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Pathways Linking Perceived Athletic Competence and Parental Support at Age 9 Years to Girls' Physical Activity at Age 11 Years

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Abstract

Girls' perceived athletic competence and parental support of physical activity across the ages of 9 to 11 years were examined as predictors of girls' physical activity at age 11 years. Participants were 174 girls and their mothers and fathers who completed questionnaires when the girls were ages 9 and 11 years. Two alternative temporal pathways linking perceived competence, parental support, and physical activity were assessed using path analysis. Results provided evidence for the child elicitation pathway; higher perceived competence at the age of 9 years predicted higher parental support at age 11 years, which, in turn, predicted higher physical activity among girls. Findings highlight the importance of encouraging parents to make a special effort to support physical activity among girls who do not perceive themselves as being athletically competent.

Keywords

children; exercise; family; social support

Physical activity levels decline during adolescence, particularly among girls (Kimm et al., 2002). According to the 2003 Youth Risk Behavior Survey, the percentage of girls meeting recommendations for vigorous physical activity declined from 64% for girls in grade 9 to 46% for girls in grade 12 (Grunbaum et al., 2004). In addition, the percentage of girls who did not engage in any vigorous or moderate physical activity increased from 10 to 17% across the same time period. Among adults, low levels of physical activity (i.e., physical inactivity) are associated with an increased risk of obesity, type II diabetes, cardiovascular disease, and premature mortality (U.S. Department of Health and Human Services, 1996). Among children and adolescents, low levels of physical activity have been linked with an increased risk of obesity (Trost, Kerr, Ward, & Pate, 2001), low bone density (Bailey & Martin, 1994), and poor physical fitness (Morrow & Freedson, 1994). Furthermore, children who are not physically active are denied the positive social and emotional benefits of physical activity, including higher self-esteem, lower anxiety, and lower stress (Calfras & Taylor, 1994). To prevent declines in physical activity among girls during adolescence, it is important to identify strategies for encouraging and promoting physical activity prior to this risk period. Parental support of children's physical activity and children's perceived athletic competence are two key determinants of physical activity among youth that may serve as mechanisms to promote the adoption and maintenance of recommended physical activity levels (Davison, 2004; Marsh, 1996; McGuire, Hannan, Neumark-Sztainer, Falkner, & Story, 2002; Moore et al., 1991; Wang,

Chatzisarantis, Spray, & Biddle, 2002). Using a longitudinal sample of girls and their parents, this study examined processes by which parental support of girls' physical activity and girls' perceived athletic competence across the ages 9 to 11 years predict their physical activity at age 11 years.

Parental Support and Children's Physical Activity

Parental support of children's physical activity can take a variety of forms, including encouraging children to be active, being active themselves, and facilitating their children's physical activity at home and in the community. Each factor has been linked with higher physical activity levels among children. Specifically, research shows that children are more likely to be active when their parents encourage them to be active (McGuire et al., 2002), are active themselves (Epstein, Paluch, Coleman, Vito, & Anderson, 1996; Moore et al., 1991; Wold & Anderssen, 1992), and include their children in their physical activities (Davison, 2004; Davison, Cutting, & Birch, 2003). In terms of facilitating children's physical activity, children are more active when their parents make physical activity-related equipment (e.g., balls and bicycles) available in the home (Dunton, Jamner, & Cooper, 2003), arrange family outings that include physical activity (e.g., hiking; Davison, 2004; Davison et al., 2003), enroll them in sports and activities (Davison et al., 2003), and provide transportation to and from places to be active (Hoefler, McKenzie, Sallis, Marshall, & Conway, 2001; Sallis et al., 1992).

