Participation in Organized Activities and Conduct Problems in Elementary School: The Mediating Effect of Social Skills

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Abstract

The goal of this study was to test a mediation model in which social skills mediate the relationship between participation in organized activities and conduct problems among elementary school children. Two moderators of these associations were also examined, namely gender and reception of special education services. A total of 563 children (45% girls; $M_{age} = 8.44$) were surveyed. The findings revealed that, after controlling for important covariates, more frequent activity participation predicted better social skills, which, in turn, predicted fewer subsequent conduct problems among children. These associations were not moderated by gender or reception of special education services. These findings suggest that organized activities may provide a positive developmental context for children with conduct problems.
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Early and persistent conduct problems among children are a significant source of concern in school settings (Bradshaw, Buckley, & Ialongo, 2008). Conduct problems include arguing with parents and teachers and refusing to comply with requests or rules, disrupting class discipline, fighting, destroying property belonging to others, bullying, and lying or cheating. A bulk of research suggests that children who show a constellation of these problems in elementary school are more likely to become involved in serious delinquent acts and health-risking behaviors in adolescence and young adulthood and to drop out of school (Byrd, Loeber, & Pardini, 2012; Dodge, Greenberg, Malone, & Conduct Problem Prevention Research Group [CPPRG], 2008; Hodgins, Larm, Ellenbogen, Vitaro, & Tremblay, 2013; Odgers et al., 2008).

Yet, despite the importance of services that address the needs of children with conduct problems, only a small percentage of children receive such services and most receive them at school (Bradshaw et al., 2008; Rones & Hoagwood, 2000). School-based mental health and special education services are thus critical resources when it comes to addressing these needs (Bradshaw et al., 2008). School-based services usually represent a continuum of services from low to high intensity, depending of the child’s individual needs. Examples include instructional accommodations and modifications, psychological services, intervention programs, parent or teacher counseling, and coaching. Another context that might contribute positively to reducing conduct problems and, this time, that may be available to the vast majority of children, is organized leisure activities. Organized activities are characterized by the presence of an adult leader, a peer group, rule-guided engagement, regular participation schedules, and an emphasis on skill-building (Larson, 2000; Mahoney & Stattin, 2000). They can be school-based
(extracurricular activities) or community-based, although most organized activities available to elementary school-aged children are offered in the community (Fletcher, Nickerson, & Wright, 2003). Most importantly, this context is natural and likely to expose children to prosocial peers (Eccles, Barber, Stone, & Hunt, 2003; Mahoney, Lowe Vandell, Simpkins, & Zarrett, 2009), thus creating opportunities for them to develop social skills while reducing the risk of the social stigma often associated with special education programs or mental health problems (Hinshaw, 2005). For children with conduct problems, interacting with prosocial peers in a structured and supervised context may be especially beneficial.

The goal of this study was to explore the mediating effect of social skills on the association between participation in organized activities and conduct problems among elementary school children. Moreover, in order to better understand these associations, the proposed mediation model was explored among boys and girls, and among children receiving special education services for conduct problems and children not receiving these services. This study adds to previous research in at least three important ways: (a) by examining participation outcomes among elementary school children, (b) by investigating the mechanisms that are likely to explain participation benefits, and (c) by including moderators that take into account heterogeneity in the student population.

**Association between participation in organized activities and conduct problems**

Participation in organized activities has been associated with fewer conduct problems, at least among high school students (Bohnert & Garber, 2007; Busseri, Rose-Krasnor, Willoughby, & Chalmers, 2006; Fredricks & Eccles, 2006; Mahoney, 2000; Mahoney & Stattin, 2000). Less is known about the association between participation in organized activities and conduct problems among elementary school students. To our knowledge, only five studies have examined
the association between organized activities and conduct problems among children and these studies offer different conclusions. On one hand, using a national cross-sectional survey \((N = 25,797)\), Howie, Lukacs, Pastor, Reuben, and Mendola (2010) found no differences in conduct problems between children aged 6 to 11 who participated in out-of-school sports teams/lessons or clubs/organizations, or both, and those who did not participate in such activities. In another cross-sectional study of 147 socioeconomically diverse fourth-grade students, Fletcher et al. (2003) found no association between the number of sports teams, church activities and other types of clubs and externalizing behaviors. Similarly, in a three-year longitudinal study of 194 third-grade students from low-income households, Posner and Lowe Vandell (1999) found no association between time spent in school-based activities and conduct problems. On the other hand, in two different samples of children aged approximately 9 to 12 years old \((N = 393 \text{ and } 277)\), Simpkins, Ripke, Huston, and Eccles (2005) found that high levels of time spent in sports were associated with lower levels of teacher-reported expected delinquent behavior in adolescence among middle-class children and lower levels of teacher-reported externalizing behaviors among children from low-income families. In a longitudinal study of 466 first- to sixth-grade students from predominantly middle-class households, Pettit, Laird, Bates, and Dodge (1997) also found that moderate involvement in “activity-oriented adult-supervised care” (which closely resembles organized activities) in fifth grade was associated with lower levels of teacher-reported externalizing behaviors in sixth grade among low-SES children only.

