



Understanding threshold effects of organized activity involvement in adolescents: Sex and family income as moderators

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A B S T R A C T

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The current study examined the curvilinear links between involvement in organized activities (OA) and sport activities specifically and various indicators of psychological and social development. Participants included 150 9th and 10th graders (57% females) from an urban, selective-enrollment high school. Eligibility for admission is based on city residence, high GPA, and high scores on standardized tests and an admission exam. Findings indicated that benefits of OA involvement leveled off at approximately 5–7 h/week, with diminishing returns for adolescents participating in more than 10 h/week. Results also suggest that OA involvement uniquely impacts male and lower-income participants. Males reported threshold effects in terms of perceived friendship competence and depressive symptoms. Male sport participants and lower-income adolescents reported a similar pattern for loneliness. Findings suggest that among a high achieving sample of urban adolescents, social and psychological benefits are linked to moderate but not intense involvement in OAs and sports.

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Introduction

Adolescence is a period characterized by transitions in the physical, social, intellectual, and emotional domains of development (Ogul & Gencoz, 2003). Research has shown that youth are vulnerable to psychological and social problems during this time of major change (Andersen & Teicher, 2008; Nangle & Hansen, 1998), and that time spent in organized after-school activities (OAs) can influence their development (i.e., Darling, 2005; Fredricks & Eccles, 2006b). Although research has shown that OA involvement is beneficial, some recent studies have demonstrated an overscheduling effect where there is a threshold for optimal activity involvement or evidence of diminishing returns for those who are highly involved in organized activities (Busseri, Rose-Krasnor, Willoughby, & Chalmers, 2006; Fredricks & Eccles, 2006b; Mahoney, Harris, & Eccles, 2006; Marsh, 1992; Marsh & Kleitman, 2002; Randall & Bohnert, 2009). Other studies, however, have found no or limited support for curvilinear relations (e.g., Bohnert & Garber, 2007; Luthar, Shoum, & Brown, 2006), and only one study to date has considered the social consequences of very high levels of involvement (see Randall & Bohnert, 2009). The aim of this study was to examine curvilinear relations between the intensity (hours per week) of participation in organized activities (including sports) as well in sport-related activities more specifically, and a variety of psychological and social outcomes, including adolescents' perceptions of their social competence (making close friendships and being socially accepted) as well their reported levels of depressive symptoms and loneliness. In addition, this study is one of the first to explore if the curvilinear relation between intensity of OA and sport involvement and developmental outcomes varies by adolescent sex and/or family income.

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Organized activity involvement and developmental outcomes

Ecological systems theory (i.e., Bronfenbrenner, 1979) suggests that OAs are an important context that impacts adolescents' development. The majority of research on OA involvement during adolescence has focused on problem behaviors and academic achievement, suggesting that participation is related to decreases in various risky behaviors (e.g., smoking, marijuana use, and delinquent and anti-social behaviors) as well as increased academic motivation and higher GPAs (Eccles & Barber, 1999; Mahoney, 2000; Mahoney, Cairns, & Farmer, 2003; Youniss, McLellan, Su, & Yates, 1999). However, a recent conceptual model suggests that the current OA literature does not sufficiently examine how involvement in OAs may impact two additional outcomes: psychological and social development (Bohnert, Fredricks, & Randall, 2010). Although a few recent studies have included indicators of psychosocial adjustment in their analyses, the current study seeks to offer a more nuanced examination of OA's influence on adolescents' psychological (depressive symptoms) and social (perceptions of social competence and loneliness) outcomes, and to examine if these relations differ by adolescent sex and/or family income.

Although depressive symptoms have been shown to increase during adolescence (Luthar et al., 2006), only a few studies have examined the influence OA involvement has on protecting against depressive symptoms and findings have been mixed. More specifically, although several studies have been unable to detect a link between intensity of involvement in OA and depressive symptoms (Darling, 2005; Melman, Little, & Akin-Little, 2007), other studies indicate lower levels of depressed mood in OA participants versus non participants (Mahoney, Schweder, & Stattin, 2002) and lower levels of depressive symptoms among youth participating in a wide range of OA contexts (i.e., sports, performing arts) (Simpkins, Eccles, & Becnel, 2008). Interestingly, the inconsistencies may be explained by researchers' use of different OA dimensions (intensity, breadth, duration) (Bohnert et al., 2010) as well as by the fact that the majority of studies have only considered linear relations between OA involvement and adolescent depressive symptoms. One notable exception is Randall and Bohnert's (2009) study demonstrating diminishing returns when adolescents spent more than 10 h per week in organized activities; non-participants and those who were extremely involved reported the similar levels of depressive symptoms.

Adolescence is also a time when friends become increasingly important to youth (Barber, Eccles, & Stone, 2001; Luthar & Becker, 2002) with a particular emphasis placed on feeling accepted and fitting into a peer group (Nangle & Hansen, 1998). Importantly, prior research confirms that adolescents reap social benefits from involvement in OAs (Fredricks & Eccles, 2006a). More specifically, it has been found that youth who participate in a wider range of activities and for more years tend to have relationships with a higher proportion of academic versus risky peers (Fredricks & Eccles, 2006a) and peers with positive attributes (Simpkins et al., 2008), and demonstrate more interpersonal competence (Mahoney et al., 2003). In addition, compared to non-participating youth, children who participated in after-school programming were less rejected by and isolated from their peers (Mahoney, Lord, & Carryl, 2005). Interestingly, despite the research indicating a link between OA involvement and positive social outcomes and reduction in social isolation, no known study to date has explored how and if intensity of OA involvement is associated with adolescents' perceptions of their own social competence, and specifically their perceived ability to: (a) maintain a close friendship and (b) be socially accepted. Furthermore, no study to date has assessed whether a curvilinear relation best describes the relation between intensity of OA involvement and perceived social competence.

