software & technologies for people with autism

Software developers, designers and researchers have been looking to technology for solutions to help and educate people with autism spectrum disorders (ASD) for over two decades. There are many examples of seemingly successful software/technology-based products and prototypes, yet very little is known about how well these solutions are currently integrated into lives of children and adults with autism and their families.

Creating effective products from a user-centered perspective begins with a focus on user goals, attitudes and behaviors....

... what do users want?

ASD (autism spectrum disorders)

- Affects people differently
- Diagnosed by the "triad of impairment"
  - (1) communication
  - (2) socialization
  - (3) repetitive, unimaginative and stereotyped patterns of behavior, play and interests

why are researchers excited?

- Software programs accommodate the ASD need for sameness
- Software does not get impatient with repetition and can be implemented to provide prompts and reinforcement consistently
- Eliminates the social complexities of interaction with others and allows users to work at their own pace
- Educational software for the personal computer platform can deliver a one-on-one structured learning environment which is often required for children with ASD to effectively learn a topic

concerns

- Working on computers will further isolate users that already have difficulties with social interactions
- Computer will become a focus of obsessive compulsive behaviors

Background

wide range of existing products

Type of product	*Targeted Skill Area*						*Related Literature*
	Education	*Therapeutic*	*Play Promotion*	*Communication*	*Social Skill Help*	*Schedule Aids*	
Web-based instruction	✓	✓		✓	✓		Whalen et.al, 2006
Language related skill acquisition	✓			✓			Bosseler & Massaro, 2003
Robots/ Virtual Peers	✓		✓		✓		Dautenhahn, 2003; Tartaro & Cassel, 2006
Facial Recognition instruction					✓		Baron-Cohen & Golan, 2006
Virtual Reality Simulations					✓		Kerr, 2002; Parsons & Mitchell, 2002
Cooperative Games			✓		✓		Piper et. al, 2006,
Video Modeling	✓	✓	✓		✓		Maione & Mirenda, 2006
Play Support		✓	✓				Pares et. al 2006
Activity Schedules			✓			✓	Dauphine, Kinney, Stromer 2004
Assistive Technology Devices				✓		✓	Dawe, 2006

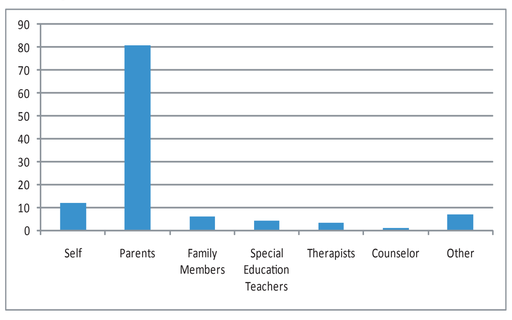
researchquestions

- What types of software and technology have users tried?
- What has been their experience with those products?
- What are USER's attitudes and behaviors towards technology?
- What common interests, behaviors and strengths might also help future design efforts?

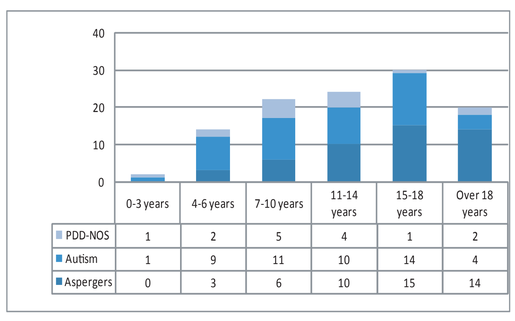
researchmethod

- Anonymous online survey
- Data from 114 respondents from Seattle and northern California
- Demographics: Age, verbal ability, diagnosis
- Asked: "In a perfect world, what type of software or technology (if any) do you think your child (or you in the case of the self responders) would really benefit from?"
  - Analyzed for goals, concerns and suggestions
- Asked: "What are your interests?", "What are your child's strengths?"

