

Protective Qualities of Structured Extracurricular Activity
Participation for Adolescent Internalizing Problems

A DISSERTATION
SUBMITTED TO THE FACULTY
OF
THE GRADUATE SCHOOL OF APPLIED AND PROFESSIONAL PSYCHOLOGY
OF
RUTGERS,
THE STATE UNIVERSITY OF NEW JERSEY
BY
KAREN H. LANE
IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE
OF
DOCTOR OF PSYCHOLOGY

NEW BRUNSWICK, NEW JERSEY

OCTOBER 2014

APPROVED:

Jami F. Young, Ph.D.

Nancy Fagley, Ph.D.

DEAN:

Stanley B. Messer, Ph.D.

Copyright 2014 by Karen Lane

Abstract

Background: Aspects of structured extracurricular activity (SEA) participation may be important protective factors for adolescent internalizing problems and warrant further investigation. The present study examined different aspects of SEA participation, intensity (i.e., weekly frequency) and duration (i.e., total months of participation) both overall and at the activity-domain level, and their relationship to internalizing problems. Other areas examined included the domain of sports and differences between parent- and adolescent-reported internalizing symptoms. **Methods:** Ninety-six adolescents being individually evaluated to determine eligibility to participate in a school-based depression prevention study completed baseline measures that included an internalizing symptom rating scale (YSR) and an extracurricular activity questionnaire (EAI). Parents of participants also completed rating scales assessing their children's internalizing symptoms (CBCL). Multiple regression analyses were conducted to examine relationships between SEA dimensions and adolescent internalizing symptoms. **Results:** Total SEA participation intensity predicted CBCL scores at a trend level in a negative direction ($p = .07$). Intensity of sports participation and duration of participation in leadership activities both significantly negatively predicted CBCL scores ($p = .02$ and $.03$, respectively). Notably, significant findings in this study were only related to parent-reported adolescent internalizing scores (CBCL) rather than adolescent self-reported internalizing scores (YSR). **Conclusions:** Results suggest that the SEA dimensions of sports participation intensity and duration of participation in leadership activities may be especially important negative predictors of parent-reported adolescent internalizing scores. Additionally, overall SEA intensity may also be an important negative predictor of parent-reported internalizing scores based on trend-level findings.

Acknowledgments

I would like to extend my sincerest gratitude and appreciation to Jami F. Young, Ph.D., my dissertation chairperson. This dissertation would not have been possible without Jami's wisdom and guidance. She has provided incredible, unwavering support throughout this project and I thank her for that and also for allowing me the use of her data. I would also like to deeply thank Nancy Fagley, Ph.D., for serving on my dissertation committee and specifically, for all of her assistance with my statistical analyses and overall support throughout this project. I would also like to express thanks to Mark Turbin for his guidance with my statistical analyses.

I would like to thank the incredible GSAPP faculty and staff members who have played such crucial roles in my personal and professional development throughout my time there, especially Karen Haboush, Psy.D., Kenneth Schneider, Ph.D., and Anne Gregory, Ph.D. Many thanks also are also owed to my pre-doctoral internship supervisor, Anthony Baldo, Ph.D., who provided such valuable advice and support as well as helping me maintain motivation throughout the course of this project.

I would like to take this opportunity to also thank my family. I extend my deepest gratitude to my husband, Matthew Lane, for his incredible love and support and without whom I simply could not have completed this journey. I would also like to sincerely thank my brother, Jason Hill, for his love and support and for always believing in me. Lastly, I would like to thank my late parents, John and Lauren Hill, for their unconditional love, for raising me to live life with curiosity and integrity, and for instilling in me the strength and courage to rise to any challenge life may present.

Table of Contents

	Page
Abstract	ii
Acknowledgements	iii
List of Tables	vi
Chapter	
I. Introduction.....	1
Early SEA Research.....	2
Current Approaches in SEA Research.....	3
Breadth and Intensity of Involvement.....	4
Duration of Involvement.....	6
Domain of Sports	7
Mixed Findings in SEA Research.....	8
Measuring SEAs	9
Present Study	11
II. Methods.....	12
Participants.....	12
Procedure	12
Measures	13
Statistical Analyses	16
III. Results.....	17
Preliminary Results	17

Multiple Regression Analyses	17
Activity-level Analyses.....	18
IV. Discussion	21
Conclusions.....	27
References.....	29
Appendix.....	43

List of Tables

Table #1 Correlations among Key Study Independent Variables.....pg 37

Table #2 Correlations among Key Study Independent and Dependent Variables.....pg 38

Table #3 Multiple Regression Analysis Examining Key Study Independent Variables
and CBCL Scores.....pg 39

Table #4 Correlations among Activity-level Intensity and Duration Variablespg 40

Table #5 Hierarchical Multiple Regression Analysis Examining Activity-Level Intensity
and Duration Variables and CBCL Scorespg 41

Table #6 Multiple Regression Analysis Examining Activity-level Variables Significantly
Correlated with CBCL Scorespg 42

Chapter I

Introduction

Internalizing problems, such as depression and anxiety, can have a substantial detrimental impact on the well-being and developmental outcomes of adolescents. Internalizing problems represent a more global grouping of mental health issues including depression, anxiety, somatic complaints, and social withdrawal (Achenbach, 1966; Achenbach & Rescorla, 2001). Between 15 and 25% of individuals experience a major depressive episode during childhood or adolescence (Kessler et al., 2001; Kessler McGonagle, Zhao, Nelson, Hughes, Eshelman, Wittchen, & Kendler, 1994). The prevalence of adolescents who self-report subthreshold-level depressive symptoms ranges from 20 to 50% (Kessler et al., 2001). Adolescent depression, at the disorder and symptom-level, is linked to increased risk of substance abuse, educational underachievement, unemployment, lower income, early parenthood, experiencing stressful life events, anxiety disorders, depressive episodes, and suicide (Fergusson & Woodward, 2002; Kessler, Avenevoli, & Merikangas, 2001; Lewinsohn & Clarke, 1999). Anxiety, another internalizing problem, is also commonly experienced during adolescence. Specifically, an estimated 32% of adolescents have at some point met diagnostic criteria for an anxiety disorder (Merikangas et al., 2010). Being that adolescent depression and anxiety are so prevalent and associated with poor outcomes, further research examining risk and protective factors for developing internalizing problems is warranted.

Participation in structured extracurricular activities (SEAs) is one potential protective factor for internalizing problems in adolescence; however, research methods and findings have been mixed, prompting further research employing different approaches (Farb & Matjasko, 2012). Considering only one in five children with significant emotional distress receives mental health services, accessing these children and enhancing psychological well-being from different angles, such as through SEAs, is critical (Mason, Schmidt, Abraham, Walker, & Tercyak, 2009). Furthermore, protective factors of internalizing problems during adolescence, such as depression and anxiety, include social support, coping strategies, self-esteem, and participation in social activities (Dumont & Provost, 1999). As social support and social activities can both be products of SEA involvement, further investigation into the specific characteristics and dimensions of activity involvement is warranted.

Early SEA research.

Initial research on SEAs tended to conceptualize participation dichotomously (i.e., participants versus non-participants) (Holland & Andre, 1987). Participation was perceived more as a static rather than dynamic variable, failing to capture more complex individual variability. Furthermore, early SEA research focused primarily on sports participation and tended to miss subsets of youth who may have participated in other activity domains that were not measured (Farb & Matjasko, 2012). Findings from this earlier research generally suggested that continuous youth participation in SEAs was associated with positive developmental outcomes related to self-concept, self-esteem, academic achievement, educational aspirations, and prosocial behaviors. The most important predictor of positive outcomes appeared to be the total number of activities in which youth participated (Farb & Matjasko 2012). Notably, unlike much of the more recent

SEA research, earlier research generally did not measure mental health outcomes such as depression and anxiety (Holland & Andre, 1987).

Current approaches in SEA research.

