

# Co-Morbid Physical & Mental Health Care Needs for Children and Youth at Risk for Obesity

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# Obesity is...

- Major public health problem, especially among racial/ethnic minority populations
- Co-morbid with other chronic physical and mental health care conditions
- Issue among children and youth with special health care needs
- Both a risk factor for chronic conditions (e.g., Type II diabetes) and also presents greater risk for developing secondary conditions associate with primary condition



# Secondary conditions

- Fatigue
- Chronic pain from joints and muscles
- Impaired mobility
- Social isolation and depression

# Special Health Care Need (SHCN)

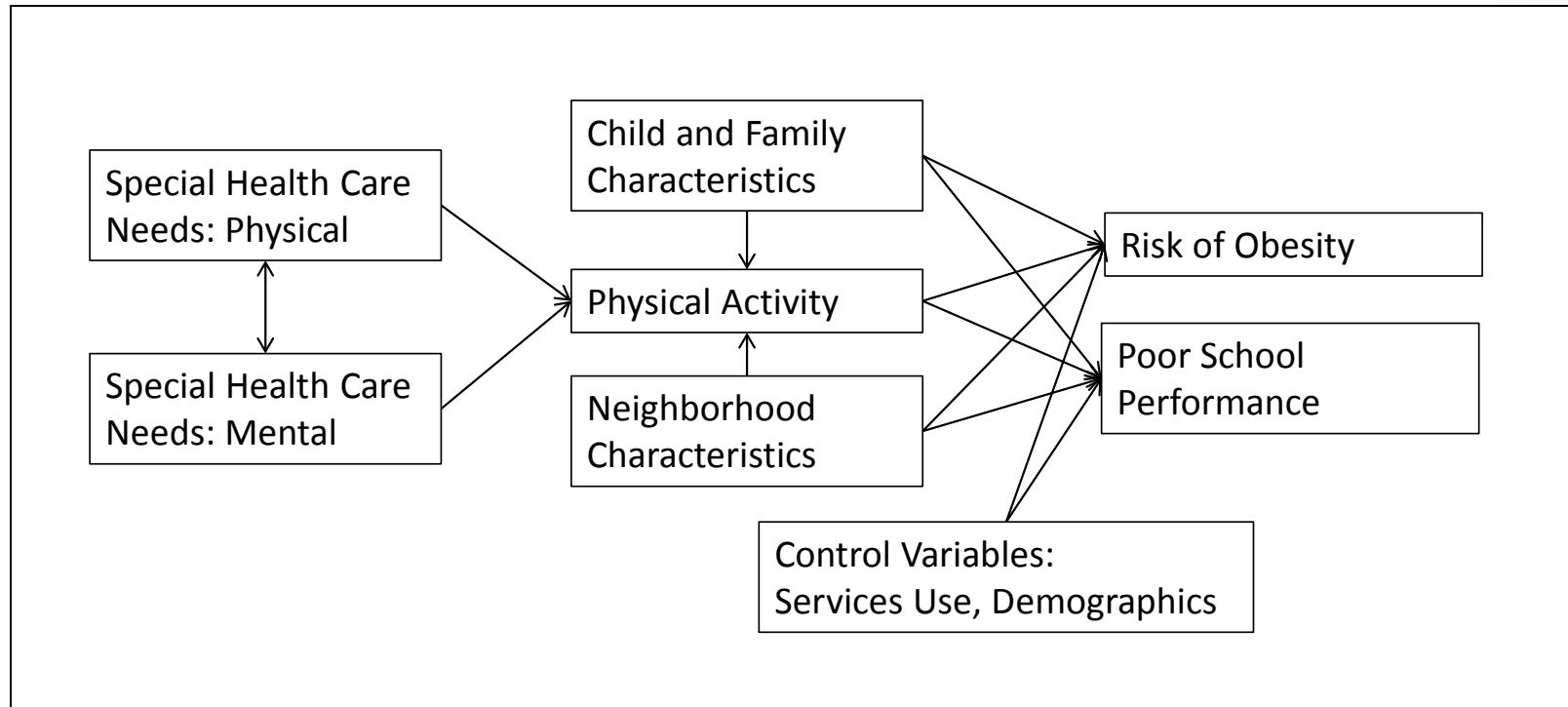
“...those who have or are at increased risk for a chronic physical, developmental, behavioral, or emotional condition and who also require health and related services of a type or amount beyond that required by children generally.”