Similarly, few studies to date have explored the relation between intensity of OA involvement and loneliness among adolescents. This is surprising given that loneliness has been shown to increase during adolescence (Mahon, Yarcheski, Yarcheski, Cannella, & Hanks, 2006). One such longitudinal study that investigated the link between OA participation and loneliness indicated that college students who reported poor friendship quality during adolescence but spent more hours per week in activities during college reported lower levels of loneliness (Bohnert, Aikins, & Edidin, 2007). Further, Randall and Bohnert (2009) found that youth who participated in more years of OAs (duration) also reported lower levels of loneliness. Examining the possibility of threshold effects or diminishing returns at highly intense OA when considering adolescents' perceptions of their social competence and loneliness is much needed. For example, in the current study, it is thought that adolescents participating in OAs for a very high number of hours per week may have fewer opportunities to engage with family members and peers outside their OA context (McDonough & Crocker, 2005) and thus experience more loneliness and perceive more difficulties in being socially accepted and making close friendships than those who are moderately involved.

Sport involvement and developmental outcomes

Given that adolescents participate in sports at a higher rate than other organized activities (National Center for Education Statistics, 2005) and that sports involvement consumes the most number of hours of activity per week (Mahoney et al., 2006), continued research on the benefits specific to involvement in organized sport activities is warranted. Findings from prior studies on the link between sport participation and developmental outcomes have been mixed. Some studies suggest that involvement in sports is linked to fewer externalizing behaviors, lower levels of depressive and anxiety symptoms and social isolation, and also associated with various positive educational and occupational outcomes (Barber et al., 2001; Danish, Taylor, & Fazio, 2003; Eccles & Barber, 1999; Fauth, Roth, & Brooks-Gunn, 2007; Findlay & Coplan, 2008; Fredricks & Eccles, 2006b; Hansen, Larson, & Dworkin, 2003; Luthar et al., 2006; Simpkins, Fredericks, Davis-Kean, & Eccles, 2006). However, research also suggests that adolescents who participate in sports, and on competitive sport teams in particular, report higher levels of stress and risky behaviors (Eccles & Barber, 1999; Fredricks & Eccles, 2008; Larson, Hanson, & Moneta, 2006). Similarly, Fauth et al. (2007) demonstrated greater levels of delinquency & substance use over time, with the largest effects for youth who participated in sports for more years. To extend and clarify prior research on sport involvement, the current study

seeks to determine if the benefits of sports involvement (i.e., school-based junior varsity and varsity sport teams, club sport teams, and sport-related club activities), either level off or are linked to diminishing returns at a high intensity involvement with regard to depression, loneliness, and adolescents' perception of their social competence. Further, the current study will explore whether adolescent sex and/or family income moderate the proposed curvilinear relations.

Sex and family income as moderators

Although much of the literature on organized activities is guided by an underlying assumption that participation is equally beneficial for all youth, the association between involvement and adolescent developmental outcomes may vary across individuals (Darling, 2005). However, rather than considering sex and family income as moderators, most studies control for these demographic factors. Using an ethnically and economically diverse sample, the current study considered the unique role sex and family income might have in moderating the link between intensity of OA involvement, as well as sports specifically, and adolescent developmental outcomes.

Prior studies indicate sex differences in discretionary time use, with females spending more discretionary time doing academic activities, creative arts, socializing, and in outdoor play whereas males spend more time in sport activities (Markstrom, Li, Blackshire, & Wilfong, 2005; McHale, Crouter, & Tucker, 2001; Posner & Vandell, 1999). However, only a few studies to date have examined whether adolescent sex moderates the effects of OA participation, and results have been mixed (Simpkins et al., 2008). Although some studies have not identified sex differences and thus support the generalizability of benefits across male and female participants, other research suggests that males and females are differentially impacted by involvement. For example, studies have reported that, for males only, involvement in performing arts, school clubs, and is linked to fewer risky behaviors and lower levels of substance abuse (e.g., marijuana and alcohol use) sports (Eccles & Barber, 1999; Fredricks & Eccles, 2006b) as well as more positive links to academic indexes and school value among sport participants (Fredricks & Eccles, 2008; Luthar et al., 2006).

In contrast, some researchers have found that females uniquely benefit from involvement. For example, it has been found that participation in out-of-school activities predicted more prosocial peers for females only (Fredricks & Eccles, 2008) and Simpkins et al. (2008) detected a significant link between breadth of participation (i.e., participation in range of different types activities including sports, academic clubs, performing arts, community, volunteering, and religious youth groups), positive friend characteristics, and depressive affect for females only. Studies have also demonstrated higher academic self-concepts but also more alcohol use among female sport participants (Fredricks & Eccles, 2006b; Simpkins, Ripke, Huston, & Eccles, 2005).

Only one known study considered sex differences when examining curvilinear relations between OA and developmental outcomes. Although findings were not significant after Bonferroni corrections, Luthar et al. (2006) demonstrated that girls with very high intensity (hours per week) of OA involvement versus medium and low levels demonstrated high substance use, while boys with extremely low levels of involvement showed lower grades than boys with high and medium levels of OA participation. Given these findings, the current study seeks to extend prior research by determining whether threshold effects and/or diminishing returns of involvement in OAs, as well in sport activities in particular, are detected specifically among male versus female participants.

Additionally, there is some suggestion in the current literature that participation in OAs differentially impacts development for high- versus low-income youth and that negative outcomes may result when youth become involved at extreme levels (Mahoney, 2000; Marsh, 1992; Marsh & Kleitman, 2002). Although youth from affluent families are more likely to become involved in OAs (Huebner & Mancini, 2003; Pedersen & Seidman, 2005) and participate with greater intensity once involved (Bartko & Eccles, 2003; Fredricks & Eccles, 2006a; Markstrom et al., 2005), research commonly indicates that the benefits of OA participation are greatest for low-income, disadvantaged youth (Mahoney, 2000; Mahoney & Cairns, 1997; Marsh, 1992; Marsh & Kleitman, 2002). Few studies known to date have examined the interaction between family income and OA or sport involvement. Although Randall and Bohnert (2009) detected a significant interaction between family income and OA intensity when considering loneliness as an outcome, post hoc probing indicated no significant differences between the low- and high-income groups. Conversely, Fredricks and Eccles (2008) found that although participants in school sports from higher socioeconomic status families had a larger decrease in depression than non-participants, sport participants from lower-income families had a smaller decrease in depression than non-participants. Alternatively, the researchers found that athletes from lower socioeconomic status homes reported a lower rate of decline in the proportion of prosocial peers than non-participants while athletes from higher socioeconomic status homes reported a greater decline.

