

Character-Based App Influences on Preschoolers' Knowledge of Food and Beverage Healthiness



Marisa M. Putnam, Kaitlin L. Brunick, and Sandra L. Calvert

Children's Digital Media Center, Georgetown University

Eastern Psychological Association Annual Meeting, March 5, 2016

Children's Nutrition

- Childhood obesity is a serious health issue in the United States (McGinnis, Gootman, & Kraak, 2006; Ogden, Carroll, Kit, & Flegal, 2014).
- Obesity may occur through poor food choices, marketing practices, and media characters that endorse low-quality foods and beverages (Calvert, 2008; Galloway & Calvert, 2014).



Media & Food

- **Media Characters** (McGinnis et al., 2006 ; Calvert & Richards, 2014; Galloway & Calvert, 2014; Horton & Wohl, 1956)
 - Girls prefer female characters, boys prefer male characters (Richards & Calvert, 2013)
- **The prevalence of applications (apps) is increasing in young children's lives** (Common Sense Media, 2013).
 - Gender gap in video game playing on consoles and hand-held devices (Common Sense Media, 2013)
- **Advergames** (Calvert, 2008; Lee et al., 2009)
 - *Games with a persuasive message*
 - Promoting healthy food choices with advergames (Harris et al., 2012; Pempek & Calvert, 2009)



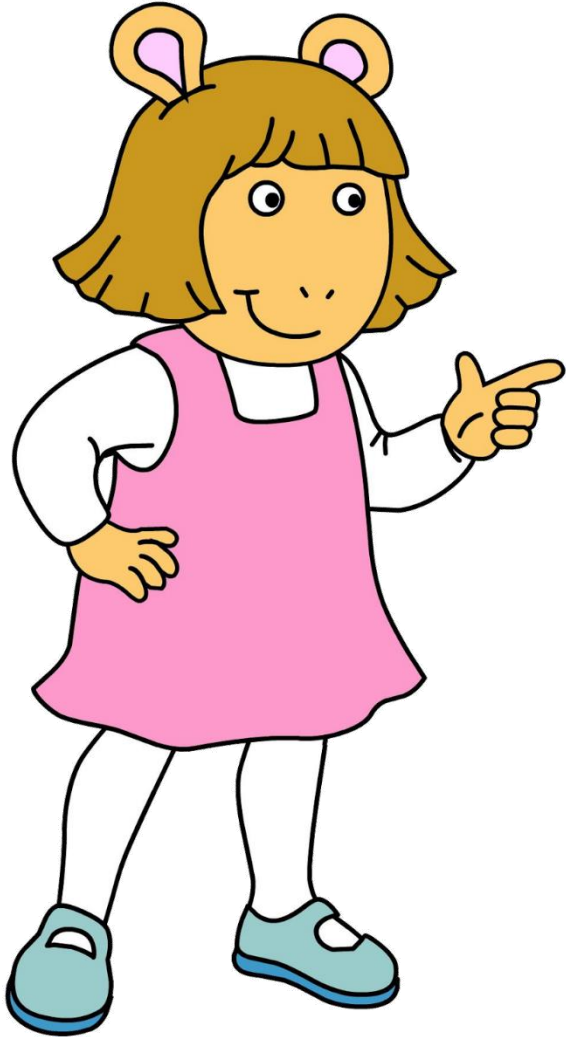
Current Study



- Does more exposure to an app increase knowledge about a food or beverage's healthiness?
- Are there gender differences in children's knowledge about healthy and unhealthy foods and learning from a female character after exposure to an app?