Perceived Athletic Competence and Children's Physical Activity

In addition to parental socialization, child intrapersonal characteristics, such as the extent to which they perceive they are physically or athletically competent (e.g., believing that they are good at sports and readily learn new physical activities), have been linked with children's physical activity levels. In particular, research indicates that children with higher perceived athletic competence are more active (Marsh, 1996; Wang, Chatzisarantis, Spray, & Biddle, 2002) and more physically fit (Marsh, 1996) than those with low perceived competence. Furthermore, a series of studies by Eccles and colleagues has illustrated that differences in perceived athletic competence can explain gender differences in physical activity among youth. Specifically, Eccles and colleagues found girls had lower perceived athletic competence than boys, and low perceived competence predicted lower sport participation among girls compared to boys, independent of differences in aptitude (Eccles & Harold, 1991).

Theories and Research Highlighting Possible Pathways Linking Parental Support, Perceived Competency, and Physical Activity

As illustrated above, parental support of children's physical activity and perceived athletic competence are associated with higher levels of physical activity among youth. Research also suggests that parental support and children's perceived athletic competence are related (Eccles & Harold, 1991), thus raising the question of how these constructs are interrelated and by what process they predict children's physical activity. Two temporal pathways by which parental support and children's perceived athletic competence may predict children's physical activity include: (a) higher parental support leads to higher perceived athletic competence, which, in turn, predicts higher physical activity (parent support pathway); and (b) higher perceived competence leads to higher parental support, which predicts higher physical activity (child elicitation pathway). The parental support pathway implies that parental support initiates the process and perceived competence mediates the link between parental support and physical activity. In contrast, the child elicitation pathway suggests children may begin the process by eliciting a response from their parents and parental support mediates the link between perceived competence and physical activity. These pathways are not necessarily mutually exclusive, as

they may operate simultaneously, reflecting a reciprocal association between parental support and perceived competence. Research and theory support the validity of each pathway.

Parental Support Pathway

The parent support pathway is consistent with predictions based on social cognitive theory (SCT) and Eccles' value expectancy model. SCT highlights the importance of self-efficacy, or one's belief in his or her ability or competence to perform a particular behavior, as a mediator of the relationship between social support and a behavioral outcome (Bandura, 1986). Similar predictions are evident in Eccles' model, which, in contrast to SCT, is specific to children (Eccles & Harold, 1991; Eccles, Jacobs, & Harold, 1990). Eccles postulated that parents socialize girls' and boys' perceived sport competencies by their expectations for their children's success and the experiences they provide for their children; children's perceived athletic competence in turn predicts their participation in sport (Bois, Sarrazin, Brustad, Trouilloud, & Cury, 2005; Eccles & Harold, 1991). More specifically, children with high perceived athletic competence are more likely to approach achievement tasks with a high expectancy of success, leading to greater persistence and effort when engaging in sport-related activities (Eccles, Wigfield, & Schiefele, 1998). Researchers have examined the parental support pathway (Brustad, 1993; Trost et al., 2003) and found that parental support promoted higher perceived competence or self-efficacy, which, in turn, was associated with higher self-reported physical activity or attraction to physical activity. Both studies, however, were cross-sectional. Consequently, a true examination of the temporal ordering of parental support and perceived competence was not possible. In addition, neither study assessed the alternative ordering of predictors, that is, the child elicitation pathway.

Child Elicitation Pathway

The child elicitation pathway is consistent with a number of developmental models or theories, including ecological systems theory (Bronfenbrenner & Morris, 1988), family systems theory (Steinglass, 1987), modern interactionism (Magnusson, 1988), and lifespan development (Baltes, 1987), as well as constructs such as the nonshared environment (Plomin, Ashbury, & Dunn, 2001). Furthermore, the child elicitation pathway is consistent with the concept of reciprocal determinism as outlined in SCT (Baranowski, Perry, & Parcel, 2002), although research has rarely examined this interpretation of SCT. Each of these conceptual frameworks highlight that in addition to parents shaping children's environments and, therefore, child outcomes, children also differentially elicit responses from their parents as a result of intrapersonal characteristics, such as their temperament and perceived competencies (Kochanska, 1993). As Magnusson stated (Magnusson, 1988) "The development of the individual's self-perception, self-evaluation, and self-respect forms a main element in the learning process during which the individual learns to exert predictive and action control over the environment" (p. 31). To the authors' knowledge, no studies have examined the extent to which children's intrapersonal characteristics specific to physical activity may lead to activity support behaviors from their parents. Research in domains outside physical activity, however, including children's verbal development (Davis & Hathaway, 1982), social adjustment (Magnusson, 1988), and aggression (Maccoby & Jacklin, 1980) support the validity of the child elicitation pathway.