As suggested by these studies, the link between participation in organized activities and conduct problems among elementary school children remains unclear. Yet, some authors suggest that participating in organized activities could be beneficial for children with conduct problems
given that these activities are thought to increase social skills (Fletcher et al., 2003), which are often deficient in these children (Snyder, Reid, & Patterson, 2003).

**Association between participation in organized activities and social skills among children**

Social skills are part of the broader construct of social competence. More specifically, they represent socially acceptable learned behaviors that enable an individual to interact effectively with others (Gresham & Elliott, 1990). Examples of such skills include showing empathy and compassion, being helpful, cooperating, sharing materials, listening carefully to others, taking turns, and respecting the rules. In other words, social skills are a set of desirable skills that allow children to get along and interact positively with adults and peers.

Mahoney, Cairns, and Farmer (2003) noted that participation in organized activities affords opportunities to build social skills, especially for youths with low interpersonal competence. For instance, during activity sessions, they may be called on to respect activity rules, help others with various tasks, listen to others and cooperate in teamwork, or share materials, all of which would support the development or reinforcement of social skills. Among the few studies that have examined the association between involvement in organized activities and social skills, Fletcher et al. (2003) found that children’s participation in organized sports was associated with teacher-reported social competence. In addition, Howie et al. (2010) found that children’s participation in both sports and clubs was associated with higher social skills index scores, as reported by parents. Pettit et al. (1997) also found that moderate involvement in “activity-oriented adult-supervised care” was associated with teacher-reported social competence among low-SES children. Organized activities thus seem to be associated with higher levels of social skills among children, both concurrently and over time.

**Association between social skills and conduct problems among children**
Most theoretical models on the development and persistence of conduct problems include a lack of social skills or a lack of social-cognitive skills as an important risk factor (Dodge et al., 2008; Lahey, Waldman, & McBurnett, 1999; Moffitt, 1993; Patterson, Reid, & Dishion, 1992). Conversely, improving social skills is recognized as a best practice for decreasing conduct problems among children (Steiner & Remsing, 2007; Eyberg et al., 2008; Wilson & Lipsey, 2007) and is part of many evidence-based programs aimed at reducing conduct problems in childhood (e.g., Second Step – Committee for Children, 1992a, 1992b). Although an improvement in social skills is not supported by intervention strategies per se in organized activities, it is reasonable to believe that the social opportunities provided by this natural context are likely to improve, or at least reinforce, social skills among children.

**The moderating effects of gender and reception of special education services**

The associations between participation in organized activities, social skills, and conduct problems may not be the same for all students. Among multiple variables that could moderate these associations, gender and reception of special education services were examined in this study. With respect to gender, to our knowledge, no studies have examined whether boys or girls show greater improvement in social skills as a result of activity participation. As for the link between social skills and conduct problems, prior research has shown that girls are usually rated as having better social skills than boys (Bennett, Farrington, & Huesmann, 2005) and boys are usually rated as showing more conduct problems than girls (Breton et al., 1999; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003; Maughan, Rowe, Messer, Goodman, & Melzer, 2004). However, concerning the specific association between social skills and conduct problems, one study suggests that there may be few gender differences (Burt, Obradovic, Long, & Masten,
2008). Consequently, our investigation of the moderating effect of gender on the proposed mediation model was rather exploratory.

Concerning the reception of special education services, as noted by Cook, Gresham, Kern, Barrera, Thorton, and Crews (2008), a large number of students receiving these services can be characterized as having substantial deficits in social competence. As a result, the link between activity participation and social skills might be stronger among children receiving special education services just because their baseline level is lower than children not receiving these services. The link between social skills and conduct problems may also be stronger for children receiving special education services because improving social skills is likely to be part of their individualized educational plan. Combining these interventions with participation in organized activities, another supervised context in which social skills are likely to be practiced or reinforced, might enhance this improvement. The mediation model might therefore be stronger for children receiving special education services.

**Important covariates**

Family income was included as a control variable in the analyses since children from low-income families are less likely to participate in organized activities, particularly those that require substantial time and monetary resources (Dearing et al., 2009; Simpkins et al., 2005). In addition, children from low-income families are more likely to show conduct problems than children from high-income families (Leventhal & Brooks-Gunn, 2011; Martin et al., 2010; McLoyd, 1998). Prior levels of conduct problems were also considered because children who already show conduct problems are less likely to participate in organized activities (Darling, 2005; Eccles & Barber, 1999; Fredricks & Eccles, 2006; McNeal, 1998) and are more likely to lack social skills and present subsequent conduct problems, as mentioned earlier. Furthermore,
children receiving special education services are more likely to present a higher level of conduct problems than children who are not referred to these services (Goodman, Lahey, Fielding, Dulcan, Narrow, & Regier, 1997; Wu et al., 1999).