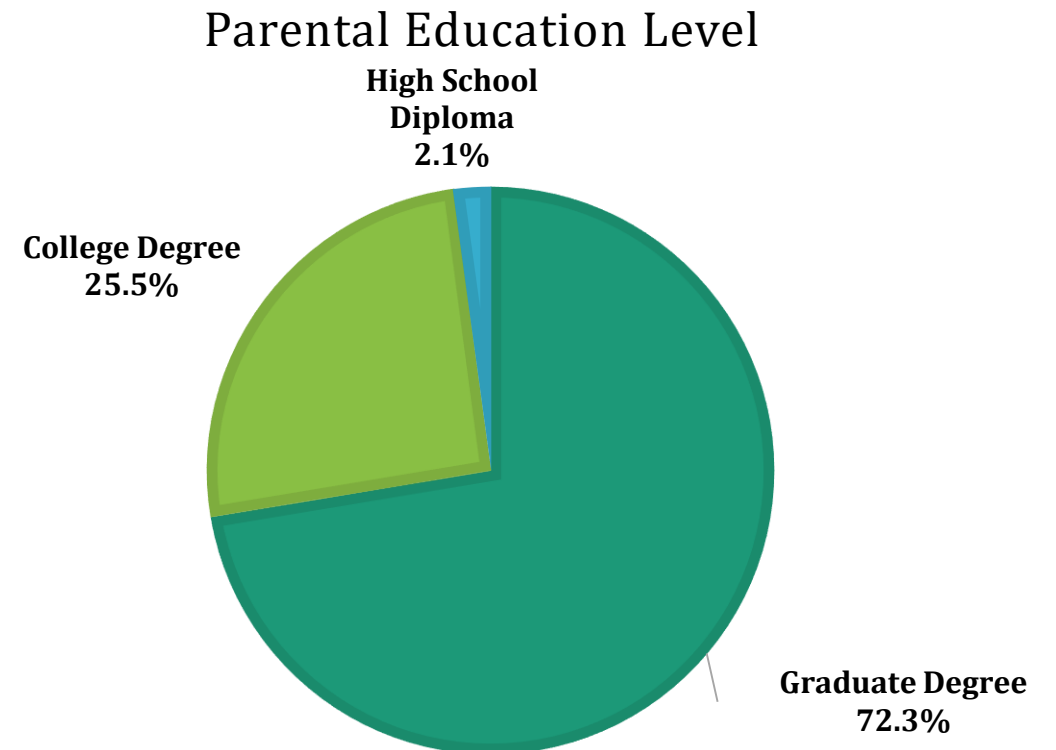
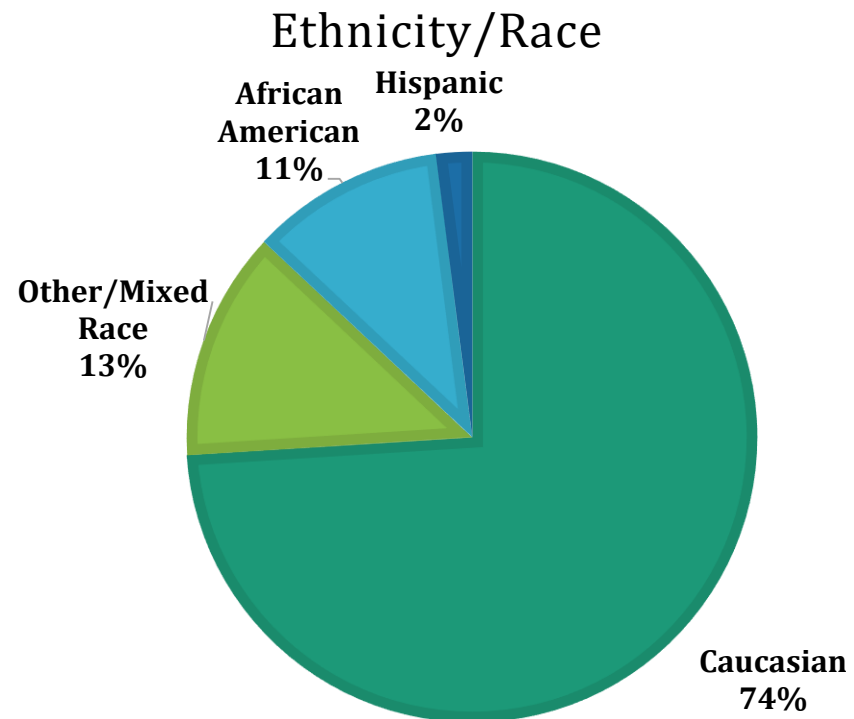
Hypotheses



- Young children with more exposure to the app will be more likely to correctly classify cartoon images of foods or beverages into healthy and unhealthy categories than those with less exposure to the app.
- Young children with more exposure to the app will be more likely to transfer that knowledge and correctly classify photos of the foods or beverages in the app into healthy and unhealthy categories.