The Current Study

The goal of this study was to examine the temporal pathways by which parental support and girls' perceived athletic competency across the ages of 9 and 11 years predict their physical activity at age 11 years. The parental support and child elicitation pathways as outlined above are simultaneously assessed using path analysis (as shown in Figure 1). This builds on previous research in three important ways. First, in contrast to previous research, a systems approach is

adopted. That is, both directions of the association between parental support and girls' perceived athletic competence as predictors of their physical activity are assessed. Second, while a number of studies have examined the parental support pathway, the child elicitation pathway has not been considered. Third, in contrast to Brustad (1993) and Trost and his colleagues (Trost et al., 2003), a longitudinal design is used, thereby providing a stronger empirical basis on which to discuss the temporal ordering of the constructs.

Method

Participants

Participants were part of a larger longitudinal project examining the health and development of young girls across the ages of 5 to 15 years, with a particular focus on familial contribution to girls' development. Data collection began in 1996 and is collected at 2-year intervals; to date, data have been collected when girls were ages 5, 7, 9, and 11 years. A substantial proportion of the original sample has been retained across time with 197, 185, 182 and 177 families participating when girls were 5, 7, 9, and 11 years old, respectively. Only data collected when girls were 9 ($M_{age}=9.34$ years, $SD=0.3$) and 11 ($M_{age}=11.34$ years, $SD=0.3$) years old are included in the current study, because measures of parents' activity support were not obtained before the girls were 9 years of age. In addition, only girls with complete data for the key measures of interest (parental support, perceived competence, physical activity) at ages 9 and 11 years are included in the analyses. Therefore, participants for this study include 174 non-Hispanic white girls and their mothers and fathers, representing 95% of the entire sample who were examined at the age of 9 years. Mothers and fathers were well educated, with an average of 15 years of education, and were generally of middle to upper income, with an average combined family income of \$50,000 or more per year.

Flyers and newspaper advertisements were used to recruit families for participation in the study. In addition, families with age-eligible female children within a five-county radius received mailings and follow-up phone calls (via Metromail, Inc.). When children were 5 years of age, two-parent families were recruited into the study, because the longitudinal study focused on maternal and paternal influences on girls' development. However, families who had divorced across time were not excluded from the study (in such cases, fathers generally dropped from the study). Of the 174 girls included in this study, 9 were from divorced families. The Institutional Review Board of the associated university approved all study procedures, and parents provided consent for their family's participation before the study began. At the age of 11 years, girls also provided written assent.

Measures

At each assessment, trained interviewers interviewed the girls individually, and parents completed self-report questionnaires. The procedures outlined below were used to measure girls' physical activity, their perceived athletic competence, and parents' support of girls' physical activity when the girls were 9 and 11 years old using.

Perceived Athletic Competence—The self-perception profile (SPP; Harter, 1985) was used to assess girls' perceived athletic competence. The perceived athletic competence subscale of the SPP includes six items (e.g., doing well at sports, learning new games readily, preferring to play sports rather than merely watching others play) and uses a four-point response scale, with high scores indicating more positive perceptions. Scores were averaged to create a total athletic competence score. Previous research supports the internal consistency and predictive validity of SPP scores (Harter, 1985). In addition, significant correlations have been noted between children's and teachers' ratings of perceived athletic competence (Harter, 1985), suggesting perceived athletic competence is related to actual competence. In this sample

the internal consistency coefficients for perceived athletic competence were $\alpha = .81$ and $\alpha = .84$ at ages 9 and 11 years, respectively.

