Health & Fitness Journal of Canada

Copyright © 2013 The Authors. Journal Compilation Copyright © 2013 Health & Fitness Program of BC

Volume 6 **December 30, 2013** **Number 4**

ORIGINAL ARTICLE

Mother knows best? Children's physical activity levels and preferences.

Rebecca L. Bassett-Gunter, PhD[1] and Scott T. Leatherdale, PhD[2]

Abstract

Background: Parents are the 'gate-keepers' to young children's physical activity (PA) and knowledge of their children's PA levels and preferences may impact the PA opportunities they provide. *Purpose:* The current study examined children's PA preferences (considering sex and grade variations) and the discrepancy between children's preferences and parents' perceptions. *Method:* Cross-sectional data were collected from 2,363 children (grades 1-4) and their parents. Children reported their PA preferences and PA levels relative to other students. Parents' reported perceptions of their children's PA preferences and levels. *Results:* Regardless of sex or age, the large majority of children liked playing sports (95%), although less parents perceived that their children liked playing sports (75%). Further, most children reported that they were less active than other children (69%), while the majority of parents perceived that their children were more active than other children (53%). *Conclusion:* Parents' perceptions of children's PA levels and preferences are often not aligned with the preferences of their children. Inaccurate parental perceptions have the potential to be detrimental with regard to the PA opportunities parents provide for their children. **Health & Fitness Journal of Canada 2013;6(4):86-98.**

Keywords: Children, Sport, Physical Activity, Preferences, Parental Influences

From [1]York University, School of Kinesiology and Health Science, and [2]University of Waterloo, School of Public Health and Health Systems. Email: rgunter@yorku.ca

Introduction

The physical inactivity levels of Canadian children has been viewed as a national crisis. Only 7% of Canadian children between the ages of five and 11 are meeting Canada's physical activity (PA) guidelines for health, development, and well-being (Active Healthy Kids Canada, 2013). As a result of decreased PA levels, there has been an increase in childhood overweight and obesity (Shields, 2005; Tremblay et al., 2010). Initiatives to increase physical activities among children are a National priority (Coalition for Active Living, 2004).

Health behaviour change theories such as the Theory of Planned Behavior (Ajzen, 1991) suggest that affective attitudes are an important predictor of PA intentions, which directly predict PA behaviour. Affective attitudes capture an individual's beliefs or feelings about engaging in PA (Conner and Norman, 2005) and how enjoyable (un-enjoyable), fun (boring), or pleasant (unpleasant) the experience might be. Affective attitudes are one important predictor of children's PA behaviour (Mummery et al., 2000). A recent meta-analysis found a medium-sized relationship between affective judgement (i.e., the overall pleasure, enjoyment and feeling states associated with a behaviour) and physical activity among children (Nasuti & Rhodes, 2013). In promoting PA among children, it is important to provide PA opportunities that evoke favourable affective judgements and attitudes as children are unlikely to be motivated by distant health benefits (Nasuti & Rhodes, 2013). Previous research, including the recent meta-analysis (Nasuti & Rhodes, 2013) has examined play and activity preferences as one component of affective judgement and attitudes.

When it comes to promoting PA among children, play and activity preferences

may be important to consider. Children's activity and PA preferences are important predictors of their PA behaviour (Sallis et al., 1999; Sallis et al., 2000). Quite simply, if children enjoy activities, then they will want to do them more often (Weiss, 2000). In fact, "enjoyment has consistently emerged as the strongest predictor of children's resolve to continue sport and PA involvement" (Weiss, 2000). By providing PA opportunities that children prefer and perceive as fun and enjoyable, we can increase the appeal of PA and decrease the attractiveness of alternative, sedentary activities (e.g., video games, watching television; Weiss, 2000).

There has been a call to better understand children's PA preferences in order to design interventions, programs and policies to promote enjoyable, preferred and sustainable PA among children (Epstein et al., 1995). Since this call almost 20 years ago, there have been tremendous changes in technology that may have impacted children's play and PA preferences. For example, the increased availability of screen-based sedentary behaviours (e.g., computers, video games, televisions, tablets) may be one factor contributing to the high levels of sedentary behaviour among children. Indeed, Canadian children spend an average of six (girls) and seven (boys) hours per day engaged in screen-related activities (WHO, 2009). Research revisiting the area of children's play and PA preferences within the context of the current technology-driven environment would be beneficial.