Further, there is suggestion that overscheduling may be particularly common among high-SES populations. As proposed in the over-scheduling hypothesis (see Mahoney et al., 2006), it is thought that high-SES youth are often over-involved to such a degree that they suffer from stress-related problems such as stomachaches, headaches, and insomnia as well as psychological difficulties such as depression and anxiety (Luthar & Sexton, 2004). It is unclear, however, how high intensities of OA involvement may impact adjustment among relatively lower-income youth, especially within a sample of high achieving adolescents. Thus, the current study seeks to determine if a curvilinear relation better describes the link between OA involvement and developmental outcomes in adolescents and if the relation differs according to adolescents' family income.

The present study

The current cross-sectional study examines curvilinear relations between OA involvement and developmental outcomes in adolescents. More specifically, the study aims to determine if threshold effects and/or diminishing returns describe the relations between hours per week spent in organized activities, as well as sport activities specifically, and levels of reported depressive

symptoms, loneliness and perceived social competence (i.e., ability to make close friendships and be socially accepted) in a diverse sample of adolescents from an urban, selective-enrollment magnet high school. Furthermore, the study seeks to demonstrate how males versus females and higher- versus lower-income adolescents may uniquely benefit from OA and sport involvement.

Method

Participants

Participants included 150 9th and 10th grade students (57% females; *Mean* age = 14.95 years; *SD* = .64) from an urban, diverse, selective-enrollment magnet high school and their parents ($n = 106$). In order to be eligible for admission, students had to be a city resident, have a high GPA, and perform well on standardized tests and on an admission exam. This type of public high school is designed to meet the needs of the city's most academically advanced students and offers a rigorous curriculum with mainly honors and Advanced Placement (AP) courses. The sample was ethnically diverse; among students, 29% were European American, 27% were African American, 26% were Latino, and 13% were Asian American, and 5% were other. Sixteen percent of parents reported a family income of under \$30,000 per year, 43% between \$30,000 and \$69,999, 12% between \$70,000 and \$100,000, and 21% over \$110,000 per year. One-third of the parents received a high school degree or less, 41% had some college education or received a Bachelors degree, and 29% completed some graduate school or received a graduate degree. Fourteen percent of parents reported being full-time homemakers, 70% employed full-time, 9% employed part-time, 2% on disability, and 5% other.

Procedure

Participants were recruited from two health classes and two gym classes. At the beginning of the fall term, 9th and 10th grade students were invited to participate in the study. Students who returned consent forms were entered in a raffle for various prizes. All students who obtained and returned a signed parental consent form and who signed an assent form were allowed to participate. At the end of the fall term, participants completed questionnaire packets thus giving them ample time to get involved in activities at their school and/or community. Participants completed a demographic form, Organized Activity Impact Form (OAIF), Loneliness Scale (LS), Children Depression Inventory (CDI), and the Self-Perception Profile for Adolescents (SPPA). In addition, a demographic questionnaire was mailed to and completed by the parent or legal guardian.

Measures

The *Demographic Form* was used to obtain information from the parents about themselves as well as their adolescent. More specifically, parents provided information about their family's level of income as well as their highest level of education, employment status, and their teen's date of birth, gender, and ethnicity. Parents reported their highest level of education using nine, pre-coded responses ranging from 1 (*some grade school*) to 9 (*received a graduate/professional degree*), and indicated the family's total yearly income by choosing from one of seven pre-coded responses ranging from 1 (*under \$10,000*) to 7 (*over \$110,000*). Employment status was also pre-coded with parents selecting one of five pre-coded responses (i.e., 1 = *full-time homemaker*, 2 = *employed full-time*, 3 = *employed part-time*, 4 = *on disability*, 5 = *other*).

Organized activity involvement was assessed using The Organized Activity Impact Form (OAIF). The OAIF was used to collect information about the activities the adolescents were involved in. Given that prior literature indicates that, on average, youth report participating in three activities during a given time period (see Bohnert & Garber, 2007; Busseri et al., 2006), the measure was designed to allow the participant to list up to four organized activities and then indicate how many hours per week they have been involved in each activity. To determine activity type, all activities listed on the OAIF were collapsed into seven mutually exclusive, exhaustive, and pre-determined categories based on activity types used in prior studies (see Eccles & Barber, 1999) as well as the type of activities available at the school. Types included sports (e.g., individual, team, competitive, and recreational), performance/fine arts (e.g., dance, orchestra, drama), prosocial (e.g., volunteer organizations), religious (e.g., church groups), academic clubs (e.g., debate, honors society), school involvement (e.g., pep club, cheerleading), and culture/identity (e.g., Asian American Culture club, Latino Unidos, Pride club). The OA Intensity variable was calculated by summing the number of hours per week spent in all activities listed on OAIF, and the Sport Intensity variable was calculated by summing the hours per week spent in all sport-related activities listed on the OAIF.

Loneliness was measured using the Loneliness Scale (LS; Asher & Wheeler, 1985). The LS is a 24-item survey that probes an adolescent's feelings regarding his or her state of loneliness. Adolescents must rate on a 5-point scale from 1 (*not true at all*) to 5 (*always true*) how much they feel the statements are true. Examples of statements include, "I have nobody to talk to," "It's hard to get others to like me," and "I can find a friend when I need one." The LS has demonstrated adequate reliability and validity (Asher & Wheeler, 1985; Crick & Ladd, 1993). For the present sample, the alpha coefficient was .89.