More recent research on youth SEA involvement has focused more on specific dimensions of participation. These dimensions include the breadth, intensity, and duration of involvement. Engagement has also been studied as an important dimension of activity participation, but is beyond the scope of the present study and thus will not be addressed in depth. Each dimension has been conceptualized and investigated based on unique and shared theoretical underpinnings and related developmental implications (Bohnert, Fredricks, & Randall, 2010; Farb & Matjasko, 2012).

In terms of mental health outcomes, internalizing problems, or some variant of them (e.g., depressive symptoms, negative emotions, self-esteem, well-being), have been the most common mental health outcomes investigated in more recent SEA involvement research (Farb & Matjasko, 2012). Associations between specific activity domains and internalizing symptoms have also received increased attention. The domains investigated have varied, but one activity domain that has received significant attention is sports (Farb & Matjasko, 2012). Notably, research has demonstrated an inverse relationship between physical activity and depressive symptom severity in adolescents (Adeniyi, Okafor, & Adeniyi, 2011; Sallis, Prochaska, & Taylor, 2000; Teychenne, Ball, & Salmon, 2008); thus, substantial investigation within the domain of sports participation seems particularly warranted considering the positive psychological outcomes already associated with the physical activity element of sports participation.

Breadth and intensity of involvement.

The dimension of breadth reflects the quantity of activities or activity domains (e.g., sports, performing arts) in which youth participate. Among the theoretical reasons to measure breadth is its relation to identity development (Bohnert et al., 2010; Marcia, 1966). Specifically, this theory purports that the greater variety of roles and identities youth can explore before committing to a more specific path, the more their developing identities benefit as a result of exposure to a broader range of growth experiences inherent to different activities and domains (Bohnert et al., 2010; Hansen, Larson, & Dworkin, 2003). Additionally, adolescents committing more time to a wider variety of SEA domains, versus just one domain, are likely better equipped to cope with a broader range of stressful events that may occur across other settings (Bohnert et al., 2010; Linville, 1985).

Greater breadth of SEA involvement may also enable youth to develop larger social networks and increase their exposure to a more diverse set of peers. Increased exposure to different types of peers may be especially essential during early adolescence, a period when youth identities and desired peer groups more clearly emerge (Bohnert et al., 2010). Exposure to a wider range of activities and domains allows for more opportunities for positive development and risk-taking. Greater exposure to different SEAs likely increases opportunities for youth to experience more challenging tasks from which skills and relationships develop to help them better cope with future changes and challenges (Bohnert et al., 2010; Call & Mortmer, 2001).

A range of developmental outcomes also appears to be related to the breadth dimension of SEA participation. Generally, longitudinal and cross-sectional research has found participation in a broader range and quantity of SEAs to be associated with more positive social and academic outcomes after controlling for a number of self-selection variables (Bohnert et al., 2010).

Although findings regarding breadth of participation and psychological well-being (e.g., levels of depression, anxiety, self-esteem, etc.) have been mixed, they have typically demonstrated positive associations between these two factors (Farb & Matjasko, 2012).

Intensity, another salient dimension of SEA involvement, represents the frequency or “dosage” of participation (Bohnert et al., 2010; Farb & Matjasko, 2012). Theoretically, examining intensity of participation may be important from a positive youth development perspective such that SEAs may foster youth growth and development through the unique learning opportunities they provide (Eccles & Gootman, 2002). By spending more time participating in SEAs, youth may experience greater socialization and skill development. Thus, this perspective suggests youth need considerable exposure to activities in order to reap the benefits associated with each particular activity or domain (Bohnert et al., 2010; Hansen & Larson, 2007; Larson & Verma, 1999). Spending more time in an activity domain may also be beneficial by enabling youth to develop stronger and deeper relationships with peers and adults within that domain (Bohnert, Aikins, & Edidin, 2007). Finally, by spending more time involved in SEAs with adult supervisors, youth inevitably have less time for unstructured and unsupervised activity domains (e.g., television, video games), both of which are associated with less desirable developmental outcomes for adolescents (Bohnert, Richards, Kohl, & Randall, 2009; Mahoney & Stattin, 2000; Osgood, Wilson, O’Malley, Bachman, & Johnston, 1996).

Research investigating SEA participation intensity has generally demonstrated that greater participation is associated with beneficial developmental outcomes such as increased academic performance, school motivation, and school connection. A number of cross-sectional studies have also found greater intensity to be related to positive psychological outcomes such as better self-esteem and emotional well-being, greater altruism, and lower levels of depressive

symptoms (Fredricks & Eccles, 2005; Mahoney, Harris, & Eccles, 2006; Rose-Krasnor, Busseri, Willoughby, & Chalmers, 2006). It is important to remember, however, that these were correlational studies and thus conclusions regarding causality cannot be reliably determined.

Some SEA research has also examined breadth and intensity of involvement simultaneously. For instance, Denault and Poulin (2009) found intensity and breadth of activity participation of 6th and 7th graders ($N = 390$, across 8 schools) to be unrelated to depression, self-worth, and loneliness ratings. On the other hand, in a much larger sample of high school students ($N = 7430$, across 25 schools), Rose-Krasnor and colleagues (2006) found both intensity and breadth of SEA participation to be positively associated with well-being composite scores which were comprised of depression, social anxiety, self-esteem, optimism, and daily hassles components. Notably, breadth of involvement was more strongly related to well-being than intensity, leading the researchers to conclude that youth may benefit more from participating across a greater variety of activity domains than they do from having greater average intensity of their involvement.

Duration of involvement.

Participation duration, a dimension of SEA involvement that has received less attention, represents the consistency or stability of participation over time (Bohnert et al., 2010; Farb & Matjasko, 2012). The theoretical rationale for examining participation duration includes the consideration of how prolonged exposure to adults and peers within activity domains may influence the association between SEA participation and more optimal youth adjustment outcomes (Fredricks & Eccles, 2005). Additionally, participation duration is important to explore in that considerable time and practice are required to develop physical, musical, social, and interpersonal skills that can take years to refine (Bohnert et al., 2010). More long-term,

consistent participation within an activity domain may also help to strengthen youth identity formation which is considered critical in terms of adolescent development (Fredricks, Alfeld-Liro, Eccles, Hruda, Patrick, & Ryan, 2002).

Among the developmental outcomes associated with participation duration are increased college attendance and volunteering (Zaff, Moore, Papillo, & Williams, 2003). Additionally, consistent SEA participation has been found to be associated with greater interpersonal competence (e.g., maintenance of positive peer relations and avoidance of aggressive conflicts) when measured concurrently as well as improved interpersonal competence over time compared to adolescents with shorter, less consistent SEA participation (Mahoney, Cairns, & Farmer, 2003). Findings regarding participation duration and psychological outcomes, however, are more mixed. Randall and Bohnert (2009) found that longer duration of participation was unrelated to depressive symptoms or loneliness among a sample of ethnically and economically diverse adolescents from an urban magnet school ($N = 152$; adolescent-reported scores). Fredricks and Eccles (2006a), however, found longer participation duration to be associated with greater psychological resilience and self-worth as well as lower alcohol use, higher grades, and higher school belonging ($N = 508$; adolescent-reported scores). Although Fauth, Roth, and Brooks-Gunn (2007) found duration of participation in sports to be associated with higher rates of delinquency and substance abuse, they also found it to be related to lower depressive symptom levels ($N = 1,315$; parent-reported scores).

Domain of sports.