**Study goals**

This study aimed to test a mediation model in which more frequent participation in organized activities was expected to predict better social skills, which, in turn, were expected to predict fewer subsequent conduct problems among elementary school children. Two moderators of these associations were examined, namely the students’ gender and the reception of special education services for conduct problems. With respect to gender, based on the current state of the literature, no hypotheses could be formulated. Consequently, the examination of this moderated mediation model was exploratory. With respect to the reception of special education services, we expected the model to be stronger among children receiving special education services. Finally, family income and prior conduct problems were included as covariates.

It should be noted that frequency of participation was used in this study as the indicator of children’s participation in school-based and community-based activities over other indicators such as the number of activities or breadth of participation (number of different types of activities, i.e., sports, performing arts, clubs, etc.). Although these different indicators are likely to capture unique features of children’s participation experiences (e.g., frequency of participation is likely to capture the intensity of children’s participation whereas breadth of participation is likely to capture the diversity of contexts in which children are involved; Denault & Poulin, 2009), frequency of participation was chosen because of the measure available in the larger longitudinal project of which this study is part (only three activities could be listed; see the Measures section for more details).
Method

Study design

This study used data collected as part of a larger longitudinal research project on conduct problems among elementary school children. The first data collection took place among students under the age of ten, recruited between 2008 and 2010 (T1). These students were then surveyed again the next year, from 2009 to 2011 (T2).

Participants

A total of 601 children ($M_{age} = 8.45$, SD = .93; 46% girls) participated in the longitudinal study. They were recruited from different school boards in the province of Quebec, Canada. Most children were born in Canada (93.5%). With respect to family structure, 48% lived in intact families, 22% lived in stepfamilies, and 30% lived in single-parent families. Mean family income was between $30,000 and $50,000 (CAN). Socio-demographic information was also available for the main respondent (86% mothers, 13% fathers, 1% other). Among the main respondents, 90% were born in Canada, 63% had a secondary school diploma (or equivalent) as their highest level of education, and 64% were currently working.

Among the sample of children, 57% were receiving special education services for conduct problems ($n = 343$, 41% girls). Since different recruitment methods were used for children receiving these services and for children not receiving these services, these methods are described separately. Students receiving special education services specifically for conduct problems were recruited from lists provided by the school boards. Participants were selected from eight school boards in four regions of Quebec. In order to attain an equal number of boys and girls despite the small number of girls in elementary school receiving special education services for conduct problems, all girls under the age of ten on the lists provided by the school
boards, and approximately one out of four boys, randomly selected, were targeted. Students with 
an intellectual or sensory disability or a pervasive developmental disorder or living with a host 
family or in a rehabilitation center (at least one parent had to participate in the study) were 
excluded. The participation rate was 75.1 %. There were no differences between participants and 
non-participants with respect to gender, grade level or school board.

Students in the control group (not receiving special education services; \( n = 258 \), 53% 
girls) were recruited in regular classes, mainly from elementary schools with a high index of 
deprivation to match the educational and geographical contexts of children with conduct 
problems. These children were recruited from four school boards. First, children under the age of 
ten were targeted based on a list of students provided by the schools. These children were then 
matched to the children in the experimental group by gender and grade level and then selected 
randomly among the different classes. In order to be included in the control group, students 
could not have received special education services for conduct problems during the selection 
year or the previous year.

Only students with complete data for all the variables in the mediation model were 
included in the analyses since the SPSS macro used to perform the analyses deletes cases listwise 
by default (Preacher & Hayes, 2008). As a result, 563 children (93.7 %) were included in the 
analyses. These children were compared to the remaining sample (\( n = 38 \)) with respect to all 
variables included in the mediation model. Results revealed that non-retained children had higher 
scores for conduct problems at T1, lower frequency of participation at T1, and lower scores for 
social skills at T1 than retained children, \( t(599) = 2.73, p < .01 \), \( t(599) = -2.17, p < .05 \), and \( t(599) 
= -2.56, p < .05 \), respectively.

**Procedure**
Different methods were used to contact parents and obtain their consent to participate in the study for students receiving special education services for conduct problems and for students not receiving these services. For students receiving special education services, in a first step, staff from the school boards contacted the primary caregiver. The staff informed the latter of the objectives, risks and possible benefits of the study and asked for their consent to participate in the research. In a second step, trained research assistants went to the students’ homes, where the parents completed paper-and-pencil questionnaires. The parent also signed a consent form to participate in the study and gave the researchers written permission to contact the child’s teacher. In a third step, the research assistants contacted the child’s teacher, with whom questionnaires were completed by phone. For students not receiving special education services, a letter explaining the research was sent to the parents, who were then asked to return the enclosed consent forms to the school. The same data collection procedure (in-home questionnaires with parents and phone interviews with teachers) was used at both measurement times (T1 and T2) and for both groups. Both parents and teachers received monetary compensation for their participation in the study. The Internal Review Board for Ethics in Research with Humans, at the second author’s University, approved this study.

