

# The Assessment of Autism Spectrum Disorder in Adults

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## APA 2019

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## Relevant Disclosure

- Co-author of the Autism Spectrum Rating Scales (MHS, 2009).
- Co-author of Assessment of Autism Spectrum Disorders 1<sup>st</sup> and 2<sup>nd</sup> Editions (Guilford, 2009, 2018).
- Co-author/presenter Assessment of Autism Spectrum Disorders CEU (APA, 2009).
- Co-author of Raising a Resilient Child With Autism Spectrum Disorders (2011, McGraw Hill).
- Co-author of Treatment of Autism Spectrum Disorders (2012, Springer).
- Co-author of the Autism Spectrum Evaluation Scales (in development, MHS).
- Compensated speaker.

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## Goals For Today

- Briefly discuss the historical theories of Autism Spectrum Disorders (ASD).
- Briefly touch on new research relative to adults with ASD
- Briefly discuss a core theory of ASD.
- Briefly review hypothesized causes.
- Define ASD and new DSM 5 criteria as they pertain to adults.
- Briefly discuss symptoms of ASD in adults.
- Discuss unique adult issues in ASD including issues of aging and camouflage.
- Discuss data from the ASRS and ASRS 2, among the largest epidemiological/standardization samples collected of normal children and adults with and without ASD.
- Discuss methods for assessment, diagnosis and treatment of ASD in adults.

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### Is There a Need To Assess ASD in Adults?

- In the fall of 2010, 369,774 American children ages 6 through 21 received services under the special education classification of "Autism" (U.S. Department of Education, Office of Special Education Programs, Data Analysis System 2011).
- As a further reminder of this growing public health issue, the per capita lifetime incremental cost of autism is estimated at \$3.2 million. Twenty-one percent is attributed to care for the adult with ASD and 30.7% to loss of the individual with ASD's productivity during adult life (Ganz 2007).

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We are social beings.




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### What Benefits Do We Derive From Socialization?



- Support
- Survival
- Affiliation
- Pleasure
- Procreation
- Knowledge
- Friendship

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The social development of autistic persons is qualitatively different from others.




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In normal individuals perceptual, affective and neuro-regulatory mechanisms predispose young infants to engage in social interaction from very early on in their lives.




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Socialization Begins Early:  
Reina and Her Mother



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Why do infants engage us?



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Adrian, my seatmate on a recent flight.



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Adrian



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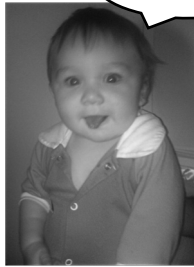
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Adrian



See what I can do!  
Wanna take me home?

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Why do some children not point?




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Imitation is more than flattery.




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### Where are Autism's Roots?

- In the bible?
- In ancient cultures?
- In history?
- In religion?
- Portrayed in art?

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### Les âges de l'ouvrier



Léon FRÉDÉRIC 1895

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Les âges de l'ouvrier




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Is this child portrayed as autistic?

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Which woman is her mother?

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### Autism's First Child

AS NEW CASES OF AUTISM HAVE EXPLODED IN RECENT YEARS—SOME FORM OF THE CONDITION AFFECTS ABOUT ONE IN 110 CHILDREN TODAY—EFFORTS HAVE MULTIPLIED TO UNDERSTAND AND ACCOMMODATE THE CONDITION IN CHILDHOOD. BUT CHILDREN WITH AUTISM WILL BECOME ADULTS WITH AUTISM. SOME 500,000 OF THEM IN THIS DECADE ALONE. WHAT THEN? MEET DONALD GRAY TRIPLETT, 77, OF FOREST, MISSISSIPPI. HE WAS THE FIRST PERSON EVER DIAGNOSED WITH AUTISM. AND HIS LONG, HAPPY, SURPRISING LIFE MAY HOLD SOME ANSWERS.

By John Donovan and Caren Zucker



Atlantic Monthly, October 2010

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### Little is Known About Older Adults With ASD

- Little is known about people with ASD above 50 years old. Small studies suggest the symptoms remain stable (Wise et. Al, 2017).
- A 2015 study from Lisa Croen of Kaiser Permanente described health issues of people with ASD in the Kaiser Permanente system (Croen et al., 2015).
- Subsequent mortality studies (Guan & Li, 2017; Hirvikoski et al., 2016) suggest a diminished lifespan for people with ASD.
- Studies from in the United Kingdom found much higher rates of suicide and debilitating depression in people with ASD (Cusack et al. 2016).

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### Is Social Information Processing at the Core of ASD (Crick and Dodge, 1994)?

- Encoding of relevant stimuli.
- Interpretation of cues (both cause and intent).
- Goal setting.
- Comparison of the present situation to past experience.
- Selection of possible responses.
- Acting on a chosen response.

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### Why Spectrum?

Autism is now referred to as a Spectrum Disorder in which individuals can present problems ranging from total impairment to near reasonable functioning.

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In a Spectrum Disorder genetic and phenotypic factors predispose certain individuals to express certain Central Nervous System vulnerabilities leading to poorly adapted variations in development and behavior.

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In a Spectrum Disorder all symptoms are considered relevant to the extent they present in each disorder. Thus a symptom is not exclusive to a disorder.

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The form that a Spectrum Disorder assumes is determined by its composite symptoms. These symptoms often have complex relationships.

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### Core DSM and ICD Core ASD Symptoms in All Ages

- Impaired social relations.
- Impaired communication skills.
- Impaired behavior.




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### Symptoms Present Before 24 Months

Children with ASD Struggle to:

- Orient to name
- Attend to human voice
- Look at face and eyes of others
- Imitate
- Show objects
- Point
- Demonstrate interest in other children




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### Symptoms Present Before 36 Months

Children with ASD:

- Use of other's body to communicate or as a tool
- Stereotyped hand/finger/body mannerisms
- Ritualistic behavior
- Failure to demonstrate pretend play
- Failure to demonstrate joint attention




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Meet Kevin



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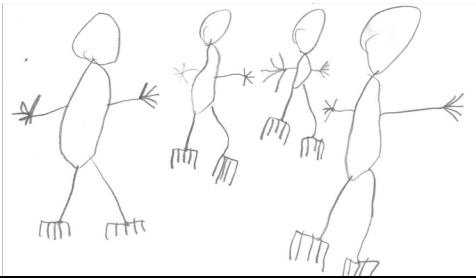
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Kevin Draws His Family



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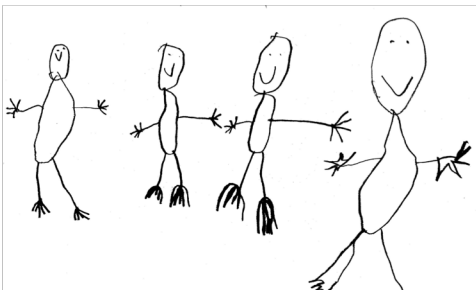
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Kevin Adds Faces



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## Capacity to Pretend Play in Autism

- Limited, often absent
- When present usually characterized by: repetitive themes, rigidity, isolated acts, one-sided play, limited imagination.