Participants

- $n = 47$ (22 boys, 25 girls)
- Mean age = 5.26 years
- Washington, DC metropolitan area



Conditions

Repeated-App Exposure

- Given iPad to play the app in their home for 5 days



- 30 minute experimental play session



Single-App Exposure

- Given iPad to play the app during 30-minute experimental play session



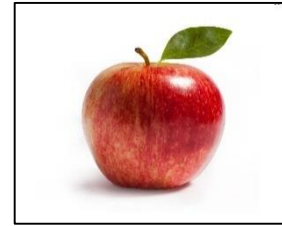
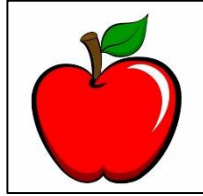
No-App Exposure Control

- No app play

Procedure

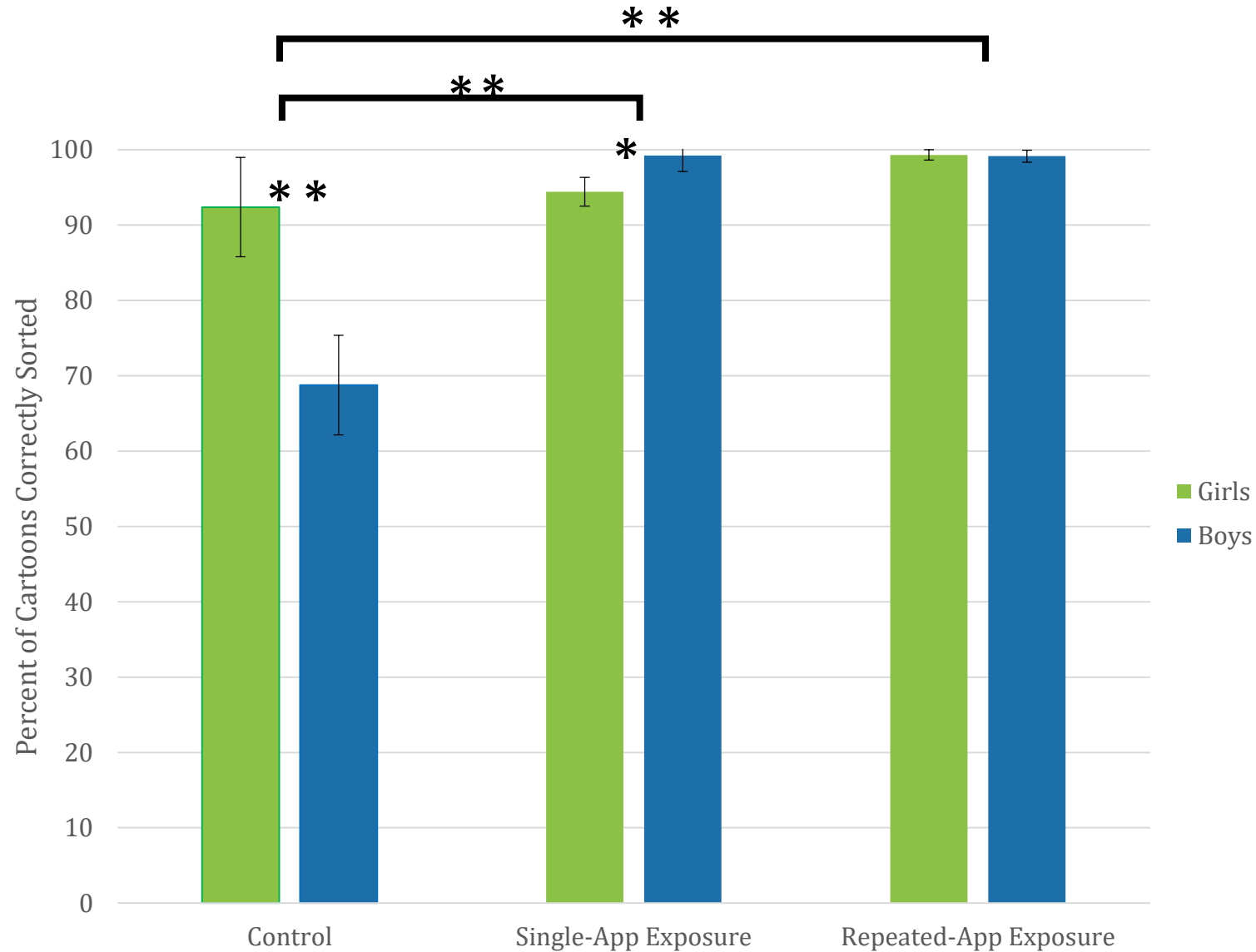


5 days + 30 minutes
30 minutes
No Exposure





Results: Percent of Cartoons Correctly Sorted

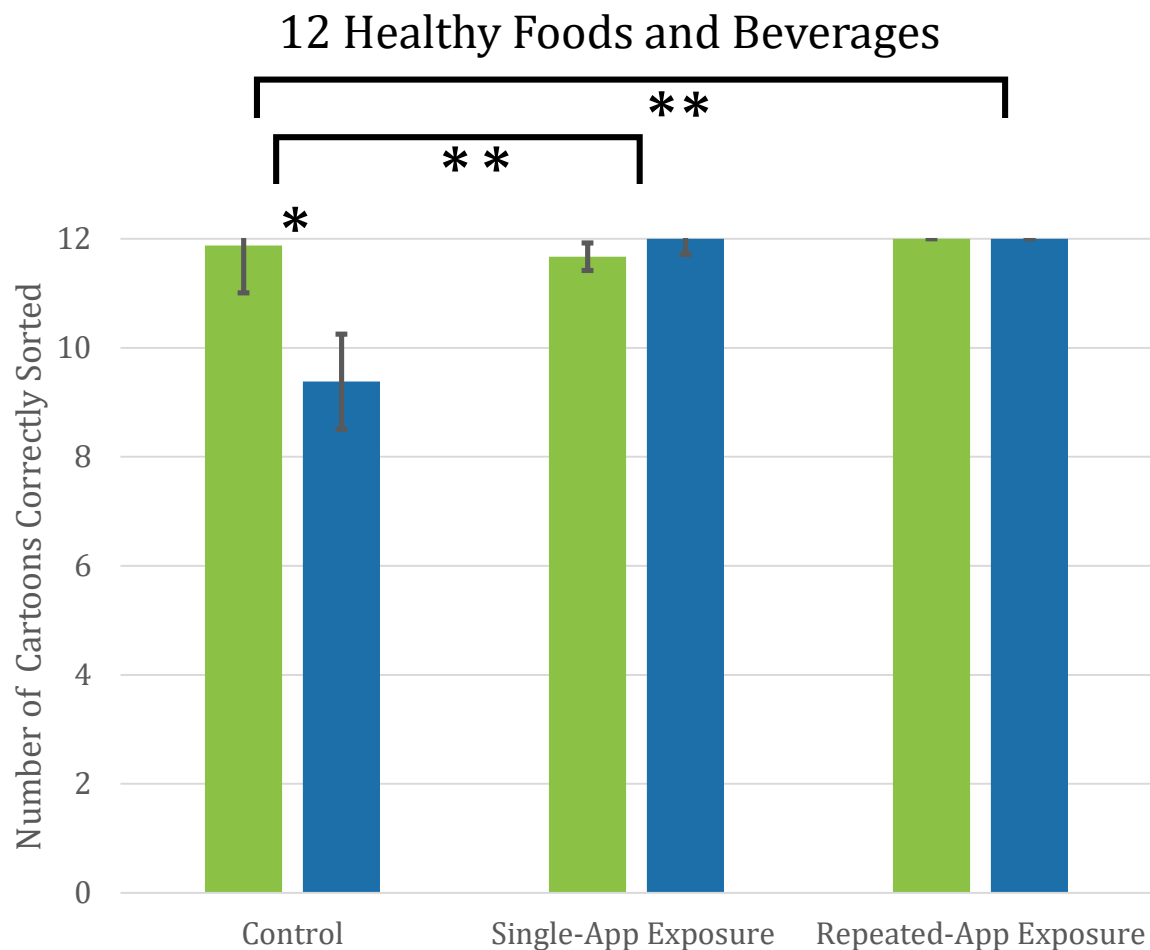


** $p < .05$

$F_{condition*gender}(2, 41) = 6.90, p = .003$
 $F_{condition}(2, 41) = 11.66, p = .000$
 $F_{gender}(1, 41) = 3.49, p = .068$