Respondents



Respondents: 79% were parents of children with ASD



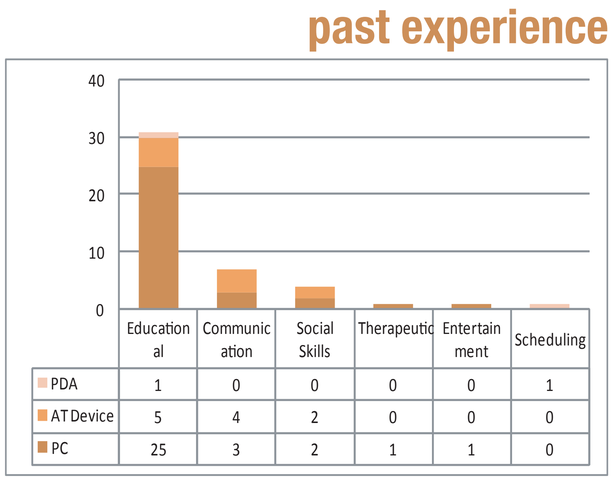
Respondents answering for a child by age and diagnosis

findings and discussion

experiences

software & tech

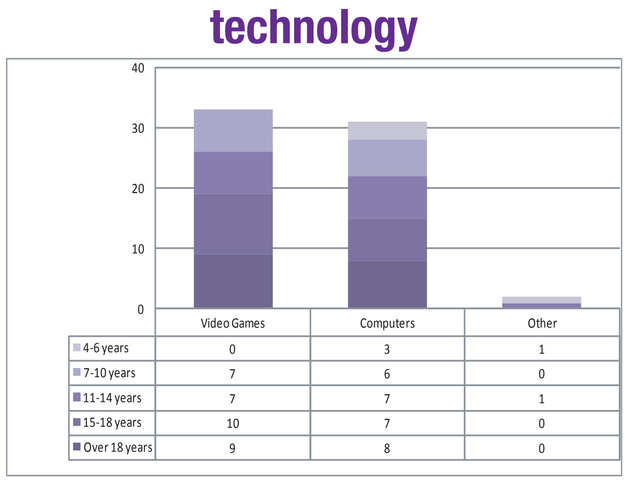
past experience



- 25% of respondents had experience with software or technology designed for cognitive disabilities
  - Eight with mulitple experiences
- 57% educational
  - Not aligned with user goals
- 71% designed for PC
- Software ratings
  - Easy to use: Mean = 3.9 of 5
  - Effective: Mean = 3.5 of 5
  - Easy to set up: = 3.9 of 5

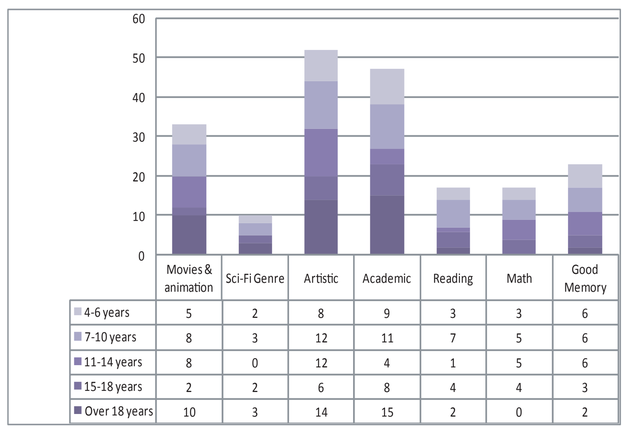
strengths & interests

technology



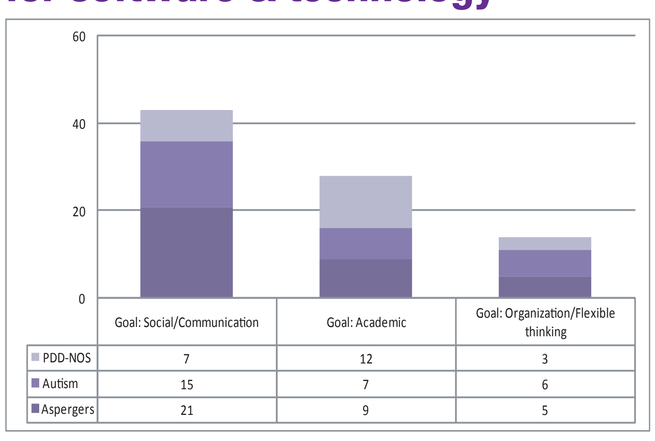
strengths & interests

other common



user goals

for software & technology



- 32% goals in social/communication domains
- 10% organization/scheduling
  - No significant correlations between demographics and these goal indicating shared by diverse users
- 20% in academic domains
  - Shared disproportionately by PDD-NOS diagnosis

concerns & suggestions

- Make products portable
- Ability to adjust noise and brightness
- Better input devices

Next steps...

What are best practices when utilizing UCD methodologies for people with ASD

What adaptations and modifications are required ?

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