significantly predicted adolescents' high school grades ($\beta = .08$, $SE = .04$, $p = .04$). Examining this relation separately by gender, activity participation during middle childhood significantly predicted girls' high school grades ($\beta = .12$, $SE = .06$, $p = .04$) and boys' high school grades ($\beta = .08$, $SE = .04$, $p = .04$), but they were not statistically different from each other ($\chi^2 = 0.10$, $df = 1$, $p = 0.76$). Therefore, the overall effect ($\beta = .08$) of proportion of K-5 organized activity epochs on high school grades was not moderated by gender.

Same form and equal measurement loadings models provided reasonable fits to the data, with the equal loadings model not fitting significantly worse than the same form model ($\chi^2_{difference} = 7.95$, $df_{difference} = 10$, $p = 0.63$) and meeting standards for alternative fit indices (RMSEA = 0.07, CFI = 0.93). The chi-square statistic is sensitive to large sample size (Bollen, 1989), and thus alternative fit indices can assess fit of the structural equation model. An RMSEA (Root Mean Square Error of Approximation) less than .10 and a CFI (Comparative Fit Index) greater than or equal to .90 are standards used to indicate sufficient fit (Bollen, 1989).

The multiple-group SEM was run as an equal measurement loadings model with structural parameters allowed to vary between groups (girls and boys). Group invariance tests

resulted in statistically significant gender differences for structural paths between (a) K-5 proportion of epochs in organized activities and school grades in Grade 9 ($\chi^2 = 7.00$, $df = 1$, $p = 0.01$), (b) K-5 proportion of epochs in organized activities and noncognitive skills in Grade 9 ($\chi^2 = 6.07$, $df = 1$, $p = 0.01$), and (c) noncognitive skills in Grade 9 and noncognitive skills at the end of high school ($\chi^2 = 3.76$, $df = 1$, $p = 0.05$). The model was then rerun with structural paths that did not vary by gender constrained to be equal across groups.

The SEM fit the data sufficiently: chi-square ($df = 672.63$ (294), $p = 0.00$, RMSEA = 0.06, and CFI = 0.92. The SEMs display effect sizes (β s) computed as the standard deviation-unit change in the outcome for a standard deviation-unit change in the predictor (see NICHD ECCRN & Duncan, 2003). Standard errors were estimated using Huber-White adjustments for research site.

Girls. SEM results for girls are displayed in Figure 4.1. Consistency of participation in organized activities during middle childhood significantly predicted higher noncognitive skills and school grades in Grade 9 ($\beta = .14$). Examining the cross-lagged paths, noncognitive skills in Grade 9 significantly predicted relative improvements in school grades at the end of high school ($\beta = .11$), but school grades in Grade 9 did not significantly predict relative changes in noncognitive skills at the end of high school ($\beta = -.03$). This shows that noncognitive skills are important predictors of academic performance.

Examining mediators of K-5 organized activities and long-term links to high school grades, noncognitive skills in Grade 9 was a significant pathway. The consistency of participation in organized activities during middle childhood positively predicted noncognitive skills in Grade 9 ($\beta = .14$), which in turn predicted school grades at the end of high school ($\beta = .11$), accounting for school grades in grade 9. K-5 activity participation was also positively

associated with Grade 9 school performance ($\beta = .16$) and this performance strongly predicted end of high school grades ($\beta = .58$). Thus, the link between consistency of organized activity participation during middle childhood and school grades at the end of high school was explained indirectly through noncognitive skills in Grade 9 and school grades in Grade 9.

For mediation to be observed, when the relationships involving the mediators are controlled for, the relationship between the independent and dependent variable should become insignificant or greatly decreased (Baron & Kenny, 1986). Indeed, when noncognitive skills in Grade 9 and school grades in Grade 9 were accounted for, the relationship between consistency of organized activity participation and high school grades became insignificant and indistinguishable from zero ($\beta = .00, p = .59$). This path between consistency of organized activity participation and high school grades was reduced and nonsignificant also when only noncognitive skills in Grade 9 was included as a mediator, without controlling for Grade 9 school performance as a mediator ($\beta = .08, p = .13$).

Boys. Figure 4.2 displays SEM results for boys. Epochs of K-5 organized activity participation did not significantly predict noncognitive skills ($\beta = .01, p = .95$), or school grades in Grade 9 ($\beta = .08, p = .23$) within the full structural model tested. Neither noncognitive skills nor school grades in Grade 9 were indirect pathways through which organized activity participation was associated with school grades at the end of high school.