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## EPIC Players




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## Theater as a Medium to Develop Social Skills

- Theater arts offer an opportunity for individuals with ASD to venture into the community in a win-win relationship.
- EPIC's performances help the general community better understand the nature of having ASD.
- At the same time, actors with ASD have the opportunity to interact in a medium that we believe will foster not only the development of self-esteem, but appropriate social interaction—the latter very clearly being the primary hurdle to successful adult transition for those with ASD.
- EPIC hopes to quantify our initial experiences of the benefits of theater for those with ASD through a long-term, qualitative study measuring the associative effects of theater arts, training on social skills, sense of purpose and independence in daily life activities.

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## A Brief Current Research Update of ASD in Adults

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### Epidemiology of Autism Spectrum Disorders in Adults in the Community in England

Traolach S. Brugha, MD/NUJ, FRCPsych; Sally McManus, MSc; John Bankart, MSc, PhD; Fiona Scott, PhD, CPsychol; Susan Pardon, MSc, PhD; Jane Smith, BSc; Paul Robinson, PhD, FRCPsych; Rachel Jenkins, MD, FRCPsych; Howard Meltzer, PhD

**Context:** To our knowledge, there is no published information on the epidemiology of autism spectrum disorders (ASDs) in adults. If the prevalence of autism is increasing, rates in older adults would be expected to be lower than rates among younger adults.

**Objective:** To estimate the prevalence and characteristics of adults with ASD living in the community in England.

**Design:** A stratified, multiphase random sample was used in the third national survey of psychiatric morbidity in adults in England in 2007. Survey data were weighted to take account of study design and nonresponse so that the results were representative of the household population.

**Setting:** General community (ie, private households) in England.

**Participants:** Adults (people 16 years or older).

**Main Outcome Measures:** Autism Diagnostic Observation Schedule, Module 4 in phase 2 validated against the Autism Diagnostic Interview-Revised and Diagnostic Interview for Social and Communication Disorders in phase 3. A 20-item subset of the Autism-Spectrum Quo-

tient self-completion questionnaire was used in phase 1 to select respondents for phase 2. Respondents also provided information on sociodemographics and their use of mental health services.

**Results:** Of 7461 adult participants who provided a complete phase 1 interview, 618 completed phase 2 diagnostic assessments. The weighted prevalence of ASD in adults was estimated to be 9.8 per 1000 (95% confidence interval, 3.0-16.3). Prevalence was not related to the respondent's age. Rates were higher in men, those without educational qualifications, and those living in rented social (government-financed) housing. There was no evidence of increased use of services for mental health problems.

**Conclusions:** Conducting epidemiologic research on ASD in adults is feasible. The prevalence of ASD in this population is similar to that found in children. The lack of an association with age is consistent with there having been no increase in prevalence and with its causes being temporally constant. Adults with ASD living in the community are socially disadvantaged and tend to be unrecognized.

Arch Gen Psychiatry. 2011;68(5):459-466

### Epidemiology of autism in adults across age groups and ability levels\*

Traolach S. Brugha, Nicola Spiers, John Bankart, Sally-Anne Cooper, Sally McManus, Fiona J. Scott, Jane Smith and Freya Tyrer

#### Background

The epidemiology of autism in adults has relied on untested projections using childhood research.

#### Aims

To derive representative estimates of the prevalence of autism and key associations in adults of all ages and ability levels.

#### Method

Comparable clinical diagnostic assessments of 7274 Adult Psychiatric Morbidity Survey participants combined with a population case-register survey of 290 adults with intellectual disability.

#### Results

The combined prevalence of autism in adults of all ages in England was 11/1000 (95% CI 3-19/1000). It was higher in

those with moderate to profound intellectual disability (odds ratio (OR)=63.5, 95% CI 27.4-147.2). Male gender was a strong predictor of autism only in those with no or mild intellectual disability (adjusted OR=8.5, 95% CI 2.0-34.9; interaction with gender,  $P=0.03$ ).

#### Conclusions

Few adults with autism have intellectual disability; however, autism is more prevalent in this population. Autism measures may miss more women with autism.

#### Declaration of interest

None.


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Cited by 1  
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### Anxiety and depression in adults with autism spectrum disorder: a systematic review and meta-analysis

Matthew J. Hollocks <sup>[a1]</sup>, Jian Wei Leih <sup>[a2]</sup>, Ilana Magiati <sup>[a2]</sup>, Richard Meiser-Stedman <sup>[a1]</sup> ...   
DOI: <https://doi.org/10.1017/S0033291718002283> Published online: 04 September 2018

Abstract

Adults with autism spectrum disorder (ASD) are thought to be at disproportionate risk of developing mental health comorbidities, with anxiety and depression being considered most prominent amongst these. Yet, no systematic review has been carried out to date to examine rates of both anxiety and depression focusing specifically on adults with ASD. This systematic review and meta-analysis examined the rates of anxiety and depression in adults with ASD and the impact of factors such as assessment methods and presence of comorbid intellectual disability (ID) diagnosis on estimated prevalence rates. Electronic database searches for studies published between January 2000 and September 2017 identified a total of 35 studies, including 30 studies measuring anxiety ( $n = 26\,070$ ; mean age = 30.9,  $s.d. = 6.2$  years) and 29 studies measuring depression ( $n = 26\,117$ ; mean age = 31.1,  $s.d. = 6.8$  years). The pooled estimation of current and lifetime prevalence for adults with ASD were 27% and 42% for any anxiety disorder, and 23% and 37% for depressive disorder. Further analyses revealed that the use of questionnaire measures and the presence of ID may significantly influence estimates of prevalence. The current literature suffers from a high degree of heterogeneity in study method and an overreliance on clinical samples. These results highlight the importance of community-based studies and the identification and inclusion of well-characterized samples to reduce heterogeneity and bias in estimates of prevalence for comorbidity in adults with ASD and other populations with complex psychiatric presentations.



