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Understanding how African-American and Latinx youth evaluate their experiences with digital assistants

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Abstract

As artificial intelligence (AI)-driven devices play an increasingly important role in children's lives, there is a need for research considering how socioeconomic and cultural differences shape children's engagement with digital assistants. This paper reports results from 10 interviews, including five African-American or Latinx parent/child dyads about how they use and evaluate digital assistants. We identified three key themes resulting from these interviews: usability, privacy, and digital literacy. We conclude that further study is needed to ensure that digital assistants are aligned with the values of children from underrepresented populations.

KEYWORDS

AI, children, digital assistants, ethnicity, human values

1 | INTRODUCTION

With the development of artificial intelligence (AI)-based technologies, children have increasing access to digital assistants (e.g., Alexa, Siri) via smart home devices and smartphones. Digital assistants are powered by natural language processing (NLP) algorithms that process human speech to assist users in performing basic tasks. Despite the increasing use of digital assistants, little attention has been devoted to understanding how issues of diversity and equity influence children's interactions with and evaluation of AI. African American and Latinx children might use different languages to talk to the digital assistants compared to upper-middle class adult English speakers. For example, NLP-based systems have been found to be racially biased (Blodgett & O'Connor, 2017). The purpose of this study is to examine how children to young adolescents (8–12 years of age) from underrepresented populations in STEM (e.g., African-American, Latinx) understand, interact with, and evaluate AI-driven digital assistants.

2 | METHODS

We conducted 10 in-depth and semi-structured interviews, including five African-American and/or Latinx child/parent dyads. After obtaining informed assent and consent, respectively, we first administered a demographic questionnaire about the child's use of digital assistants, then separately interviewed the parent and the child. Interview questions included their general use of, reflections on, and understanding of digital assistants. Interview sessions lasted about an hour and were audio-recorded and transcribed for analysis. Interview transcripts were imported to MAXQDA 2018 for thematic analysis (Braun & Clarke, 2006). We then developed codes and then clustered the codes into themes.

3 | RESULTS

Our analysis identified three key themes: usability, privacy, and digital literacy.

3.1 | Usability

Children did find digital assistants engaging. For example, one child said, "You can ask [Siri] what's the weather of the day; you can ask her for a joke or something...she's kind of your friend." However, children and parents raised concerns about the usability of digital assistants, such as challenges getting Siri or Alexa to understand their questions. Another child noted, "Sometimes if you don't pronounce a word right, they might not know." They would try asking the question again by pronouncing each word clearer. One child participant even mentioned language issues when he spoke Spanish to Siri: "She thought I was saying something completely different in English."

3.2 | Privacy

Both children and their parents/guardians expressed their privacy concerns over digital assistants with always-on audio capabilities. Parents also expressed concern about their child's reliance on these devices and felt it led to a lack of important interpersonal interactions. As one parent said, "...you have the expectation that they're going to ask you for facts of life...a lot of times they rely on the phone for that...you're competing with this massive network of knowledge that is at their fingertips."

3.3 | Digital literacy

Nearly every parent mentioned their child's digital literacy as being important to them, even when they had reservations about specific devices, because their child's future success would be influenced by how capable they are with this technology. Our analysis also revealed the reciprocal relationship in terms of technology use between children and their parents: children taught or helped their parents to use digital assistants, and parents tried to provide scaffolding to children's use of these devices. For instance, one parent said, "just for parental guidance...depending on their developmental stage...they might need additional assistance from someone who knows them." However, it is important to note that two children expressed that using digital assistants made them feel less comfortable due to their ethnicity; for example, one child stated: "it's not really part of Hispanics' lives, it's for the white people kind of stuff."

4 | DISCUSSION

The three themes reveal that although children and parents have concerns about usability and privacy, they are willing to accept these trade-offs due to the tremendous value that they place on digital literacy. This finding resonates with a prior study which found that parents view technology as a pathway to better education and future opportunities and the risks associated with attachment, screen time, and exposure to harmful content (Watkins, 2018). Our finding about the challenges that children face when using digital assistants resonates with Druga, Williams, Breazeal, and Resnick (2017) that children tried to increase their voice level or pause in their questions. Our findings also confirmed results from Lovato and Piper's (2019) findings that young children felt confused by their lack of a full understanding of what the system can and cannot answer.

While these early results represent a small sample of users of these devices, they nonetheless are evocative of the issues we expect to encounter as the study continues. We have iterated upon our initial interview instrument to focus more fully on how our participants solve problems and make use of digital assistants in their daily lives. Building upon the critical incident technique (Flanagan, 1954) and a variation on contextual inquiry (Wixon, Flanders, & Beabes, 1996), ongoing research will supplement our existing approach with semi-structured tasks developed from our early interviews. Tasks focused on discovering family history and cultural objects such as music will aid in eliciting ethnic and cultural dimensions of our subjects' engagement with the devices.

5 | CONCLUSION

Good systems must be responsive to diverse communities, particularly for children from underrepresented populations in tech for creating age-appropriate AI technologies for children. Digital assistants and similar AI-driven technologies are becoming increasingly pervasive tools for information-seeking, recreation, and education among youths across communities, ethnicities, and cultures. Given the relative lack of diversity within the US STEM workforce (NSF, 2017), there is reason to be concerned that these technologies may not be designed with everyone in mind. As this study continues, we seek to understand not only the role of these devices in the lives of diverse youth, but also the extent to which diverse experience and disparate access impact engagement with digital assistants. This will provide an evocative and generative baseline for future research and key knowledge for how to align digital assistants and other AI-driven applications with the children from underrepresented populations.

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