The current study seeks to examine play and PA preferences regarding factors related to children's PA such as preferences for playing alone versus with other children, playing active versus quiet games, playing sports, and playing inside versus outside. Previous research has found that these preference factors may be related to children's PA (King et al., 2005; Janz, Broffit & Levy, 2005) and some activity preferences may act as barriers to PA participation. For example, a preference for playing indoors is a barrier to PA participation among children (O'dea, 2003). It is also necessary to further explore sex and age variations in play and activity preferences as there is evidence, albeit limited, that boys and girls, and children of various ages may differ in their activity preferences (King et al., 2005). For example, boys are more likely than girls to prefer highly active and sports activities and older children are more likely than younger children to prefer quiet activities and playing indoors (King et al., 2005). This work will enhance our understanding of today's children's play and PA preferences.

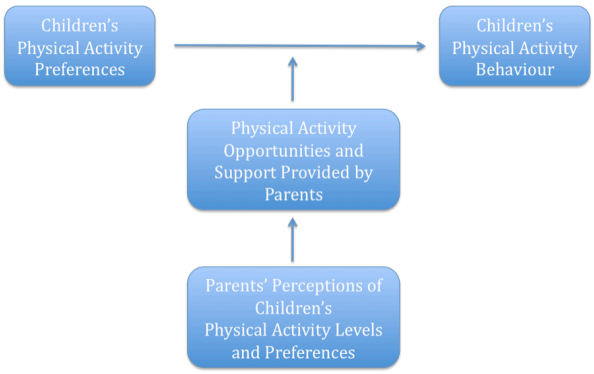
Although children's preferences are important in predicting children's PA (Sallis et al., 2000), their parents undoubtedly play a tremendous role in providing opportunities for PA. Consider for example, children ages six to nine years old. Regardless of their PA preferences, many of the decisions and opportunities for PA will be determined by their parents. A young child is unlikely to have much autonomy over his or her involvement in many physical activities, particularly organized activities (e.g., sports) that require registration and transportation, or activities that require supervision (e.g., playing at the park after school). Accordingly, many of the PA opportunities available to young children are likely to be determined by their parents' support (Gustafson et al., 2003). There is strong evidence to suggest that

parents influence children's physical activity through both instrumental and motivational support (Sallis et al., 2000; Trost et al., 2003). Indeed, parents are the 'gate-keepers' to children's PA (Gustafson and Rhodes, 2006) and it is important to determine if parent perceptions reflect the PA levels and preferences of children. Such information can provide valuable insight for developing future PA promotion interventions for children.

For instance, it would be beneficial to know how a parent decides what PA opportunities to provide for his or her child, since a parent's perceptions of their child's play and activity preferences play a role in decision making regarding PA (Dempsey et al., 1993; Kimiecik and Horn, 1998). However, to our knowledge there is no research examining parents' perceptions of their children's PA preferences, or the congruency between children's preferences and parents' perceptions. Parents' awareness of their children's play and PA preferences could be instrumental in the provision of preferred and enjoyable activities that could motivate PA among young children. Likewise, parents' beliefs regarding their children's PA levels may also influence their decision making regarding PA opportunities they provide for their children. For example, a mother who believes her child is getting adequate PA at school may be less likely to encourage or support PA at home. See Figure 1 for a visual representation of the possible relationship between children's PA levels and preferences and parents' perceptions.

Given the evolving, technologically-driven environment and the gaps in the literature regarding children's PA preferences and their parents' perceptions of their preferences, the first purpose of the current study was to revisit and examine play and activity preferences among young children in grades 1 to 4 (ages six to nine years old), while examining potential variations by sex and grade. The second purpose of the current study was to examine the congruency between children's play and activity preferences and their parents' perceptions.

Figure 1: Relationship between children's physical activity levels and preferences and parental perceptions.



Methods

Design and Data Collection

This cross-sectional study was conducted as part of the Play-On study. The overall purpose of Play-On was to examine factors associated with PA and obesity among a sample of elementary school aged children. For the present study, data were collected from a convenience sample of grade 1 to 4 children attending 30 elementary schools in Ontario, Canada and their parents. All children at the participating schools were eligible to participate. Active consent from parents (or guardians) was required for participation and children were able to decline participation at any time. Two methods of data collection were used: 1) questionnaire data regarding play and activity preferences were provided by children to a registered nurse hired as

part of the Play-On study staff, and 2) data regarding perceptions of their child's play and activity preferences were provided by parents via a self-administered questionnaire. Each child met on an individual basis with the Play-On staff in order to minimize any social or peer pressure that may have occurred if data collection occurred in the presence of peers. All child data were collected during class time and there was no compensation for participation. The University Office of Research Ethics and appropriate school board ethics committees approved the study procedures.

