

The Roles of Social Support and Physical Activity Participation among Western Australian Adolescents

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ABSTRACT

The present study was undertaken to examine the roles of social supports on adolescents' involvement in out-of-school physical activities. 175 conveniently sampled middle high school students from three public schools in Western Australia participated in this study. Data were collected using self-report measures of physical activity (PA) duration, social support (modelling, instrumental, and motivational supports) and social support agents (mother, father, siblings, peers, and teachers). Using stepwise regression analysis, the results revealed that motivational and instrumental supports were significant predictors of the PA for the male and female adolescents, respectively. In terms of the roles of social agents, father was indicated as an influential agent of change for the male adolescents, while mother and peers were influential figures for the female adolescents' involvement in physical activity. The finding of this study reinforces the view that social support for PA may be best provided by the adolescents' same-sex parents. The finding also supports the notion that motivational and instrumental supports may be more effective in promoting male and female adolescent PA, respectively.

Keywords: Adolescents, physical activity, and social support for physical activity

INTRODUCTION

The relationships between physical activity (PA) and health-related outcomes are well documented. Indeed, there is evidence that shows PA provides an array of physical, psychological, social, and emotional benefits for individuals of all ages (Carroll & Loumidis, 2001; Centre for Disease Control and Prevention [CDC], 1997). Among adolescents, it has been specifically shown that higher levels of PA are associated with higher levels of perceived competence and lower levels of anxiety and depression (Parfitt & Eston, 2005). It has also been shown that PA is associated with an increase in cardiovascular fitness (Imperatore *et al.*, 2006), a reduced risk of being overweight, and a tendency to possess

fewer risk factors associated with coronary heart disease (Sharma, 2006). The recommended level of PA for adolescents to achieve these benefits is 30 – 60 minutes of moderate to vigorous activity per day (Corbin & Pangrazi, 1999). Unfortunately, a large proportion of adolescents do not meet this recommended level. For instance, in a survey in the United States, only 35.8% of high school students were found to meet the current recommended levels of PA (CDC, 2006). In an Australian study, although a sizeable percentage of the adolescents had adequate PA, girls (especially older girls) were lower in PA compared to boys (Booth *et al.*, 1997). Given these findings, a number of researchers believe it is necessary to further

investigate factors that can potentially enhance adolescents' involvement in PA (eg., Sallis *et al.*, 2000; Sallis *et al.*, 1999).

There is evidence that show social support can positively influence adolescents' PA involvement (see Anderssen & Wold, 1997; Biddle & Goudas, 1996; Cleland, Venn *et al.*, 2003; Neumark-Sztainer, 2003; Prochaska *et al.*, 2002; Sallis *et al.*, 2000; Trost *et al.*, 1997; Trost *et al.*, 2003, for review). In an Australian study, for instance, parental exercise was positively associated with children's extracurricular sports participation ($p < 0.001$), and 1.6 km run/walk time ($p < 0.001$). Among girls only, cycling performance using PWC₁₇₀ ($p = 0.013$) was also positively associated with their parents' exercise habit. However, the researchers also observed that the gender of the parents was not an independent predictor of the child's extracurricular sports participation and cardiorespiratory fitness. In other words, active participation in PA of either parent is likely to influence their children PA (Cleland *et al.*, 2003).

Social support can take a number of forms, including instrumental support, motivational support, and modelling support. Instrumental support refers to a direct support, such as providing financial support, transportation, lending sports equipment and others. Motivational support reflects aspects such as encouragement and praise to adolescents for their participation in PA. Modelling support refers to the provision of support as a role model for PA involvement (Prochaska *et al.*, 2002).