Parents' Activity-Related Support—The Parent Activity Support Scale developed by Davison and colleagues (2003) was used to assess parents' support of their children's physical activity. This scale uses a self-report format, is completed by mothers and fathers, and assesses two forms of parental support, including logistic support (e.g., enrolling children in sports and taking them to and from sporting events) and modeling (e.g., including physical activity in family recreational activities, being active with their children). A single support score was created for each parent by taking the mean of all items (i.e., collapsing across logistic support and modeling). Previous research supports the factorial structure, predictive validity, and internal consistency of scores this scale (Davison et al., 2003). The internal consistency coefficients for maternal and paternal support for girls at ages 9 and 11 years ranged between $\alpha = .65$ and $\alpha = .74$.

Physical Activity—Two measures of girls' physical activity were obtained to provide a multidimensional assessment of physical activity, as recommended by Wood (2000). First, an activity checklist was used to assess girls' participation in organized sports. On a checklist of 24 activities (e.g., basketball, soccer, softball) girls were asked to indicate whether they participated in the activity at an organized level (i.e., belonged to a team or had lessons or classes) in the past year. Responses were summed for a total number of activity participation at an organized level. Scores on the checklist had not been validated in other samples; however, in this sample scores on the activity checklist at 11 years of age are significantly correlated with girls' body mass index ($r = -.38, p < .001$) and percentage of body fat ($r = -.38, p < .001$) and marginally correlated with girls' physical fitness ($r = .14, p < .10$).

Second, the Children's Physical Activity (CPA) scale was used to assess girls' general tendency or inclination toward physical activity (e.g., I would rather watch TV or play in the house than play outside; Tucker, Seljaas, & Hager, 1997). The CPA contains 15 items and uses a four point response scale ranging from 1 (completely true) to 4 (completely false); scores were averaged to create a total physical activity score. Previous research supports the validity of scores on the CPA; specifically, scores on the CPA were found to be significantly related to 1-mile (1.6 km) run/walk time, percentage of body fat, and body mass index (Tucker et al., 1997). The internal consistency coefficients for the CPA in this study were $\alpha = .67$ (at 9 years of age) and $\alpha = .73$ (at 11 years).

Statistical Analyses

The individual measures of each construct were used for the descriptive analyses outlined below (i.e., *t* tests). For all other analyses, a single score was created for each construct at each age. The mean of maternal and paternal support represented parental support. When only one parent was present in the household, data for that parent was used in the analyses. For physical activity, scores from the activity checklist and the CPA were combined using principal component analysis, specifying a single component. Both measures were highly and significantly correlated with the component score at each age ($r = .76$ to $.79, p < .01$).

Paired *t* tests were performed to examine whether mean scores for each physical activity measure, perceived competence, and parental support differed significantly between the ages of 9 and 11 years (see Table 1). The variables included the number of organized sports, the children's physical activity scale, maternal activity support, paternal activity support, and girls' perceived athletic competence. Associations between the summary measures of each construct at each assessment time were calculated using Spearman rank correlation analysis (see Table 2). These analyses were performed using SAS 8.01 (Carey, NC).

AMOS software was used to examine the specified path model. The advantage of assessing the path model in AMOS (in contrast to performing a series of regression analyses) is that the estimates are based on information from the full covariance matrix, and measures of direct and indirect associations are provided. Fit indexes were not examined, because we analyzed a saturated model. The child elicitation and parental support pathways were simultaneously assessed (see Figure 1). Specifically, parental support when girls were 11 years of age was tested as a mediator of the association between perceived competence at age 9 years and girls' physical activity at 11 years (child elicitation pathway) and perceived competence at age 11 years was assessed as a mediator of the relationship between parental support at age 9 years and physical activity at age 11 years (parental support pathway). Mediation was tested based on criteria outlined by Baron and Kenny (1986). Using the parent support pathway as an example, mediation is effectively illustrated if: (a) parental support of girls at age 9 years (the independent variable) predicts perceived competence at 11 years (the mediator); (b) perceived competence at age 11 years predicts physical activity at 11 years (the outcome), independent of parental support; and (c) the direct relationship between parental support and physical activity is *reduced* when perceived competence is included in the model. Although the parental support and child elicitation pathways were of primary interest in this study, the model included additional paths to control for contemporaneous associations between parental support and perceived competence and associations within the same construct across time (e.g., parental support for girls ages 9 and 11 years).

