Barriers to Technology Inclusion: Teens with ASD and Typically Developing Peers  
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Background
- Current standards and guidelines for creating accessible web and information technology have focused on people with visual, auditory, and motor differences. Little attention has been paid to creating evidence-based guidelines for people with autism spectrum disorder (ASD).
- The use of technology is ubiquitous in teens with ASD and their typically developing (TD) peers (Cohen, 2015). Many people with autism spectrum disorder (ASD) are interested in and prefer screen-based activities to other activities (Mazurek, 2012).
- Computer competency is an important adaptive skill and is necessary for many careers.
- Little research has been done to understand what programs (applications) are being used, whether teens with ASD can use them, and whether current design guidelines adequately address the diverse needs of people with ASD.

Objectives
- To understand which commonly used applications are difficult for teens with ASD to use and to identify avenues for improvement.

Methods
- An anonymous 80-question online survey developed in SurveyMonkey; University of Baltimore IRB: Exempt
- Recruited via email to Interactive Autism Network (IAN) Research registry participants. IAN Community (www.iancommunity.org), and Facebook
- Administered September 9, 2015 through October 24, 2015 to parents/guardians of children ages 13 – 17, with and without ASD, in the US.

Results

Results (continued)
- Parents were asked, “What advice do you have for people who design computers and other digital devices, computer applications, and web pages so that they could improve these technologies for your child?” A thematic content analysis revealed the following themes for the ASD groups, in order of frequency:
  - Simple and predictable. Use clear, simple, concrete language; clean design; predictable navigation; and clear instructions.
  - “Stop making everything take a million unnecessary steps”.
  - “Make them so nothing ever goes wrong and they always do what they are supposed to do! Ha ha!”
  - “It would be fantastic if parental controls vis-a-vis time and content were more user-friendly.”
- Multi-sensory. Spaces should accommodate a variety of learning and perceptual differences.
- “More visual, language, and auditory.”
- Respect. Despite cognitive differences, their teens appreciate games and information with sophisticated, age-appropriate material.
- “Design fun and interesting spaces for older people with lower cognitive abilities. They’re not children.”
- Accommodate motor differences. 59% of the ASD teens had fine and 41% had gross motor problems. The ASD teens had more difficulty with device use, but were using all devices.

Conclusions
- Most of the teens in this study with ASD were active technology users. When programs were tailored to the needs of the ASD low teens, they are able to use them.
- People who design office productivity and entertainment applications should provide simplified versions so that people with lower intellectual ability and cognitive differences can have equal access to occupational and entertainment opportunities.
- Adequacy to current accessibility guidelines for people with cognitive and motor differences will help increase technology access for people with ASD. These guidelines include: Web Accessibility Initiative (w3.org/WAI/lntr/wcag), Plain Language (www.plainlanguage.gov), and W3C Cognitive Accessibility User Research (w3.org/TR/cogau-user-research).

References