Many of the sports participation studies have focused on or at least included measures of internalizing symptoms. In a longitudinal study investigating outcomes related to sports participation, Fauth, Roth, and Brooks-Gunn (2007) found greater sports participation to be

associated with lower ratings of depression and anxiety symptoms. Shernoff and Vandell (2007) demonstrated an association between middle school sports participation and lower negative affect scores ($N = 165$; adolescent-reported scores). Additionally, Fredricks and Eccles (2006b) also found greater sports participation to be associated with lower depression and other internalizing symptoms in a sample of 11th graders; however, longitudinal analyses revealed that those associations were no longer evident one year after high school graduation ($N = 912$; adolescent- and parent-reported scores). Notably, a prior study also conducted by Fredricks and Eccles (2005) demonstrated no significant association between greater sports participation and fewer depressive symptoms ($N = 498$; adolescent-reported scores). They did find, however, a negative association between participation in other school activities (e.g., student government, pep-club) and depressive symptoms; moreover, the relationship was mediated by affiliation with prosocial peers. Despite the association between sports participation and depressive symptoms being non-significant, their socially-mediated finding deserves consideration and warrants further investigation into the socially-specific nature of SEAs (e.g., more individual versus team/collaboration-focused) (Farb & Matjasko, 2012).

Mixed findings in SEA research.

Many studies have found significant associations between SEA involvement and mental health outcomes such as internalizing problems; however, findings are mixed overall even with theoretical and methodological advances in the field such as investigating the specific dimensions of SEA involvement (Bohnert et al., 2010; Farb & Matjasko, 2012). These mixed findings may be due in part to differences in sample size and composition as well as how activities are measured across studies. All else being equal, small samples are less likely to yield statistically significant results. Additionally, variability of factors such as socioeconomic status,

ethnicity, gender, history of depressive symptoms, and peer characteristics may contribute to the current state of mixed findings (Farb & Matjasko, 2012). For example, in a longitudinal study, Fredricks and Eccles (2008) found that among adolescents from higher socioeconomic status households, those who had participated in school sports in 8th grade experienced a larger decrease in depressive symptoms than did non-participants. However, the reverse was true for students from lower socioeconomic status households in that non-participants had a larger decrease in depressive symptoms than did sports participants.

Measuring SEAs.

Considering the mixed findings in the psychologically-specific domain of SEA research, further research is needed to develop more standard and valid ways of measuring participation and its relevant dimensions. For instance, simply collecting a total activity count to capture the dimension of breadth fails to capture the range of activity domains (Bohnert et al., 2010). Thus, it is recommended that future research investigating breadth of participation should incorporate measures of activity dispersion, the degree of participation concentration across different activity domains (Bohnert et al., 2010). Measuring breadth consistently across studies is also challenging in part because the quantity and types of activity domains available to youth depend significantly on age, such that adolescents typically have access to a broader range of activities than do younger children. In attempting to standardize and more comprehensively measure breadth, it is recommended to incorporate the total activity count, total activity domain count, and activity dispersion together into an involvement profile for each participant (Bohnert et al., 2010).

Methods of measuring intensity of activity involvement have also varied across studies, possibly accounting in part for some of the mixed findings (Bohnert et al., 2010). Some studies have used total activity count to reflect intensity which is problematic as it is identical to how

other studies have measured breadth of involvement. Additionally, measuring intensity simply by tallying activities fails to capture how much time youth are spending in each activity. Many of the questionnaires measuring intensity of involvement have implemented a fixed-choice answer format (e.g., one to three times per week) which can limit the detail derived about exactly how much time youth participate in SEAs each week (Bohnert et al., 2010). Ideally, studies might utilize diary methods to collect intensity data in which the specific quantity of time spent in each activity is recorded by the parent or child throughout a 24-hour period (including one randomly selected weekday and one weekend day). While diary methods may be superior to survey methods, they are unfortunately more time-consuming for participants and less logistically practical (Bohnert et al., 2010). Due to these challenges of employing diary methods, they were not utilized in the present study.

Regarding measurement of SEA participation duration, many cross-sectional studies have asked youth to retrospectively report on several years of participation all at one time point or through intermittent retrospective reports at multiple time points of longitudinal studies (Bohnert, 2010). For instance, Zaff and colleagues (2003) examined participation duration across 8th, 10th, and 12th grades as a three-level variable (i.e., consistent, occasional, and no participation). Another study used yearbooks to measure participation duration by tallying the number of years youth participated in each activity based on their presence in activity sections of their yearbooks (Mahoney et al., 2003). In the present study, duration was measured through self-report and is limited to only the previous 12 months. Limiting the window to 12 months is intended to enhance participants' recall accuracy of their SEA involvement (e.g., versus asking them to recall SEA details beyond the 12 month range).

Present Study

The present study aimed to more precisely assess breadth, intensity, and duration dimensions of adolescent participation in SEAs, examine the relations between these dimensions, and examine the relationship between participation and internalizing symptoms.

The primary hypothesized outcome of the present study is that internalizing symptoms will be negatively correlated with SEA participation. Additional areas explored in regard to internalizing symptoms include: (1) whether any one dimension of SEAs is more important than the others, (2) whether different relationships emerge between SEA participation and child-reported internalizing symptoms versus parent-reported internalizing symptoms, and (3) if participating in sports, as compared to other activities, is particularly related to internalizing symptoms.

Chapter II

Methods

Participants.

Participants were 96 adolescents aged between 12 and 16 in the 7th-10th grades across 3 suburban public middle schools and 3 suburban public high schools in New Jersey. Participants were initially identified through classroom-based screening procedures. Participants meeting criteria for further screening (those with scores in the subthreshold range on a depression screening measure) were then comprehensively evaluated individually to determine eligibility to participate in a school-based depression prevention study. The average age of participants was 13.6 ($SD = 1.3$) years with 66.7% of the sample being female. A portion of the participants (22.9%) identified as Hispanic or Latino. In terms of race, 64.6 % of participants identified as White, 16.7% as African American, 7.3% as Asian, 1.0% as American Indian, and 10.4% as more than one race. Thirty-five percent of the sample lived in a single-parent home and 9.5% reported a gross household income of \$25,000 or less.

Procedure.

Participants completed baseline evaluations including structured diagnostic interviews and self-report questionnaires. This evaluation included the Kiddie Schedule for Affective Disorders and Schizophrenia-Present and Lifetime Version (K-SADS-PL) and Children's Depression Rating Scale, Revised (CDRS-R), which were administered by a doctoral psychology graduate student. Adolescents independently completed the Achenbach System of Empirically

Based Assessment Youth Self-Report (YSR) and Extracurricular Activity Inventory (EAI). They received \$20 for assessment completion. During a separate evaluation, parents completed the Achenbach System of Empirically Based Assessment Child Behavior Checklist (CBCL). Parents were compensated \$10 for this assessment.

Measures.

Extracurricular Activity Inventory (EAI).

The EAI assesses adolescents' temporal degree and duration of involvement in structured extracurricular activities (SEAs) within and outside of school (see Appendix). The EAI was adapted from the Adolescent Activity Involvement Inventory (AII) which assesses the total count and types of school and community-based activities for each year of high school (Bohnert & Garber, 2007; Bohnert, Kane, and Garber, 2008; Bohnert, Martin, & Garber, 2007). The EAI asks adolescents to indicate SEAs in which they participated at any point in the last 12 months. Number of months participated and weekly frequency of participation for each indicated activity are also included. Categories of activities comprising the EAI include sports teams (e.g., football, cheerleading, ROTC), arts (e.g., school band, church choir, dance), leadership (e.g., scouts, student government), and other activities (e.g., school yearbook, church youth group, community service).

EAI scores were calculated according to different dimensions of SEA involvement. Each participant received an EAI total breadth, total intensity, and total duration score. The total breadth score was calculated by summing two components of breadth: count of activities endorsed across all activity categories (e.g., basketball + football + school band = 3; $M = 3.1$, $SD = 2.5$) and count of different activity categories endorsed (e.g., sports + arts = 2; $M = 1.9$, $SD =$

1.1). These two component scores were transformed into z-scores and added together to create a total breadth score ($M = 0.0$, $SD = 1.9$, *score range* = -2.9 to 4.6).