Results

Descriptive Statistics

Preliminary analyses examined whether background characteristics, including family income and mothers' and fathers' education, confounded associations between perceived athletic competence, parental support, and physical activity. A background characteristic was considered a confounding variable if it was significantly correlated with the independent (i.e., perceived competence or parental support) and dependent (i.e., physical activity) variables. With the exception of the association between mothers' education and total parental support for girls 9 years of age ($r = .16$, $df = 173$, $p < .05$), no significant associations were identified between background characteristics and the variables of interest. Therefore, it was not necessary to include covariates in the analyses that follow.

Mean scores for each physical activity measure, parental support, and perceived athletic competence for girls at ages 9 and 11 years are shown in Table 1. Girls reported participating in an average of two organized sports at ages 9 and 11 years, with no significant changes in sport participation across time. Girls' inclination to be physically active (e.g., choosing to play outdoors rather than doing some-thing quiet indoors), increased significantly across time. Mean levels of parental support were not significantly different for girls between ages 9 and 11 years. Differences in activity support by mothers and fathers at each time of assessment were also examined. In comparison to fathers, mothers reported marginally ($p < .10$) higher levels of overall support for girls at age 9 years and significantly ($p < .05$) higher support at age 11 years. Girls' mean perceived athletic competence did not differ between ages 9 and 11 years.

Correlations Between Parental Support, Perceived Competence and Physical Activity

Correlations between perceived athletic competence, parental support, and physical activity are shown in Table 2. All correlations were statistically significant at $p < .01$. At each age, girls who were more physically active reported higher perceived athletic competence and had parents who reported higher levels of support. In addition, girls with higher perceived athletic competence had parents who provided higher levels of support. These associations were also noted across time. In particular, parental support ($r = .17$, $df(173)$, $p < .05$) and perceived athletic

competence ($r = .27$, $df(173)$, $p < .05$) for girls 9 years of age were significantly and positively associated with girls' physical activity at age 11 years. Finally, each construct showed a moderate degree of tracking between the ages of 9 and 11 years, with correlations ranging between $r = .49$, $df(173)$ and $r = .62$, $df(173)$, $p < .01$, respectively.

Results From the Path Model

Path coefficients for the full path model are presented in Figure 1. Perceived athletic competence and parental support for girls at 11 years of age (i.e., the proposed mediators) were significant and independent predictors of girls' physical activity at age 11 years, collectively explaining 27% of the variance in physical activity. As shown in Figure 1, parental support for girls at age 11 years mediated the association between perceived competence at age 9 years and physical activity at age 11 years, thus providing evidence for the child elicitation pathway. That is, (a) perceived competence at the age of 9 years significantly predicted parental support at the age of 11 years, (b) parental support for girls at age 11 years significantly predicted girls' physical activity at age 11 years, and (c) the direct association between perceived competence at the age of 9 years and physical activity at age 11 years was reduced from $\beta = .21$ ($p < .05$) to $\beta = .00$ ($p > .05$) with parental support at age 11 years in the model (not shown in model). Results did not provide evidence for the parental support pathway, because no association was identified between parental support for girls at age 9 years and perceived competence at age 11 years (i.e., the first pathway in the mediation process). Finally, longitudinal associations were identified between both parental support and perceived competence and girls' physical activity. That is, parental support for girls at 9 years of age predicted support at 11 years of age, which, in turn, predicted physical activity at 11 years of age. Similarly, perceived competence at 9 years of age predicted perceived competence at 11 years of age, which, in turn, predicted physical activity at 11 years of age.

