

Web Difficulties and Concerns: Teens with Autism

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Pediatric Academic Societies

April 30, 2016

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Have documented no financial relationships to disclose or Conflicts of Interest (COIs) to resolve.

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Presenter: Cheryl Cohen has documented this presentation will not involve discussion of unapproved or off-label, experimental or investigational use.

Background

What is Autism Spectrum Disorder (ASD)?

- Core characteristics include (DSM-5, 2013):
 - Deficits in social communication and social interaction
 - Restricted, repetitive patterns of behavior, interests, activities
 - Sensory over- or under- reactivity
- Impairments in fine and gross motor skills, gait, and postural control common



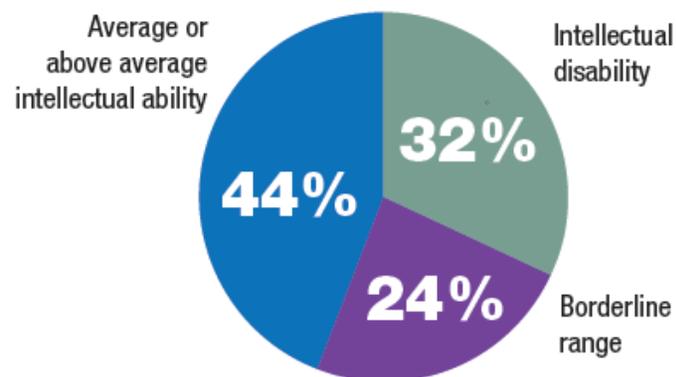
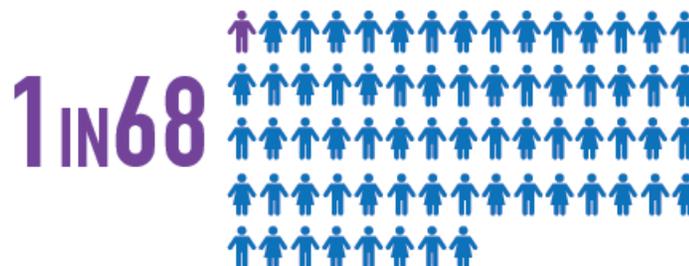
Background

Autism Spectrum Disorder (ASD)

- Lifelong
- Prevalence is 1 in 68* (1.1 million children in US)
- Males to females - 4.5:1*
- It's a spectrum
 - ✓ Non-verbal to verbal
 - ✓ 44% have average or above average intellectual ability*

*CDC, 2016

NUMBER OF CHILDREN IDENTIFIED WITH ASD



Images courtesy CDC, 2016.

Background

People with autism are not fully included in society.

Young adults and their parents reported*:

- In the first years out of high school, **more than 1/3rd** in the US had no jobs and were not involved in higher education. Higher than rates for comparison disabilities.
- **Only 58%** had paying jobs into their 20s. Most jobs were low wage or part time. Lower than rates for comparison disabilities.
- **Vocational skills** most important services needed

*Roux, 2015

Background

- Little research has focused on how people with autism use technology in their day-to-day lives and whether that technology is accessible to them to meet their occupational, economic, entertainment, and information needs.*

*Cohen, 2015



Objectives

To find out whether web use is a barrier by looking at:

- Which teens with autism were using the web
- Whether they could use that technology successfully

To determine the extent of problematic behaviors:

- Parents' concerns with their teens' online behaviors

Methods

- Anonymous online 80-question survey
- Administered to parents of children ages 13-17 living in the US with and without autism
- Subjects were recruited:
 - with the assistance of the Interactive Autism Network (IAN) Research Database and Community at the Kennedy Krieger Institute, Baltimore
 - social media
- September – October 2015
- University of Baltimore IRB: Exempt

Participants

- Completed surveys = 347
- Groups:
 - Parents reporting on their teens with ASD – 263 (76%)
 - Parents reporting on their typically-developing teens (TD) – 84 (24%)
- Male-to-female gender ratios
 - ASD (5.9:1) – within expected range
 - TD (1:1)