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RESEARCH ARTICLE

### Psychometric Evaluation of Social Cognitive Measures for Adults with Autism

Kerianne E. Morrison , Amy E. Pinkham, Skylar Kelsven,<sup>1</sup> Kelsey Ludwig, David L. Penn, and Noah J. Sasson

Although social cognition is frequently identified as a target in clinical trials and psychosocial interventions for adults with autism spectrum disorder (ASD), these efforts are hampered by a lack of consensus and validation of social cognitive measures. The current study provides psychometric evaluation of 11 frequently used measures encompassing different subdomains of social cognition. Adults with autism ( $N = 103$ ) and typically developing controls ( $N = 95$ ) completed 11 commonly used social cognitive tasks spanning the domains of emotion processing, social perception, and mentalizing/theory of mind. We examined each measure's internal reliability and sensitivity to group differences, how performance related to general intellectual ability, and alignment of measures with a proposed two-factor structure of social cognition in ASD. Controls outperformed the ASD group on 8 of the 11 social cognitive tasks, with the largest group differences occurring on two mentalizing measures. The awareness of social inference task (TASIT) and hinting task. In ASD, all tasks demonstrated strong internal consistency and avoided ceiling and floor effects. Social cognitive performance was also related to, but not redundant with, intellectual functioning. We also found support for a two-factor structure of social cognition, with basic social perception and emotional processing aligning into a lower-order social perception factor, while mentalizing tasks aligned into a higher-order social appraisal factor. In sum, eight tasks showed adequate to strong psychometric properties. The psychometric data, effect size estimates, and correlations between measures reported here can be used for study planning for social cognitive interventions in autism. *Autism Res* 2019, 12: 766-778. © 2019 The Authors. *Autism Research* published by International Society for Autism Research published by Wiley Periodicals, Inc.

Lay Summary:

We examined 11 tasks that measure how adults with autism perceive and interpret social information. Eight of the tasks were reliable and showed lower performance in adults with autism compared to typically-developing controls. Task performance was related to but distinguishable from IQ. These measures evaluated here may be useful in assessing the effectiveness of interventions and treatments to improve social abilities in adults with autism.

Keywords:

autism spectrum disorder; adults; reliability; social social cognition; validity

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Journal of Applied Behavior Analysis

JOURNAL OF APPLIED BEHAVIOR ANALYSIS 2019, 52, 150-172 NUMBER 1 (WINTER)

### ASSESSING AND TEACHING JOB-RELATED SOCIAL SKILLS TO ADULTS WITH AUTISM SPECTRUM DISORDER

CAROLYN M. GROB, DOROTHEA C. LERMAN, CHANNING A. LANGINIS AND NATALIE K. VILLANTE  
UNIVERSITY OF HOUSTON—CLEAR LAKE

Few studies have evaluated interventions to improve the job-related social skills of adults with autism spectrum disorder. In this study, we examined the efficacy of a treatment package for teaching several social skills that are critical to job success, such as responding appropriately to feedback and asking for a task model from the supervisor. Three adults, aged 19 to 27 years, participated. Initial training of each skill consisted of verbal explanations, modeling, and role-play with feedback, along with stimulus prompts to promote generalization to a different setting. The trainer introduced additional intervention components as needed. We also evaluated generalization across different social skills and evocative situations. Results indicated that the treatment package was generally effective in improving the targeted social skills, and that stimulus prompts may be necessary for generalization to a job setting. However, generalized responding across social skills rarely emerged. These findings have important implications for preparing individuals with autism to function successfully on the job.

Key words:

job skills, social skills, behavioral skills training, stimulus prompts, multiple exemplar training

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# The costs of services and employment outcomes achieved by adults with autism in the US

ROBERT EVERT CIMERA     Kent State University, USA  
RICHARD J. COWAN     Kent State University, USA

**ABSTRACT** This article examines the cost of services and employment outcomes obtained by adults with autism within the United States vocational rehabilitation (VR) system. It found that the number of such individuals has increased by more than 121 percent from 2002 to 2006. Moreover, though adults with autism were employed at higher rates than most disability groups investigated, they tended to work far fewer hours and earn less in wages per week. The study also found that adults with autism were among the most costly individuals to serve.

**KEYWORDS** adults; autism; employment; service costs; vocational rehabilitation

**ADDRESS** Correspondence should be addressed to: ROBERT EVERT CIMERA, PhD, Kent State University, Educational Foundations and Special Services, 405 White Hall, Kent, OH 44242-0001, USA. e-mail: rcimera@kent.edu

autism © 2009  
SAGE Publications  
and The National  
Autistic Society  
Vol 13(3) 285-302; 103791  
1362-3613(200905)13:3

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*Autism*: Author manuscript; available in PMC 2016 Oct 1.  
Published in final edited form as:  
*Autism*. 2015 Oct; 19(7): 795-793.  
Published online 2015 May 27. doi: 10.1177/1362361315588643

PMCID: PMC4581899  
NIHMSID: NIHMS684593  
PMID: 26015026

## Longitudinal patterns of employment and postsecondary education for adults with autism and average-range IQ

Julia Luenda Taylor, Natalie A. Henningsen, and Marsha R. Mallick

• Author information • Copyright and License Information (Disclaimer)

The publisher's final edited version of this article is available at *Autism*.  
See other articles in PMC that cite the published article.

Associated Data

• Supplementary Materials

**Abstract** Go to: [Full Text](#)

This study examined correlates of participation in postsecondary education (PSE) and employment over 12 years for 73 adults with autism spectrum disorders (ASD) and average-range IQ whose families were part of a larger, longitudinal study. Correlates included demographics (sex, maternal education, paternal education), behavioral (activities of daily living, maladaptive behaviors, autism symptoms) and family (size of maternal social network, maternal depressive symptoms, anxiety, and pessimism) factors. Although two-thirds of adults with ASD participated in competitive employment/PSE during the study, fewer than 25% maintained these activities over the study period. Behavioral characteristics distinguished those who never had competitive employment/PSE from those who sometimes or consistently participated in these activities. Women were considerably less likely than men to maintain employment/PSE over time.