Results: Number of Cartoons Correctly Sorted

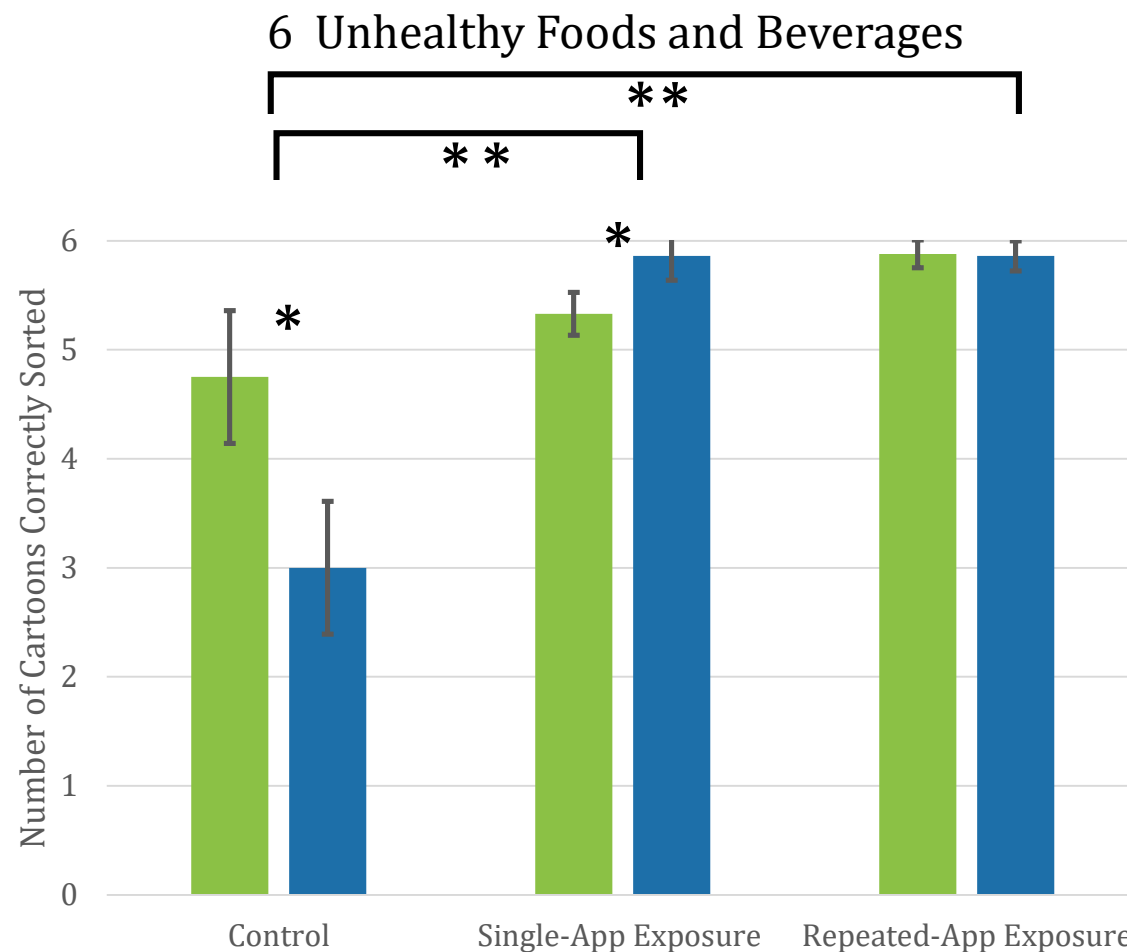


$$F_{gender*condition}(2, 41) = 4.19, p = .022$$

$$F_{condition}(2,41) = 3.91, p = .028$$

■ Girls ■ Boys

| * $p < .10$ | ** $p < .05$