Analysis

Analysis groups (n=347):

- **ASD Normal** (129/37%) - Teens with ASD and parent-reported normal or higher intellectual ability
- **ASD Low** (134/39%) - Teens with ASD and parent-reported below-normal intellectual ability
- **TD** (84/24%) - Typically-developing teens with parent-reported normal or higher intellectual ability

No statistically significant differences between the groups in demographic characteristics (skewed toward higher SES)

Statistical model used Logistic Regression controlling for age, gender, white (vs. non-white), Hispanic (vs. non-Hispanic)

*Does your teen use the internet or
the web (go online)?*



Which teens are going online?

Almost all teens going online:

- TD – 99%
- ASD Normal – 99%
- ASD Low – 89%



Why not?

- No ability (5)
- No interest (5)
- Only watches videos (2)
- Other (2)

*Does your teen have problems with
common web tasks?*



Common web tasks: Filling in web forms

Teens with ASD had significantly more difficulty filling in forms, with ASD Low group having the most difficulty.



123

Job Application

Name *

Email *

Phone *

What position are you applying for? *

Available start date *
 / /

What is your current employment status? *
 Employed Self-Employed
 Unemployed Student

How do you prefer to submit your resume? *
 Upload file
 Provide URL

Upload your resume

	ASD-Low n = 117	ASD- Normal n = 127	TD n = 83	Difference between all groups	ASD-Normal vs. TD
Filling in web forms	57%	20%	4%	$\chi^2=84.54$; $p<.001$; $d.f.=6$	$p=.004$

Common web tasks: Finding information on a webpage

Teens with ASD had significantly more difficulty finding information on a webpage, with ASD Low group having the most difficulty.

	ASD Low n = 117	ASD Normal n = 127	TD n = 83	Difference between all groups	ASD- Normal vs. TD
Finding information on a webpage	42%	17%	6%	$\chi^2=50.14$; $p<.001$; d.f.=6	$p=.007$

Common web tasks: Using search engines

ASD Low group had significantly more difficulty using search engines.





	ASD Low n = 117	ASD Normal n = 127	TD n = 83	Difference between all groups	ASD Normal vs. TD
Using search engines	28%	10%	4%	$\chi^2=36.99$; $p<.001$; d.f.=6	NS

Common web tasks: Switching between websites or webpages

ASD Low group had significantly more difficulty.

	ASD Low n = 117	ASD Normal n = 127	TD n = 83	Difference between all groups	ASD Normal vs. TD
Switching between websites or webpages	15%	5%	1%	$\chi^2=26.33$; $p<.001$; d.f.=6	NS

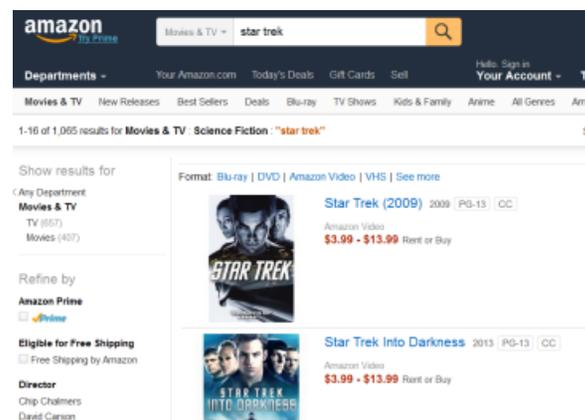
*What are your concerns with your
teen's online behavior and safety?*



Communication/judgment :

Does your child **purchase online offers or online subscriptions or sign up for websites that he/she shouldn't?**

Important problem for all groups, with ASD Low having the most problematic behavior.



	ASD Low	ASD Normal	TD	Difference between all groups	ASD-Normal vs. TD
Inappropriate purchasing and joining	53%	35%	19%	$\chi^2=14.65$; $p=.023$; $d.f.=6$	$p = 0.05$

Communication/judgment :

In the past year, has your child been **taken advantage of or bullied** on social media, photo sharing sites, discussion forums, or chat rooms?

