Channel BMI: Does Television have an Impact on Childhood Obesity?
Audrey Hoene, Kyle Hoang, Passang Gonrong
Department of Human Development Family Studies, College of Agriculture Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign

Abstract
Our purpose for this study was to examine the relationship between television viewing and childhood obesity in a sample of preschool children, 2-5 years old.

The sample included 497 children from 30 licensed child care centers in central Illinois.

The results showed the difference in hours of television viewed between overweight and non-overweight children was statistically significant in our study.

Results of this study highlight the complexity of obesity by the differences in race and other demographic factors. A multidisciplinary approach is needed to combat the growing obesity epidemic.

According to the CDC, obesity now affects 1 in 6 children and adolescents in the United States. Our results can be used for an intervention that combats obesity by decreasing television viewing time.

Introduction
We studied the effects of media use, specifically television viewing, on children’s body mass index (BMI). Body mass index is an indicator describing how overweight or underweight a person is. The CDC states childhood obesity has both short term and long term negative health consequences. Poor body image, depression, and eating disorders are a few health risks associated with childhood obesity. Other possible health consequences include type II diabetes, hypertension, sleep apnea, and orthopedic problems.

We wanted to study the variation of television viewing and BMI across race, parent/guardian income, and parent/guardian level of education. The differences in demographics pinpointed where we need to target future interventions.

Dennison, Erb, and Jenkins (2002) concluded there was an increase in BMI in accordance with television viewing. Television viewing can contribute to obesity through exposure to advertisements marketing unhealthy food. Zimmerman and Bell (2010) found an association between television advertising and BMI levels. The effects of TV advertising on food preferences and BMI are well documented. Children who view more hours of TV per week, our results showed that the difference in TV viewing and childhood obesity in a sample of preschool children who made $25,000 to $69,999 watched an average of 11.09 hours compared to children who made between $25,000 and $69,999 watched an average of (11.09 ± 8.2) hours. Parents in the highest income level of greater than $70,000, had children who watched an average of (6.9 ± 7.8) hours per week.

Method
STRONG Kids Sample
- 497 children aged 2-5 years and their guardians.
- Recruited from 30 child care centers in East-Central Illinois.
- Mean hours per week of total TV viewed by the child were compared across categories of child BMI percentiles.

Independent Variable: Hours spent watching TV
Parent self-reported questionnaire from STRONG Kids 1
- Children’s time viewing television.
- Demographics (household income, education, race/ethnicity).

Dependent Variable: Child BMI
- Total body fat measured using a Health-o-meter 349KLX digital scale and a SECA 213 stadiometer to measure each child’s height and weight.
- BMI was calculated as weight (kg)/height^2 (m^2) and was then converted to age and gender specific BMI percentiles according to CDC methods.
- 2 groups of child BMI
  - Non-overweight: < 5th percentile to < 85th percentile
  - Overweight: 85th to ≥ 5th percentile

Analysis:
- Used a t-test to determine the relationship between BMI and hours spent watching TV.
- Conducted using the Statistical Analysis Software (SAS) version 9.3

Results
- The children in our sample watched an average of 11.4 ± 10.3 hours of TV per week.
- Children spent an average of 13.5 hours per week watching TV if they were overweight and 10.9 hours if they were non-overweight. (p = 0.0297).
- Children with parents of higher education watched significantly less hours of TV per week (8.9 ± 7.8) compared to moderate education level (13.8 ± 11.4) and least educated parents (15.4 ± 13.3).
- For the combined annual household income, children of parents who made $24,999 or less watched TV an average of (13.9 ± 12.63) hours. Children of parents who made between $25,000 to $69,999 watched an average of (11.09 ± 8.2) hours. Parents in the highest income level of greater than $70,000, had children who watched an average of (6.9 ± 7.8) hrs per week.

Discussions & Conclusions
- Our hypothesis was supported by our data. Overweight children spent more hours watching television per week than non-overweight children.
- Our findings highlight the influence of television and the need to include this issue in obesity education for parents and children. The data can also be used for policy initiatives, such as promoting physical education in schools and regulating advertisements since increased television viewing results in an increase in sedentary behavior and an exposure to food advertisements marketing unhealthy foods on children’s shows.
- Our results also showed that there was a statistically significant relationship between parent’s income, education, and childhood obesity. Further research with families could focus on these relationships to gain a better understanding of the multidisciplinary cause for fighting obesity, and help create programs for low income families.
- Although there were high standard deviations among the hours of TV viewed per week, our results showed that the difference in hours between the non-overweight and overweight children was statistically significant.
- Limitations: Our sample was not nationally representative since recruitment was limited to central Illinois where most children were non-Hispanic white and from middle or upper class families.
- Strength: Measured height and weight were used to calculate child body mass index (BMI).
- Our sample size was relatively large (>497) supporting the validity of our study findings. Along with a large sample size, we sampled children ages ranging from 2-5 years old broadening our study, and providing us with a robust amount of information further supporting our research.

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