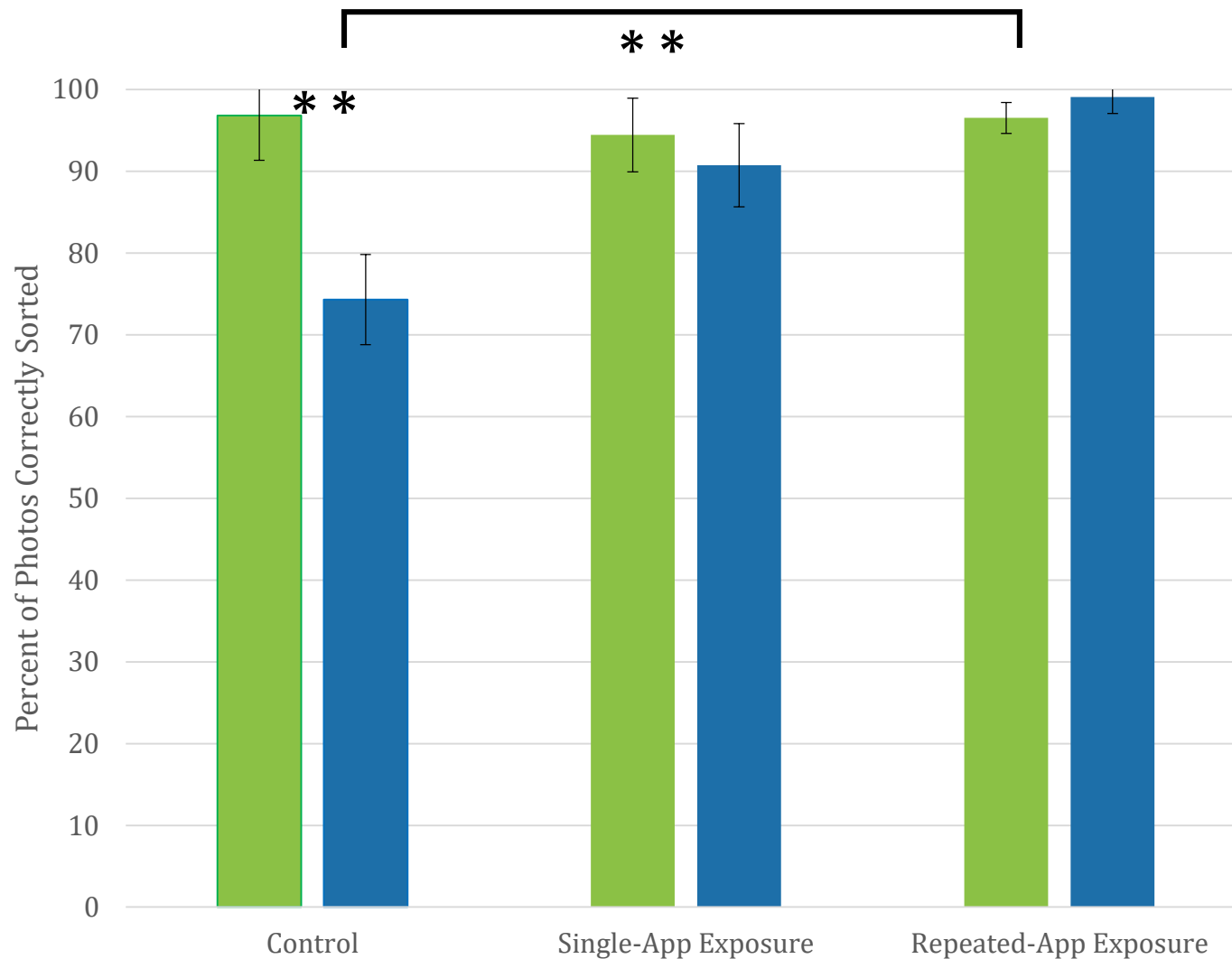


$$F_{gender*condition}(2, 41) = 4.79, p = .014$$

$$F_{condition}(2,41) = 15.56, p = .000$$



Results: Percent of Photos Correctly Sorted



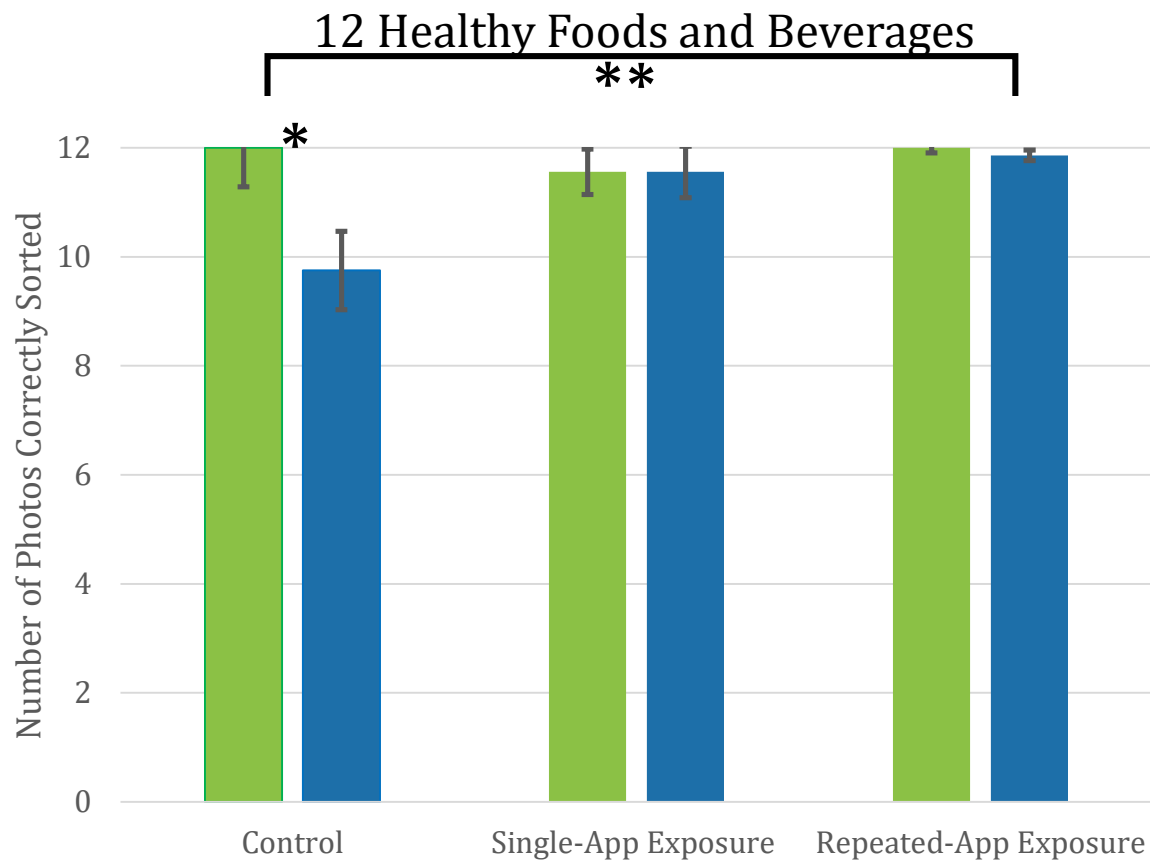