Cyber bullying a problem for all groups, but no statistically significant difference between groups.

- Bullying a problem for individuals with ASD (38% past month/63% lifetime) (Zablotsky, 2014)
- Kowalski (2011) showed that parents of teens with ADHD and Asperger's unaware of cyber bullying occurrence and don't discuss with teens.

	ASD Low	ASD Normal	TD	Difference between all groups	ASD Normal vs. TD
Cyber bullying	15%	25%	14%	NS	NA

Communication/judgment :

Are you concerned about the **content of your child's comments or postings on social media?**

Behavior a problem for all groups, but no statistically significant difference between groups.

	ASD Low	ASD Normal	TD	Difference between all groups	ASD Normal vs. TD
Comment or posting content	51%	44%	41%	NS	NA

Behavior:

Are you concerned about your child's **video viewing habits**?

Behavior a problem for all groups, but especially ASD Normal.

	ASD Low	ASD Normal	TD	Difference between all groups	ASD Normal vs. TD
Video viewing habits	45%	59%	35%	$\chi^2=13.88$; $p=.031$; d.f.=6	$p = 0.006$

Behavior:

Are you concerned about your child's **gaming habits**?

Teens' **gaming habits** were problematic for all groups, but **being male** was the biggest risk factor.



	ASD Low	ASD Normal	TD	Difference between all groups	ASD Normal vs. TD
Gaming habits	27%	41%	29%	$\chi^2=18.61$; $p=.005$; $d.f.=6$ (gender male $p=.005$)	NS

Concerns of Parents of Teens with ASD

“He spends far too much time playing games, he's addicted to them. If I take the device(s) away he has a meltdown.”

“He tends to look for videos that are either violent, or that trigger excitement.”

“He has had problems in the past about looking at porn and we have to be diligent to keep him from those sites.”

“I am afraid that he could get so involved in it, if not being monitored, that he could forget about everything else.”

“In the past she's talked to strangers and watched things she shouldn't. I'm very afraid of predators.”

Summary

- Most of the teens were going online
- **Performing common web tasks** more difficult for teens with ASD, but especially ASD Low
- **Content of social media postings** was problem across groups
- **Cyber bullying** a minor concern of parents for all groups (but underestimated)
- **Inappropriate joining and purchasing** big problem for all groups, especially ASD Low
- **Time spent gaming and gaming content** problematic for many **male** teens across groups
- **Time spent watching videos and content** problematic for all groups, but especially ASD Normal

Acknowledgements



- Individuals with autism and their parents and guardians for their generous contribution of time and effort
- Subjects were recruited with the assistance of the Interactive Autism Network (IAN) Research Database at the Kennedy Krieger Institute, Baltimore

References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Centers for Disease Control and Prevention (2016). *Community Report from the Autism and Developmental Disabilities Monitoring (ADDM) Network* Retrieved from http://www.cdc.gov/ncbddd/autism/documents/community_report_autism.pdf

Cohen, C.A. (2015). *Identifying Opportunities to Improve the Accessibility of Web and Information Technology for People on the Autism Spectrum*. Master's Thesis. University of Baltimore.

Kowalski, R.M., Fedina, K. (2011). Cyber bullying in ADHD and Asperger Syndrome populations. *Research in Autism Spectrum Disorders*, 5(3), 1201-1208.

Roux, A.M., Shattuck, P.T., Rast, J.E., Rava, J.A. & Anderson, K.A. (2015) *National Autism Indicators Report: Transition into Young Adulthood*. Philadelphia, PA: Life Course Outcomes Research Program, A.J. Drexel Autism Institute, Drexel University.

Zablotsky, B., Bradshaw, C. P., Anderson, C., & Law, P. A. (2013). The association between bullying and the psychological functioning of children with autism spectrum disorders. *Journal of Developmental and Behavioral Pediatrics*, 34(1), 1–8.