Depressive symptoms were measured using The Child Depression Inventory (CDI; Garber, 1984; Kovacs, 1981). The CDI is a widely-used scale and includes 27 identical items relating to cognitive and behavioral depressive symptoms that require the respondent to rate his or her level of depressive symptoms in the last two weeks on a 0–2 scale (e.g., 0 = *I am sad once in a while*; 1 = *I am sad many times*; 2 = *I am sad all the time*). Higher scores indicate higher levels of depressive symptoms. The psychometric property of the CDI is adequate (Garber, 1984; Saylor, Finch, Spirito, & Bennet, 1984). For the present sample, the alpha coefficient was .80 indicating adequate internal consistency of scores on the measure.

Perceived Social Competence (Close Friendship & Social Acceptance) was assessed using 2 subscales of The Self-Perception Profile for Adolescents (SPPA; Harter, 1982). The SPPA is a 45-item self-report that includes nine subscales: scholastic competence, athletic competence, social acceptance, physical appearance, job competence, close friendship, romantic appeal, behavioral conduct, and global self-worth. Items are organized in a 4-point structured-alternative format. Accordingly, respondents were presented with a brief description of two types of individuals, and asked to identify which one he or she identifies with more closely. For the current study, only the close friendship and social acceptance domains were used, with higher scores indicating greater levels of perceived ability to make close friendships and to be socially accepted. An example of an item on the Close Friendship domain is, “Some teenagers find it hard to make friends that they can really trust” vs. “Other teenagers are able to make close friends that they can really trust.” An example of an item on the Social Acceptance domain is, “Some teenagers have a lot of friends” vs. “Other teenagers don’t have many friends.” Harter (1988) and Wichstrøm (1995) reported strong internal consistency reliabilities for each of the nine subscales. Wichstrøm (1995) also reported adequate convergent validity by comparing scores on the subscales with others instruments intended to assess the same constructs. In this study, the alpha coefficient for scores on global self-worth scale was .80, indicating adequate internal consistency of scores.

Data preparation and analytic plan

Initially, all activity indices were centered to circumvent problems with multicollinearity and to assist with interpretability of interactions. Two adolescents who reported participating in organized activities for 33 or more hours per week (3 or more SD above the mean) were deemed outliers and were thus omitted from analyses. Examination of study variables revealed that all variables except Sport Intensity were normally distributed. The Sport Intensity variable was normally distributed after conducting a square root transformation. This type of transformation is recommended when data are in the form of counts and values are small (Howell, 1992). Also of note, due to missing income data, a smaller sub-sample ($n = 106$) was used for all analyses assessing moderation by income. There were no significant differences in means of study variables between participants with income data ($n = 106$) and those with missing income data ($n = 44$), suggesting that the data was missing at random. Of note, income groups compared in *t*-test analyses were constructed using a median split, such that the “low-income” group encompassed all youth with annual family income less than \$60,000 and were thus *relatively* lower in income than the “high income” group, which included youth whose family income exceeded \$60,000 per year.

Stepwise multiple regression was then used to assess the curvilinear relations between 1) intensity of organized activity involvement and 2) intensity of sport involvement, and the four developmental outcomes (depressive symptoms, loneliness, perceived ability to make close friendships, and perceived social acceptance). Further, analyses were conducted to determine if adolescent sex and/or family income moderated the relations. More specifically, for each regression model, main effects of organized activity (or sport) intensity and the moderator (i.e., Sex) were entered as Step 1. The linear two-way interaction (i.e., Intensity \times Sex) was entered into a regression model as Step 2. Next the quadratic term of organized activity intensity (i.e., Intensity²) was added (Step 3). Last, the quadratic-by-linear interaction (i.e., Intensity² \times Sex) was entered into the regression (Step 4). Thus, the above-described analysis was conducted for intensity of organized activity involvement (all activities listed on OALF) as well as intensity of sport involvement, for each adjustment outcome (depressive symptoms, loneliness, close friendship, social acceptance) and for each moderator (sex, family income) for a total of 16 regression models.

Post-hoc analyses were conducted for all significant interactions (Holmbeck, 2002). Specifically, to probe significant interactions, two new conditional moderator variables were computed by manipulating the zero point of the moderator variable (Aiken & West, 1991). Next, regression models using simultaneous entry were run with the new interactions terms that incorporated each of these conditional variables (i.e., Male \times Intensity² and Female \times Intensity²) to generate the slope for each sub-sample (i.e., Male/Female; High/Low Income groups). Significance tests (*t*) for each slope were examined by considering the significance test of the quadratic intensity term (Intensity²). The regression lines were then plotted by substituting $-1.5 SD$, $-1.0 SD$, $0 SD$, $1.0 SD$, and $1.5 SD$ of the Intensity (centered) variable into the equation generated from the post-hoc regression analyses (see Holmbeck, 2002 for a full description of post-hoc probing of significant moderational effects).

Effect size estimates were provided when reporting the *p*-value of all significant *t*-tests and regressions with significant interactions. Specifically, as recommended by Durlak (2009), Cohen’s *d* was calculated when mean differences between groups on study variables (i.e., sex differences) were assessed. The product-moment correlation coefficient, *r*, provided information on the effect size of the unique contribution of quadratic term of the independent variable (i.e., Intensity²) as it entered the regression (Durlak, 2009). Although Cohen’s (1988) conventions suggest that Cohen *d* values of 0.2 indicate a “small” effect size, 0.5 “medium,” and 0.8 or higher “large” (with corresponding values of *r* at 0.10, 0.30, and 0.50), effect sizes in the social sciences are shown to commonly be between $-.08$ and $+1.08$ (Lipsey & Wilson, 1993).