**Keywords:** Autism spectrum disorder, adult, employment, postsecondary education, longitudinal

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Journal of Vocational Rehabilitation 32 (2016) 125-134  
DOI: 10.1177/0898010115588643  
JVR 32(3)

## Employment and adults with autism spectrum disorders: Challenges and strategies for success

Dawn Hendricks  
Virginia Commonwealth University, Department of Special Education and Disability Policy,  
1314 W. Main Street, Richmond, VA 23234, USA  
E-mail: dhendricks@vcu.edu

Accepted: August 2009

**Abstract** Individuals with autism spectrum disorder (ASD) have the ability and desire to work, but there are still several obstructions. Research overwhelmingly demonstrates disappointing employment outcomes for this group. The vast majority is unemployed and for those who do have paid employment, underemployment is common. The increased prevalence of ASD coupled with unique social, communication, and behavioral characteristics translate into the need for services to help them achieve employment success. Consideration of individual characteristics including strengths, needs, as well as specific interests, coupled with implementation of proper supports can result in successful and ongoing employment. This paper provides a review of evidence based research related to employment for individuals with ASD. Specific areas addressed include benefits of employment, state of employment, obstacles to employment, current service options, and an in depth review of supports needed for success. These supports focus not only on job tasks, but also the interpersonal skills needed to foster a positive work experience.

**Keywords:** Autism, ASD, employment for adults with autism

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Some people with autism have abnormalities at a specific site on the 16th chromosome known as 16p11.2. Deletion or duplication of a small piece of chromosome at this site is one of the most common identified genetic causes of autism spectrum disorder.

MRI reveals striking brain differences in people with genetic autism. August 8, 2017. Radiological Society of North America

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### Assessment of Adult ASD

- Autism is a dimensional condition; traits are distributed across the entire population, but with a cut-off point at the extreme end guiding clinical identification.
- All individuals in the general population possess some level of autistic traits.
- Some with an above average number may successfully cover or camouflage these to varying extent there by reducing impairment.
- Camouflaging is similar to impression management, where behaviors occurring in front of others are manipulated in order to make a better impression. This requires theory of mind.
- Individuals with ASD engage in impression management to a lesser degree than non-autistic individuals

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### Assessment of Adult ASD

- High levels of co-morbidity require a comprehensive assessment including: intellect, neuropsychological abilities, achievement, emotional status, personality and protective factors.
- A careful history is essential.
- Well developed, reliable and valid measures must be used to the extent they are available.
- DSM 5 or ICD 11 criteria must be met.

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### Making the Diagnosis of Adult ASD

- Meets DSM 5 or ICD 11 Criteria (they are more alike than different).
- Coping behaviors assessed.
- Co-morbid behaviors and disorders assessed.
- Corroborating data obtained about child and adulthood.
- Intellectual, achievement and neuropsychological data collected if warranted.

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### DSM 5 Autism Spectrum Disorder

- Combined social and communication categories.
- Tightened required criteria reducing the number of symptom combinations leading to a diagnosis.
- Omitted Retts and Childhood Disintegrative Disorders.
- Clarifies co-morbidity issues.
- Eliminated PDD NOS and Aspergers in favor of Autism Spectrum Disorder.
- Created Social Pragmatic Communication Disorder.
- Still no specified profile for adults, just guidelines.

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### DSM 5 Autism Spectrum Disorder

- Five criteria.
- Seven sets of symptoms in the first two criteria – Social/Communication and Restrictive/Repetitive behaviors, interests or activities.
- All three symptoms are required to meet the first criteria (although a typo omits this).
- Two out of four are needed for the second criteria.
- Some symptoms have been combined.
- Sensory sensitivity has been added.

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## DSM 5 ASD Criteria A

Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-and-forth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
2. Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.
3. Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

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## DSM 5 ASD Criteria B

Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):

1. Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
2. Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).
3. Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

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## DSM 5 ASD Criteria C, D, E.

C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life)

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make co-morbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

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## DSM 5 Autism Spectrum Disorder

• *Specify if:*

- With or without accompanying intellectual impairment.
- With or without accompanying language impairment.
- Associated with a known medical or genetic condition or environmental factor.
- Associated with another neurodevelopmental, mental, or behavioral disorder.
- With catatonia.

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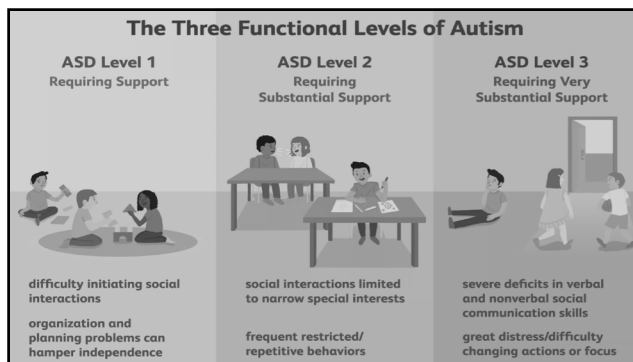
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### The Three Functional Levels of Autism




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## Applying DSM 5 With Adults (page 54)

- "Many adults with ASD without intellectual or language disabilities learn to suppress repetitive behavior in public."
- "Special interests may be a source of pleasure and motivation and provide avenues for education and vocation later in life."
- "Diagnostic criteria may be met when restricted, repetitive patterns of behavior, interests or activities were clearly present during childhood. . . even if symptoms are no longer present."
- "Among adults with ASD with fluent language, the difficulty in coordinating non-verbal communication with speech may give the impression of odd, wooden or exaggerated body language."

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### Applying DSM 5 With Adults (page 56-57)

- Symptoms are "clear in the developmental period."
- "In later life interventions or compensations, as well as current supports, may mask these difficulties in at least some contexts."
- "However **symptoms remain sufficient** to cause current impairment in social, occupational or other important areas of functioning."
- "ASD is diagnosed four times more often in males than females."
- "Girls without accompanying intellectual impairment or language delays may go unrecognized."

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### DSM IV TR Autism and Asperger Syndrome

Data from the Autism Spectrum Rating Scales Epidemiologic Sample (2009)

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### Lorna Wing: Godmother of Autism




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## Autism vs. Asperger

- ASRS means for ages 2-5 years were typically somewhat higher for children with Autism than those with Asperger's syndrome.
  - Exception being Unusual Behaviors where the two groups were similar
- ASRS means for ages 6-18 years were consistently higher for children with Autism than those with Asperger's syndrome.