In summary, there was an unmoderated overall effect of proportion of K-5 organized activity epochs on high school grades, but the indirect effect of the proportion of epochs on high school grades via noncognitive skills was moderated, such that the indirect pathway was significant for girls but not for boys, indicating moderated mediation (Muller, Judd, & Yzerbyt, 2005).

Discussion

The present study examined whether the longitudinal relation between organized activities during middle childhood and high school grades is explained by changes in noncognitive skills, and whether these relations are moderated by gender. Noncognitive skills, along with prior school grades, were significant mediators, but only among girls. The results point to the importance of (a) considering noncognitive person characteristics as explanatory mechanisms in the study of out-of-school time longitudinal outcomes and (b) studying such mediating relations alongside the moderating effects of gender.

Noncognitive Skills as a Mediator of Longitudinal Effects on School Grades

Past research has linked out-of-school time participation to better academic outcomes (e.g., Darling, 2005; Eccles, Barber, Stone, & Hunt, 2003; Fredricks & Eccles, 2006). The present study's findings are consistent with prior work, such that there was a positive link between organized activities during Kindergarten to Grade 5 and high school grade point average. In addition, consistent with hypotheses about noncognitive skills affecting cognitive performance and academic success (Heckman, 2000), noncognitive skills significantly predicted better high school grade point average in both boys and girls. This reflects what other researchers have found on noncognitive factors such as intentional self-regulation and self-discipline being linked to academic functioning (e.g., Duckworth & Seligman, 2005; Zimmerman et al., 2008). Developing noncognitive skills in adolescence can positively impact cognitive development, such as improved performance in mathematics, reading, and writing (Economic Policy Institute, 2014). Noncognitive skills are important in themselves, but they are also valuable indirectly as correlates of other desirable outcomes such as better academic performance and educational attainment (Economic Policy Institute, 2014).

The present study examines a set of three specific noncognitive skills—work orientation, self-reliance, and identity—as mediators of associations between organized activity participation and academic performance. Related skills, including work ethic, self-regulation, and self-confidence, have been cited or implied by the Economic Policy Institute’s (2014) list of noncognitive skills, which is a recommendation of noncognitive skills that should be the focus of education policy.

Besides these findings that replicate extant research, the present study found that noncognitive skill is an underlying mechanism explaining how consistent organized activity participation associates with positive change in girls’ high school academic performance. Consistent involvement in organized activities can be viewed as a contextual asset that gives rise to positive changes in individual assets such as noncognitive skills. The development of individual assets is then able to support students’ academic functioning in the school context. In other words, there is an indirect pathway of association whereby increased involvement in organized activities during middle childhood is predictive of increased noncognitive skills in early adolescence and, in turn, noncognitive skills are predictive of increased school grades in late adolescence. Though there are potentially multiple underlying processes explaining the relation between organized activity participation and academic outcomes, this study presents evidence that the skills used and developed in organized activities can carry over into the classroom and affect academic performance positively. Other hypothesized explanatory mechanisms might include changes in peer and social networks (e.g., Eccles & Barber, 1999; Mahoney & Stattin, 2000), but evidence to support this hypothesis has not always been found (e.g., Darling et al., 2005). Indeed these results are consistent with the theory that identity—one of the noncognitive skills examined in this study—is something discovered through activities

that provide youths the opportunity to realize their true self, rather than through private reflective and psychological processes (Waterman, 1984).

Gender Differences

The link between organized activities during middle childhood and high school grades was mediated by noncognitive skills among girls but not boys. Research continues to examine the multiple contributing factors to gender differences in the out-of-school time context. One possible explanation for this study's findings is that boys may be more sensitive to the quality of their experiences in out-of-school activities, which is a gender difference that has been found in some studies. For example, boys experienced more effects or larger effects of program quality, such as staff-child relations, than did girls on dimensions of cognitive and noncognitive development (Pierce et al., 2010; Pierce et al., 1999). For boys, examining only the consistency of activity participation across childhood may not be meaningful in predicting long-term high school differences in noncognitive skills and academic functioning. Creative ways to account for the variable quality of out-of-school experiences over a significant length of time, such as the six-year period in this study, are needed.

Another possible explanation is that the rate of change in structured activity involvement during the transition to adolescence differs between boys and girls. However, some research indicates that changes in children's structured activities, such as sports, occur at an increased rate in boys compared to girls as children age (Hofferth & Sandberg, 2001). Out-of-school activity participation during the middle school transitional period may be influencing noncognitive and academic changes in high school for boys more significantly than it is for girls, whose changes in out-of-school participation may be less variable compared to boys' over the transition. It was

not possible to test this hypothesis in the present study, but future research should consider this potential gender difference.