Total intensity scores were calculated by summing the average weekly involvement scores of each endorsed activity. The mean total frequency of weekly SEA participation across categories (i.e., total intensity) was 7.7 ($SD = 6.2$, *score range* = 0 to 28.0) times per week. Intensity scores by category were also calculated by summing average weekly involvement scores within each SEA category (sports, arts, leadership, and other). The mean participation frequency by category (i.e., activity-level intensity) was 3.9 times per week for sports ($SD = 4.3$, *score range* = 0 to 19.0), 2.5 for art ($SD = 3.4$, *score range* = 0 to 16.5), 0.4 for leadership ($SD = 0.9$, *score range* = 0 to 4.0), and 0.9 for other ($SD = 1.2$, *score range* = 0 to 6.0).

Total duration scores were calculated by summing the total number of months participants reported involvement in each endorsed activity across categories. The mean total months of SEA participation (i.e., total duration) was 15.6 ($SD = 11.4$, *score range* = 0 to 48.0). Duration scores by category were also calculated by summing the total number of months of participation for endorsed SEAs within each SEA category (sports, arts, leadership, and other). The mean number of months of SEA participation by category (i.e., activity-level duration) was 5.5 for sports ($SD = 5.1$, *score range* = 0 to 12.0), 5.3 for art ($SD = 5.3$, *score range* = 0 to 12.0), 1.9 for leadership ($SD = 4.0$, *score range* = 0 to 12.0), and 2.9 for other ($SD = 4.2$, *score range* = 0 to 12.0).

The total number of participants who endorsed some level of participation in each SEA activity category was as follows: sports = 61, art = 54, leadership = 20, and other = 46.

Achenbach System of Empirically Based Assessment, Youth Self-Report (YSR).

The YSR (Achenbach & Rescorla, 2001; Achenbach, 1991) is a broad-band questionnaire completed by children and adolescents between 11 and 18 years that assesses internalizing and externalizing symptoms. As the primary focus of this study was to examine the relationship between internalizing symptoms and SEA participation, only the YSR Internalizing domain score (comprised of the Anxious/Depressed, Withdrawn/Depressed, and Somatic Complaints subscale scores) was included in analyses. The YSR Internalizing domain is comprised of 31 items with a possible score range of 0 to 62. The mean YSR Internalizing domain score in this study was 15.3 ($SD = 7.7$) with scores ranging from 1 to 32. Cronbach's alpha, which was calculated to assess the internal consistency of the YSR Internalizing scale scores within this sample, was .85.

Achenbach System of Empirically Based Assessment, Child Behavior Checklist (CBCL).

The CBCL (Achenbach & Rescorla, 2001; Achenbach, 1991) is a broad-band questionnaire completed by a parent or caregiver that assesses internalizing and externalizing symptoms in children and adolescents. As the primary focus of this study was to examine the relationship between internalizing symptoms and SEA participation, only the CBCL Internalizing domain score (comprised of the Anxious/Depressed, Withdrawn/Depressed, and Somatic Complaints subscale scores) was included in analyses. The CBCL Internalizing domain is comprised of 32 items with a possible score range of 0 to 64. The mean CBCL Internalizing domain score in this study was 10.5 ($SD = 7.8$) with scores ranging from 0 to 37. Cronbach's alpha, which was calculated to assess the internal consistency of the CBCL Internalizing scale scores within this sample, was .88.

Statistical analyses.

Bivariate correlations were computed prior to regression analyses to explore the shared variance between variables. Multiple regression analyses were then conducted to evaluate the predictive relationships between the EAI, YSR, and CBCL baseline scores. Namely, the purpose of multiple regression analyses was to evaluate how well dimensions of extracurricular activity participation predict internalizing symptoms in adolescents. Additionally, scatterplots of the data were examined to assess for curvilinearity (no evidence of curvilinearity was observed).

Chapter III

Results

Preliminary results.

Bivariate correlations revealed that the SEA dimensions of intensity, duration, and breadth were strongly correlated with each other (see Table 1). To assess the potential impact of multicollinearity, a multiple regression analysis for each dependent variable was computed with the three SEA dimensions as predictor variables so that VIF values could be obtained. Variance inflation factor (VIF) values were calculated for each SEA dimension variable: total intensity ($VIF = 6.05$), total duration ($VIF = 5.66$), and total breadth ($VIF = 13.92$). The suggested VIF cutoff value range of 5 to 10 was used to determine the severity of multicollinearity and how detrimental it might be to analyses (Craney & Surles, 2002; Stine, 1995). Based upon the high VIF (>10) value of total breadth, it was decided that breadth be excluded from further analyses. VIF values were again calculated with total breadth excluded and both total intensity and total duration VIF values fell to 2.11, well below the cutoff value range of 5 to 10. Thus, all further SEA dimension analyses included only the dimensions of intensity and duration.

Multiple regression analyses.

Multiple regression analyses were conducted to assess the relationships between the two internalizing symptom outcome variables, the YSR and CBCL, and the SEA dimensions of total intensity and total duration. Prior to running these regression analyses, relationships between YSR and CBCL scores and the following participant demographics variables were assessed for

significance via ANOVA (for categorical variables) and bivariate correlations (for continuous variables): current grade in school, age, gross household income, race, ethnicity, and gender. No significant associations emerged and thus, the multiple regression analyses did not control for any demographics variables.

YSR results.

Bivariate correlations computed between YSR scores and the SEA dimensions of total intensity and duration were non-significant (see Table 2). The multiple regression model predicting YSR scores from the predictor variables of total intensity and total duration yielded non-significant results ($R^2 = .02, p = .37$).

CBCL results.

Bivariate correlations were calculated to examine relationships between YSR and CBCL Internalizing scores and total intensity and duration scores (see Table 2). CBCL scores were significantly correlated with total intensity scores ($r = -.26; p = .05$), but not with total duration scores.

The multiple regression model predicting CBCL scores from total intensity and total duration (see Table 3) yielded significant results ($R^2 = .07, p = .04$) indicating that together, total intensity and total duration accounted for significant variance in CBCL scores. However, neither total intensity ($\beta = -.26, p = .07$) nor total duration ($\beta = .01, p = .95$) accounted for significant variance in CBCL scores when the effects of the other variable were controlled statistically.

Activity-level analyses.

Bivariate correlations were calculated to examine relationships between YSR and CBCL scores and intensity and duration scores at the activity-category level (see Table 4). YSR scores were significantly correlated with sports duration ($r = -.20; p = .05$). CBCL scores were

significantly correlated with sports intensity ($r = -.27$; $p = .01$) and leadership duration ($r = -.24$; $p = .02$).

A hierarchical multiple regression was conducted to examine how well activity-level intensity and duration predicted YSR scores. In this hierarchical regression model, activity-level intensity and duration variables were treated as two sets of four variables (i.e., an intensity and duration score for each of the four specific activity categories) entered into the overall model in two blocks. Activity-level intensity and duration scores were entered as separate sets within one hierarchical regression model in order to consider each SEA dimension separately at an activity-level, but to also be able to consider all eight activity-level variables together. The decision about whether the activity-level intensity or duration variables would enter into the first block of the model was determined by comparing the p-values of total intensity and total duration in the regression model predicting YSR scores from those two variables. The p-value of total intensity in that regression model was smaller ($p = .34$) than the p-value for total duration ($p = .98$), so it was decided that the four activity-level intensity variables would be entered into the first block followed by the four activity-level duration variables into the second block. The first block, activity-level intensity variables, did not significantly predict YSR scores ($R^2 = .04$, $p = .44$) and the second block, activity-level duration variables, did not significantly increase the amount of variance in YSR scores accounted for by the overall hierarchical model ($R^2 \text{ change} = .02$, $p = .67$). Lastly, although bivariate correlations demonstrated that sports duration was significantly related to YSR scores ($r = -.20$; $p = .05$), sports duration did not emerge as an individually significant predictor ($\beta = -.15$, $p = .35$) of YSR scores in the hierarchical multiple regression when the effects of the seven other activity-level predictors were partialled out.