Measures

**Frequency of participation in organized activities (T1).** Frequency of participation in organized activities was measured using a questionnaire included in the Quebec Child Mental Health Survey (Valla et al., 1994). Parents first listed three school-based or community-based activities that their child was involved in *during the last six months* and indicated, for each activity, how frequently their child had participated (1 = once a month, 2 = 2 or 3 times a month, 3 = once a week, 4 = twice a week). The value “0” was attributed to non-participating children.
Mean scores for this item were used in the analyses. Overall, 261 (46.4%) children participated in at least one organized activity (44.8% girls, 46.7% receiving special education services for conduct problems). As expected for a sample of primary school children, the majority of organized activities were based in the community (Fletcher et al., 2003); only 15% were school-based.

For the measure of social skills and conduct problems, both parents and teachers completed the questionnaires. To take advantage of the multi-respondents, we combined parents’ and teachers’ scores for these two measures. The strategies chosen to combine the scores were based on correlations and mean differences between the parent and teacher scales. As for the children’s social skills, the correlation between the two informants was high ($r = .77$), suggesting that the parents and teachers consistently assigned high scores on this scale to the same children, even though the parents scored the skills slightly higher than did the teachers, $t(553) = 7.46$, $p < .001$ ($M = 3.10$ vs. $M = 2.78$). As a result, we chose to use the mean of the two scores. As for conduct problems, the correlations calculated at T1 and at T2 were lower than for social skills ($r = .63$ and $r = .59$, respectively) and there were no significant differences between parent and teacher reports at either measurement time. Since the results suggested that parents and teachers did not always assign high scores on the scales to the same children, the highest score between that given by the parent and that given by the teacher was chosen to report conduct problems in children at T1 and T2. Moreover, some conduct problems might be context-specific. As a result, these lower correlations might reflect the fact that parents and teachers do not witness the same conduct problems, which underlines the importance of considering the highest score in order to fully capture the severity of the children’s problems.
Social skills (T1). The prosocial/communication skills subscale of the Teacher Social Competence–Revised scale (2004; CPPRG - Fast Track Project, 1999–2006) was used to measure social skills based on parent and teacher reports. The seven items in this subscale are rated on a six-point Likert-type scale, ranging from 0 (almost never) to 5 (almost always). Examples include “Provides help, shares materials, and acts cooperatively with others,” “Takes turns, plays fair, and follows the rules of the game,” “Listens carefully to others,” and “Recognizes and names his/her feelings and those of others appropriately.” No time frame is specified for this measure. The original version was shown to possess excellent internal consistency (Cronbach’s alpha $[\alpha] = .97$). In our study, the instrument’s internal consistency was found to be $\alpha = .88$ for the parent version and $\alpha = .94$ for the teacher version. As mentioned above, the mean scores for the parent and teacher scales were used in the analyses.

Conduct problems (T1, T2). The Child’s Behavior Check List (CBCL, Achenbach & Rescorla, 2001) and the Teacher’s Report Form (TRF, Achenbach & Rescorla, 2001) were used to measure conduct problems at T1 (control variable) and T2 (outcome). For the purposes of this study, the externalizing behavior scale was used. This scale includes items measuring rule-breaking behavior (e.g., doesn’t seem to feel guilty after misbehaving, breaks school rules, hangs out with others who get in trouble, lies or cheats, steals, truancy or unexplained absence) and aggressive behavior (e.g., argues a lot; defiant, talks back; cruelty, bullying, meanness to others; destroys property belonging to others; disobedient at school; teases a lot). For the parent version, the time frame is now or within the last six months whereas for the teacher version, the time frame is now or within the last two months. Items are rated on a 3-point Likert scale (0 = “not true”; 1 = “somewhat or sometimes true”; 2 = “very true or often true”). Given that the items differ slightly between the parent and the teacher reports, T-scores were used in the analyses.
This questionnaire has been validated and demonstrates good psychometric properties (Lowe, 1998). In our study, the instrument’s internal consistency was found to be \( \alpha = .93 \) for the parent version and \( \alpha = .96 \) for the teacher version at T1, and \( \alpha = .93 \) for both versions at T2. As mentioned above, the highest score between that given by the parent and that given by the teacher was used in the analyses.

**Moderators.** Gender was coded “0” for boys \((n = 309)\) and “1” for girls \((n = 254)\). Children not receiving special education services were coded “0” \((n = 252)\) and children receiving special education services were coded “1” \((n = 311)\).

**Other control variables (T1).** Information on the family’s annual income was obtained using questions from the Quebec Child Mental Health Survey (Valla et al., 1994). In addition, given the specificity of the study design (three cohorts at each measurement time), the students’ age was considered as a control variable in the analyses.