Participants

Across the 30 participating elementary schools, 3,926 children were enrolled in grades 1 to 4. Data were collected from 2,363 children and their parents (or guardians) resulting in a 60.2% completion rate. Missing respondents resulted from parent refusal and absenteeism on the day of the survey. This distribution is consistent with other research conducted among Canadian elementary children (Veugelers and Fitzgerald, 2005). Child participants were in grades one (22%), two (21%), three (28%), and four (29%).

Measures

Child and parent preferences were measured using a questionnaire adapted from the Netherlands Physical Activity Questionnaire for children (NPAQ; Janz, Broffit & Levy, 1996). The NPAQ is a survey questionnaire designed for parents to report preferences.

Child Preferences

Children verbally responded to questionnaire items administered by a registered nurse. Children chose a response for the following questions targeting their preferences regarding various activities: 1) Do you prefer to play alone or with other children (*alone, other children, both)*? 2) Do you prefer active games (e.g., tag, kickball) or quiet games (e.g., board games; *active games, quiet games, both)*? 3) Do you like to play outside or inside (*outside, inside, both)*? 4) Do you like playing sports (e.g., soccer, basketball) or do you dislike playing sports (*likes sports, dislikes sports)*? The final question asked children to directly compare their own levels of PA with other children in their class: 5) Compared to other kids in your class, when you are at school (during recess, lunch, nutrition breaks) are you: *more active, less active, about the same?* The method of data collection and the design of the children response options were chosen to facilitate children' understanding of the questions and responses. Children's responses were coded as 0, 1, or 2 (items 1-3) or 0, 1 (items 4-5).

Parent Perceptions of Children' Preferences

Parents responded to a series of questions self-administered via a paper questionnaire, which was included with the parent consent/permission form. Parents chose a response for statements regarding their perceptions of their son's or daughter's activity preferences in the past 6 months. The following statements were presented as pairs on either end of a 5-point scale with the anchors *almost always* at either end of the scale and *about equal* at the mid-point of the scale: 1) Prefers to play alone/Prefers to play with other children; 2) Prefers vigorous games (e.g., tag, kickball)/ Prefers quiet games (e.g., board games); 3) Likes to play outside/Likes to play inside; 4) Likes

playing sports (e.g., soccer, basketball)/ Dislikes playing sports. The final question asked parents to directly compare their child's PA level with other children of the same age: 5) Less physically active compared to other children the same age/More physically active compared to other children of the same age. Parents' responses were coded 0, 1, or 2 (items 1-5).

Data Analyses

A series of chi-square analyses were conducted to examine sex and grade variations in a) children's activity preferences, and b) parents' perceptions of children's preferences. An additional series of chi-square analyses were conducted to compare children's preferences with parents' perceptions. In the presence of a statistically significant chi-square value, Cramer's v effect sizes were calculated (small = 0.10; medium = 0.30; large = 0.50). Cramer's v is the preferred effect size when computing a chi-square value from a contingency table with greater than two rows or columns (Field, 2009).

Results[1]

Descriptive Results

Descriptive results are displayed in Table 1.

Preference and Perceptions by Children's Sex

As shown in Table 1, there were significant differences between boys' and girls' activity levels and preferences. For example, girls were more likely than boys to report that they were less physically active than other children, whereas boys were more likely than girls to report that their PA levels were the same as other children (χ^2 = 34.7, *df* = 2, *p* < 0.001; Cramer's V = 0.12). Boys were more likely than girls to prefer playing both vigorous and quiet games, whereas girls were most likely to prefer quiet games (χ^2= 16.4, *df* = 2, *p* < 0.001; Cramer's V =.08).