Another hierarchical multiple regression analysis was conducted in a similar manner to examine how well activity-level intensity and duration predicted CBCL scores (see Table 5). The four activity-level intensity variables were again entered into block 1 of the overall model based on total intensity yielding a smaller p-value ($p = .07$) than total duration ($p = .95$) in the regression model predicting CBCL scores from those two variables. While the block including activity-level intensity variables ($R^2 = .11, p = .03$) significantly predicted CBCL scores, the block including activity-level duration ($R^2 \text{ change} = .03, p = .08$) did not significantly increase the amount of variance in CBCL scores accounted for by the overall hierarchical model. In terms of specific activities significantly predicting CBCL scores, sports intensity emerged as the only variable to make a significant unique contribution ($\beta = -.31, p = .049$) when the seven other variables were partialled out.

To further examine how well activity-level intensity and duration scores predict CBCL scores, a multiple regression analysis was conducted to include the two activity-level predictors that were significantly correlated to CBCL scores (see Table 6): sports intensity ($r = -.27, p < .01$) and leadership duration ($r = -.24, p < .05$). The overall regression model significantly predicted CBCL scores ($R^2 = .12, p = .003$). Additionally, both sports intensity ($\beta = -.24, p = .02$) and leadership duration ($\beta = -.21, p = .03$) made significant unique contributions to CBCL scores.

Chapter IV

Discussion

This study originally intended to compare SEA participation measures of intensity, duration, and breadth to determine which dimension best predicts adolescent internalizing symptoms; however, multicollinearity issues uncovered in preliminary analyses led to the decision to exclude breadth from further analyses. Specifically, breadth of SEA participation was highly correlated with both intensity and duration (see Table 1). Intensity and duration were also highly correlated, but not to the extent of the correlations with breadth. Further examination of potential multicollinearity included calculation of variance inflation factors (VIF). VIF values were utilized because they enabled quantification of the extent to which each SEA dimension's variability was accounted for by the other dimensions due to correlations among them (Craney & Surles, 2002). Based on the high bivariate correlations between breadth and the other dimensions and its high VIF value, it was determined that breadth would be excluded from further analyses to avoid the likelihood of challenges associated with multicollinearity.

Consideration of correlations between SEA dimensions in past research on youth developmental outcomes also influenced the decision to exclude breadth. Most studies that reported SEA dimension correlations examined only breadth and intensity and for the most part, those correlations were substantially lower than the correlation between intensity and breadth in the present study ($r = .90, p < .01$). For instance, in a longitudinal study, Busseri, Rose-Krasnor, Willoughby, and Chalmers (2006) reported correlations between breadth and intensity at two

time points that ranged from .33 ($p < .05$) to .53 ($p < .05$). Another longitudinal study by Denault and Poulin (2009) reported correlations between breadth and intensity at five different time points that ranged from .14 ($p < .05$) to .61 ($p < .05$). Rose-Krasnor and colleagues (2006) found a correlation of .47 ($p < .001$) between breadth and intensity in their cross-sectional study of SEA dimensions and youth development. Another cross-sectional study by Bohnert, Aikins, and Edidin (2007) reported a correlation of .59 ($p < .001$) between breadth and intensity. Finally, while most studies examining more than one SEA participation dimension tended to only include dimensions of intensity and breadth, Randall and Bohnert (2009) examined intensity, breadth, and duration together (as the present study also intended to do) and found correlations of .59 ($p < .01$) between intensity and duration, .42 ($p < .01$) between intensity and breadth, and .24 ($p < .01$) between duration and breadth. None of the aforementioned studies addressed potential issues of multicollinearity; however, most of the reported correlations were much lower than the SEA dimension correlations in the present study.

Thus, it may be that aspects of how the EAI assessed breadth in the present study resulted in a measure too similar to intensity and duration to warrant treating it as a separate SEA dimension. For instance, Bohnert and colleagues (2010) recommended generating a breadth of involvement profile score comprised of total activity count, total activity domain count, and activity dispersion sub-scores. The present study incorporated the total activity count and total activity domain count components into the overall breadth score, but perhaps developing a measure of activity dispersion and incorporating that into the overall breadth score would help distinguish the EAI breadth score from its measures of intensity and duration.

Between total intensity and total duration, neither dimension emerged as a significant unique predictor of CBCL scores. Rather, total intensity and total duration appeared to jointly

predict CBCL scores at a significant level in a negative direction. The unique contribution of total intensity, however, more closely approached significance ($p = .07$) compared to total duration ($p = .95$). Thus, at a trend level, it appears total intensity may be a stronger negative predictor of CBCL internalizing scores than total duration. This finding is generally consistent with existing SEA literature such that prior studies examining participation intensity and some measure of emotional well-being have consistently found significant relationships between those variables (e.g., Denault & Poulin, 2009; Fredricks & Eccles, 2005; Mahoney et al., 2006; Rose-Krasnor et al., 2006). Alternately, while some studies have found significant relationships between SEA participation duration and measures of emotional well-being (Fredricks & Eccles, 2006a; Mahoney et al., 2003; Zaff et al., 2003), other studies have found duration to be unrelated to well-being (e.g., Randall & Bohnert, 2009). Notably, I am not aware of any past studies that have directly compared intensity and duration in terms of which SEA dimension best predicts internalizing scores or other measures of emotional well-being.

Intensity of participation in sports, or how often adolescents indicated participating in sports per week on average, was a significant predictor of parent-reported adolescent internalizing scores (CBCL) in a negative direction. Specifically, intensity of sports participation was the only activity-level intensity score to significantly predict CBCL scores when participation intensity in other activity categories was controlled. Additionally, duration of participation in leadership activities, or for how many months adolescents indicated participation out of the previous 12 months, was the only activity-level duration score to significantly negatively predict CBCL scores when the other activity categories were partialled out. Notably, no activity-level intensity or duration scores significantly predicted YSR scores in the multiple

regression analyses, although there is some indication from the bivariate correlations that sports duration was negatively associated with youth reported internalizing symptoms.

Regarding the importance of participation in sports, the findings of this study provide some support for the idea that sports participation may be particularly important in terms of internalizing symptoms. Previous studies have also demonstrated meaningful associations between greater sports participation and lower depressive and anxiety symptoms (Fauth, Roth, & Brooks-Gunn, 2007; Fredricks & Eccles, 2006b) and lower negative affect in general (Shernoff & Vandell, 2007). In the present study, however, the unique contribution of sports intensity was the only significant activity-level intensity predictor (in a negative direction) of parent-reported internalizing scores (CBCL) while the unique contributions of other activity-level intensity measures (arts, leadership, and other) were not significant. Additionally, sports duration was not a significant predictor of YSR or CBCL scores; however, it was the only activity-level SEA dimension significantly correlated (in a negative direction) with youth-reported internalizing scores (YSR) and should be further examined in future research on SEA dimensions and adolescent internalizing problems.

The unique contribution of leadership duration was the only significant activity-level duration predictor (in a negative direction) of CBCL scores (notably, it was only significant in the regression model with only one other predictor, sports intensity, but not in the model including all activity-level intensity and duration predictor variables). The significant association between leadership duration and parent-reported adolescent internalizing scores (CBCL) in the present study is a new finding and is based on cross-sectional data. Thus, it is unclear if participating in leadership activities over time is protective for internalizing problems or if parents simply have a difficult time identifying internalizing symptoms in children who are

highly active in leadership activities given the recognition these youth receive for their leadership roles. It should be noted that only two items comprised the SEA category of leadership on the EAI, Scouts (15 adolescents endorsed participation in Scouts) and Student Government (10 adolescents endorsed participation), which is a limitation of this measure that may have impacted study findings. Further research is necessary to determine what factors might underlie the relationship between leadership duration and parent-reported, but not adolescent-reported, internalizing scores. In particular, longitudinal research, which can determine whether participating in leadership activities is protective of subsequent internalizing symptoms, is recommended.