Follow-up Analyses

Additional analyses examined the possibility of reverse causation and whether results differed when examining individual physical activity measures. To rule out the possibility of reverse causation (i.e., higher physical activity at the age of 9 years led to higher perceived competence and higher parental support at the age of 11 years), the models were rerun using only data for girls in the bottom two tertiles for physical activity at age 9 years. This cutoff was chosen instead of using the mean to keep the sample size, and, therefore, statistical power, as high as possible. The pattern of findings did not differ from those outlined above. Specifically, support was gained for the child elicitation pathway but not for the parental support pathway. Similarly, results did not differ when each physical activity measure was used as the outcome variable.

Discussion

This study assessed the temporal ordering of perceived athletic competence and parental support as predictors of physical activity among preadolescent girls. Although parental support was an important predictor of girls' physical activity, results did not provide evidence for the parent support pathway. In contrast, results confirm the presence of the child elicitation pathway with parental support for girls at age 11 years, mediating the association between perceived competence at age 9 years and girls' physical activity at age 11 years. That is, girls with higher perceived athletic competence at age 9 years were exposed to higher levels of parental support at 11 years, which, in turn, were associated with higher levels of physical activity. While it is likely that the associations between perceived competence, parental support, and physical activity are cyclical, such that higher levels of physical activity further promote perceived competence and parental support, the results did not change after ruling out the possibility that high levels of physical activity at 9 years of age initiated higher perceived competence and parental support.

Findings from this study support the idea that parent-child influences are bidirectional such that child-specific characteristics may lead to or elicit a particular response from parents, which, in turn, impacts their child's behavior. Specifically, in this study, parents were more likely to provide high levels of support if their daughters exhibited high levels of perceived athletic competence. Thus, it appears that parental support is important, but that only certain girls receive support. These findings are consistent with modern developmental theories, such as ecological systems theory (Bronfenbrenner & Morris, 1988) and modern interactionism (Magnusson, 1988), as well as the concept of reciprocal determinism from SCT (Baranowski et al., 2002). These study results highlight the importance of assessing the bidirectional nature of interactions between an individual and his or her environment, including the family environment, to gain a more complete understanding of children's physical activity behaviors.

Further compounding the implications of this research, Davison and Schmalz (2005) found that adolescents at risk of physical inactivity (i.e., girls, youth with low perceived competence, and overweight youth) disproportionately benefit from parental support compared to youth who are not at risk (i.e., boys, youth with high perceived athletic competence, normal weight youth). That is, a stronger relationship between parental support and physical activity was noted among youth at risk of physical inactivity compared to youth not at risk. Findings from the current study and Davison and Schmalz (2005) collectively suggest that youth at risk of physical inactivity (including those with low perceived self-competence) have the greatest need for activity-related support from their parents and show greater benefits of parental support compared to youth not at risk of physical inactivity—but they are least likely to receive such support.

Results from this study are inconsistent with Eccles' value-expectancy theory and research by Brustad (1993) and Trost and his colleagues (Trost et al., 2003). Specifically, the current study found no support for the parental support pathway, which states that parental support leads to higher perceived competence, which, in turn, predicts higher levels of physical activity. There are a number of possible explanations for this discrepancy. In contrast to previous research, the current study simultaneously assessed both possible temporal pathways linking parental support and perceived athletic competence. In addition, the studies by Brustad (1993) and Trost et al. (2003) did not use a longitudinal design; as a result, an assessment of the temporal ordering of parental support and children's perceived competence or self-efficacy was not possible. Although there was no support for the parental support pathway, previous research has consistently demonstrated that children are more active when parents support their activity behaviors (Davison, 2004; Davison et al., 2003; Dunton et al., 2003; Hoefler et al., 2001; Sallis et al., 1992). Results from this study do not negate the importance of parents; indeed, parental support was linked with higher physical activity. Rather, findings from this study suggest more attention should be given to ways parents respond to the cues their children provide. Parents need to be equipped with the necessary skills to provide activity-related support when their children have low perceived athletic competence and do not naturally elicit support. For example, when a child exhibits low perceived competence in a particular activity, parents could help identify and structure ways their child could practice the necessary skills in an informal setting, thereby building skills and confidence. Alternatively, parents could assist their child in identifying an activity (possibly an individual activity) in which success and competence can be individually defined.

