INFLUENCE OF PARENTAL PHYSCIAL ACTIVITY ON YOUNG CHILDREN PHYSICAL ACTIVITY: CONSIDERING TIME TOGETHER



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Abstract

Background: Parents' are thought to play a key role in modeling physical activity (PA) for their child (Beets, Cardinal, & Alderman, 2010). However, only half of studies using objective measures showed a relationship between parent and child PA (Bingham et al., 2016). As social learning theory suggests that behavior is learned through observation (Bandura, 1977), one might expect that modeling only occurs when the child is with the parent.

Purpose: This study examined the parent-child PA relationship in preschool aged children using a momentary perspective that accounts for time the parent is with the child (parent presence).

Methods: Dyads (N=26) consisting of one parent (22 Mothers) and child (Mean age = 3.9 years) completed a questionnaire and then wore accelerometers for 10 days. During this time, parents recorded times away from their child in an online daily diary. Regression was used to predict overall child PA (light, moderate, vigorous, and moderate-to-vigorous PA (MVPA)) using the respective parent PA. To consider the momentary perspective, multilevel modeling was used to predict child PA each hour using parent PA from that hour, parent presence, and their interaction.

Results: Overall parent PA did not predict child PA (ps>.05). In the multilevel models, the interaction between parent presence and parent PA was significant for light, moderate, and MVPA (p <.05) and approached significance for vigorous PA (p=.071). In all cases, parents' PA when with their child was positively related to their child's PA (ps<.05). When not together, the relationship between parent PA and child PA was weaker (light PA; p=.003) or not present (moderate, vigorous, and MVPA; ps>.05).

Conclusions: Supporting social learning theory, being active alone was not sufficient for a parent's PA to relate to their child's PA, but rather being active when the child is around that was important.

Introduction

- Despite the health benefits of physical activity (PA) for young children (Strong et al., 2005), research has suggested young children generally have low levels of PA including low moderate-to-vigorous physical activity (MVPA; Oliver, Schofield, & Schluter, 2010)
 - Only 12.1% of preschoolers time is spent in MVPA while 83% of their time is spent being sednetary (Vale et al., 2010)
- Favorable PA levels in parents have been associated with increased child PA (Beets, Cardinal, & Alderman, 2010; Fuemmeler, Anderson, & Mâsse, 2011)
 - Children with active parents are more likely to be active themselves (Dunton et al., 2012)
- However, the parent and child PA relationship is complex as highlighted by a systematic review (Bingham et al., 2016)
 - 4 out of 5 (80%) studies using subjective PA measures reported a positive relationship
 - 6 out of 12 (50%) studies using objective PA measures reported such a positive relationship
- Based on social learning theory, parents may influence their child's PA with their own engagement in PA by serving as a role model (Bandura, 1977)
 - In order for such modeling to occur it has been speculated that the PA the parent performs must be visible to the child (Rutkowski et al., 2012) • In school-aged children, however, only 16% of parents physical activity
 - was conducted in the presence of their child (Dunton et al., 2012) • Parents of preschoolers report engaging in just over one hour of PA with
 - their child (Alderman, Benham-Deal, & Jenkins, 2010)
- It is beneficial to examine the role that parent PA plays in their child's PA by considering time when the child can observe the parent being active

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Purpose

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Methods

Participants

- 26 parent and child dyads recruited from the local community participated
- The majority of parents were females (n = 22, 85%) and married (n = 21, 81%)
- 16 parents identified as White (62%); with 6 (23%) identifying as Latino
- 20 (77%) of parents had completed at least a 4 year college degree
- The children (58% males) ranged in age from 2 6 years (M = 3.9, SD = 1.2)

Procedures

- Parents completed a background questionnaire and received training on completing an online-diary and the accelerometers
- Both parents and children wore accelerometers for 10 days
- Parents recorded times with or away from children in an electronic daily diary Completed online via SurveyMonkey

Measures

- **Physical activity:** Both the parent and child wore an Actigraph 3GX+ triaxial accelerometer (Actigraph, Pensacola, FL) during all waking hours for 10 days.
- Actilife 6.13.3 (Actigraph, Pensacola, FL) was used for screening data
- Wear validation was performed using algorithm by Choi et al. (2011)
- Cut points for intensity of activity were different for parents (Troiano et al., 2008) and children (Butte et al, 2014)
- Overall analysis: Average physical activity levels per day • Momentary analysis: Minutes of PA levels each hour
- **Time with the child:** As part of the diary, parents were asked to indicate the times when their child was at a preschool, with a babysitter, or being looked after another adult

Analysis

- **Overall analysis:** To examine the overall PA, a regression analysis was used predicting overall child PA (light, moderate, vigorous, and MVPA) using the respective parent PA
- Momentary analysis: Multilevel modeling was used to predict child's PA each hour using parent PA from that same hour, parental presence (with the child or away) and their interaction
- Alpha level was set at .05 with interactions approaching significance (p<.10) examined

Results

Overall Relationship between Child Activity and Parent Activity

- No significant regressions were found when predicting child PA with the corresponding parent PA level:
- Light PA: $F(1,17) = .342, p = .566, R^2 = .020$
- Moderate PA: F(1,17) = .058, p = .813, $R^2 = .003$
- Vigorous PA: F(1,17) = .087, p = .772, $R^2 = .005$
- MVPA: F(1,17) = .267, p = .612, $R^2 = .015$

Momentary Analysis

Light PA: The interaction between significant (p = .031)





- Parent's activity will not always translate to child activity but suggests a more complex relationship
- Supports findings that objective measures do not always show parentchild activity relationship
- One of the first studies to consider the presence of parents matters when examining for the role that parents play in modeling PA for their child
- Supports social learning theory
- This has been previously suggested by Rutkowski and colleagues (2012) but has received little attention

Strengths/Limitations

- Strengths include an examination of the data from the hourly perspective, use of objective measures of PA, and a diary approach
- Limitations include a relatively small sample size of 26 parents-child dyads due to the intensive nature of the daily diary as well as limited generalizability due to several reasons, such as similar geographic location, education level and gender of the participants





Results cont.

Discussion

• Parents' level of PA when they are with their child was related to the PA level of their preschool aged child but this relationship was not evident with overall PA or during the times when the parent was not with the child