Results

Descriptive analyses and correlations

Means, standard deviations, ranges, and correlations for study variables are presented in Table 1. For the entire sample, adolescents were involved in organized activities for an average of approximately 9 h per week ($M = 9.41$, $SD = 6.99$) and sports for 5 h per week ($M = 5.38$, $SD = 7.73$). Approximately 50% (35 males, 35 females) of adolescents in the sample reported

Table 1

Descriptive information and correlations among independent, moderator, and outcome variables.

Variables:	1	2	3	4	5	6	7	8
1. Depressive symptoms ^a	–							
2. Loneliness ^a	.53**	–						
3. Social acceptance ^a	–.34**	–.65**	–					
4. Close friendship ^a	–.32**	–.55**	.51**	–				
5. OA intensity ^a	.02	–.10	–.26**	.09	–			
6. Sport intensity ^a	.06	–.01	.15	–.02	.80**	–		
7. Sex ^c	.03	–.11	.19*	.22**	–.02	–.16*	–	
8. Income ^b	–.16	–.15	.10	–.03	.16	.20*	–.08 ⁺	–
Mean	7.21	27.92	16.55	16.91	9.41	5.11	.57	4.44
SD	5.12	7.69	2.55	3.29	6.99	7.35	.50	1.78
Range	23	38	14	13	30	30	1	7

* $p < .05$; ** $p < .01$.^a Intercorrelations for the entire sample ($n = 150$) are presented.^b Intercorrelations for sample with income data ($n = 106$).^c Spearman Rank–Order correlations.

involvement in sports (at least 1 h per week), and among the sport participants, the average intensity of sport involvement was 10.96 h/week.

Correlational analyses indicated several significant relations between study variables (see Table 1). In particular, depressive symptoms and loneliness were positively related, but both were negatively related to the two perceived social competence variables (i.e., close friendship and social acceptance). Further, reported levels of adolescents' perceptions of their ability to make close friendships and be socially accepted were positively related. Sex was also significantly correlated with adolescents' perceptions of their ability to make close friendships and be socially accepted as well as hours per week spent in sports.

T -tests were run to determine if there were sex ($N = 150$) and income ($n = 106$) differences in intensity of OA and sport involvement as well in developmental outcomes (see Table 2). Sex differences detected related only to time spent involved in sports and adolescents' perceptions of their ability to make close friendship; males spent significantly more hours per week ($M = 6.69$, $SD = 8.54$) in sports than females ($M = 3.94$, $SD = 6.11$), $t(109) = 2.19$, $p = .03$, $d = .36$, but reported lower levels of perceived ability to make close friendships ($M = 16.03$, $SD = 3.43$) than females ($M = 17.51$, $SD = 3.06$), $t(148) = -2.67$, $p = .01$, $d = -.33$. Levene's test indicated unequal variances when examining sex differences in sport participation, ($F = 8.80$, $p = .00$), so degrees of freedom were adjusted from 148 to 109. T -tests also demonstrated that high-income adolescents spent significantly more hours per week in sports ($M = 6.56$, $SD = 7.92$) than relatively lower-income adolescents ($M = 3.83$, $SD = 5.57$), $t(80) = -2.00$, $p = .05$, $d = -.39$ and reported marginally significant lower levels of depressive symptoms ($M = 6.13$, $SD = 4.33$) than lower-income adolescents ($M = 7.97$, $SD = 5.60$), $t(104) = 1.91$, $p = .06$, $d = .37$. Again, Levene's test indicated unequal variances when examining income differences in depressive symptoms ($F = 4.37$, $p = .04$) and sport participation, ($F = 7.14$, $p = .01$) so degrees of freedom were adjusted from 104 to 103.92 and 80, respectively.

Organized activity involvement and developmental outcomes

Model statistics reflect those from final step of the stepwise regression model including the interaction between the quadratic term of the independent variable and the moderator (i.e., Intensity² × Sex). Analyses suggest that adolescents demonstrated threshold effects with decreasing benefits in terms of their perceived ability to be socially accepted when the intensity of their involvement increased beyond 10 h/week, $B = -.01$, $\beta = -.18$, $R^2 = .09$, $\Delta R^2 = .03$, $p = .047$, $r = .16$ (see Fig. 1). In addition, adolescent sex moderated the curvilinear association between organized activity intensity and reported levels of depressive symptoms, $B = -.03$, $\beta = -.24$, $R^2 = .06$, $\Delta R^2 = .03$, $p = .04$, $r = .17$, and adolescents' perceptions of their ability to make close friendships, $B = .02$, $\beta = .22$, $R^2 = .10$, $\Delta R^2 = .03$, $p = .05$, $r = .16$. Results indicated that for male adolescents only, levels of depressive symptoms remained the same among participants involved for 10 h/week or less, but were higher among those who participated in 10 or more hours/week (see Fig. 2). Interestingly, although not significant, females demonstrated

Table 2

Means and Standard Deviations for male, female, low, and high income adolescents.

Study variables	Sex M (SD)		Family income M (SD)	
	Males ($n = 64$)	Females ($n = 86$)	Low ($n = 59$)	High ($n = 47$)
Depressive symptoms	7.16 (5.32)	7.24 (5.00)	7.97 (5.60)	6.13 (4.33)
Loneliness	28.80 (7.70)	27.27 (7.65)	28.88 (8.60)	27.38 (7.08)
Social acceptance	16.03 (2.54)	16.93 (2.50)	16.36 (2.51)	16.60 (2.80)
Close friendship	16.09 (3.43)	17.51 (3.06)**	16.88 (3.37)	16.68 (3.51)
OA intensity	9.91 (7.97)	9.05 (6.19)	8.59 (6.03)	10.17 (6.95)
Sport intensity	6.69 (8.54)*	3.94 (6.11)	3.83 (5.57)	6.55 (7.92)*

Low income group representing all youth with family incomes \leq \$60,000 and High income group $>$ \$60,000; * $p < .05$, ** $p < .01$.

