

Parent Perceptions of Mobile Device Use Among Preschool-Aged Children in Rural Head Start Centers

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ABSTRACT

Objective: To describe child use and parents' beliefs and comfort with young children's use of mobile devices in low-income, rural communities.

Methods: This was a descriptive, cross-sectional study. The survey, which consisted of 18 multiple-part questions, was distributed to families at 5 *Head Start*/preschool centers in Colorado.

Results: In total, 192 surveys were returned (28.5% response rate). Most children (92%) used a smart-phone or tablet at some frequency and most parents (90%) had downloaded apps specifically for their child. Education and ethnicity were related to parents' technology beliefs. Parent comfort with technology was positively associated with greater child use of technology ($P < .001$).

Conclusions and Implications: Mobile device use was relatively high in this sample. Mobile devices appear to be a feasible platform to offer nutrition and physical activity education for this audience. Ensuring parent comfort with technology and apps will be important.

Key Words: technology, mobile devices, child, preschool, low-income (*J Nutr Educ Behav.* 2017; ■:1-7.)

Accepted March 6, 2017.

INTRODUCTION

Early childhood is a critical developmental window for establishing healthy habits. Parents have a key role in nutrition and physical activity for young children, making the home environment an ideal intervention point.¹ Parental involvement has been shown to be an important intervention strategy to achieve changes in eating, activity, and

other health behaviors in young children.² Engaging parents via technology or eHealth modalities (eg, Web/mobile applications [apps], social media, telemedicine, interactive voice response, e-mail, e-learning) may be an attractive format for family-focused food and physical activity interventions.³

A recent review by Hammersley et al³ on parent-focused eHealth found no studies targeting early childhood

audiences (aged 0–8 years) on obesity interventions; thus opportunities exist to explore technology-based intervention strategies. Although some aspects of technology, such as television screen time, were linked to rising obesity prevalence,⁴ well-designed mobile apps offer a unique opportunity to engage parents and their young children to relevant messages. They may also bridge messages from child care to home environments and facilitate parent–child communication and interactions related to the adoption of health behaviors. As noted in an Institute of Medicine report on obesity prevention efforts in early childhood, “Integration of social media and web applications into family interventions could be considered to increase family engagement and reduce attrition.”⁵

Although uncertainty and concerns were voiced related to the use of technology with young children,^{6,7} mobile devices have become an inescapable and valuable part of modern life. Recently, the American Academy of Pediatrics revised its screen media use recommendations, acknowledging that technology is a part of everyday life and noting the critical importance of parents and

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Conflict of Interest Disclosure: The authors' conflict of interest disclosures can be found online with this article on www.jneb.org. The second author of this article (S. L. Johnson) served on the JNEB staff as Associate Editor. Review of this article was handled, exclusively, by the Editor-in-Chief to minimize conflict of interest.

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<http://dx.doi.org/10.1016/j.jneb.2017.03.006>

their children engaging together in technology use.⁸ The guidelines also highlight the importance of appropriate content and care to ensure technology use does not replace more active play.⁸

Several nationally representative studies showed that access to and use of mobile devices among young children are rising.⁹⁻¹² Despite this overall increase in the use of mobile devices, there were also reports of a persistent digital divide in which lower-income and ethnic minority children had more limited access to technology.¹³ The Common Sense Media survey also described an app gap, in which lower-income children were substantially less likely to have access to a smartphone, tablet, or educational apps.¹¹ Thus, the same low-income families that many interventions aim to target may well have disparate access to mobile devices, limiting access to potential quality educational or health-promoting content. However, the diffusion of innovation happens quickly. The Pew Research Center¹⁴ reported that adult ownership of smartphones climbed from 35% in 2011 to 68% in 2015 and that adult ownership of tablets rose from 3% in 2010 to 45% in 2015. Alongside this rise in mobile device ownership was an expansion of broadband services, including in rural areas of Colorado,¹⁵ and an increase in the use of mobile devices for Internet access. In 2013, Pew¹⁶ reported that 63% of cell phone owners used their phone to go online, up from just 31% of cell owners in 2009. Clearly, the technology landscape is changing rapidly, so it is important to reassess access to and use of mobile devices frequently among target populations.