64

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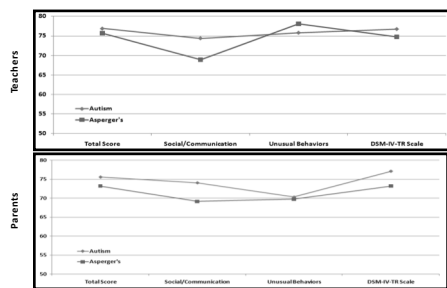
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## Autism vs Asperger (2-5 years)



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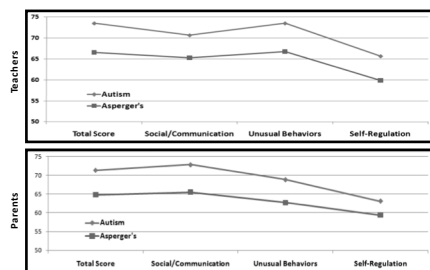
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## Autism vs Asperger (6-18 Years)



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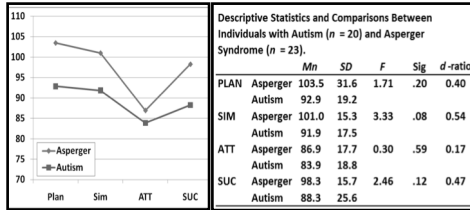
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## Autism vs Asperger (6-18 years)



67

## DSM 5 Social (Pragmatic) Communication Disorder Criteria A

Persistent difficulties in the social use of verbal and nonverbal communication as manifested by all of the following:

- Deficits in using communication for social purposes, such as greeting and sharing information, in a manner that is appropriate for the social context.
- Impairment of the ability to change communication to match context or the needs of the listener, such as speaking differently in a classroom than on a playground, talking differently to a child than to an adult, and avoiding use of overly formal language.
- Difficulties following rules for conversation and storytelling, such as taking turns in conversation, rephrasing when misunderstood, and knowing how to use verbal and nonverbal signals to regulate interaction.
- Difficulties understanding what is not explicitly stated (e.g., making inferences) and non-literal or ambiguous meanings of language (e.g., idioms, humor, metaphors, multiple meanings that depend on the context for interpretation).

68

## DSM 5 Social (Pragmatic) Communication Disorder Criteria B, C, and D

B. The deficits result in functional limitations in effective communication, social participation, social relationships, academic achievement, or occupational performance, individually or in combination.

C. The onset of the symptoms is in the early developmental period (but deficits may not become fully manifest until social communication demands exceed limited capacities).

D. The symptoms are not attributable to another medical or neurological condition or to low abilities in the domains of word structure and grammar, and are not better explained by autism spectrum disorder, intellectual disability (intellectual developmental disorder), global developmental delay, or another mental disorder.

NO DISCUSSION OF THIS DIAGNOSIS IN ADULTS!

69

# Conducting an Evaluation for ASD

## Google It!

The screenshot shows a Google search for 'Questionnaires to evaluate adult Autism'. The results include a link to 'Take the Autism Test for Adults: Do I Have Symptoms of Autism ...' and a section titled 'People also ask' with questions like 'Is there a test for autism in adults?' and 'Can I test myself for Autism?'.

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# Google It! Conducting an Evaluation for ASD

The screenshot shows the 'ARC Tests - Autism Research Centre' website. It lists various tests including 'Adult Asperger Assessment (AAA)', 'Childhood Autism Spectrum Test (CAST)', and 'Quick Autism Test - 2 Minutes, Instant Results - Psych Central'. It also includes a section for 'Take the Autism Test | WIRED'.

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# https://www.autismresearchcentre.com/arc\_tests

The screenshot shows the 'Downloadable Tests' section on the ARC website. It includes a 'Please note' section stating that tests are for research purposes only and a 'Translations' section providing contact information for those who have translated the tests.

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https://www.autismresearchcentre.com/arc\_tests

Adult Asperger Assessment (AAA) ▾	Empathy/Systemizing Quotient (EQ-SQ) (Child) ▾
Autism Spectrum Quotient (AQ) (Adult) ▾	The EU-Emotion Stimulus Set ▾
Autism Spectrum Quotient - 10 Items (AQ-10) (Adult) ▾	Eyes Test (Adult) ▾
Autism Spectrum Quotient (AQ) (Adolescent) ▾	Eyes Test (Child) ▾
Autism Spectrum Quotient - 10 Items (AQ-10) (Adolescent) ▾	Faces Test ▾
Autism Spectrum Quotient (AQ) (Child) ▾	Faux Pas Test (Adult) ▾
Autism Spectrum Quotient - 10 Items (AQ-10) (Child) ▾	Faux Pas Test (Child) ▾
Cambridge Mindreading (CAM) Face-Voice Battery ▾	Friendship and Relationship Quotient (FQ) ▾
Checklist for Autism in Toddlers (CHAT) ▾	Intuitive Physics Test ▾
Quantitative Checklist for Autism in Toddlers (Q-CHAT) ▾	Coherence Inferences Test ▾
Quantitative Checklist for Autism in Toddlers - 10 Items (Q-CHAT-10) ▾	Physical Prediction Questionnaire (PPQ) ▾
Childhood Autism Spectrum Test (CAST) ▾	Picture Sequencing Test ▾
Empathy Quotient (EQ) for Adults ▾	Reading the Mind in the Voice Test ▾
Empathy Quotient (EQ) for Adolescents ▾	Reading the Mind in Films Test ▾
Empathy/Systemizing Quotient (EQ-SQ) (Child) ▾	Revised Test of Genuineness (TOG-R) ▾
	Sensory Perception Quotient ▾

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Cambridge Behavioural Scale

1. I can easily tell if someone else wants to enter a conversation.	strongly agree	slightly agree	slightly disagree	strongly disagree
2. I prefer animals to humans.	strongly agree	slightly agree	slightly disagree	strongly disagree
3. I try to keep up with the current trends and fashions.	strongly agree	slightly agree	slightly disagree	strongly disagree
4. I find it difficult to explain to others things that I understand easily, when they don't understand it first time.	strongly agree	slightly agree	slightly disagree	strongly disagree
5. I dream most nights.	strongly agree	slightly agree	slightly disagree	strongly disagree
6. I really enjoy caring for other people.	strongly agree	slightly agree	slightly disagree	strongly disagree
7. I try to solve my own problem rather than discussing them with others.	strongly agree	slightly agree	slightly disagree	strongly disagree
8. I find it hard to know what to do in a social situation.	strongly agree	slightly agree	slightly disagree	strongly disagree
9. I am at my best first thing in the morning.	strongly agree	slightly agree	slightly disagree	strongly disagree

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Autism Spectrum Disorder as Reflected in the Autism Spectrum Rating Scales (Goldstein and Naglieri, 2009)

Exploratory and Confirmatory Factor Analyses

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## Validity of the Factors

- Factor analysis is a valuable tool to understand how items group.
- But we also need to know if the items have validity, that is do they measure what they purport to measure?
- Discriminating individuals with ASD from the regular population is important.
- Discriminating individuals with ASD from those who are not in the regular population (e.g. they suffer from other conditions) but not ASD is equally important.