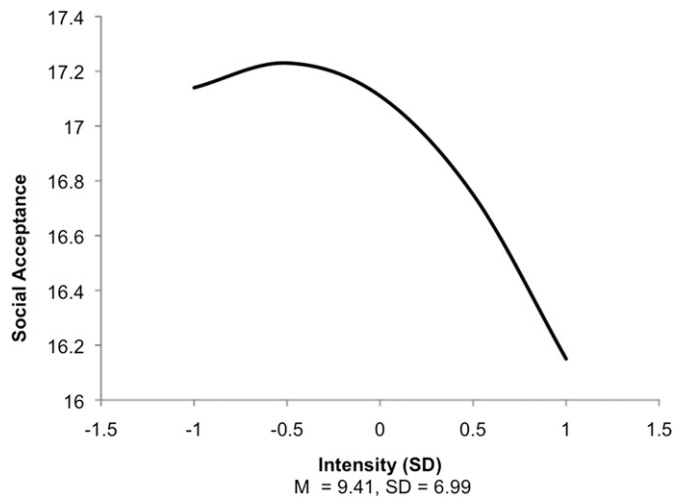


Fig. 1. Curvilinear relation between intensity of organized activity involvement and social acceptance. M = mean; SD = standard deviation.

a different pattern with increases in intensity of involvement consistently linked to decreases in depressive symptoms. Similarly, for males only, perceptions of their ability to make close friendships were highest among those who participated between two to six hours/week, began to decrease among those participating in six or more hours, with levels decreasing more dramatically among those participating exceeding 10 h/week (see Fig. 3). Like with depressive symptoms, although not statistically significant, females demonstrated a pattern of higher levels of perceived competence in making close friendships the more hours per week they spent in OAs.

In addition, income moderated the relation between intensity of organized activity involvement and loneliness, $B = -.02$, $\beta = -.31$, $R^2 = .15$, $\Delta R^2 = .04$, $p = .04$, $r = .20$. More specifically, for lower-income adolescents only, reported levels of loneliness were the same and lowest among those participating for two to 6 h/week, were higher among those reporting approximately 6 h/week of involvement, and then even higher among those participating in 10 or more hours/week thus suggesting evidence of diminishing returns (see Fig. 4). Higher income youth demonstrated a similar pattern, but the difference in reported loneliness levels among adolescents with higher intensity rather than moderate involvement was less notable and insignificant.

Sport involvement and developmental outcomes

Results indicated that sex moderated the curvilinear relation between sport intensity and loneliness, $B = -1.3$, $\beta = -.35$, $R^2 = .08$, $\Delta R^2 = .03$, $p = .03$, $r = .18$. Specifically, it was found that, for males only, levels of loneliness decreased among those

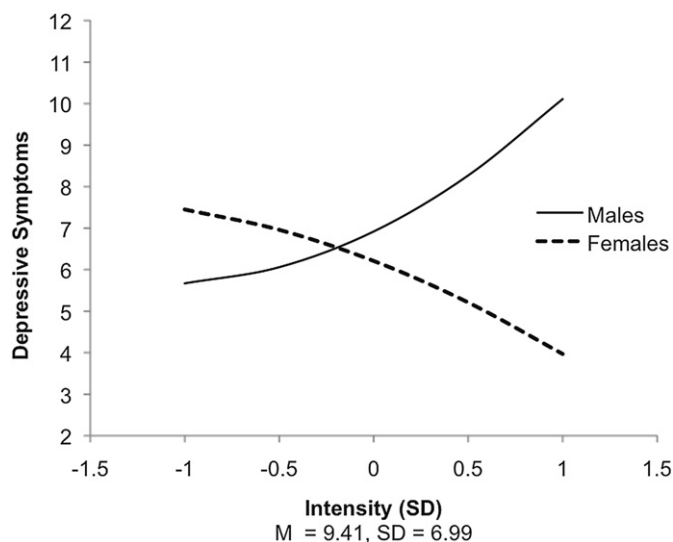


Fig. 2. Curvilinear relation between intensity of organized activity involvement and depressive symptoms, moderation by sex. M = mean; SD = standard deviation.

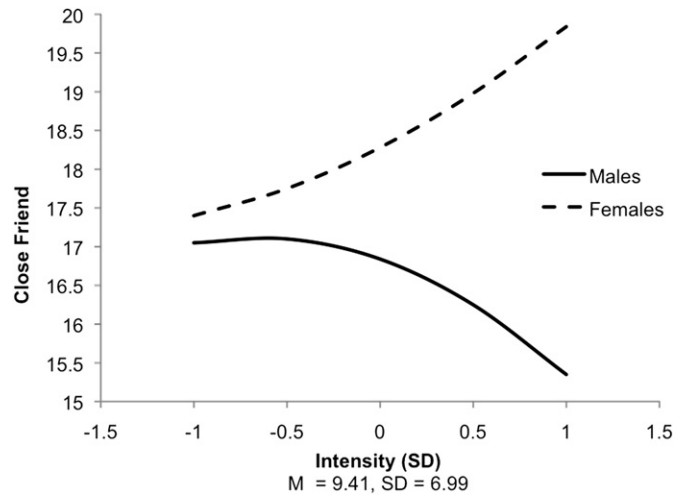


Fig. 3. Curvilinear relation between intensity of organized activity involvement and perceptions of ability to make a close friendship, moderation by sex. *M* = mean; *SD* = standard deviation.

involved in sports up to three hours per week, but then sharply increased for participants participating for more than approximately seven hours per week (see Fig. 5). Although insignificant, the pattern among females participants was opposite, with more hours of sport participation linked to lower levels of loneliness. Of note, although the interaction Sport Intensity² × Sex was significant when considering adolescents’ perceptions of their ability to make close friends, post-hoc analyses were insignificant for both male and female sport participants.