Another aim of this study was to examine whether different relationships emerge between SEA participation and child-reported internalizing symptoms versus parent-reported internalizing symptoms. Results demonstrate that the two examined dimensions of SEA participation (intensity and duration) significantly predicted internalizing scores reported by parents (CBCL scores), but not those self-reported by adolescents (YSR scores). Although all observed relationships between SEA participation dimensions and internalizing scores (YSR and CBCL) were in a negative direction as expected, the activity-level hierarchical multiple regression model predicting adolescent-reported internalizing scores (YSR) was not significant. Thus, no conclusions can be made about the general impact of SEA participation on youth-reported symptoms or whether any one activity is more important in predicting youth-reported symptoms. The informant-discrepant findings of this study are similar to findings of prior research demonstrating significant differences between multiple informants on the same construct (Achenbach et al., 1987; De Los Reyes & Kazdin, 2004, 2005; Laird & De Los Reyes, 2012). To my knowledge, this is only the second SEA study (the first being Fredricks & Eccles, 2006b) to

investigate both self- and parent-reported adolescent internalizing symptoms; thus, it is difficult to interpret why the only significant predictive relationships between adolescent internalizing symptom scores and SEA dimensions were those predicting parent-reported adolescent internalizing scores and not self-reported. It may be that when rating their children's internalizing symptoms, parents utilize external sources of information (e.g., SEA participation).

A number of potential limitations that may have influenced the findings in the present study should be considered. For one, characteristics of the sample may have been a limiting factor. Specifically, adolescents in this sample were at greater risk for depression than adolescents participating in prior studies of SEA involvement. This observation was supported by the fact that YSR scores ($M = 15.3$, $SD = 7.7$) were similar to the normative sample of youth referred for mental health services ($M = 16.5$, $SD = 10.4$). Although the CBCL scores ($M = 10.5$, $SD = 7.8$) were somewhat lower than the referred normative sample ($M = 16.4$, $SD = 9.8$), they were still higher than the non-referred normative sample ($M = 6.1$, $SD = 5.5$). The fact that internalizing scores in this study were more similar to the referred norms versus the non-referred norms is one reason that might help explain why the results may differ from other studies on SEA involvement. Furthermore, considering that the adolescents in this sample assented to being considered for a depression prevention study, a self-selection bias may also have affected the findings of this study. Lastly, the number of participants who endorsed some level of SEA participation within activity categories (i.e., those with activity-level intensity and duration scores greater than zero) ranged from 20 (leadership) to 61 (sports) which also may have been a limiting factor in this study.

Measurement limitations and their impact on the results should also be considered. For instance, being that breadth scores were excluded from regression analyses based upon high

correlations with the other SEA dimensions and problematic multicollinearity diagnostics, the EAI's psychometric properties may benefit from changes to the way in which breadth (as well as dimensions of intensity and duration) is measured. As aforementioned, incorporating a third sub-score reflecting activity dispersion into the overall breadth score may help better distinguish it from intensity and duration (Bohnert et al., 2010). Additionally, duration scores only captured the past 12 months of SEA participation which may be an inadequate amount of time to validly measure the construct of duration. SEA duration and intensity dimensions may be better captured by one score computed by multiplying them together (i.e., multiplying months of SEA participation by hours or days per week of SEA participation).

Lastly, an element of SEA participation this study originally hoped to explore was the social aspect of participation, namely whether participating in group- or team-focused versus individual-focused SEAs is particularly important. Unfortunately, the EAI did not include a rating dimension to capture whether activities were considered to be team/group- or individual-focused and thus the social nature of activities could not be validly coded to distinguish between the two. Including an additional scale on the EAI to capture that social dimension of participation would likely be beneficial to future SEA participation dimension research.

Conclusions.

Fully understanding the influence of dimensions of SEA participation on adolescent internalizing symptoms remains a challenge. Part of that challenge is due to the fact that a consensus has yet to be reached in terms of how best to measure dimensions of SEA participation and which dimensions should be prioritized in terms of how they are related to adolescent internalizing symptoms and other developmental outcomes. This study attempted to more distinctly and reliably measure the SEA participation dimensions of intensity, duration, and

breadth at a comprehensive level as well as within different types of activity domains as many past studies have failed to incorporate multiple SEA dimensions and/or more standardized measures of SEA dimensions.

Although preliminary analyses led to the elimination of the dimension of breadth from further analyses, some meaningful findings did emerge, particularly regarding aspects of participation related to intensity, sports, leadership, and parent- vs. self-reported adolescent internalizing scores. Specifically, this study found that the intensity, or weekly frequency, at which adolescents participate in sports significantly negatively predicts adolescent internalizing symptom scores, but only internalizing scores reported by parents and not those self-reported by adolescents. Additionally, the duration of participation in leadership activities was found to significantly negatively predict adolescent internalizing scores as reported by the parent.

The informant discrepancies between parent and adolescent reports of internalizing symptoms were also similar to findings of previous research; however, to my knowledge, this is only the second SEA study to include measures of both self- and parent-reported adolescent internalizing symptoms (the first being Fredricks & Eccles, 2006b). Future research in the area of SEA participation and internalizing symptoms should further explore these informant discrepancies to help understand these discrepancies and to determine which source yields more valid scores. In addition, research should continue to examine how best to measure dimensions of SEA participation to lead to more valid and reliable conclusions regarding what aspects of SEA participation are most important in terms of predicting lower internalizing symptom scores.

References

- Achenbach, T. M. (1966). The classification of children's psychiatric symptoms: A factor-analytic study. *Psychological Monographs*, *80*(7), 1-37.
- Achenbach, T. M. (1991). *Integrative guide for the 1991 CBCL/4-18, YSR, and TRF profiles*. Burlington, VT: University of Vermont, Department of Psychiatry.
- Achenbach, T. M., McConaughy, S. H., & Howell, C. T. (1987). Child/adolescent behavioral and emotional problems: Implications of cross-informant correlations for situational specificity. *Psychological Bulletin*, *101*, 213–232.
- Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Adeniyi, A., Okafor, N., & Adeniyi, C. (2011). Depression and physical activity in a sample of Nigerian adolescents: levels, relationships, and predictors. *Child and Adolescent Psychiatry and Mental Health*, *5*(16), 1-10.
- Anderman, E. M. (2002). School effects on psychological outcomes during adolescence. *Journal of Educational Psychology*, *94*, 795–809.
- Bohnert, A., Aikins, J., & Edidin, J. (2007). The role of organized activities in facilitating social adaptation across the transition to college. *Journal of Adolescent Research*, *22*, 1–20.
- Bohnert, A., Fredricks, J., & Randall, E. (2010). Capturing unique dimensions of youth organized activity involvement: Theoretical and methodological considerations. *Review of Educational Research*, *80*(4), 576-610.

- Bohnert, A. & Garber, J. (2007). Prospective relations between organized activity participation and psychopathology during adolescence. *Journal of Abnormal Child Psychology*, *35*, 1021-1033.
- Bohnert, A., Kane, P., & Garber, J. (2008). Organized activity participation and internalizing and externalizing Syndromes: reciprocal relations during adolescence. *Journal of Youth and Adolescence*, *37*, 239-250.
- Bohnert, A., Martin, N.C., & Garber, J. (2007). Predicting adolescents' organized activity involvement: The role of maternal depression history, family relationship quality and adolescent cognitions. *Journal of Research on Adolescence*, *17*, 221-244.
- Bohnert, A. M., Richards, M. H., Kohl, K., & Randall, E. (2009). Relationships between discretionary time activities, emotional experiences, delinquency and depressive symptoms among urban African American adolescents. *Journal of Youth and Adolescence*, *38*, 587–601.
- Busseri, M. A., Rose-Krasnor, L., Willoughby, T., & Chalmers, H. (2006). A longitudinal examination of breadth and intensity of youth activity involvement and successful development. *Developmental Psychology*, *42*, 1313-1326.
- Call, K. T., & Mortimer, J. T. (2001). *Arena for comfort in adolescence: A study of adjustment in context*. Mahwah, NJ: Lawrence Erlbaum.
- Craney, T. A., & Surlis, J. G. (2002). Model-dependent variance inflation factor cutoff values. *Quality Engineering*, *14*(3), 391-403.
- De Los Reyes, A., & Kazdin, A. E. (2004). Measuring informant discrepancies in clinical child research. *Psychological Assessment*, *16*, 330–334.