Maternal and Child Health Bureau

# Academic Risk

- CSHCN potential for school success is compromised due to emotional, behavioral, or developmental problems and case management in schools
- Academic disparities in math/lang. arts begin as early as 4<sup>th</sup> grade for overweight/limited fitness
- Obesity linked to higher rates of absenteeism and lower grades
- Physical activity is protective factor for mental health and management of chronic illness

# Theoretical Framework: Health Equity Model (Goldhagen, 2007)



# Questions

- What are the prevalence and types of co-morbid chronic physical and mental health care needs for a national sample of children associated with risk of obesity?
- What is the association between co-morbid chronic and physical health care needs and poor academic performance?
- How are these risks mediated by physical activity and moderated by child and family and neighborhood characteristics.

# Secondary Data Analysis Methods

## Nationally Representative Sample

- 2012 National Survey of Children's Health (NSCH, [www.childhealthdata.org](http://www.childhealthdata.org))
- Phone interviews with caretakers
- Children 10-17 with data on Body Mass Index (BMI) = 43,861
- Categories of CSHCN
  - Physical and Mental Health Care Needs = 10.07%
  - Physical Health Care Needs = 15.48%
  - No Special Health Care Needs = 74.44%



# Dependent Variables

- Overweight and Obesity. Body-mass index (BMI) is obtained from parent report of the child's height and weight for a categorical measure of BMI for age
  - overweight indicated for the 85<sup>th</sup> to 94<sup>th</sup> percentile (15% of sample)
  - obese for children in the 95<sup>th</sup> percentile and above (16% of sample). The categories take into consideration age and gender.

# Dependent Variables

- Academic Performance
  - Retention in grade
  - Number of school days missed
  - Child on Individualized Educational Plan (IEP)
  - Engagement (homework, reading for pleasure)
  - Motivation (cares about doing well in school)

# Independent Variables

- Special health care needs status
  - Physical conditions concurrent with mental health conditions
- Mediating/Moderating/Co-variates
  - Physical activity
  - Family characteristics (parent physical/mental health)
  - Neighborhood characteristics (safety, amenities)
- Control Variables
  - poverty level, insurance coverage (private [reference] vs. public and uninsured)

# Sample Characteristics for Children with Special Health Care Needs (CSHCN)

- Boys 57% vs. girls 43%
- White children more likely identified as CSHCN
- CSHCN have lower rates of physical activity
- CSHCN have higher rates of overweight (17% vs. 16%) or obesity (19% vs. 16%) compared to children overall
- CSHCN more likely to have public insurance, but less likely to have comprehensive care within a medical home

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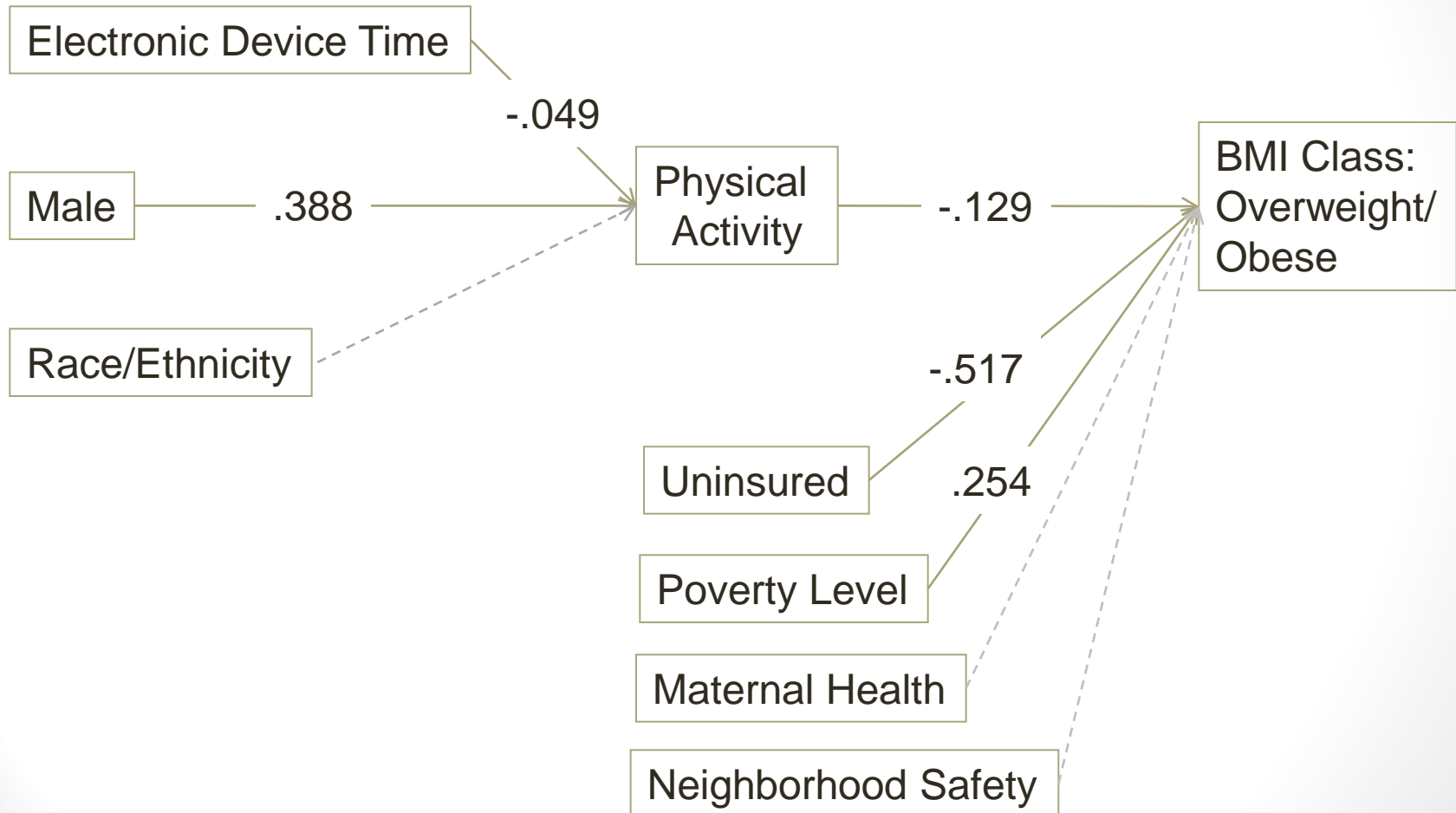
# Sample Characteristics for Children with Special Health Care Needs (CSHCN)