Discussion

Findings from the current cross-sectional study provide some support for the overscheduling hypothesis (see Mahoney et al., 2006) with the benefits of OA decreasing among adolescents who were more highly involved. Past research has not investigated the relation between OA involvement and adolescents’ perceptions of their social competence nor considered that there may be a point when the social benefits of involvement level off and then decrease. Although the difference in levels of depressive symptoms, loneliness, and perceptions of social competence between low, moderate, and highly involved adolescents in the current study is relatively small, a statistically significant pattern of threshold effects and diminishing returns was demonstrated with effect sizes ($r = 0.15$ through 0.20) falling in the range commonly found in social sciences (Durlak, 2009). More specifically, for all adolescents, perceptions of social acceptance and depressive symptoms increased up

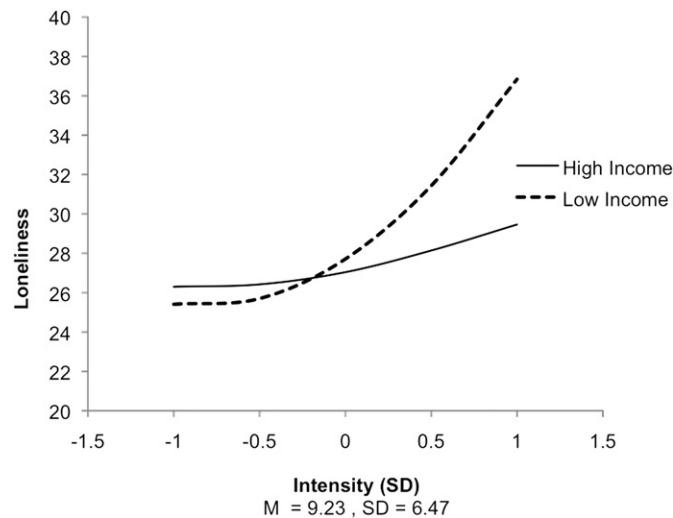


Fig. 4. Curvilinear relation between intensity of organized activity involvement and loneliness, moderation by family income. *M* = mean; *SD* = standard deviation.

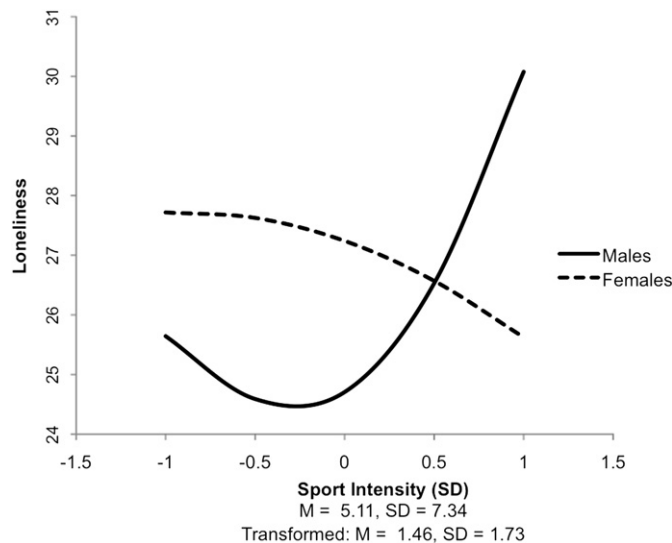


Fig. 5. Curvilinear relation between intensity of sport involvement and loneliness, moderation by sex. *M* = mean; *SD* = standard deviation (untransformed and transformed values provided).

until six hours, but were then lower among adolescents who were more highly involved (approximately 10 h/week). Likewise, although specific to male and lower-income participants, findings indicated a similar relation in terms of perceptions of close friendships and loneliness, respectively, showing diminishing returns among those who were involved for more than 10 h.

The current study also demonstrated that a high level of OA involvement is negatively associated with psychological (i.e., depressive symptoms) and social (i.e., making close friendships) developmental outcomes for males only. Conversely, females showed a nonsignificant trend of increasing benefits. Although prior research has not achieved a consensus regarding the differential impact of OA participation on psychosocial development among males versus females, studies suggest that adolescent sex is important to consider given that boys and girls may develop differently in the interpersonal realm (Maccoby, 1998) and may also respond differently in the dyadic and group relationships in the organized activity context (Denault & Poulin, 2008). Given that males' friendships are often oriented around mutual interests in activities (Maccoby, 1990) paired with the fact that males are also more focused on their status within their peer group (Benenson, 1990), it is possible that males' perceptions of their ability to make close friendships within the OA and sport contexts may be compromised by competitive pressures.

Another sex difference found relates to participation in sports. Although there was question in the current study that sport involvement, especially among males, may drive the results found for intense involvement in OA and outcomes, this was not found. Rather, findings seemed to suggest a unique relation between involvement in sports and loneliness among male participants. Reported loneliness levels were lowest among those moderately involved (i.e., three hours per week) but then higher among males who participated in seven or more hours of sport activities per week. Given that being a good athlete is a predictor for increased social status (Duda & Ntoumanis, 2005), lonely males may get involved in sports in order to increase their popularity (Kinny, 1993). However, related to the findings in the current study, Rees, Howell, and Miracle (1990) demonstrated that males very highly involved in sports also report more irritability. Therefore, although boys may develop relationships with peers on their teams, the relationships may not extend beyond the OA setting and may be competitive in nature. Conversely, female athletes often focus on the socioemotional aspects of participation, placing a great emphasis upon the collateral benefits of such as camaraderie and identification with team members while involved (Weiss & Frazer, 1995).

These findings also support the building body of research suggesting that the negative effects of over-scheduling. In the current study, however, this effect was not seen among the higher-income youth as expected but rather the lower-income adolescents. Although prior research suggests that levels of criticism and expectations are unrelated to low-SES parents' achievement values and that low-income youth benefit from high parental expectations to motivate them to pursue academic success (Luthar & Latendresse, 2005), this may not be true of the current sample. Although causation cannot be confirmed in this cross-sectional study, it is possible that the high-achieving yet lower-income adolescents in the current sample experience internal and external pressures for success but also with additional stress associated with financial strain. For example, as is common with lower-income youth, these adolescents may also be responsible for the care of siblings or holding a job (Halpern, 1999) in addition to intense OA involvement during after school time, thus limiting contact with significant others who do not participate in their activities.