- De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin, 131*, 483–509.
- Denault, A., & Poulin, F. (2009). Intensity and breadth of participation in organized activities during the adolescent years: Multiple associations with youth outcomes. *Journal of Youth and Adolescence, 38*, 1199–1213.
- Dumont, M., & Provost, M. A. (1999). Resilience in adolescents: Protective role of social support, coping strategies, self-esteem, and social activities on experience of stress and depression. *Journal of Youth and Adolescence, 28*(3), 343-363.
- Eccles, J. S., & Gootman, J. A. (2002). *Community programs to promote youth development*. Washington, DC: National Academy Press.
- Farb, A. F., & Matjasko, J. L. (2012). Recent advances in research on school-based extracurricular activities and adolescent development. *Developmental Review, 32*, 1-48.
- Fauth, R. C., Roth, J. L., & Brooks-Gunn, J. (2007). Does the neighborhood context alter the link between youths' after-school time activities and developmental outcomes? A multilevel analysis. *Developmental Psychology, 43*, 760–777.
- Fergusson, D., & Woodward, L. (2002). Mental health, educational, and social role outcomes of adolescents with depression. *Archives of General Psychiatry, 59*, 225-231.
- Fredricks, J. A., Alfeld-Liro, C., Eccles, J. S., Hruda, L. Z., Patrick, H., & Ryan, A. M. (2002). A qualitative exploration of adolescents' commitment to athletics and the arts. *Journal of Adolescent Research, 17*, 68–97.

- Fredricks, J. A., & Eccles, J. S. (2005). Developmental benefits of extracurricular involvement: Do peer characteristics mediate the link between activities and youth outcomes? *Journal of Youth and Adolescence*, *6*, 507–520.
- Fredricks, J. A., & Eccles, J. S. (2006a). Extracurricular involvement and adolescent adjustment: Impact of duration, number of activities, and breadth of participation. *Applied Developmental Science*, *10*, 132–146.
- Fredricks, J. A., & Eccles, J. S. (2006b). Is extracurricular participation associated with beneficial outcomes: Concurrent and longitudinal relations? *Developmental Psychology*, *42*, 698–713.
- Fredricks, J. A., & Eccles, J. S. (2008). Participation in extracurricular activities in the middle school years: Are there developmental benefits for African American and European American youth? *Journal of Youth and Adolescence*, *37*, 1029–1043.
- Hansen, D. M., & Larson, R. W. (2007). Amplifiers of developmental and negative experiences in organized activities. Dosage, motivation, lead roles, and adult-youth ratios. *Journal of Applied Developmental Psychology*, *28*, 360–374.
- Hansen, D. M., Larson, R. W., & Dworkin, J. B. (2003). What adolescents learn in organized youth activities: A survey of self-reported developmental experiences. *Journal of Research on Adolescence*, *13*, 25–55.
- Holland, A., & Andre, T. (1987). Participation in extracurricular activities in secondary school: What is known, what needs to be known? *Review of Educational Research*, *57*, 437–466.
- Jacobson, K. C., & Rowe, D. C. (1999). Genetic and environmental influences on the relationship between family connectedness, school connectedness and adolescent depressed mood: Sex differences. *Developmental Psychology*, *35*, 926–939.

- Kaufman, J., Birmaher, B., Brent, D., & Rao, U. (1997). Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL): Initial reliability and validity data. *Journal of the American Academy of Child and Adolescent Psychiatry, 36*, 980–988.
- Kessler, R. C., Avenevoli, S., & Merikangas, K. R. (2001). Mood disorders in children and adolescents: An epidemiologic perspective. *Biological Psychiatry, 49*, 1002–1014.
- Kessler, R., McGonagle, K., Zhao, S., Nelson, C., Hughes, M., Eshelman, S., Wittchen, H., & Kendler, K. (1994). Lifetime and 12-month prevalence of DSM-III psychiatric disorders in the United States: Results from the National Comorbidity Survey. *Archives of General Psychiatry, 51*, 8–19.
- Laird, R. D., & De Los Reyes, A. (2013). Testing informant discrepancies as predictors of early adolescent psychopathology: Why difference scores cannot tell you what you want to know and how polynomial regression may. *Journal of Abnormal Child Psychology, 41*, 1-14.
- Larson, R. W., & Verma, S. (1999). How children and adolescents spend time across the world: Work, play, and developmental opportunities. *Psychological Bulletin, 125*, 701–736.
- Lewinsohn, P. M., & Clarke, G. N. (1999). Psychosocial treatments for adolescent depression. *Clinical Psychology Review, 19*(3), 329-342.
- Li, Y., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *Developmental Psychology, 47*(1), 233-247.
- Linville, P. W. (1985). Self-complexity and affective extremity: Don't put all of your eggs in one cognitive basket. *Social Cognition, 3*, 94-120.

- Mahoney, J. L., Cairns, B. D., & Farmer, T. (2003). Promoting interpersonal competence and educational success through extracurricular activity participation. *Journal of Educational Psychology, 95*, 409–418.
- Mahoney, J. L., Harris, A. L., & Eccles, J. S. (2006). Organized activity participation, positive youth development, and the over-scheduling hypothesis. *Society for Research in Child Development: Social Policy Report, 20*, 1–30.
- Mahoney, J. L., & Stattin, H. (2000). Leisure activities and adolescent antisocial behavior: The role of structure and social context. *Journal of Adolescence, 23*, 113–127.
- Marcia, J. (1966). Development and validation of ego identity status. *Journal of Personality and Social Psychology, 3*, 551–558.
- Marsh, H. W. (1992). Extracurricular activities: Beneficial extension of the traditional curriculum or subversion of academic goals. *Journal of Educational Psychology, 84*, 553–562.
- Marsh, H. W., & Kleitman, S. (2002). Extracurricular school activities: The good, the bad, and the non-linear. *Harvard Educational Review, 72*, 464–514.
- Mason, M. J., Schmidt, C., Abraham, A., Walker, L., & Tercyak, K. (2009). Adolescents' social environment and depression: Social networks, extracurricular activity, and family relationship influences. *Journal of Clinical Psychology in Medical Settings, 16*, 346-354.
- Merikangas, K. R., He, J., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., . . . Swendsen, J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: Results from the national comorbidity survey replication-adolescent supplement (NCS-A). *Journal of the American Academy of Child and Adolescent Psychiatry, 49*(10), 980-989.

- Osgood, D. W., Wilson, J. K., O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1996). Routine activities and individual deviant behavior. *American Sociological Review*, *61*, 635–655.
- Osterman, K. F. (2000). Students' need for belonging in the school community. *Review of Educational Research*, *70*, 323–367.
- Poznanski, E. O., & Mokros, H. B. (1996). *Children's Depression Rating Scale, Revised (CDRS-R): Manual*. Los Angeles: Western Psychological Services.
- Radloff, L.S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385–401.
- Randall, E., & Bohnert, A. (2009). Organized activity involvement, depressive symptoms, and social adjustment in adolescents: Ethnicity and socioeconomic status as moderators. *Journal of Youth and Adolescence*, *38*, 1187–1198.
- Resnick, M. D., Bearman, P. S., Blum, R. M., Bauman, K. E., Harris, K. M., Jones, Tabor, J. J., Beuhring, T., Sieving, R. E., Shew, M., Ireland, M., Bearinger, L. H., Udry, J. R. (1997). Protecting adolescents from harm: Findings from the national longitudinal study on adolescent health. *Journal of the American Medical Association*, *278*(10), 823-832.
- Rose-Krasnor, L., Busseri, M. A., Willoughby, T., & Chalmers, H. (2006). Breadth and intensity of youth activity involvement as contexts for positive development. *Journal of Youth and Adolescence*, *35*, 385–499.
- Sallis, J. F., Prochaska, J. J., & Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Journal of the American College of Sports Medicine*, *32*(5), 963-975.

- Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child & Adolescent Psychology, 35*(2), 170-179.
- Shernoff, D. J., & Vandell, D. L. (2007). Engagement in after-school activities: Quality of experience from perspective of participants. *Journal of Youth and Adolescence, 36*, 891–903.
- Simmons, R. G., & Blyth, D. A. (1987). *Moving into adolescence*. Hawthorne, NY: Aldine de Gruyter.
- Stine, R. A. (1995). Graphical interpretation of variance inflation factors. *The American Statistician, 49*(1), 53-56.
- Teychenne, M., Ball, K., & Salmon, J. (2008). Physical activity and likelihood of depression in adults: A review. *Preventative Medicine, 46*, 397-411.
- Zaff, J. F., Moore, K. A., Papillo, A. R., & Williams, S. (2003). Implications of extracurricular activity participation during adolescence on positive outcomes. *Journal of Adolescent Research, 18*, 599–630.

Table 1

Correlations among Key Study Independent Variables (N = 96)

	Tot. Intensity	Tot. Duration	Tot. Breadth
Total Intensity		.73**	.90**
Total Duration			.89**
Total Breadth			

Note. ** $p < .01$

Table 2

Correlations among Key Study Independent and Dependent Variables (N = 96)

	CBCL	YSR	Tot. Intensity	Tot. Duration
CBCL		.15	-.26*	-.18
YSR			-.15	-.11
Total Intensity				.73**
Total Duration				

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

Table 3

Multiple Regression Analysis Examining Key Study Independent Variables and CBCL

Scores (N = 96)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Total Intensity	-.33	.19	-.26	-1.80	.07
Total Duration	.01	.10	.01	.07	.95
R^2		.07			
<i>F</i>		3.25*			.04

Note. * $p < .05$

Table 4

Correlations among Activity-Level Intensity and Duration Variables (N = 96)

	CBCL	YSR	SI	AI	LI	OI	SD	AD	LD	OD
CBCL		.15	-.27**	-.11	-.14	.09	-.19	-.10	-.24*	.10
YSR			-.20	.00	-.04	-.03	-.20*	-.02	.01	-.03
SI				.10	.02	.08	.75**	.11	.13	.01
AI					.10	.12	.06	.70**	.27**	.13
LI						.18	.14	.07	.81**	.16
OI							.06	.13	.15	.72**
SD								.06	.24*	.05
AD									.25*	.21*
LD										.18
OD										

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

SI = sports intensity, AI = arts intensity, LI = leadership intensity, OI = other intensity, SD = sports duration, AD = arts duration, LD = leadership duration, OD = other duration

Table 5

*Hierarchical Multiple Regression Analysis Examining Activity-Level Intensity and Duration**Variables and CBCL Scores (N = 96)*

	Model 1					Model 2				
	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
SI	-.48**	.18	-.27	-2.68	.01	-.55*	.28	-.31	-2.00	.05
AI	-.21	.23	-.09	-.91	.36	-.06	.33	-.03	-.20	.85
LI	-1.31	.87	-.15	-1.50	.14	.71	1.55	.08	.46	.65
OI	.95	.68	.14	1.39	.17	.41	.99	.06	.42	.68
SD						.15	.24	.10	.64	.52
AD						-.02	.21	-.01	-.08	.94
LD						-.61	.37	-.31	-1.66	.10
OD						.19	.28	.10	.70	.49
R^2		.11					.15			
$F (R^2 \text{ change})$		2.93*					.83			

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

SI = sports intensity, AI = arts intensity, LI = leadership intensity, OI = other intensity, SD = sports duration, AD = arts duration, LD = leadership duration, OD = other duration

Table 6

Multiple Regression Analysis Examining Activity-level Variables Significantly Correlated with CBCL Scores (N = 96)

	<i>B</i>	<i>SE B</i>	β	<i>t</i>	<i>p</i>
Sports Intensity	-.44*	.18	-.24	-2.44	.02
Leadership Duration	-.42*	.19	-.21	-2.16	.03
<i>R</i> ²		.12			
<i>F</i>		6.09**			

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

Extracurricular Activity Inventory

	STUDY: Depression Prevention Initiative (DPI)
ID: <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> Subject #	DATE ASSESSMENT COMPLETED: <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> <input style="width: 20px; height: 20px;" type="text"/> m m d d y y y y
Study Week: Baseline	

Instructions

Please indicate the activities in which you participated over the last 12 months.

ATHLETICS

Please list any sports teams (e.g., football, basketball, baseball, softball, volleyball, soccer, tennis, wrestling, track, cross-country, lacrosse, hockey, field hockey, swimming, etc.) in which you participated in the last 12 months and the total number of months you participated. Then, use the scale to indicate your average weekly participation during those months by circling the corresponding number.

School Sports Teams:

	# of Months	Never	Less than once a week	1 to 3 times a week	4 or more times a week
1. Sport 1 _____	_____	0	1	2	3
2. Sport 2 _____	_____	0	1	2	3
3. Sport 3 _____	_____	0	1	2	3
4. Sport 4 _____	_____	0	1	2	3
5. Sport 5 _____	_____	0	1	2	3

Sports Teams Outside of School:

	# of Months	Never	Less than once a week	1 to 3 times a week	4 or more times a week
1. Sport 1 _____	_____	0	1	2	3
2. Sport 2 _____	_____	0	1	2	3
3. Sport 3 _____	_____	0	1	2	3
4. Sport 4 _____	_____	0	1	2	3
5. Sport 5 _____	_____	0	1	2	3

Other Activities:

	# of Months	Never	Less than once a week	1 to 3 times a week	4 or more times a week
1. Cheerleading _____	_____	0	1	2	3
2. Majorettes _____	_____	0	1	2	3
3. Colorguard or Flags _____	_____	0	1	2	3

4. ROTC	_____	0	1	2	3
5. Ultimate Frisbee	_____	0	1	2	3
6. Martial Arts	_____	0	1	2	3
7. Ice Skating	_____	0	1	2	3

Please indicate the total number of months you participated in the following activities. Then, use the scale to indicate your average weekly participation during those months by circling the corresponding number.

ARTS:

	# of Months	Never	Less than once a week	1 to 3 times a week	4 or more times a week
1. School Band	_____	0	1	2	3
2. School Orchestra	_____	0	1	2	3
3. School Chorus	_____	0	1	2	3
4. Church Choir	_____	0	1	2	3
5. Theater (school)	_____	0	1	2	3
6. Theater (outside of school)	_____	0	1	2	3
7. Art activities (not school classes)	_____	0	1	2	3
8. Dance	_____	0	1	2	3
9. Music activities (outside of school)	_____	0	1	2	3

Describe: _____

LEADERSHIP:

	# of Months	Never	Less than once a week	1 to 3 times a week	4 or more times a week
1. Scouts	_____	0	1	2	3
2. Student Government	_____	0	1	2	3

What was your role? (e.g., president, vice president, secretary, treasurer, class rep, etc.): _____

OTHER:

	# of Months	Never	Less than once a week	1 to 3 times a week	4 or more times a week
1. School Newspaper	_____	0	1	2	3
2. School Yearbook	_____	0	1	2	3
3. Church Youth Group	_____	0	1	2	3
4. Community Service	_____	0	1	2	3

Describe: _____

5. Other Activities _____ 0 1 2 3

Describe: _____

(e.g., photography club, math club, Spanish club, debate team, etc.)