There are a number of strengths to this study. First, it provides a detailed assessment of the temporal ordering of parental support and perceived athletic competence as predictors of girls' physical activity. In particular, a prospective design was used to simultaneously assess both directions of the association between parental support and perceived competence. Second, the path model was assessed using AMOS software, rather than performing a series of multiple regression analyses, thus enabling the use of the full covariance matrix, which provides a more

accurate assessment of the path coefficients. Finally, this study addressed an important public health topic—namely modifiable factors that impact girls' physical activity levels as they approach adolescence, a period traditionally associated with declines in physical activity (Kimm et al., 2002).

Future research could extend findings from this study by examining their applicability to other ethnic and racial groups and boys, as only white girls were included in this sample. In addition, the parent support and child elicitation pathways could be more effectively assessed using objective physical activity measures (e.g., accelerometry) and measuring the constructs across a broader time period such that the mediator and outcome variables are not assessed at the same time; research by authors to assess these shortcomings is in progress. Finally, future research could use a broader assessment of parental support and perceived athletic competence. More specifically, the measure of parental support in this study did not include items assessing parents' beliefs and attitudes specific to their children's physical activity, which may play an important role in the link between parental support and children's perceived competence. Recent research by Bois and colleagues (2005) highlighted the link between parents' perceptions of children's athletic competence and children's perceived competence. Similarly, a multidimensional assessment of perceived athletic competence that includes measures of different domains of perceived competence, such as strength, flexibility, endurance, and sport ability, may be useful. The measure used in this study provided a single score that collapsed across such domains. It is possible that different associations exist between parental support and the different domains of perceived competence.

In summary, findings from this study highlight that girls are more active when their parents support their physical activity but only certain girls are exposed to high levels of parental support. Girls are more likely to receive support from their parents when they perceive themselves as being athletically competent. Practitioners and intervention specialists may use these study findings to design programs for parents and children that effectively promote physical activity participation—especially for girls—by emphasizing the importance of parental support and involvement for all children regardless of their perceived competency. Future researchers are encouraged to prospectively examine processes by which perceived competency among girls may lead to higher support from parents and to determine the relative importance of these exercise determinants as predictors of children's physical activity at different developmental stages.

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Figure 1.
Path model assessing links between perceived athletic competence and parental support across ages 9 to 11 years as predictors of girls' physical activity at age 11 years.

Mean scores (and standard deviations) for each measure of physical activity, parental support, and perceived athletic competence at ages 9 and 11 years

Table 1

Variables assessing each construct	Scale range	Age: 9 years		Age: 11 years		P value for difference in means
		M	SD	M	SD	
Number of organized sports	0+	2.30	1.3	2.50	1.5	.20
Children's physical activity scale	1-4	2.83	0.4	2.95	0.4	.0001
Maternal activity support	1-4	2.77	0.5	2.80	0.5	.34
Paternal activity support	1-4	2.67	0.6	2.69	0.6	.93
Perceived athletic competence	1-4	2.93	0.7	2.94	0.6	.94

M = mean
SD = standard deviation.

Table 2
Correlations between parental support, perceived athletic competence, and physical activity at ages 9 and 11 years

	1	2	3	4	5
1. Perceived competence (9 years)					
2. Parental support (9 years)	.22**				
3. Physical activity (9 years)	.35**	.16*			
4. Perceived competence (11 years)	.49**	.18**	.37**		
5. Parental support (11 years)	.31**	.62**	.36**	.36**	
6. Physical activity (11 years)	.27**	.17*	.51**	.51**	.38**

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