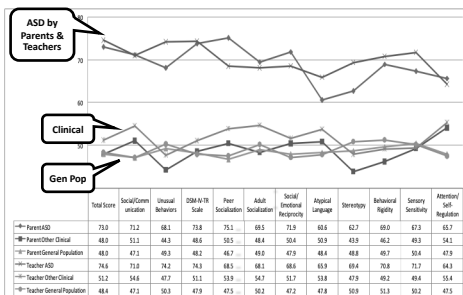
76

## ASRS Profiles

- A scale like the ASRS should differentiate adults with ASD from the normal population.
- Comparison to regular individuals should demonstrate that those with ASD have high scores.
- Comparisons to other clinical groups should also show differences from those with ASD.
- Comparisons of the ASD to regular and other clinical samples provides an essential examination of validity.

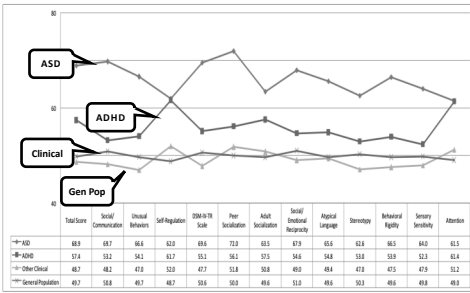
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## ASRS Validity for ages 2-5



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### ASRS Validity: Ages 6-18 Parents




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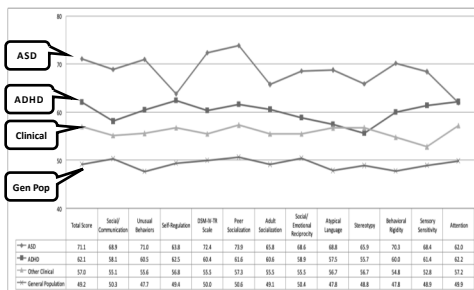
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### ASRS Validity: Ages 6-18 Teachers




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## Autism Spectrum Rating Scales 2<sup>nd</sup> Edition (ASRS 2)

Pilot Adult Data Analysis Results

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### ASRS 2 Adult Data collection

- Pilot Data collection for the ASRS 2 took place in 2016-2018
- Data was collected from General Population and Clinical Samples
- Data was collected from:
  - Individuals 19 years and older (For the Self-Report form)
  - The individual's spouse, parent or family member (For the Observer-Report Form)
- Data collection resulted in:

Form	General Population	ASD	Other Clinical
Self-Report	466	30	47
Observer-Report	452	22	26

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### Other Clinical Groups Included in the Pilot

- Attention Deficit Hyperactivity Disorder (ADHD)
- Major Depressive Disorder (MDD)
- Generalized Anxiety Disorder (GAD)
- Bipolar Disorder
- Obsessive Compulsive Disorder (OCD)
- Adjustment Disorders

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Initial Analysis Suggests that the Empirical Scales  
For the Adult ASRS 2 Pilot Match Our Child Data

- Social/Communication
- Unusual Behaviors
- Self-Regulation

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## Rationale Scales For the Adult ASRS 2 Pilot are Similar as Well

- Atypical Language
- Attention
- Behavioral Rigidity
- Sensory Sensitivity
- Socialization
- Social/Emotional Reciprocity
- Stereotypy
- DSM 5 ASD

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## Scale Reliability

► **Summary of the Reliability of each scale as measured by Cronbach's alpha** (a measure of internal consistency, that is, how closely related a set of items are as a group).

► **Overall, the alpha values indicate high level of reliability for each scale.**

Scales	Self-Report		Observer-Report	
	General Population	Clinical	General Population	Clinical
Atypical Language	0.88	0.89	0.87	0.94
Attention	0.86	0.86	0.90	0.90
Behavioral Rigidity	0.90	0.94	0.93	0.91
Sensory Sensitivity	0.85	0.90	0.84	0.87
Socialization	0.85	0.92	0.86	0.90
Social/Emotional Reciprocity	0.90	0.93	0.91	0.94
Self-Injurious Behavior	0.86	0.79	0.90	0.82
Stereotypy	0.87	0.91	0.88	0.90
DSM-5 ASD	0.92	0.96	0.93	0.96

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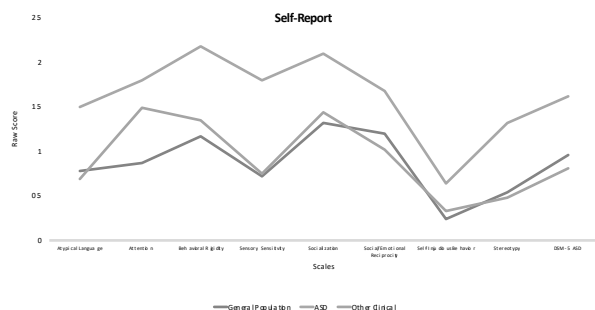
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## Clinical Group Differences (Raw scores)




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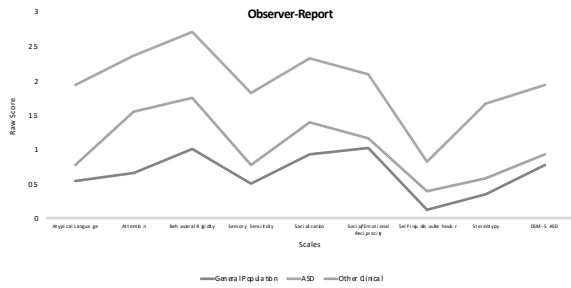
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### Clinical Group Differences (Raw scores)




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### Clinical Group Differences (Cohen's d)

Scales	Self-Report		Observer-Report	
	ASD vs. General Population	ASD vs. Other Clinical	ASD vs. General Population	ASD vs. Other Clinical
Atypical Language	1.21	1.36	2.46	1.38
Attention	1.66	0.49	2.93	1.24
Behavioral Rigidity	1.61	1.19	2.47	1.57
Sensory Sensitivity	1.74	1.60	2.39	1.91
Socialization	1.30	0.94	2.51	1.61
Social/Emotional Reciprocity	0.86	1.23	1.80	1.53
Self-Injurious Behavior	0.88	0.62	1.76	0.70
Stereotypy	1.34	1.31	2.62	1.62
DSM-5 ASD	1.49	1.70	2.67	2.36

d= 0.2-0.4 Small  
d= 0.5-0.7 Med  
d >=0.8 Large

For the most part, Large d-values are observed across comparisons, indicating the ability of the assessment to identify individuals with ASD

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We are collecting data for additional new scales for the Adult ASRS 2 including camouflage or coping behaviors and anxiety.