Another possibility explaining the observed gender difference is that the specific types of organized activities engaged in by girls may foster noncognitive skills whereas the kinds of organized activities engaged in by boys do not. The present study does not differentiate between consistency of participation in different types of organized activities, but rather focuses on the consistency of involvement across organized activities during the elementary school years. It would be worthwhile to consider how links between consistency in specific types of activities and academic outcomes are potentially mediated by noncognitive skills and moderated by gender. Given the length of time (K-5; 14 epochs) over which participation in organized activities was measured in this study, it was expected that children would try different activities and could be fairly inconsistent in their participation in a particular type of activity even if they are consistent in their participation in organized activity contexts on the whole.

More research is needed to understand why gender moderates the structural relationships between organized activity participation and academic functioning, and how organized activities can be improved to equitably support both boys' and girls' noncognitive skill development and academic functioning.

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Table 4.1

Descriptive Statistics

Variable	<i>n</i>	<i>M</i> or %	<i>SD</i>
<i>Proportion of Organized Activity Epochs</i>			
Time 2: Middle Childhood			
% of Epochs Involved	782	47.95	30.71
<i>Noncognitive Skills</i>			
Time 1: Early Childhood			
Social Skills Rating System ^a	729	98.87	13.22
Time 3: Grade 9			
Identity	752	3.56	0.39
Self-Reliance	752	3.45	0.37
Work Orientation	752	3.02	0.50
Time 4: End of High School			
Identity	761	3.54	0.47
Self-Reliance	762	3.46	0.42
Work Orientation	761	3.18	0.52
<i>Academic Functioning</i>			
Time 1: Early Childhood			
Academic Competence	704	99.70	11.55
Time 3: Grade 9			
Transcript GPA in Math	566	2.93	0.91
Transcript GPA in Science	548	2.97	0.90
Transcript GPA in English	566	3.03	0.85
Transcript GPA in Social Studies	519	3.05	0.92
Time 4: End of High School			
Youth Report of Grades in Math	774	6.04	1.72
Youth Report of Grades in Science	775	6.33	1.53
Youth Report of Grades in English	772	6.66	1.50
Youth Report of Grades in Social Studies	772	6.65	1.49
<i>Covariates</i>			
Gender (Male=1)	782	49%	
Race/Ethnicity	782		
White		85%	
Black		8%	
Other		7%	
Income-to-Needs Ratio (Cumulative Grades 1-5)	776	4.58	3.53
Maternal Education	782	14.71	2.42

Note. Time 1 refers to early childhood (pre-Kindergarten (4 ½ years) to fall of Kindergarten). Time 2 refers to middle childhood (Kindergarten to Grade 5). Time 3 refers to Grade 9 or age 15 years. Time 4 refers to the end of high school. Transcript GPA in Grade 9 was obtained from school transcripts and reported on a 4.0 scale. Youth self-report of grades in high school was reported on an 8-point scale (*1 = mostly below D's, 8 = mostly A's*).

^aSocial Skills Rating System is a composite measure of four subscales: cooperation, assertion, responsibility, and self-control.

Table 4.2

Correlations between Organized Activity Epochs and Youth Development Variables

Variable	Outcome:				Hypothesized Mediator:		
	Academic Grades (High School)				Noncognitive Skills (Grade 9)		
	Math	Science	English	Social Studies	Identity	Self-Reliance	Work Orientation
Predictor:							
Percent of Epochs Involved in Organized Activities (K-Grade 5)	0.20** *	0.22** *	0.29** *	0.26** *	0.10** *	0.12***	0.12***

Note. K = Kindergarten
 *** $p < .001$.