Also shown in Table 1, are the significant differences between children's activity preferences and parents' perceptions. For example, most boys reported being less physically active than others, whereas most parents of boys reported that their children were more physically active compared to other children (χ^2 = 11.8, *df* = 4, *p* = 0.03; Cramer's V = 0.10)). The large majority of boys and girls reported that they liked sports, whereas significantly fewer parents perceived that their children liked sports (boys χ^2 = 66.6, *df* = 4, *p* <0.001; Cramer's V = 0.24; girls χ^2 = 28.2, *df* = 4, *p* < 0.001; Cramer's V = 0.17).

Preference and Perceptions by Children's Grade

As shown in Table 2, there were significant differences by grade for children's activity preferences. For example, children in grades 1, 2, and 3 were most likely to report that they preferred quiet games, while children in grade 4 were most likely to report that they preferred both quiet and vigorous games (χ^2 = 116.1, *df* = 8, *p* < 0.001; Cramer's V = 0.23). Younger children (grades 1 and 2) were most likely to report that they preferred playing with other children, whereas older children (grades 3 and 4) were most likely to report that they preferred both playing alone and with other children (χ^2 = 65.5, *df* = 8, *p* < 0.001; Cramer's V = 0.17).

[1] Please contact the first author for the results of a post-hoc breakdown of chi square analyses.

Table 1: Children's preferences and parents' Perceptions according to sex of children.

	Children				Parents				Children vs. Parents	
	Total	Boys	Girls		Total	Boys	Girls		Boys	Girls
Preference and Perception Items		n (%)		c^2		n (%)		c^2	c^2	c^2
Play alone versus with other Children				9.5**				1.49	8.7	4.6
Always Alone	39(2)	28(2)	11(1)		73(3)	39(3)	34(3)			
Both	1312(56)	679(58)	633(55)		674(30)	355(31)	319(29)			
Always with Others	982(42)	476(40)	506(44)		1535(67)	768(66)	767(68)			
Play outside versus play inside				4.3				8.08*	11.6*	14.2**
Always Outside	97(4)	49(4)	48(4)		405(18)	214(18)	191(17)			
Both	439(19)	242(21)	197(17)		790(35)	370(32)	420(38)			
Always Inside	1797(77)	892(75)	905(79)		1087(47)	578(50)	509(45)			
Play vigorous games versus quiet games				16.4**				94.9**	5.1	14.7**
Always Vigorous	139(6)	53(4)	86(8)		480(21)	241(21)	239(21)			
Both	900(38)	494(42)	406(35)		877(38)	345(30)	532(48)			
Always Quiet	1294(55)	636(54)	658(57)		925(41)	576(49)	349(31)			
Perceived Relative PA Levels				34.7**				7.7*	11.8*	7.8
Less Active than Other Children	1599(69)	762(65)	837(73)		165(7)	87(7)	78(7)			
About the Same as Other Children	543(23)	335(28)	208(18)		904(40)	428(37)	476(43)			
More Active than Other Children	191(8)	86(7)	105(9)		1213(53)	647(56)	566(50)			
Sports				15.5**				40.1**	66.6**	28.2**
Likes Sports	2208(95)	1141(96)	1067(93)		1713(75)	936(80)	777(69)			
Sometimes Likes – Sometimes Dislikes		-	-		370(16)	139(12)	231(21)			
Dislikes Sports	125(5)	42(4)	83(7)		199(9)	87(8)	112(10)			

Table 2: Children's preferences by grade.

	Grade				
	1	2	3	4	
Preference/Perception Items		**n (%)**			**c^2**
Play Alone versus With other Children					65.5**
Always Alone	15(3)	10(2)	6(1)	8(1)	
Both	247(48)	231(46)	406(63)	425(63)	
Always with Others	257(49)	257(52)	229(36)	239(36)	
Play Outside Versus Play Inside					52.1**
Always Outside	35(7)	20(4)	27(4)	15(2)	
Both	93(18)	58(12)	112(18)	173(26)	
Always Inside	391(75)	420(84)	502(78)	484(72)	
Play Vigorous Games versus Quiet Games					116.1**
Always Vigorous	57(11)	36(7)	25(4)	21(3)	
Both	153(30)	138(28)	259(40)	347(52)	
Always Quiet	309(59)	324(65)	357(56)	304(45)	
Perceived Relative PA Levels					10.7**
Less Active than Other Children	354(68)	341(68)	450(70)	454(68)	
About the Same as Other Children	109(21)	112(23)	151(24)	168(25)	
More Active than Other Children	56(11)	45(9)	40(6)	50(7)	
Sports					21.2**
Likes Sports	476(92)	462(93)	620(97)	647(96)	
Sometimes Likes - Sometimes Dislikes	-	-	-	-	
Dislikes Sports	43(8)	36(7)	21(3)	25(4)	

Discussion

Children's activity and PA preferences are important predictors of their PA behaviour (Sallis et al., 1999; Sallis et al., 2000; Weiss, 2000). We identified children's PA preferences and the variations in preferences by sex and grade. We identified that there is often a disjunction between children's reports of PA levels and preferences and parents' perceptions of their children's PA levels and preferences.