- Higher likelihood of IEP (32% vs. 12% in population)
- Higher likelihood of repeating a grade in school (17% vs. 11% in population)
- Lower ratings of school engagement
- Less participation in extracurricular activities

# Analysis and Results

- Tests for multi-group modeling of risk of obesity and overweight showed that mediation of physical activity only significant for children with co-morbid physical and mental health special care needs
- Physical activity was not a mediating predictor for academic outcomes

# Mediation Model for BMI Risk



# Overview of Academic Outcomes

- BMI negatively related to physical activity
- BMI is positively associated with being retained in grade
- Physical activity is positively related to school engagement (caring about doing well and doing homework)



We know that physical activity is protective against risk of obesity for children with special health care needs. What can we do to promote physical activity?

# Inclusive Recreation

A concept whereby people with disabilities are given the opportunity to participate in recreational activities alongside their non-disabled peers.

This is typically achieved by:

1. Making activity modifications (ex. Wheelchair basketball)
2. Using assistive technology (standing frames, pool lifts, modified bike, sail, and ski)
3. Design of parks/gyms (Boundless Playgrounds)



# Why is Inclusive Recreation Important?

- Lower levels of exercise can lead to more health care problems and increased weight gain.
- Regular physical activity results in increased strength, coordination and locomotion. This makes activities of daily living become easier, less help may be needed from others, and quality of life can be improved.
- Important for children with disabilities to feel a part of all aspects of society and be able to do many activities alongside their peers. They can also learn from their peers in an informal way.
- For children without disabilities, it is also an informal lesson of respect for all people who all have differences and leads to a greater understanding of different kinds of disabilities and special health care needs.

# Three local examples

- Piers Park sailing (East Boston)

[www.piersparksailing.org](http://www.piersparksailing.org)

- YMCA (Boston and Children's Hospital)

<http://www.openingdoorsforyouth.org/let-the-fun-begin>

- Boundless Playground/CVS Caremark All Kids Can-Harambee Park

<http://www.boundlessplaygrounds.org/Home/FeaturedPlaygroundsambee>  
Park

# Harambee Park

## Blue Hill Ave./Talbot

- **Smooth surface throughout** A surface that smooth enough for a wheelchair, and is resilient enough to cushion a fall.
- **Transfer stations** Low platforms where those using wheelchairs can lift themselves out of them, onto playground equipment.
- **Ramps to play components** A path for a wheelchair to travel, not just to the playground, but within it as well.

# Harambee Park









# Limitations and Next Steps

- No information on nutrition included in the NSCH
- Latest version of survey does not include parent/guardian physical activity
- Future work:
  - Investigate association between medication and BMI outcomes for children with special health care needs, e.g. autism
  - Will complete testing of model for academic outcomes, focusing on direct effects of predictors
  - Modeling of associations between special health care needs status, physical activity, BMI, and educational outcomes with focus on Latino and African American children