**Analytical Strategy**

Preacher and Hayes’ (2008) mediator model was used to examine the mediating effect of social skills on the relationship between frequency of participation in organized activities and subsequent conduct problems (see Figure 1). This model made it possible to test for the total effect \((c)\) and direct effect \((c')\), as well as the indirect effect of the mediator \((a_ib_i, i = 1 \text{ to } j\) mediators). The indirect effect of the mediator (i.e., \(a_1b_1\)) was calculated as the product of the two regression coefficients between frequency of participation and conduct problems through social skills. This procedure also made it possible to control for covariates (i.e., family income, age, prior conduct problems), which were partialed out of the dependent variable and the mediator by default. To test for mediation, the bootstrapping procedure \((n = 5000)\) was used to generate a parameter estimate and a percentile bootstrap confidence interval (CI) for the indirect
effect. If the 95% bias-corrected CI did not contain zero, then the indirect effect was statistically significant and mediation was demonstrated (Preacher & Hayes, 2007). Moreover, if the direct effect \( c' \) was not statistically significant in the presence of a statistically significant indirect effect (i.e., \( a_1b_1 \)), complete mediation was demonstrated.

To test for the moderating effects of the child’s gender and special education status on the mediation model proposed in Figure 1, Preacher, Rucker, and Hayes’ (2008) moderated mediation model was used. This analysis made it possible to examine whether or not the effect of the mediator remained constant across both genders or across both special education statuses (i.e. receiving or not receiving special education services). The two moderators were tested separately. More specifically, we simultaneously tested the moderator effect on the link between frequency of participation and social skills \( (a) \) and on the link between social skills and subsequent conduct problems \( (b) \). Moderated mediation was demonstrated when one of these relationships (i.e., \( a \) or \( b \)) varied systematically as a function of the moderating variable. Using this procedure, we calculated the Sobel test and bootstrap \( (n = 5000) \) CIs for the moderated mediation effect. We also used the Johnson-Neyman technique to verify whether the indirect effect \( (ab) \) was significant or non-significant at each level of the moderator. The control variables were also included in these analyses.

**Results**

**Descriptive analyses**

Means, standard deviations, and correlations among the main study variables are presented in Table 1. All variables were normally distributed. The links between the variables in the model were in the expected direction: frequency of participation was negatively associated with conduct problems at T2 \( (c) \), whereas frequency of participation was positively linked to
social skills \((a)\), which, in turn, were negatively associated with conduct problems at T2 \((b)\).

With respect to the control variables, age was only marginally and positively associated with frequency of participation, whereas family income and conduct problems at T1 were significantly associated with the three variables of the proposed model, in the expected direction.

Mean differences in the three variables of interest were also examined with respect to the two moderating variables (see Table 2 for descriptive information). Concerning gender, the results revealed that girls were rated as having better social skills than boys, \(t(561) = -4.98, p < .001\). As for special education services, children receiving these services participated less frequently in organized activities, and were rated as having fewer social skills and more conduct problems than children not receiving these services, \(t(561) = -4.19, p < .001\), \(t(561) = -24.51, p < .001\), and \(t(531) = 22.26, p < .001\), respectively.

Finally, correlations were examined at both levels of the moderator variables (boys vs. girls; children receiving special education services vs. children not receiving these services).

Concerning the main links in the mediation model \((c, a, and b; see Figure 1)\), correlations were similar among boys and girls \((c: r = -.22, p < .001\) among boys, \(r = -.19, p < .01\) among girls; \(a: r = .21, p < .001\) among boys, \(r = .24, p < .001\) among girls; \(b: r = -.62, p < .001\) among boys, \(r = -.69, p < .001\) among girls). As for special education services, links \(c\) and \(b\) were significant both for children receiving and children not receiving special education services \((c: r = -.12, p < .05\) among children receiving services, \(r = -.13, p < .05\) among children not receiving services; \(b: r = -.25, p < .001\) among children receiving services, \(r = -.38, p < .001\) among children not receiving services). However, the association between frequency of participation and social skills \((a)\) was significant only among children receiving special education services for conduct problems, \(r = .23, p < .001\) vs. \(r = .11, ns\).
Mediation model

Results for the tested mediation model appear in Table 3. As can be seen in this table, the mediation model was supported by the analyses. After controlling for the effects of important covariates on both the mediator and the dependent variables, the indirect effect of social skills significantly mediated the relationship between frequency of participation in organized activities and conduct problems at T2, as demonstrated by the absence of zero in the confidence intervals. In other words, more frequent activity participation predicted better social skills, which, in turn, predicted fewer subsequent conduct problems among children. The model accounted for 61% of the variance in conduct problems at T2.1

Moderated mediation or conditional indirect effects

Concerning the moderating effect of gender, the results revealed that the predictive link between frequency of activity participation and social skills\(^a\) did not vary systematically as a function of gender, after controlling for the covariates\( (b = .02, SE = .10, t = 0.22, p = .82)\). Results were the same for the predictive link between social skills and conduct problems\( b\), after controlling for the covariates\( (b = -.48, SE = .60, t = -.81, p = .42)\). Results from the Johnson-Neyman technique also revealed that the indirect effect was not significant at either level of the moderator.