Relative Physical Activity Levels

Children were most likely to report that they were less active than other children in their class. More girls than boys perceived themselves to be less active than other children, whereas more boys than girls perceived themselves to be of similar activity levels. Girls' perceptions that they are less active than other children in their class may reflect their self-comparison with both girls and boys in their class. Boys are more physically active than girls (Canadian Fitness and Lifestyle Research Institute [CFLRI], 2010), which may explain girls' perceptions that they are less active than other children in their class. The reported (and potentially accurate) perception that girls are less active than their classmates further suggests that support and encouragement for PA, particularly among young girls, is warranted. Parents of girls didn't perceive a significant difference from their children in terms of activity levels compared with peers. Within the sample, there was little perceptual difference between parents and girls regarding relative physical activity levels. However, despite the fact that most boys reported being less active than other children in their class, parents of boys were most likely to report that their sons were *more* active than other children the same age. Parents have a tendency to over-report their children's PA levels (Bender et al., 2005). There may be several explanations for why parents of boys report perceptions that their sons have relatively higher PA levels than the boys perceive themselves. Parents of boys may be under the impression that their sons are being physically active at times when they are not with their children such as during school hours causing parents to guess at their children's PA levels (Bender et al., 2005). Indeed, a recent report (Colley et al., 2012) indicates that parents believe their children are engaging in significantly more daily PA than objective measures (i.e., accelerometer) of children's actual daily PA are indicating. This assumption is dangerous as parents who believe that their children are sufficient active during the school day may be less likely to promote and support PA outside the school hours. For example, boys engage in greater levels of screen-based sedentary behaviour (e.g., video games, television; WHO, 2009) than girls; Perhaps some parents of boys permit higher levels of screen-based sedentary behaviour because they believe their sons are engaging in sufficient physical activity. Alternatively, parents may report that they perceive their sons to be more physically active than other children due to an optimistic bias or social desirability effect, whereby parents believe (or report) that their sons are highly active because they know that PA is good for their children. Regardless of the reason for the discrepancy between boys' reports of their relative PA and their parents' perceptions, parents of young boys need to be better aware of their son's PA levels both within and outside the school

setting. This notion is supported by the current ParticipACTION® campaign (www.participACTION.com) aimed at informing parents that their children are not as active as they may think. Such campaigns should be supported to educate parents as an awareness of both their children's activity levels and activity preferences may help parents make informed decisions regarding PA opportunities and promotion for their children. Other initiatives to increase parents' awareness should also be supported. For example, report cards which are sent home to parents could include a section for teachers to comment on each child's PA participation at school. The report could also indicate to parents the recommended levels of PA and encourage parents to initiate a conversation with their child regarding his or her PA preferences.

Sports

Regardless of sex or grade, children were always most likely to report a preference for sports. The finding that children enjoy sports is positive in light of promoting PA for children. Positive sport experiences during childhood have a lasting influence on adult PA behaviour (Thompson et al., 2003). Programs, policies and initiatives to promote PA among children should support sport opportunities at various levels. Not all children may have equal access to organized sport due to variations in parental support (Kurc and Leatherdale, 2009). Accordingly, initiatives are necessary to promote sport opportunities within schools and endorse affordable, diverse sport opportunities outside of schools. Affordable and accessible opportunities for sport must be made available to all boys and girls in order to support a source of PA that is clearly preferred by many children.

