INFLUENCE OF PARENTAL PHYSICAL 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 (p=.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 (p<.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: p>.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, & Schletter, 2010).
• Only 12.1% of preschoolers time is spent in MVPA while 83% of their time is spent being sedentary (Vale et al., 2010).
• Favorable PA levels in parents have been associated with increased child PA (Beets, Cardinal, & Alderman, 2010; Fuemmeler, Anderson, & Mâsse, 2011).
• 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 (Beets, Cardinal, & Alderman, 2010).
• 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).

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
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 an 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.

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, R² = .020
  - Moderate PA: F (1,17) = .058, p = .813, R² = .003
  - Vigorous PA: F (1,17) = .087, p = .772, R² = .005
  - MVPA: F (1,17) = .267, p = .612, R² = .015

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.
• 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 parent-child 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.
Momentary Analysis
• Light PA: The interaction between parent presence and parent PA was significant (p = .031).
• Moderate PA: The interaction between parent presence and parent PA was also significant (p = .038).

Vigorous PA: The interaction between parent presence and parent PA approached significance (p = .071).

MVPA: The interaction between parent presence and parent PA was significant (p = .038).

Conclusion
• 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.