Because of the breadth of use in both the home and child care environments, technology presents as an innovative intervention strategy for families with young children. Specific to nutrition and physical activity, technology may offer a way to educate families on these topics by offering engaging, accessible, and high-quality content. The overarching goal of this study was to explore child use and parents' beliefs about young children's use of smartphones, tablets, and apps in low-income, minority populations in rural Colorado. Research aims focused on revealing: (1) the types of mobile devices young children used; (2) the frequency and patterns of

young children's mobile technology use; and (3) parent beliefs and comfort regarding preschoolers' use of mobile technology.

METHODS

Study Setting and Participants

This was a descriptive, cross-sectional study targeting rural, low-income families with preschool-aged children enrolled at 5 *Head Start*/preschool centers in rural northeastern Colorado. Parent packets, including the survey and informed consent, were distributed to *Head Start*/preschool centers and sent home via children's backpacks in spring, 2016. Parents had approximately 3 weeks to return the survey to their child's teacher and reminder notes were sent home as well. All parents who completed the survey were entered into a drawing for \$100 at each site; survey data were deidentified immediately upon return. In an effort to increase the response, preschool center staff were engaged in the process and encouraged families to participate. In total, 192 surveys were returned (28.5%), with similar response rates for English (29%) and Spanish (25%) surveys. The study was approved by Colorado State University's Institutional Review Board.

Survey

The survey consisted of 18 multiple-part questions with response options including Likert scale, multiple choice, and open-ended text. Questions encompassed topics related to frequency, content and context of children's smartphone and tablet use, as well as parent beliefs and comfort with mobile devices, and demographics. Several questions were adapted from published surveys on technology use;^{10-12,17,18} others were developed to answer study aims. Content validity was established by experts in child development, public health, technology and instructional design, medical anthropology, and pediatrics. The survey was translated into Spanish and then back-translated into English by a native speaker for validation.¹⁹ Face validity was established via 2 phases of cognitive interviews completed by the target audience in both English ($n = 4$) and Spanish ($n = 2$).²⁰ Insights led to additional

refinement in the question set, including separating smartphone and tablet as distinct response items.

Data Analysis

The researchers calculated descriptive statistics for each question to summarize patterns of technology use and characterize data distributions with respect to normality. Summed scores for frequency of use and comfort were calculated. Frequency of use of videogames/educational devices, tablets, and smartphones were calculated to create a total use score, which was analyzed in tertiles. Comfort scores included questions related to parent or child comfort with technology. Chi-square goodness of fit was used to assess differences in responses by demographics. Binary logistic regression models were used to assess differences in parent's beliefs regarding technology by ethnicity (Hispanic and non-Hispanic) and education (low and high education). The researchers used ANOVA to analyze parent comfort level and child's use of technology. Because of unequal variances, the Welch F test and Games-Howell *post hoc* analyses were used to compare comfort scores by tertiles of child use. All data were entered and stored in REDCap electronic data capture tools hosted by the University of Colorado Anschutz Medical Campus.²¹ Data were analyzed with SPSS (version 23; IBM Corporation, Armonk, NY).

RESULTS

The majority of respondents (85.9%) consisted of mothers; nearly half (41%) identified as Hispanic or Latino and 44% reported having a high school diploma or less (Table 1). Overall, smartphone and tablet use was high among children in this population, with 92% of children using a smartphone or tablet at some frequency (Table 2). Specifically, 78% reported ever having used a smartphone and 76% had ever used a tablet. Almost three quarters of children used a device either occasionally or daily to play games to learn, play games for fun, or watch movies, videos, or shows.

Most children (89%) had used technology (smartphones, tablets, or computers) on their own. When using technology with others, children most commonly co-used devices

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