Although the influence of social support on adolescent PA has been generally consistent, Trost *et al.* (2003) have argued for further investigation of the specific mechanisms of support. Indeed, studies that had looked at these specific mechanisms revealed some inconsistent findings. For instance, Trost *et al.* (2003) revealed that parental modelling did not influence adolescent PA in their study, but other areas of support, such as instrumental support, and encouragement, did appear to influence adolescents' PA. They reasoned that modelling alone did not remove the barriers to PA, and

could therefore discourage some adolescents from participating in PA. In another study, Prochaska *et al.* (2002) studied the influence of parental encouragement, praise, transportation and direct involvement on adolescents' PA. Contrary to the findings by Trost *et al.* (2003), parental encouragement appeared to have no association with adolescent PA in the study of Prochaska *et al.* (2002). These discrepant findings suggest that various forms of support might influence adolescent PA involvement in different ways.

Adolescents can obtain numerous benefits from engaging in the recommended levels of PA. However, a large proportion of adolescents do not meet the recommended levels of PA involvement. Although the influence of social support on adolescent PA has been consistent, there is evidence that different types of support may influence adolescent PA in a variety of ways. Therefore, the present study sought to examine the roles of the three types of social support for PA (motivational, modelling, and instrumental) and also the influence of the agents of social support on adolescents' involvement in out-of-school PA.

METHOD

Participants

Students from grades 8, 9, and 10 ($N = 203$) participated in this study. The participants were conveniently sampled from three public high schools in Western Australia. Approximate percentages of the participants from years 8, 9, and 10 were 29%, 34%, and 37%, respectively. The sample consisted of 55.6% boys and 44.4% girls, with a mean age of 13.4 years ($SD = 1.0$). Data were collected using self-report instruments. Twenty three incomplete questionnaires were discarded leaving 180 cases for final analysis. In addition to demographic information, the questionnaire included measures of out-of-school PA and social support for PA. Descriptions of these measures are presented below.

Instruments

Physical Activity. Conceptualized as the overall out-of school participation, PA was assessed using a single-item measure. Specifically, the students were asked: "Outside school hours in this term, how much time did you spend doing physical activities that made you get out of breath or sweat?" The response options were (1) Never, (2) About ½ hour per week, (3) About 1 hour per week, (4) About 2-3 hours per week, (5) About 4-6 hours per week, and (6) 7 or more hours per week. This same questionnaire has been used widely in other studies, and support for the validity of this measure has been reported elsewhere (see Booth *et al.*, 2001). For data analysis purposes, these categories were converted into equivalent minutes per week, based on the mid-point values (i.e., 30 min, 60 min, 150 min, 300 min, and 350 min).

Social Support for Physical Activity.

Perceived social support was measured using the three items taken from the New South Wales School and Physical Activity Survey (Booth *et al.*, 1997). The items reflected three types of support (instrumental support, motivational support, and modelling support) provided by five different social agents (father, mother, siblings, teachers, and peers). For each question, a separate reference was made to the social agents. In more specific, the participants were asked the following questions: (1) How often does each of the following people (father, mother, best friends) play/participate in some sort of sports, exercise or other physical activities? (2) How often does each of the following people (father, mother, siblings, teachers, best friend) help you to play some sort of sport or to participate in other physical activities? (3) How often does each of the following people (father, mother, siblings, teachers, best friend) encourage you to play some sort of sport or participate in other physical activities? All the responses were made on a 5-point scale ranging from Never (1) to Very Often (5).

Procedures

Prior to data collection, permission to conduct the study was obtained from the relevant authorities. In specific, the approval was obtained from the University's Human Ethics Committee, the State Department of Education and Training, the school principals, and the Heads of Physical Education (PE) departments in the participating schools from Western Australia. Times and locations for questionnaire administration were then organized by the head of PE in each school. Prior to data collection, informed consent forms were distributed and signed by the students and their parents.

The participants were provided with standardized instructions during the data collection process. In more specific, the students were told that they would be responding to a series of statements reflecting their participation in PA outside of the school setting, and the support they received from their family, teachers, and friends to participate in PA. To minimize the effects of social desirability bias, the students were advised that the survey was not a test, and that there were no right or wrong answers. It was also emphasized that honest responses would help the researchers to better understand their PA experiences. Questionnaire completion took place in a classroom setting, and the participants took an average of 10 minutes to complete the questionnaire.