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### Evaluating Compensatory Behaviors: Social Camouflage in ASD

- Social camouflaging is defined as the use of strategies by autistic people to minimize the challenges of autism during social situations (Lai et al. 2011).
- Social camouflage has recently been a focus of researchers, but has been recognized by clinicians as coping strategies for some time. It is now recommended that clinicians evaluate masking or coping behaviors when assessing autism in the newly released 11th edition of the International Classification of Diseases (Zeldovich 2017).
- This phenomena may be a widespread in ASD, especially in intellectually strong individuals.

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### Social Camouflage in ASD

- Social camouflaging reflects an explicit effort to 'mask' or 'compensate' for autistic characteristics; and to use conscious techniques to minimize an autistic behavioral presentation (Hull et al. 2017; Lai et al. 2017; Livingston and Happé 2017).
- Examples of camouflaging behaviors described in the current literature include as example: forcing oneself to make eye contact during a social interaction; pretending that one is doing so by looking at the space between someone's eyes or at the tip of their nose; or using working memory strategies to develop a list of appropriate topics for conversation.

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### Social Camouflage in ASD: Unanswered Questions

- Do autistic females camouflage more than males, and does this partly account for gender disparities in the rate and timing of diagnosis (Begeer et al. 2013; Loomes et al. 2017)?
- What is the relationship between camouflaging and mental health outcomes?
- How should camouflaging be accurately measured? Is a discrepancy method sufficient to assess the the gap between how a person with ASD mediates their internal autistic status and their overt behavior (external autistic presentation)?

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## Measuring Social Camouflage

Livingston and Happé (2017) suggest that camouflaging is a component of social compensation.

The “processes contributing to improved behavioral presentation of a neurodevelopmental disorder such as ASD, despite persisting core deficit(s) at cognitive and/or neurobiological levels”.

As such they should be measured at the behavioral, cognitive, and maybe in the future, neurobiological levels.

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Performance on tests of cognition relevant to autism, or scores on self-reported measures of autism traits can only serve as a proxy measure of internal autistic status.

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## Measuring Social Camouflage

- An alternative to the discrepancy approaches is one based on observational recognition of camouflaging; measuring the specific behaviors and experiences which represent camouflaging.
- Observational/reflective methods circumvent the limitation of being unable to measure an individual's internal autistic state. Camouflaging can be measured consistently and compared between individuals, and behaviors can be identified regardless of how successful they may be.
- This approach to camouflaging has the advantage of allowing for variation in camouflaging behaviors and their success. Techniques learned and used in some situations may not be successful in others.
- An individual's overall camouflaging skill may partly depend on their flexibility/generalizable capacity to adapt to different situations.

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## Measuring Social Camouflage

- Both the discrepancy and observational/reflective approaches offer ways to define and measure camouflaging in ASD.
- All the methods used or suggested have their own strengths and weaknesses, thus combining multiple methods may allow for greater accuracy in measuring and identifying a complex phenomenon such as camouflaging.

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## Camouflaging Autistic Traits Questionnaire (CAT-Q)

- Compensation
- Masking
- Assimilation

Laura Hull, William Mandy, Meng-Chuan Lai, Simon Baron-Cohen, Carrie Allison, Paula Smith & K. V. Petrides. Development and Validation of the Camouflaging Autistic Traits Questionnaire (CAT-Q)  
*Journal of Autism and Developmental Disorders.* doi.org/10.1007/s10803-018-3792-6

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## Social Camouflage: Compensation

- Copy others facial expression or body language.
- Learn social clues from media.
- Watch others to understand social skills.
- Repeat others phrasing and tone.
- Use script in social situations.
- Explicitly research the rules of social engagement.

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### Social Camouflage: Masking

- Monitor face and body to appear relaxed.
- Adjust face and body to appear relaxed.
- Monitor face and body to appear interested in others.
- Adjust face and body to appear interested in others.
- Pressured to make eye contact.
- Think about impression made on others.
- Aware of impression made on others.

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### Social Camouflage: Assimilation

- Feel a need to put on an act.
- Conversation with others is not natural.
- Avoid interacting with others in social situations.
- "Performing" e.g. not being oneself in social situations
- Force self to interact with others.
- Pretending to be normal.
- Need support of others to socialize.
- Cannot be oneself while socializing.

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### CAT-Q Sample Items: Compensation

- When I am interacting with someone, I deliberately copy their body language or facial expressions.
- I learn how people use their bodies and faces to interact by watching television or films, or by reading fiction.
- I have tried to improve my understanding of social skills by watching other people.
- I will repeat phrases that I have heard others say in the exact same way that I first heard them.
- I practice my facial expressions and body language to make sure they look natural.
- I have spent time learning social skills from television shows and films, and try to use these in my interactions.

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### CAT-Q Sample Items: Masking

- In my own social interactions, I use behaviors that I have learned from watching other people interacting.
- I have researched the rules of social interactions to improve my own social skills.
- I have developed a script to follow in social situations.
- I monitor my body language or facial expressions so that I appear relaxed.
- I adjust my body language or facial expressions so that I appear relaxed.
- I monitor my body language or facial expressions so that I appear interested by the person I am interacting with.

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### CAT-Q Sample items: Compensation

- I adjust my body language or facial expressions so that I appear interested by the person I am interacting with.
- I don't feel the need to make eye contact with other people if I don't want to (Reversed scored).
- In social interactions, I do not pay attention to what my face or body are doing (Reversed scored).
- I always think about the impression I make on other people.
- I am always aware of the impression I make on other people.

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### CAT-Q Sample Items: Related Behaviors

- I rarely feel the need to put on an act in order to get through a social situation (Reverse Scored).
- When talking to other people, I feel like the conversation flows naturally (Reverse Scored).
- When in social situations, I try to find ways to avoid interacting with others.
- In social situations, I feel like I'm "performing" rather than being myself.
- I have to force myself to interact with people when I am in social situations.