As regards the moderating effect of reception of special education services, the results revealed that the predictive link between frequency of activity participation and social skills\( a\) did not vary systematically as a function of reception of special education services, after controlling for the covariates. However, it should be noted that the results were marginally significant\( (b = -.19, SE = .10, t = -1.86, p = .06)\). Results were the same for the predictive link between social skills and conduct problems\( b\), after controlling for the covariates\( (b = -1.18, SE \)
Results from the Johnson-Neyman technique also revealed that the indirect effect was not significant at either level of the moderator.

**Discussion**

Fletcher and colleagues pointed out in 2003 that the study of children’s activity participation had not received sufficient attention among researchers. More than ten years later, not much has changed. The goal of this study was to test a mediation model in which more frequent participation in organized activities was expected to predict fewer subsequent conduct problems through improvements in social skills among elementary school children. This study thus contributes to the current state of research by examining the potential benefits and mechanisms associated with activity participation among children. Moreover, gender and reception of special education services were examined as relevant moderators of the associations between frequency of participation, social skills, and conduct problems in an effort to consider individual differences in the student population. Results will be discussed separately for the main mediation model and the moderated mediation models.

**The mediation model of the association between activity participation and conduct problems through social skills**

Results for the main mediation model revealed that more frequent participation was associated with better social skills, which, in turn, predicted fewer conduct problems, after controlling for the effect of the children’s age, family income, and prior conduct problems on both the mediator and the dependent variables. Our results are consistent with prior studies. On the one hand, the few studies that have examined the associations between activity participation and social skills have demonstrated that participation in organized activities is associated with better social skills (Fletcher et al., 2003, Howie et al., 2010; Mahoney et al., 2003; Pettit et al.,
1997). On the other hand, prior studies have shown that an improvement in social skills is likely to reduce conduct problems among children and adolescents (Cook et al., 2008; Eyberg et al., 2008; Wilson & Lipsey, 2007). We also found a negative correlation between frequency of activity participation and conduct problems in the univariate analyses. However, after taking into account all the other variables in the equation, this association was no longer significant. These results are also in line with prior studies revealing no significant predictive association between activity participation and conduct problems among children (Fletcher et al., 2003; Howie et al., 2010; Posner & Lowe Vandell, 1999). Yet, Simpkins et al. (2005) found that high levels of time spent in sports were associated with lower levels of teacher-reported externalizing behaviors among children from low-income families. However, this study did not control for previous externalizing behaviors and externalizing behaviors were only assessed using one item on a five-point Likert scale. In addition, the children in their study were older than our participants (9 to 12 years old vs. 6 to 10 years old) and only participation in sports, compared to other types of activities, was significantly linked to conduct problems, a dimension that was not explored in the present study. Pettit et al. (1997) also found that what they labeled “activity-oriented adult-supervised care” was associated with lower levels of teacher-reported externalizing behaviors among low-SES children. Although they controlled for prior levels of externalizing behaviors (kindergarten) and used the same measure to assess externalizing behaviors as used in the present study, children with conduct problems were not specifically sampled in their study, as was the case here, which may explain this discrepancy (i.e., children in their sample probably showed lower levels of conduct problems that children in this sample).

Concerning the mediating effect of social skills, to our knowledge, no study has tested such a model among children, which precludes comparisons with prior studies. However, studies
in adolescence suggest that friends’ characteristics, such as their level of prosociality or deviancy, are likely to mediate the association between activity participation and adolescent adjustment (Fredricks & Eccles, 2005; Gardner, Roth, & Brooks-Gunn, 2009; Simpkins, Eccles, & Becnel, 2008). At a more micro-level, one of the underlying processes might involve the quality of friends’ social skills. Being exposed to prosocial peers, for instance, might give children with conduct problems a chance to learn how to interact effectively with peers and learn or practice skills such as providing help, sharing materials, acting cooperatively with others, or following rules.

**Examination of potential moderators**

Gender and reception of special education services were examined as potential moderators of the links between activity participation and social skills ($a$) and social skills and conduct problems ($b$), and of the indirect effect of activity participation on conduct problems through social skills ($ab$). Correlation analyses first revealed few differences in the main links of the mediation model among boys and girls. This was confirmed in the tested moderated mediation model. The examination of gender was rather exploratory, and, as a result, no hypothesis was formulated. These results thus need to be replicated in future studies.

Concerning the reception of special education services, we expected the mediation model to be stronger among children receiving these services. On one hand, students receiving these services can be characterized as having substantial deficits in social competence (Cook et al., 2008). On the other hand, improvement in social skills is likely to be part of these students’ individualized educational plan. Correlation analyses first revealed that the association between frequency of participation in organized activities and social skills was significant only among children receiving special education services for conduct problems. In multivariate analyses,
however, after controlling for important covariates, reception of special education services only acted as a moderator in the proposed mediation model in a marginal way. One explanation may lie in the fact that children receiving special education services had lower rates of participation and participated less frequently than children not receiving these services. Perhaps the model was not confirmed in this group as expected because of their lower rates of participation. For instance, if organized activities have a positive effect on children’s conduct problems and social skills, children receiving special education services may benefit less because of their lower rates of participation. For children not receiving special education services, perhaps the extra opportunities provided by organized activities are redundant to experiences and interactions already available at school or in their home environment. Organized activities may just be an additional context rather than a compensatory context in which to practice social skills (Covay & Carbonaro, 2010). Here again, given the embryonic state of the literature on activity participation among elementary school students, further research is needed to clarify the association between frequency of participation, social skills, and conduct problems among subgroups of children.