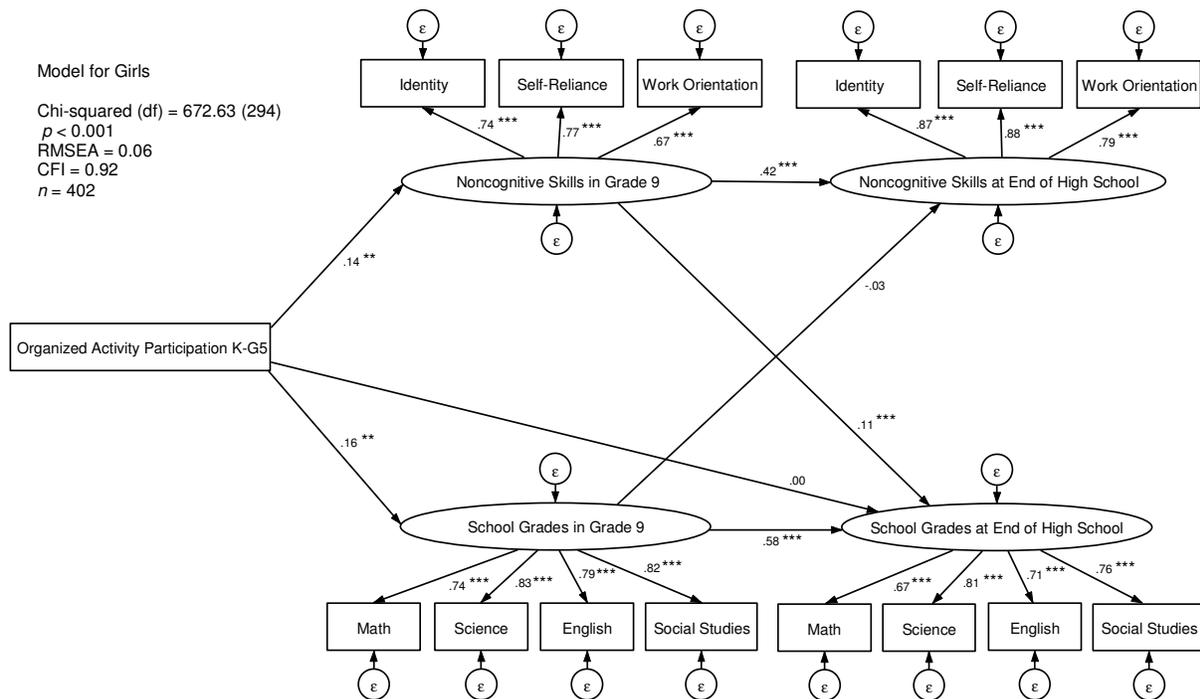


Figure 4.1. Longitudinal SEM for girls, relating proportion of organized activity epochs, noncognitive skills, and school grades from Kindergarten to end of high school. Covariates include race/ethnicity, cumulative income-to-needs ratio from Grades 1-5, maternal education, prior adjustment in noncognitive skills at 4 ½ years, and prior academic competence in fall of Kindergarten.