The discrepancy observed between children's preferences and parents' perceptions regarding sports was notable. Although the overwhelming majority of children reported liking sports, fewer parents reported that their children liked playing sports. This finding can clearly illustrate how a discrepancy between children's preferences and their parents' perceptions could be detrimental to children's PA behaviour. Parents who perceived that their children disliked sports may be unlikely to enroll their children in sports or provide the necessary financial and transportation support, or encouragement. Parents should be sure to communicate with their young children regarding their PA preferences and provide opportunities accordingly as children are more likely to engage in physical activities that they enjoy (Weiss, 2000). Parent-child communication is a significant predictor of children's PA levels (Ornelas et al., 2007). Teachers and healthcare practitioners may have a role to play in promoting parent-child communication. They can encourage parents to promote PA among their children and to initiate communication regarding PA preferences. Parental encouragement and sharing of information regarding PA is a form of parental social support for PA, which can contribute to children's PA participation (Trost et al., 2003).

Indoor Versus Outdoor Activity

The finding that children were most likely to report a preference for playing indoors is not as ideal as if children preferred to play outside as a preference for playing indoors is a barrier to PA participation among children (O'dea,

2003). Outdoor play should be encouraged among children in order to enhance opportunities for PA. Further, indoor play time should be limited since when given the choice children who prefer playing indoors are unlikely to choose outdoor play. The data for the current study were collected during the fall and winter of 2007, which may have influenced children's preference for indoor play. In Canada, during winter months and inclement weather, it may be difficult to motivate outdoor play among children who have a preference for indoor play. Accordingly, opportunities for indoor physical activities must be maximized under these circumstances. In particular, indoor PA within the school setting may be optimal as there may be access to recreation facilities such as gymnasiums, which may permit indoor PA for school-aged children. Parents and guardians may consider indoor physical activities offered through community centres and local recreation facilities. Children's PA program and policy developers must focus on providing PA opportunities that are accessible to families of diverse socio-economic backgrounds. The *Everybody gets to Play* initiative funded by the Canadian Parks and Recreation Association (Canadian Parks and Recreation, 2000) is an excellent example of innovative programs and policies designed to enhance PA opportunities for low-income families in Ontario.

Active Versus Quiet Games

Children generally preferred playing quiet games (e.g., board games) versus active games (e.g., tag, kickball). These findings are interesting in light of previous research which has indicated that the majority of children liked quiet and active games equally (CFLRI, 2010). Children who prefer quiet games and activities are less physically active than children who prefer active games (CFLRI). The preference for quiet games was particularly evident for girls. More girls than boys always preferred quiet games, whereas more boys than girls preferred both active and quiet games. This finding is consistent with previous research which has demonstrated that boys report higher preferences for active activities compared to girls (King et al., 2005). These sex differences may reflect gender stereotypes regarding sports and PA, which children often recognize and embrace as early as age two (Schmalz and Kersetter, 2006). It is important that active games be encouraged and supported for all children, particularly young girls.

Children in grades 1, 2, and 3 were most likely to prefer always playing quiet games, while children in grade 4 only were most likely to prefer both quiet and active games. This finding is contrary to previous research, which has suggested that a preference for active games is inversely related to age (CFLRI, 2010). Regardless of their age or sex, children who prefer quiet games and activities may require additional encouragement and motivation for physical activities. Active games such as tag, kickball, dodge ball, and jump rope are inexpensive, low-skill, low-organization activities that can replace quiet games such as board games and video games to enhance PA levels among children.

Playing Alone Versus Playing with Others

Younger children (i.e., grades 1 and 2) were most likely to report a preference to always like to play with others, whereas

older children (i.e., grade 3 and 4) were most likely to report an equal preference for both playing alone and with others. Intuitively, one might expect that children are more likely to be physically active when they are engaged with other children as many popular children's activities are group activities (e.g., basketball, baseball; Wilson et al., 2005). The increase in preference to play both alone and with others that is observed among older children may reflect the inverse relationship between PA and grade (Trost et al., 2003). That is, if children are more likely to be active with other children (i.e., versus alone), older children's developing preference toward playing alone may be a contributing factor to declining PA with age among young children. Opportunities for solitary PA such as bicycling, hopscotch, and skipping should be supported among children who prefer to play alone.