**Study Limitations**

This study is not without limitations. First, parents were restricted to listing only three activities. This restrained the options of looking at different indicators of activity participation, such as breadth. However, only a small percentage of parents indicated that their children participated in three activities (5% of participating children). Similarly, the type of activity, such as sports, performing arts, or clubs, was not considered in this study. Yet, prior studies on the associations between (a) activity participation and social skills and (b) activity participation and conduct problems found that it was mainly sports that were linked to better social skills (Fletcher et al., 2005; Howie et al., 2010) and fewer conduct problems (Simpkins et al., 2005).
Consequently, it would be important in future research to devote more attention to the type of activity. The quality of the activity, in terms of climate, structure, leaders’ practices, and peer group dynamics, should also be considered in future studies in order to better understand the relationships between participation, social skills, and conduct problems. Participation does not mean equal benefits or equal quality across all activities. It should also be noted that the organized activities in question were mainly community-based. Yet, given that this study focused on elementary school children, these results are likely to have good ecological validity.

Second, even though the study design was longitudinal, both frequency of participation and social skills were measured at T1. As a result, the direction of the effect between activity participation and social skills cannot be disentangled (e.g., children with better social skills may be more likely to get involved in organized activities). However, regarding the specific time frames of the questionnaires, frequency of participation referred to the previous six months, whereas no time frame was specified for social skills, which opens a possible window of six months between the two measures. Ideally, three measurement points should be used when testing a mediation model (i.e., T1 for the independent variable, T2 for the mediator, and T3 for the dependent variable; Mackinnon, 2007; Preacher & Hayes, 2008).

Third, the population of children with conduct problems is likely to be heterogeneous. For instance, it is possible that a small group of these children are socially competent, as proposed by Hawley (2003; bi-strategic controllers) and Rodkin, Farmer, Pearl, and Van Acker (2000; tough boys). This possibility was not taken into account in the conceptual framework or research design of our study. As a result, future studies should investigate whether the associations between participation in organized activities, social skills and conduct problems apply to different subgroups of disruptive children.
Fourth, this study was conducted among an at-risk sample, which may limit the generalizability of the findings. Participants mainly came from disadvantaged neighborhoods and half of them were receiving special education services for conduct problems. Yet, very few studies on organized activities have considered the severity of the problems presented by the adolescents or children studied. In other words, few researchers have investigated whether, in their sample, some students had significant conduct problems, i.e., beyond the clinical threshold or severe enough to receive special education services at school. From a clinical perspective, these are the students who require special attention and are targeted in intervention programs. It might thus be important to consider at-risk students when looking at the potential benefits and mechanisms associated with participation in school-based and community-based activities.

Lastly, only social skills were examined as a potential mediator of the association between participation in organized activities and conduct problems among children. Given the current state of the literature on organized activities among elementary school children, further research is needed to better document the potential mechanisms associated with this context. For instance, other peer-related influences might be at play in the association between activity participation and conduct problems, such as the reputational bias against students with conduct disorders. Mere exposure to peers in organized activities may reduce this bias, which in turn may lead to less conflict and fewer conduct problems in the future. Another interesting avenue would be to examine family influences. Aspects of parents’ child-rearing and disciplinary styles, such as warmth, agreeableness, and support, are likely to be linked to children’s social competence (Ladd, 1999), and participation in organized activities (Anderson, Funk, Elliott, & Smith, 2003; Fletcher, Elder, & Mekos, 2000; Huebner & Mancini, 2003), whereas the opposite (e.g., coercive parenting) is likely to be associated with conduct problems (Dodge et al., 2008; Lahey et al.,...
1999; Moffitt, 1993; Patterson et al., 1992). Moreover, students’ home environments are likely to have a greater impact on children than on adolescents because young children spend more time at home. As a result, future research on activity participation in childhood should include indicators of family influences as potential mechanisms explaining the benefits of activity participation.

Among the strengths of this study, the design was longitudinal and adequate control variables were included in the analyses to address potential confounding effects. Conduct problems were also assessed using a well-known questionnaire with excellent psychometric properties. In addition, both parents and teachers completed the measures to limit the potential bias associated with shared variance. Finally, the use of bootstrapping increased the robustness of the estimated indirect effect.