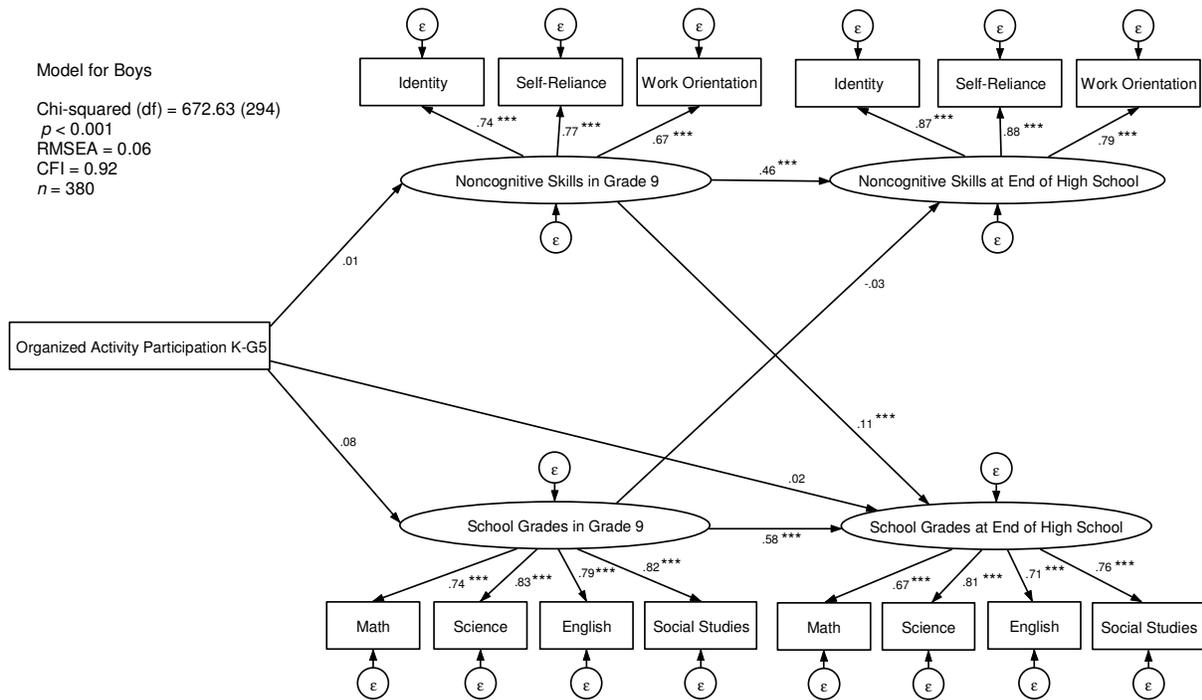


Figure 4.2. Longitudinal SEM for boys, relating proportion of organized activity epochs, noncognitive skills, and school grades from Kindergarten to end of high school. Covariates include race/ethnicity, cumulative income-to-needs ratio from Grades 1-5, maternal education, prior adjustment in noncognitive skills at 4 ½ years, and prior academic competence in fall of Kindergarten.

CHAPTER 5

DISCUSSION

Every year, millions of youths participate in organized out-of-school activities (Yohalem, Pittman, & Edwards, 2010). Policymakers, practitioners, and researchers alike have developed interest in the consequences of such participation for youths in various out-of-school contexts during the afterschool hours (Mahoney, Harris, & Eccles, 2006). Relatively little developmental research has been conducted on leisure and extracurricular contexts in comparison to school and family contexts (Kleiber, 1999). Nonetheless, organized activities have been supported by developmentalists, parents, and youth advocates due to their potential to prevent risky behavior, establish positive social networks of peers and adults, and nurture skills that will be useful in many situations, including in-school academic functioning (Eccles, Barber, Stone, Hunt, 2003). These activities are sometimes juxtaposed to that of unsupervised time, which is also a common experience for millions of youths (Mahoney & Parente, 2009), to predict such outcomes as maladaptive academic functioning and decreased school attendance (Posner & Vandell, 1999; Shulman, Kedern, Kaplan, Sever, & Braja, 1998).

Are these anticipated consequences, especially for school-related functioning, of organized activities and unsupervised time affected by the person characteristics of adolescent participants? In particular, are they influenced by noncognitive skills, which have been found to underlie school-related functioning (Heckman, 2000) and found even more predictive of academic outcomes than cognitive measures (Duckworth & Seligman, 2005)? The purpose of this dissertation was to investigate noncognitive skills as predictors of selection into out-of-school contexts, as moderators of relations between out-of-school activities and school-related

functioning, and as mediators of relations between out-of-school activities and school-related functioning, while simultaneously accounting for differential effects by gender.

Review of Findings

Person Factors Influencing Selection into Out-of-School Contexts. A major concern in out-of-school time research is the impact of self-selection into particular out-of-school contexts by better functioning youths. This dissertation first investigated noncognitive skills, behavioral problems, and school grades in bidirectional relations between person characteristics and intensity of participation in various out-of-school contexts, including organized activities (aggregated and by specific type) and unsupervised time with peers. The first study employed a cross-lagged structural equation model design examining adolescents at age 15 and end of high school, using data from the NICHD SECCYD (a longitudinal dataset of predominantly White, middle-class youth followed from birth to end of high school).

Multiple effects were indeed bidirectional such that both significant selection effects and participation effects were found between age 15 when the youth were typically in grade 9 and the end of high school when the youth were typically 18 years old. The bidirectional results indicated that although selection effects were present based on person characteristics and covariates, there were also participation effects of out-of-school activity contexts, which were most consistent and positive for school grades across the organized activity contexts studied. Key findings include a positive bidirectional relationship between school grades and intensity of participation in organized activities, and a gender moderated effect in which for boys (but not girls), higher level of noncognitive skills and behavioral problems predicted increased unsupervised time, and more unsupervised time predicted decreased school grades at the end of

high school. Interestingly, many of the selection effects were approximately twice the magnitude of participation effects.

Noncognitive skills, surprisingly, predicted decreased participation in some organized activity contexts among adolescents, and increased participation in unsupervised time among adolescent boys. This could reflect the desire of youths who perceive themselves as more mature, in terms of such indicators as self-reliance and identity, to participate in less adult-supervised and adult-structured activities to demonstrate their maturity (Richardson et al., 1989). Taken together, findings were complex based on person characteristics, the out-of-school context studied, and, sometimes, adolescent gender.