■ Girls
■ Boys

** $p \leq .05$

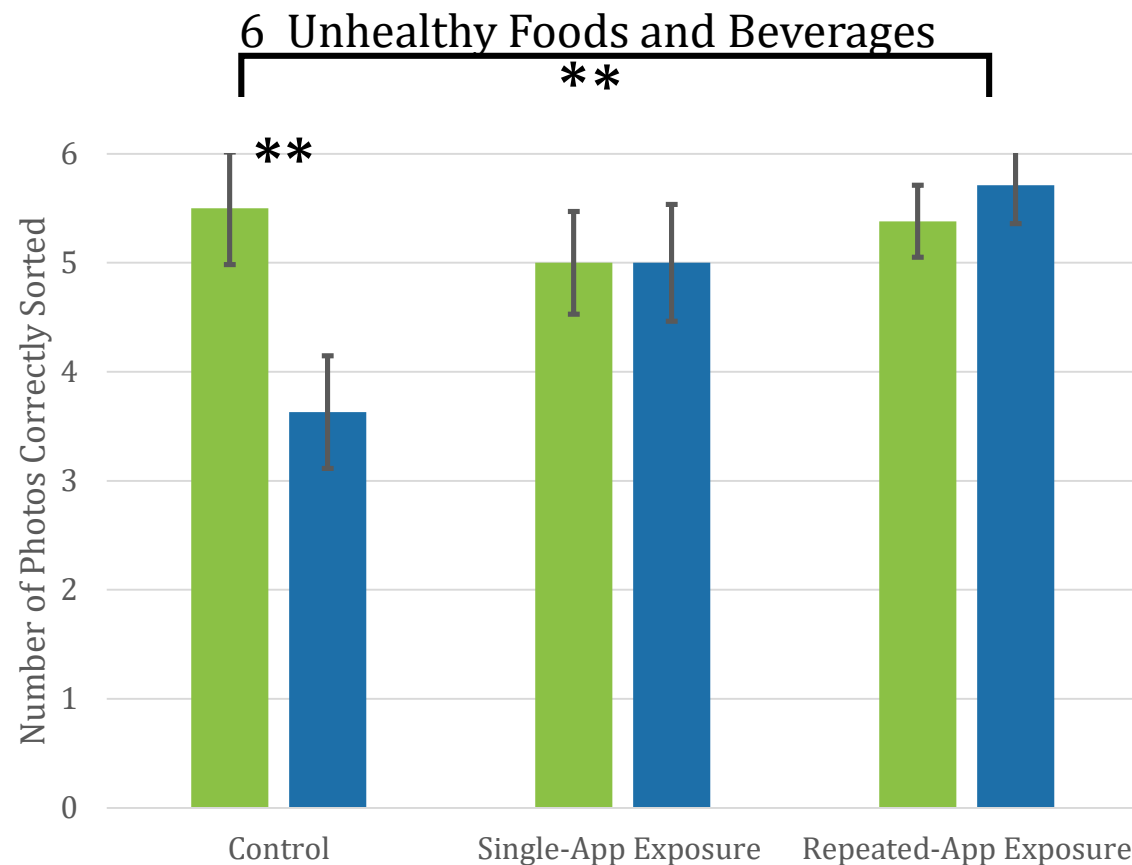
$F_{condition*gender}(2, 41) = 4.71, p = .014$
 $F_{condition}(2, 41) = 3.22, p = .050$
 $F_{gender}(1, 41) = 4.16, p = .048$