Future Research and Limitations

Although the current study has contributed valuable knowledge regarding children's PA preferences and their parent's perceptions of their preferences, a few limitations warrant mention. First, not all aspects of children's play and PA preferences were considered. Future research should examine additional aspects of PA such as preferences regarding PA varying in physical intensity, seasonal variations in activity preferences, whether children prefer PA within or outside the school environment, with or without adult involvement, and with children of the opposite sex. The development of a psychometrically sound instrument to measure children's PA preferences would be beneficial as the lack of data regarding the psychometric properties of the measure used in the current study is a limitation. Second, the relationship between PA preferences and parents' perceptions were not examined in relation to actual PA among the children. Future research should investigate the relationship between a) children's PA preferences, parents' perceptions, and actual PA behaviour, and b) the discrepancy between children's preferences and parent's perceptions in relation to children's PA behaviour. Finally, because the methodology of the current study included a secondary analysis of data collected for a larger study, parents' demographic information was not available. Future research should examine parent factors such as sex, education, PA status, and health status in relation to the discrepancy between children's PA preferences and parental perceptions.

Conclusion

Discrepancies exist between young children's and parents' reports of children's PA levels relative to other children their age. Parents' inaccurate perceptions of children's PA levels and preferences may have the potential to be detrimental. It is critical that parents are aware of their children's PA at school so that they can make informed decisions regarding PA encouragement outside of the school environment. Further, discrepancies exist between young children's reported preferences and parents' perceptions of preferences, particularly sports. Parental awareness of children's preferences may be lacking. Children's activity preferences are an important determinant of their PA behaviour (Sallis et al., 1999; Sallis et al., 2000). Increased awareness of children's preferences can inform the development

of program and policies for PA promotion among children. The current study was the first known investigation of discrepancies between young children's PA preferences and their parents' perceptions. Given the "gate-keeper" role that parents often play in providing PA opportunities and determining children's PA levels (Gustafson and Rhodes, 2006), significant discrepancies between children's preferences and parents' perceptions could be detrimental. Parents play an instrumental role in facilitating children's PA and their awareness of children's preferences may impact decisions regarding PA opportunities.

Authors' Qualifications

The authors' qualifications are as follows: Rebecca L. Bassett-Gunter PhD, and Scott T. Leatherdale PhD.

References

Active Healthy Kids Canada. (2013). *Active healthy kids Canada report card on physical activity for children and youth.* Toronto, Ontario, Canada: Retrieved November 14, 2013 from http://www.activehealthykids.ca

Ajzen, I. (1991). The theory of planned behavior. *Organ Behav Hum Dec* , 50, 179-211.

Bender, J. M., Brownson, R. C., Elliott, M. B., and Haire-Joshu, D. L. (2005). Children's physical activity: Using accelerometers to validate a parent proxy record. *Med Sci Sport Exer,* 37, 1409-1413. DOI: 10.1249/01.mss.0000174906.38722.2e

Canadian Fitness and Lifestyle Research Institute. (2010). *Physical Activity Monitor.* Ottawa, Ontario, Canada. Retrieved April 20, 2012, from www.cflri.ca

Canadian Parks and Recreation. (2000). *Everybody gets to play; Recreation without borders.* Retrieved April 20, 2012 from: https://www.cpra.ca/UserFiles/File/EN/sitePdfs/initiatives/EGTP/CPRA%20Position%20Paper%20Final%20_new%20logo.pdf

Coalition for Active Living (2004). *Pan-Canadian physical activity strategy.* Retrieved April 20, 2012, from http://www.activeliving.ca

Colley, R. C., Wong, S. L., Garriguet, D., Janssen, I., Connor Gorber, S., and Tremblay, M. S. (2012). *Physical activity, sedentary behaviour and sleep in Canadian children: Parent-report versus direct measures and relative associations with health risk.* Ottawa, Ontario, Canada: Statistics Canada (Report No.: 82-003-X).

Conner, M., and Norman P. (2005). Predicting health behaviour. 2nd ed. Berkshire, UK: Open University Press.

Dempsey, J. M., Kimiecik, J. C., and Horn, T. S. (1993). Parental influence on children's moderate to vigorous PA participation: an expectancy-value approach. *Pediatr Exerc Sci* , 5, 151–67.

Epstein, L. H., Saelens, B. E., and O'Brien, J. G. (1995). Effects of reinforcing increases in active behavior versus decreases in sdentary behavior for obese children. *Int J Behav Med* , 2, 41-50.

Field, A. (2009). Discovering statistics using spss (3rd Ed). London: Sage.

Gustafson, S. L., and Rhodes, R. E. (2006). Parental correlates of physical activity in children and early adolescents. *Sports Med,* 36, 79-97.