Statistical Analysis

Three statistical procedures were utilized. The descriptive statistics was used for data screening, while Pearson correlation coefficient was used to examine the relationships between the variables, and stepwise regression analyses were computed to examine the influence of the mechanism of social support and the influence of the agents of social support on PA among the participants. The data analysis was carried out using SPSS version 14. Prior to conducting the primary analyses, the data were examined for their accuracy, missing values and distributional properties. The missing values were minimal, and the mean substitutions were used where necessary. Mahalanobis

distance was used to detect multivariate outliers. At 0.001 cut-off point, five cases were identified as the outliers and were discarded, leaving the total number of usable questionnaires to 175. The frequency distributions indicated a mixture of positive and negative skewness. However, no variable transformations were deemed necessary.

RESULTS

The full-sample descriptive statistics are presented in Table 1. The results of the correlation analyses revealed significant positive relationships between the mechanism of social support, agents of social support, and adolescent PA. In more specific, out-of-school PA was positively correlated with instrumental support ($r = 0.30, p < 0.001$) and motivational support ($r = 0.30, p < 0.001$). A significant but weak correlation was also obtained between out-of-school PA and modelling ($r = 0.17, p < 0.05$). With regard to the social support agents, positive relationships were found between father’s support ($r = 0.25, p < 0.01$), mother’s support ($r = 0.21, p < 0.01$), siblings’ support ($r = 0.25, p < 0.01$), peers’ support ($r = 0.24, p < 0.01$), and teacher’s support ($r = 0.15, p < 0.05$).

In order to obtain the relative importance of the mechanism of social support and social support agents, the stepwise regressions were computed separately for the male and female participants. In terms of the mechanisms of support, instrumental support was the only significant predictor of PA participation for the male participants ($\beta = 0.35, t = 3.58, p < 0.01$). As for the female participants, encouragement was the only significant predictor of PA participation ($\beta = 0.42, t = 4.06, p < 0.001$). In terms of social support agents, mother’s support ($\beta = 0.30, t = 2.63, p < 0.01$) and peer’s support ($\beta = 0.23, t = 2.04, p < 0.05$) were the significant predictors of PA participation for the females, while father’s support ($\beta = 0.30, t = 3.05, p < 0.01$) was the only significant predictor of PA for the male adolescents. Detailed results are presented in Tables 2 and 3.

DISCUSSION

Consistent with some previous studies (e.g., Sallis *et al.*, 2000), a positive relationship was obtained between social support and out-of-school PA. More importantly, the results suggested a stronger link between out-of-school PA and instrumental and motivational supports

TABLE 1
Full-Sample Descriptive Statistics for the Primary Measures

	N	Min	Max	Mean	Std. Deviation	Skewness	Kurtosis
Father Support	175	3.00	15.00	9.71	3.12	-0.33	-0.65
Mother Support	175	3.00	15.00	9.56	2.93	-0.16	-0.85
Sibling Support	175	2.00	10.00	5.97	2.23	-0.15	-0.75
Peer Support	175	3.00	15.00	10.21	2.81	-0.39	-0.15
Teacher Support	175	1.00	10.00	5.78	2.33	-0.01	-0.76
Out-of-School Physical Activity	175	0.00	420.00	160.80	148.83	0.52	-1.05
Modelling Support	175	3.00	15.00	9.68	2.45	-0.37	0.21
Instrumental Support	175	5.00	24.00	14.92	3.69	-0.15	-0.16
Motivational Support	175	5.00	25.00	16.67	4.63	-0.11	-0.67

Note:
Std. Error of Skewness = 0.18
Std. Error of Kurtosis = 0.37

TABLE 2
Results of the stepwise regression for the types of social support for the male and female samples

Model 1	Male (n = 97)			Female (n = 78)		
	β	t	P Value	β	t	P Value
Instrumental Support	0.35	3.58	0.001	-0.08	0.64	0.52
Modelling Support	0.04	0.31	0.76	0.06	0.51	0.61
Motivational Support	-0.02	-0.16	0.87	0.42	4.06	0.00