**Conclusion and implications for practice**

This study suggests that participation in organized activities may potentially decrease conduct problems among children by increasing their social skills. Prior studies have also demonstrated that participating in this positive context of development is associated with other indicators of adjustment among children, such as enhanced school performance (Covay & Carbonaro, 2010; Dumais, 2006; Fletcher et al., 2003; Howie et al., 2010). Organized activities are likely to provide learning opportunities outside both the conventional school curriculum and the immediate home environment (Covay & Carbonaro, 2010). However, organized activities are less accessible in childhood than in adolescence: fewer organized activities take place at school and children still have to rely on their parents to participate (e.g., for transportation). We believe that elementary school administrators should be made aware of this discrepancy and consider offering more affordable and high-quality opportunities for activity participation outside of
school hours. As mentioned by Wilson and Lipsey (2007), schools are an important player when it comes to interventions to prevent or reduce conduct problems and are the only setting to which children have almost universal access. With respect to organized activities, this could be mean identifying which organized activities have the most potential to increase social skills and offering activities with a focus on skill building to children with conduct problems. Of course, organized activities are not a panacea for disruptive children. However, coupled with other types of interventions, organized activities are promising. As part of the daily lives of children, they can provide the opportunity to learn new skills and experience social interactions with significant peers and adults, which is likely to make a positive difference in their lives.
References


Footnotes

1It should be noted that the mediation model was also tested using the highest scores for both social skills at T1 and conduct problems at T1 and T2. The mediation model was supported by these analyses. The only difference when using the highest scores for all variables was that link $a$ was significant at $p = .05$ instead of at $p = .003$. 
Table 1

*Means, Standard Deviations, and Correlations among the Main Study Variables (N = 563)*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age at T1</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Family income at T1</td>
<td>.06</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Conduct problems at T1</td>
<td>-.05</td>
<td>-.29***</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Frequency of participation at T1</td>
<td>.08†</td>
<td>.32***</td>
<td>-.21***</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Social skills at T1</td>
<td>-.01</td>
<td>.25***</td>
<td>-.78***</td>
<td>.24***</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>6. Conduct problems at T2</td>
<td>-.06</td>
<td>-.32***</td>
<td>.77***</td>
<td>-.21***</td>
<td>-.65***</td>
<td>-</td>
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<tr>
<td>Mean</td>
<td>8.45</td>
<td>5.34</td>
<td>66.71</td>
<td>.36</td>
<td>2.03</td>
<td>65.19</td>
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<tr>
<td>Standard deviation</td>
<td>.94</td>
<td>3.45</td>
<td>10.62</td>
<td>.48</td>
<td>.97</td>
<td>10.42</td>
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</tbody>
</table>

*Note.* †p < .10, ***p < .001.
Table 2

*Descriptive Statistics for the Main Study Variables by Gender and Reception of Special Education Services*

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Special education services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td>1. Age at T1</td>
<td>8.42</td>
<td>8.44</td>
</tr>
<tr>
<td>2. Family income at T1</td>
<td>5.06</td>
<td>5.57</td>
</tr>
<tr>
<td>3. Conduct problems at T1</td>
<td>65.98</td>
<td>67.30</td>
</tr>
<tr>
<td>4. Frequency of participation at T1</td>
<td>.40</td>
<td>.32</td>
</tr>
<tr>
<td>5. Social skills at T1</td>
<td>3.16</td>
<td>2.75</td>
</tr>
<tr>
<td>6. Conduct problems at T2</td>
<td>64.55</td>
<td>65.72</td>
</tr>
<tr>
<td>Total</td>
<td>254</td>
<td>309</td>
</tr>
</tbody>
</table>
Table 3

Results for the Mediation Model Involving Participation in Organized Activities, Social Skills, and Subsequent Conduct Problems (n = 563)

<table>
<thead>
<tr>
<th>Control variables on the dependent variable</th>
<th>b</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age → Conduct problems at T2</td>
<td>-.221</td>
<td>.296</td>
<td>-.748</td>
<td>.454</td>
</tr>
<tr>
<td>Family income → Conduct problems at T2</td>
<td>-.268</td>
<td>.087</td>
<td>-3.08</td>
<td>.002</td>
</tr>
<tr>
<td>Conduct problems at T1 → Conduct problems at T2</td>
<td>.636</td>
<td>.042</td>
<td>15.01</td>
<td>.000</td>
</tr>
</tbody>
</table>

Model paths

| Frequency of participation → Conduct problems at T2 (c) | -.551 | .610 |-.903 | .367 |
| Frequency of participation → Social skills (a) | .166 | .056 | 2.98 | .003 |
| Social skills → Conduct problems at T2 (b) | -1.27 | .460 | -2.77 | .006 |
| Frequency of participation → Conduct problems at T2 (c’) | -.339 | .611 | -5.55 | .579 |

Test of mediation

<table>
<thead>
<tr>
<th>Indirect effect (ab)</th>
<th>b</th>
<th>SE</th>
<th>Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-.212</td>
<td>.101</td>
<td>-.468</td>
<td>-.064</td>
</tr>
</tbody>
</table>