Janz, K. F., Broffit, B. & Levy, S. M. (2005). Validation evidence for the netherlands physical activity questionnaire for young children *Res Q Exercise Sport,* 76, 363-369.

Kimiecik, J. C., and Horn, T.S. (1998). Parental beliefs and children's moderate-to-vigorous physical activity. *Res Q Exercise Sport,* 69, 163-75.

King, G. A, Law, M., King, S., Hurley, P., Hanna, S., Kertoy, M., and Rosenbaum, P. (2005). Measuring children's participation in recreation and leisure activities: construct validation of the CAPE and PAC. *Child Care Hlth Dev,* 33, 28-39. DOI: 10.1111/j.1365-2214.2006.00613.x

Kurc, A. R., and Leatherdale, S. T. (2009). The effect of social support and school- and community-based sports on youth physical activity. *C J Public Health* , 100, 60-64.

Mummery, W. K., Spence, J. C., and Hudec, J. C. (2000). Understanding physical activity intention in Canadian school children and youth: An application of the theory of planned behavior. *Res Q Exercise Sport* , 71, 116-124. DOI:10.1080/02701367.2000.10608889

Nasuti, G., and Rhodes, R. (2013). Affective judgment and physical activity in youth: Review and meta-analysis. *Ann Behav Med,* 45, 357-376.

O'dea, J (2003). Why do kids eat healthful food? Perceived benefits of and barriers to healthful eating and PA among children and adolescents. *J Am Diet Assoc,* 103, 497-501.

Ornelas, I. J., Perreira, K. M., and Ayala, G. X. (2007). Parental influences on adolescents physical activity: A longitudinal study [Electronic version]. *I J Behav Nutr Phy.* Retrieved April 20, 2012 from http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1805507/

Sallis, J. F., Alcaraz, J. E., McKenzie, T. L., and Hovell, M. F. (1999). Predictors of change in children's physical activity over 20 months: Variations by gender and level of adiposity. *Am J Prev Med,* 16, 222-229.

Sallis, J. F., Prochaska, J. J., and Taylor, W. C. (2000). A review of correlates of physical activity of children and adolescents. *Med Sci Sport Exer,* 32, 963-975.

Schmalz, D. L., and Kersetter, D. L. (2006). Girly girls and manly man: Children's stigma consciousness of gender in sports and physical activities. *J Leisure Res,* 38, 536-557.

Shields, M. (2005). *Overweight Canadian children and adolescents*. Ottawa, Ontario, Canada: Statistics Canada (Report No.: Canada catalogue 82-620-MWE2005001).

Thompson, A. M., Humber, M. L., and Mirwald, R. L. (2003). A longitudinal study of the impact of childhood and adolescent physical activity experiences on adult physical activity perceptions and behaviors. *Qual Health Res,* 13, 358-377. DOI: 10.1177/1049732302250332

Tremblay, M. S., Shields, M., Laviolette, M., Craig, C. L., Janssen, I., and Conner Gorber, S. (2010). *Fitness of Canadian children and youth: Results from the 2007-2009 Canadian health measures survey*. Ottawa, Ontario, Canada: Statistics Canada, Health Reports 21(1), Catalogue no. 82-003-XPE

Trost, S. G., Sallis, J. F., Pate, R. R., Freedson, P. S., Taylor, W.C., and Dowda, M. (2003). Evaluating a model of parental influence on youth physical activity. *Am J Prev Med*, 25, 277-282. doi:10.1016/S0749-3797(03)00217-4

Veugelers, P. J., and Fitzgerald, A. L. (2005). Prevalence of and risk factors for childhood overweight and obesity. *Can Med Assoc J, 7*3, 607-613. doi: 10.1503/cmaj.050445

Weiss, M. R. (2000). Motivating kids in physical activity. *President's Council on Physical Fitness and Sports Research Digest.* Series 3; No. 11. Retrieved April 20, 2012 from: https://www.presidentschallenge.org/informed/digest/docs/200009digest.pdf

World Health Organization. (2009). *Health behaviour in school-aged children survey. R*etrieved December 20, 2013 from: http://www.hbsc.org/

Wilson, D. K., Williams, J., Evans, A., Mixon, G., and Rheaume, C. (2005). Brief report: A qualitative study of gender preferences and motivational factors for physical activity in underserved adolescents. *J Pediatr Psychol,* 30, 293-297. *doi: 10.1093/jpepsy/jsi039*