Understanding the Link Between Parent and Child Physical Activity Levels: The Role of Parental Influence

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Physical Activity in Children

- Recommended amount of moderate-to-vigorous physical activity for children (ages 6-17): 60 min. per day (CDC, 2011)
Association of Child and Parent Physical Activity (PA) Levels

- **Inconsistent results** for the association of parent-child physical activity levels (Trost et. al, 2011)
  - Parent physical activity showed **positive association** with the physical activity of obese children (Kalakanis, 2001)
  - Multivariate regression analysis of child-parent PA results in **no significant association** (Kimiecik & Horn, 1998)
Potential Moderators

- Parental support directly increases child physical activity levels (Sallis et. al)

- Parents who believe that physical activity is important also had more physically active children (Heitzler et. al, 2006)

- Do parental factors act as moderators of the parent-child physical activity relationship?
Current Study

Perceived Parent Influence

Parent Physical Activity (PA) → Child Physical Activity (PA)
Research Goals

1) Examine the correlation between parent physical activity levels and child physical activity levels

2) Determine whether this relationship is moderated by parenting factors—parent’s perceived influences, PA in the presence of children, parental encouragement of PA
Study Design & Inclusion Criteria

- Study Design: Cross-sectional

- Inclusion Criteria:
  - Child is enrolled in grades 4-8
  - Child and parents are living in Chino, CA, USA or surrounding communities
  - Annual household income is < $210,000
  - Read English
Data Collection: Survey

- Self Report Survey (Parent)
  - Parent perceived influence ($\alpha = 0.60$, 3 items)
    - Ex. Parent’s physical activity habits can have a lot of influence on children (1-Strongly Disagree, 4-Strongly Agree)
  - Parent modeling ($\alpha = 0.65$, 5 items)
    - Ex. In the past 30 days, how often did your child see you do something physically active (walking, biking, playing sports)? (0-Never, 5-Always)
  - Parent Encouragement ($\alpha = 0.81$, 7 items)
    - Ex. In the past 30 days how often did you praise your child when they were physically active (1-Never, 5-Always)
Data Collection: Accelerometer

- ActiGraph GT2M Accelerometer
- Worn for 7 days
- 30 sec. epochs
- Moderate-to-vigorous physical activity (MVPA)
  - Adults: >2020 counts/minute
  - Children: age-specific cut points
## Participants

- **Parent-Child Pairs:** N= 622

<table>
<thead>
<tr>
<th></th>
<th>CHILD</th>
<th>PARENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td>53% Female</td>
<td>81% Female</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>M= 11 years old (SD= 1.51)</td>
<td>M= 39 years old (SD= 6.01)</td>
</tr>
<tr>
<td><strong>Hispanic/Latino</strong></td>
<td>42% Yes</td>
<td>51% Yes</td>
</tr>
<tr>
<td><strong>Household Income</strong></td>
<td>N/A</td>
<td>22% &lt; 30,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29% 30,000-60,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26% 60,000-100,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23% &gt;100,000</td>
</tr>
<tr>
<td><strong>Moderate to Vigorous Physical Activity</strong></td>
<td>M= 47.81 min. per day (SD= 42.99)</td>
<td>M= 29.82 min. per day (SD= 34.36)</td>
</tr>
<tr>
<td><strong>Body Mass Index (BMI)</strong></td>
<td>62% Normal/Underweight</td>
<td>27% Normal/Underweight</td>
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<tr>
<td></td>
<td>18% Overweight</td>
<td>38% Overweight</td>
</tr>
<tr>
<td></td>
<td>20% Obese</td>
<td>35% Obese</td>
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</table>
## Correlations Among Study Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>C_MVPA</th>
<th>P_MVPA</th>
<th>P_PI</th>
<th>P_ENC</th>
<th>P_MOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child MVPA (C_MVPA)</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Parent MVPA (P_MVPA)</td>
<td>0.30***</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Parent Perceived Influence (P_PI)</td>
<td>0.06</td>
<td>0.05</td>
<td>1.00</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Parent Encouragement (P_ENC)</td>
<td>0.13***</td>
<td>0.08</td>
<td>0.13**</td>
<td>1.00</td>
<td>--</td>
</tr>
<tr>
<td>Parent Modeling (P_MOD)</td>
<td>0.11**</td>
<td>0.25***</td>
<td>0.11**</td>
<td>0.56***</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p< 0.05 ; ** p< 0.01 ; *** p< 0.001
# Results of Linear Regression Analysis Testing Moderators

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent Modeling</td>
<td>0.23***</td>
<td>0.25***</td>
<td>0.26***</td>
</tr>
<tr>
<td>Parent Moderate-to-Vigorous Physical Activity (MVPA)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent MVPA x Parent Modeling</td>
<td>-0.11*</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Parent Encouragement</td>
<td>---</td>
<td>0.07^</td>
<td>---</td>
</tr>
<tr>
<td>Parent Perceived Influence</td>
<td>---</td>
<td>---</td>
<td>-0.07</td>
</tr>
<tr>
<td>Parent MVPA x Parent Perceived Influence</td>
<td>---</td>
<td>---</td>
<td>-0.25*</td>
</tr>
<tr>
<td>^ p&lt; 0.10, *p&lt; 0.05, **p&lt; 0.01, ***p&lt; 0.001</td>
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Parent Perceived Influence

Perceived Influence

- High on Perceived Influence
- Mean on Perceived Influence
- Low on Perceived Influence

Child MVPA

Low on Parent MVPA  Mean on Parent MVPA  High on Parent MVPA
Discussion

- Results were as expected
- Focus on parent-child physical activity relationship
- Parents who exhibit low levels of physical activity
- Parents who exhibit high levels of physical activity
Limitations

- Cross-sectional study
- Mother : father ratio is unequal
- Sample is not representative of other populations
- Biases (parent survey)
Acknowledgements

- National Cancer Institute #R01-CA-123243 (Pentz, PI)
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References

Thank You!!