TABLE 3
Results of the stepwise regression for the agents of social support for the male and female samples

Model 1	Male (n = 97)			Female (n =78)		
	β	t	P Value	β	T	P Value
Father	0.30	3.04	0.00	0.07	0.57	0.57
Mother	-0.03	-0.28	0.78	0.38	3.57	0.00
Family	0.17	1.63	0.11	0.15	1.29	0.20
Friend	0.09	0.88	0.38	0.23	2.04	0.04
Teacher	0.14	1.43	0.16	-0.009	-0.08	0.93
Model 2						
Mother	-	-	-	0.30	2.63	0.01
Friend	-	-	-	0.23	2.04	0.04
Father	-	-	-	0.05	0.42	0.67
Family	-	-	-	0.07	0.57	0.57
Teacher	-	-	-	-0.15	-1.23	0.22

than with modelling support. These findings reinforce the views of Trost *et al.* (2003), who argued that modelling alone might be insufficient to promote adolescent PA. More specifically, Trost *et al.* (2003) believe that modelling alone is insufficient because it does not remove the barriers to PA perceived by adolescents.

Indeed, in a study of PA barriers, Hohepa *et al.* (2006) interviewed forty-four high school students regarding the benefits of PA, barriers, and potential strategies to help students increase their activity levels. Structural constraints (e.g., transportation, accessibility and availability of activities, and travel distance) and intrapersonal constraints (e.g., the lack of motivation, perceived incompetence) emerged as the key

barriers to PA. In practical terms, social support strategies that acknowledge these barriers may be necessary for encouraging adolescents to adopt PA as parts of their daily activities. More specifically, providing direct assistance, such as transport to and from physical activity venues and providing positive reinforcement for adolescents PA participation may be effective in increasing adolescents' levels of physical activity (Trost *et al.*, 2003).

The present study indicated that father was a significant agent of social support for the male adolescents while mother and peer were significant social support agents for the female adolescents. Indeed, this finding is parallel to the results obtained by Bauer *et al.* (2008), who

found that father's and mother's support could predict the male and female adolescents' PA involvement, respectively. The finding of this study further reinforces the view that that social support for PA may be best provided by the adolescents' same-sex parents.

Meanwhile, it has been shown that PA levels progressively decline from late childhood through adolescence (Thompson *et al.*, 2003). At the same time, there is a significant, positive correlation between childhood physical activity levels and adult physical activity levels (Lotan *et al.*, 2005). From a public health perspective, increasing the level of physical activity within the population could be associated with substantial reductions in direct health care costs as well as reductions in indirect costs associated with reduced work productivity, disease-related disability, and premature death (Stephenson *et al.*, 2000). Thus, parental roles in promoting adolescent PA may help address the problem of increased physical inactivity among adolescents. In turn, this may translate into exercise habit during adulthood, which may help promote a healthy society.

In summary, the findings support the notion that motivational and instrumental supports may be more effective in promoting male and female adolescents' PA, respectively. In order to enhance the effectiveness of these strategies, specific social agents can play important roles in encouraging adolescents' participation in PA. Although the findings present some valuable implications, it must be acknowledged that this study is limited in several respects. Firstly, the present study utilized self-report measure of PA. This form of measurement is commonly influenced by recall errors and social desirability bias. Secondly, our measure of PA was limited to a single-item duration estimate. Therefore, it is necessary to replicate the findings using a more comprehensive measure of PA. In more specific, it would be desirable to obtain information about frequency, intensity, and duration in order to gain a more complete understanding of the relationship between social aspects of PA and adolescent PA.

To conclude, additional practical implications that can be gleaned from the present study include: (1) educating parents on their roles in promoting adolescents' physical activity, (2) encouraging parents to identify the barriers to physical activity among their children and providing direct assistance to remove these barriers, and (3) educating parents to encourage their children to participate in physical activity.

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