Results: Number of Photos Correctly Sorted



$F_{\text{gender*condition}}(2, 41) = 3.00, p = .061$
 $F_{\text{gender}}(1, 41) = 4.20, p = .047$



$F_{\text{gender*condition}}(2, 41) = 3.29, p = .047$

■ Girls ■ Boys | * $p < .10$ | ** $p < .05$

Discussion

- Young boys in our sample know less about whether an item is healthy or unhealthy
- Playing an advergame featuring a female character that rewards healthy behaviors helps boys to identify if a food is healthy or unhealthy as well as girls
- Apps can improve nutritional knowledge for boys, and that knowledge can be transferred to realistic representations of foods and beverages



Thank you

**All the parents and children
who participated
in this project**

**Georgetown
University**



**Children's Digital Media
Center**



**The team at the Children's
Digital Media Center**

Bill Shribman



The National Science Foundation



References

- Calvert, S.L. Growing consumers: Media marketing and advertising. (2008). In J. Brooks-Gunn & E. Donahue, (Ed.) *The Future of Children: Children, Media and Technology*. Princeton, NJ: Princeton/Brookings.
- Calvert, S.L. & Richards, M.N. (2014). Children's parasocial relationships with media characters. In J. Bossert (Oxford Ed), A. Jordan & D. Romer (Eds). *Media and the well being of children and adolescents*. Oxford: Oxford University Press.
- Common Sense Media. (2013). *Zero to eight: Children's media use in America 2013*. San Francisco, CA.
- Galloway, D.P. & Calvert, S.L. (2014). Media characters as spokespeople in U.S. grocery stores: Promoting poor nutritional messages to children. *Journal of Obesity & Weight Loss Therapy*.
- Harris, J. L., Speers, S. E., Schwartz, M. B., & Brownell, K. D. (2012). US food company branded advergames on the internet: children's exposure and effects on snack consumption. *Journal of Children and Media*, 6(1), 51-68.
- Horton, D., & Richard Wohl, R. (1956). Mass communication and para-social interaction: Observations on intimacy at a distance. *Psychiatry*, 19(3), 215-229.
- Lee, M., Choi, Y., Quilliam, E. T., & Cole, R. T. (2009). Playing with food: Content analysis of food advergames. *Journal of Consumer Affairs*, 43(1), 129-154.
- McGinnis, J., Gootman, J., & Kraak, V. (Eds.). (2006). *Food marketing to children and youth threat or opportunity?* Washington, DC: National Academies Press.
- Ogden, C., Carroll, M., Kit, B., & Flegal, K. (2014). Prevalence of Childhood and Adult Obesity in the United States, 2011-2012. *Journal of the American Medical Association*, 806-714.
- Pempek, T. & Calvert, S.L. (2009). Use of advergames to promote consumption of nutritious foods and beverages by low-income African American children. *Archives of Pediatrics and Adolescent Medicine*, 163(7), 633-637.