It is important to note, however, that findings support the preponderance of research associating OA participation with beneficial outcomes for adolescents. Adolescents involved in moderate levels of OA reported positive psychological and social outcomes, and female participants consistently indicated benefits across all intensity levels. It is possible in this cross-

sectional investigation that better adjusted youth participated in moderate levels while more poorly adjusted youth compensate by getting more involved. However, it is thought that adolescents in the current study who were moderately involved (approximately three to six hours/week) in OAs may be ideally situated to have positive developmental experiences in their OAs and reap social benefits such as interpersonal competence (Mahoney et al., 2003). Additionally, the sample represents a group of highly motivated and involved adolescents whose average level of participation (10 h per week) was notably higher than the national average (approximately five hours per week). Thus, “moderate involvement” as defined in the current study represents the level of involvement typical for adolescents across the nation (National Center for Education Statistics, 2005).

Importantly, with this high-achieving sample, daily OA and sport participation was likely in addition to several hours of homework and other school-related activities per day. Thus, rather than reaping the social benefits of OA involvement as is seen among youth with moderate levels of involvement, these over-extended adolescents who are intensely involved in OA may begin to miss out on other important developmental contexts and relationship-building experiences. For example, McDonough and Crocker (2005) found that for very highly involved athletes in particular, making friends within and outside their sports team was difficult due to the fact that they spend a large proportion of their discretionary time training. In addition, having to compete against friends can be stressful and have a negative effect on the development and maintenance of close relationships (McDonough & Crocker, 2005). However, given that the direction of causality cannot be determined in the current cross-sectional study, it is also possible that youth who feel less socially competent and more lonely get involved in OAs in an effort to eventually increase their popularity and social status (Kinny, 1993).

Related, it may be that the findings have less to do with involvement in OA per se, but more to do with the micro contexts of organized activity involvement (Guest & McRee, 2009; Luthar et al., 2006). Specifically, it is possible that the unique group of adolescents in this investigation experience internal and external pressures to succeed (Luthar et al., 2006), which then compromises the benefits of OA involvement. For example, adolescents may experience an activity climate oriented towards performance rather than learning and skill-building (Nicholls, 1984; Ames, 1992) and then suffer as a result (Bortoli, Bertollo, & Robazza, 2009; de Bruin, Bakker, & Oudejans, 2009; Reinboth & Duda, 2006).

Limitations and future directions

These results need to be interpreted in light of some methodological limitations. First, the sampling strategy is both a strength and limitation. The adolescents were students at a highly competitive, urban, selective-enrollment magnet high school and were more involved in organized activities than the average American adolescent. One limitation is that these findings may not apply to a normative community sample. It may be that these youth spend significantly more time than the average adolescent on academic-related tasks (i.e., homework, tutoring), which is then added on to the hours per week they spend in organized activities outside of school. Furthermore, these youth are also likely under pressure to maintain the grades and level of OA involvement that helped them gain admission to the school. An advantage, however, is that it allowed for consideration of the effects of higher levels of involvement on developmental outcomes. A second limitation to note is that the OAIF utilized in the current study limited how many activities youth could report (up to four activities), thus imposing a ceiling effect on the OA intensity variable.

The cross-sectional design of the current study is a third limitation, as it does not allow for determination of causality when examining relations between activity involvement and outcomes. Involvement in OAs generally and sports more specifically may lead to better outcomes. Alternatively, it may be that certain males and females who are prone to loneliness and depressive symptoms and lower levels of perceived social competence get more highly involved in activities to counteract pre-existing psychological and social difficulties.

A fourth limitation is that the adolescents in this study were relatively well-adjusted, reporting low levels of depressive symptoms and loneliness and relatively high levels of perceived social competence, which may have limited the degree to which involvement in OAs and sports was associated with developmental outcomes. In addition, differences in levels of the depressive symptoms and perceptions of social competence (but not as much with loneliness) between minimally versus highly involved adolescents were relatively small. Although effect sizes were shown to be within the range commonly seen in social science research, it is important to acknowledge that a statistically significant finding may not translate into differences that are clinically meaningful.

Future research should consider whether certain types of activities, and sports in the case of this study, are characterized by particular features (e.g., competitive atmosphere, supportive relationships with adults) that mediate relations between activities and outcomes. That is, by adopting a person environment fit perspective (Eccles, 2005), certain types of activities may provide experiences that are more conducive to healthy development among males versus females allowing adolescents to be better matched with activities that will be the most beneficial. Likewise, more work needs to be done to examine how varying intensities of OA and sport participation differentially impacts lower versus higher income youth. Future studies should also employ longitudinal designs and investigate whether OA and sport involvement is associated with developmental outcomes controlling for prior levels of involvement among a broader sample of adolescents.

In summary, the current study highlights the import of assuming a more nuanced approach when assessing the influence intensity organized activity involvement and sport participation has on both psychological and social outcomes in adolescents. Unlike most studies to date, the present investigation focused on investigating threshold effects and/or diminishing returns of the benefits of OA and sport involvement. The study also examined sex and family income differences to provide

greater perspective on relations between OA participation and outcomes during adolescence. Findings highlight the benefits of involvement at moderate versus higher intensity levels and underscore the importance of considering perceptions of social competence and loneliness as salient outcomes related to activity participation. Additionally, results suggest that male, female, lower-, and higher-income adolescents differentially benefit from varying levels of OA and sport involvement. In sum, in addition to indicating areas where future research on organized activities can further expand our knowledge base, findings from the current study suggest ways in which parents and legislators may more effectively guide adolescents in shaping their discretionary time.

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