Noncognitive Characteristics in Moderation Processes. In Study 2, I considered person characteristics as moderators of out-of-school time effects using a second data set, the Study of Promising After-School Programs, a longitudinal dataset of primarily low-income students of color. Using the sample of middle school students in grades 6-8, I tested two characteristics, defiance and college expectations, as moderators of relations between intensity of participation in organized activities and unsupervised time, examined concurrently, and school-related (work habits, school attendance) and risk-taking (drug use, misconduct) outcomes. Multiple-group structural equation models were analyzed for each outcome, with gender as the grouping variable.

After finding significant “average” participation effects of out-of-school contexts accounting for selection effects in Study 1, the second study turned to the question of whether noncognitive characteristics produce differential participation effects, especially on school-related and risk-taking outcomes, which have gained much attention as outcomes in out-of-school time research (Eccles & Gootman, 2002).

Moderation effects were consistent with compensatory and dual risk hypotheses, such that organized activities were most compensatory for high defiant boys' school attendance at the end of two years, and unsupervised activities were most risky for high defiant boys' school attendance and high defiant boys' and girls' drug use at the end of two years. These suggest that, in addition to gender, the youth characteristic of "defiance to adult authority" is a noncognitive characteristic that serves as a person-level risk factor. Unsupervised time is not necessarily a problematic context for some low defiant youths, whereas it poses special risk for highly defiant youths, especially boys.

The general findings of the second study, namely that organized activities are associated with more positive outcomes and unsupervised time is associated with more negative outcomes, replicate prior work that has found organized activities as a protective context for school-related outcomes (Springer & Diffily, 2012; White, Reisner, Welsh, & Russell, 2001) and unsupervised activities as a risk context for school-related and risk-taking outcomes (Galambos & Maggs, 1991; Posner & Vandell, 1999; Richardson et al., 1989).

Noncognitive Characteristics in Mediation Processes. Although there are selection and moderation effects of noncognitive characteristics that can qualify out-of-school participation effects, more and more research, including the studies of this dissertation, continues to support a general direction of effects that links organized activities to positive school-related outcomes (Bohnert, Fredricks, & Randall, 2010; Darling, 2005; Darling, Caldwell, & Smith, 2005; Fredricks & Eccles, 2006). A question arises about the explanatory mechanism of this relationship, and whether the development of noncognitive skills may partially explain the link between organized activity participation and increased academic performance.

To answer this question, the third study examined the development of noncognitive skills in grade 9 as an indirect pathway through which consistent participation in organized activities during middle childhood was linked to school grades at the end of high school, using the NICHD SECCYD dataset. Accounting for intermediary improvement to school grades in grade 9, noncognitive skills was involved in a significant indirect relationship linking organized activities to high school grades in girls. One possible explanation for the gender difference is that girls and boys tend to participate in different kinds of activities in terms how they affect noncognitive development. More research to understand why this mediation was found in girls and not boys is needed.

Implications

The importance of person characteristics to the developmental process has been emphasized by theoretical perspectives of adolescent development (Bronfenbrenner & Morris, 2006; Gestsdottir & Lerner, 2008). In recent years, there has been high interest in noncognitive characteristics or skills, in particular, as significant variables in the study of academic and other school-related outcomes (Economic Policy Institute, 2014). Noncognitive skills encompass the thought, feeling, and behavior patterns of individuals (Borghans, Duckworth, Heckman, & Weel, 2008) and underlie successful educational and life outcomes (Heckman, 2000; Heckman & Rubinstein, 2001).

Despite their central roles in education and healthy functioning, noncognitive skills have been predominantly overlooked in the education research literature until recently (Economic Policy Institute, 2014). Though to a lesser degree, this has also been the case in the out-of-school time literature. Thus, this dissertation examined three ways in which noncognitive

characteristics may influence out-of-school time research associated with school-related outcomes.

The findings from the three independent, yet related studies of this dissertation have implications for in-school and academic achievement literatures. There is an increasing body of research on adolescents indicating that extracurricular activities can have academic and cognitive benefits (Larson, 2000; Vandell et al., 2015), and this dissertation supports this conclusion. Accounting for other characteristics, such as demographics, problem behaviors, and noncognitive skills, and even accounting for interactive effects, the direction of the effect of organized activities on school functioning was, by and large, positive. Numerous positive relations were found, whereas a few relations were nonsignificant, but there were no detrimental academic or school outcomes associated with organized activities.

With an emphasis on standardized test performance, activities outside of the academic curriculum are being regarded as distractions for students (Darling et al., 2005). “Non-core” subjects are eliminated in exchange for more instructional time for “core” subjects such as math (Nagaoka, Farrington, Ehrlich, & Heath, 2015). However, these non-core subjects and extracurricular activities are precisely the experiences that are supporting, not diminishing, the cognitive and academic performance goals of schools. The mistakes of accountability systems that narrowly focus on cognitive skills should be corrected by new education policies that account for the roles of noncognitive functioning and out-of-school organized activities in adolescents’ in-school academic functioning.

More recent research has started to examine these important interrelations between noncognitive and cognitive functioning. Noteworthy is research suggesting a pattern of increased influence of noncognitive skills on cognitive performance in adolescence compared to

childhood. The effect of noncognitive skills on increasing student academic performance remained positive and fairly stable through the elementary years but rose substantially (nearly double the magnitude of effect) by eighth grade (Economic Policy Institute, 2014). In this dissertation, the development of noncognitive skills, specifically work orientation, self-reliance, and identity, predicted increases in high school grades for both girls and boys. Further, at least among girls, noncognitive characteristics were involved in a positive indirect pathway that, in part, explained the link between organized activities and high school grades. Such findings inform current educational policy discussions that fail to acknowledge the critical link between noncognitive and cognitive functioning (Economic Policy Institute, 2014).

There are many types of organized activities that are not explicitly academically-oriented (e.g., sports), but there is little empirical evidence that suggests any type of organized activity distracts youths from academic pursuits or emphasizes values contrary to academic achievement; rather, organized activities can promote academic functioning (Fredricks, 2011). Whereas overall amount of organized activities as well as many specific types of organized activities (sports, nonacademic clubs, volunteering, religious classes) studied in this dissertation were associated with increases in school grades, academic clubs did not show any significant effects on school grades. Ironically, nonacademic activities are cut out of adolescents' lives, especially those who are struggling academically, because they are mistakenly viewed as unnecessary for students' academic functioning (McNeal, 1998). For educators, parents, and policymakers, this underscores the significance of holistic development in promoting academic performance and school-related functioning.

There are also important implications for adolescents' unsupervised time. Most deviant activity during the adolescent period occurs in the afternoon hours on school days (Newman,

Fox, Flynn, & Christeson, 2000). The present studies showed that, in general, higher participation was linked to increased problematic outcomes. However, during adolescence, at least small amounts of unsupervised time become commonplace (Pettit, Bates, Dodge, & Meece, 1999). Thus, it is critical to understand what protects youth from the risks associated with the unsupervised afterschool hours and what heightens the risks, knowing that unsupervised time tends to increase during adolescence.

At the same time, the present findings suggest that the risks of unsupervised time are not necessarily problematic for all youths, and there may even be benefits associated with this context of experience during adolescence for some youths. In the first study, intensity of unsupervised time with peers in early high school was associated with gains in noncognitive skills, measured by identity, self-reliance, and work orientation at the end of high school. The autonomy and independence that adolescents experience during unsupervised time may be allowing them to explore and develop their identity and other noncognitive competencies. In the second study examining low-income, ethnically diverse middle school students, boys who were low in oppositional defiance (i.e., high in compliance) were found to have gains in school attendance as the intensity of unsupervised time increased. In this case, unsupervised time was linked to indicators of positive development, a finding not typically found. Adolescents' different levels of noncognitive functioning can influence how problematic unsupervised time will be. Assuming unsupervised time is a negative developmental context is unfair to those for whom unsupervised time may represent a positive person-environment fit (Mahoney & Parente, 2009). Low defiant youths who can use unsupervised time constructively and who can responsibly limit their interaction with risky contexts and peers may not experience the negative "average" effects linked to unsupervised time and instead benefit in terms of self-reliance and

other indicators of noncognitive functioning. On the other hand, the present dissertation concludes that unsupervised time for high defiant youths, especially boys, should be limited.

Although some unsupervised time is normative during adolescence, it is recommended that more organized activities are incorporated into the afterschool hours in comparison to more unsupervised time, for the majority of adolescents. Nearly 70% of America's youths live in either a single-parent home with an employed parent or a two-parent home with both parents employed (Zaff, Moore, Papillo, & Williams, 2003). Opportunities to be involved in safe and constructive organized environments during the out-of-school hours are important for these and other youths who, voluntarily or by no other choice, may end up unsupervised during the high-risk afterschool hours. Interestingly, there is approximately double the number of students unsupervised during out-of-school hours compared to the number enrolled in structured afterschool programs nationwide (Weiss, Little, & Bouffard, 2005). Besides access barriers based on youths' characteristics (e.g., minimum GPA), there is evidence that the demand for youth programs after school far exceeds the current supply (Eccles & Gootman, 2002; Mahoney & Parente, 2009; U.S. Department of Education, 2000). Therefore, increased funding to create structured and supervised activities for the majority of youths in the afterschool hours would be valuable.

The implications of current findings are made with an understanding of effect size. Effect sizes were generally small, but they may function cumulatively over time. Given the reciprocal effects found between participation and outcomes, the small effects from year to year can accumulate. Furthermore, evidence indicates that ease of access to organized activities can be easier in high school for adolescents who have already been participating in activities before high school (McNeal, 1998), perhaps making it easier for those who have been consistently

participating over the years, compared to those who have not, to continue participating during the high school years, further accumulating the yearly small positive effects on their development.

Future Research

Noncognitive skills are conceived as person characteristics that are cultivated over time and that can transfer to affect functioning in other contexts. The measurement of such skills based on this understanding is critical. In addition to common measurements for academic content knowledge and skills, more consistent measurements of noncognitive skills that also contribute to academic and life success are needed. As interest in noncognitive skills has grown, the development of measures for these constructs have been outpaced (Economic Policy Institute, 2014; Nagaoka et al., 2015). Intervention and program evaluation research, especially those focused on cognitive skills, should consider how fostering the development of noncognitive skills, and including assessments of these skills, could improve their evaluations (Economic Policy Institute, 2014).

Many of the effects of out-of-school time are generalizable across gender, but the interactive effects of gender on relations predicting selection into out-of-school contexts and predicting developmental outcomes are not well understood. Moreover, few researchers have actually tested for interactive effects, making it difficult to arrive to a consensus about generalizable versus gender moderated effects (Mahoney, Larson, & Eccles, 2005; Vandell et al., 2015). Future research should continue to address the question of gender moderation.

Though examination of various types of organized activities has become more common, investigations of unsupervised time in the out-of-school time literature typically study these experiences as a single context aggregated across types of unsupervised time. The findings on unsupervised time, however, may be clarified as more research is conducted looking at various

types of unsupervised time (e.g., home alone, sibling care, hanging out with peers). Compared to organized activities, unsupervised activities on the whole present greater opportunities to engage in antisocial behavior (Osgood, Wilson, O'Malley, Bachman, & Johnston, 1996). However, there is evidence that problematic outcomes are more likely if unsupervised time occurs outside of the home (Mahoney & Parente, 2009). Just as organized activities have been studied as different types of activities, including sports, arts, and service activities, future investigations of unsupervised contexts examining different types of unsupervised contexts within the out-of-school time literature are needed.

Peers were not examined in this dissertation, but there are some important contributions of peers that can be assessed. Persson, Kerr, and Stattin (2004) reported that attending unstructured Swedish youth recreation centers, characterized by little adult supervision, but no structure, was not problematic in and of itself. They suggested that the most likely explanation for the link between attendance and normbreaking behaviors was entering a peer group within the youth center that socialized youths into delinquency. Adult supervision, per se, did not ensure a protective environment for adolescents (Persson, Kerr, & Stattin, 2004). Examining the peer context in future research that also accounts for noncognitive characteristics would be worthwhile. For example, noncognitive characteristics and peer cultures may interact to differentially predict school-related functioning. Poor noncognitive functioning may make one more vulnerable to the poor developmental outcomes associated with deviant peer cultures that may be found even within structured afterschool activities.

Conclusion

There is much work to be done to explain what kinds of effects out-of-school activities have for whom and under what circumstances. Advancing the study of out-of-school contexts

and youth development is not a simple matter of accounting for features of the context and dimensions of participants' involvement. While these areas of research are important, they must be examined with consideration for the active role of person-level characteristics, beyond demographics. Organized activity research can deepen understanding of the diversity of youth development by cultivating a greater appreciation for individuals' abilities to influence outcomes within the contexts of their lives and to actively shape their own life trajectories. Adolescents are active participants in their own development, and organized activities are not "one-size-fits-all" contexts for youths.

The present dissertation examined person characteristics, with particular emphasis on noncognitive skills, which can affect selection into out-of-school contexts, can moderate the associations between out-of-school activity participation and youth development, and can mediate the associations between out-of-school activity participation and youth development. Future organized activity research should account for these selection, moderating, and mediating roles of noncognitive person characteristics, alongside the moderating role of gender, in the developmental processes that underlie school-related functioning.

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