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Journal of Autism and Developmental Disorders								
Table 8 Correlations between CAT-Q Total and factor scores and autistic traits (BAPQ), social anxiety (LSAS), wellbeing (WEMWBS), depression (PHQ), and generalised anxiety (GAD) for the autistic (N=306) and non-autistic (N=400) subsamples								
	Total BAPQ	BAPQ: Aloof	BAPQ: pragmatic language	BAPQ: rigidity	Total LSAS	WEMWBS	PHQ	GAD
Autistic								
CAT-Q total	0.34***	0.24***	0.33***	0.28***	0.44***	-0.16*	0.28***	0.35***
Compensation	0.21***	0.08	0.27***	0.18**	0.30***	-0.02	0.18**	0.25***
Masking	-0.03	-0.07	-0.03	0.01	0.19**	-0.02	0.16**	0.20***
Assimilation	0.72***	0.63***	0.62***	0.54***	0.60***	-0.37***	0.35***	0.41***
Non-autistic								
CAT-Q total	0.67***	0.58***	0.56***	0.54***	0.60***	-0.43***	-	-
Compensation	0.54***	0.42***	0.52***	0.44***	0.46***	-0.31***	-	-
Masking	0.32***	0.24***	0.24***	0.32***	0.35***	-0.24***	-	-
Assimilation	0.78***	0.77***	0.62***	0.59***	0.69***	-0.53***	-	-
*p < .05, **p < .01, ***p < .001								

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### To ADOS or Not to ADOS

J Autism Dev Disord. Author manuscript; available in PMC 2015 Aug 1.  
Published in final edited form as:  
J Autism Dev Disord. 2014 Aug; 44(8): 1996-2012.  
doi: 10.1007/s10803-014-2080-3

**The Autism Diagnostic Observation Schedule, Module 4: Revised Algorithm and Standardized Severity Scores**  
Vanessa Hus, MSc<sup>1</sup> and Catherine Lord, PhD<sup>2</sup>  
• Author information • Copyright and License information Disclaimer

The publisher's final edited version of this article is available at J Autism Dev Disord  
See other articles in PMC that cite the published article.

Abstract

The Autism Diagnostic Observation Schedule, 2<sup>nd</sup> Edition includes revised diagnostic algorithms and standardized severity scores for modules used to assess children and adolescents of varying language abilities. Comparable revisions have not yet been applied to the Module 4, used with verbally fluent adults. The current study revises the Module 4 algorithm and calibrates raw overall and domain totals to provide metrics of ASD symptom severity. Sensitivity and specificity of the revised Module 4 algorithm exceeded 80% in the overall sample. Module 4 calibrated severity scores provide quantitative estimates of ASD symptom severity that are relatively independent of participant characteristics. These efforts increase comparability of ADOS scores across modules and should facilitate efforts to increase understanding of adults with ASD.

PMCID: PMC4104292  
NIDMSID: NIDMS071154  
PMID: 245950409

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### To ADOS or Not to ADOS

J Autism Dev Disord (2017) 47:3570-3579  
DOI 10.1007/s10803-017-3284-2

**ORIGINAL PAPER**

**Diagnosing ASD in Adults Without ID: Accuracy of the ADOS-2 and the ADI-R**  
Laura Fumagalli<sup>1</sup> · Natacha Dondanville<sup>1</sup> · Matteo Rocchetti<sup>1</sup> · Cristina Panis<sup>2</sup> · Umberto Prevedenti<sup>1</sup> · Stefano Damiani<sup>1</sup> · Pierluigi Palli<sup>3</sup>

Published online: 28 July 2017  
© Springer Science+Business Media, LLC 2017

**Abstract** Diagnosing autism spectrum disorder (ASD) in adulthood often represents a challenge in clinical practice. The aim of the present study was to evaluate the sensitivity and specificity of the ADOS-2 and ADI-R in diagnosing ASD in adults. 113 subjects with an IQ of 70 or above were assessed through an extensive clinical evaluation. The ADOS-2 Module 4 and the ADI-R were separately administered by staff members blind to clinical judgment. Our results consistently confirm the accuracy of ADOS-2 Module 4, while suggest that ADI-R might not be reliable in adults without intellectual disability. Clinicians' training and experience remains of primary importance while assessing adults who could potentially belong to the autism spectrum.

criteria and to the increased awareness towards autism (Beut et al. 2016; Hansen et al. 2015; Rutter 2005).  
Diagnosing ASD in adulthood for the first time may represent a challenge for clinicians. The difficulties could be partly ascribed to the presence of similarities in symptoms with other psychopathological conditions, such as personality disorders, obsessive-compulsive disorder or social anxiety (Wolf and Vennart 2014). Professionals could also experience difficulties in gaining information about the patient's early development (Lai and Baron-Cohen 2015) and could eventually be misled by previous psychiatric diagnosis in the subject's medical history (Nicolaidis et al. 2014). Additionally, ASD symptoms, even if present since childhood,

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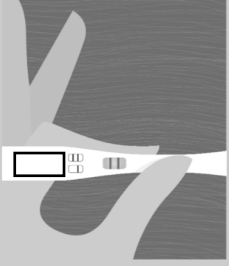
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### UNDERSTANDING MEDICAL TESTS

How *sensitive* is the test?  
As in: How many actually-pregnant women does it correctly identify as pregnant?

How *specific* is the test?  
As in: How many not-pregnant women does it correctly confirm as not-pregnant?

What is the *false-negative* rate?  
As in: How many women who were pregnant were told they weren't?

What is the *false-positive* rate?  
As in: How many women who weren't actually pregnant were told they were pregnant?

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To ADOS or  
Not to ADOS

## ADOS-2

Participant ID: \_\_\_\_\_

Gender: Female ☐ Male ☐

Date of Birth: \_\_\_\_\_

Date of Evaluation: \_\_\_\_\_

Chronological Age: \_\_\_\_\_

Examiner: \_\_\_\_\_

Other Information: \_\_\_\_\_

### Fluent Speech Adolescent/Adult

#### Observation/Coding

1. Construction Task\*
2. Telling a Story From a Book
3. Description of a Picture\*
4. Conversation and Reporting
5. Current Work or School\*
6. Social Difficulties and Annoyance
7. Emotions
8. Demonstration Task
9. Cartoons\*
10. Break
11. Daily Living\*
12. Friends, Relationships, and Marriage
13. Loneliness
14. Plans and Hopes
15. Creating a Story

\*optional

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To ADOS or  
Not to ADOS

### D Stereotyped Behaviors and Restricted Interests

Code in relation to chronological age expectations.

#### D1. Unusual Sensory Interest in Play Material/Person

Rate the participant's interest in or unusual behaviors associated with sensory aspects of toys or surroundings (e.g., sniffing, repetitive feeling of textures, licking, mouthing, or biting, unusually strong interest in the repetition of certain sounds, unusual or prolonged visual examination).

If the participant has a preoccupation that is based on a sensory interest, this may be coded here as one unusual sensory interest. For example, if he or she shows an interest in radiators or plumbing, that is coded later in this section of the protocol under "D4. Excessive Interest in or References to Unusual or Highly Specific Topics or Objects or Repetitive Behaviors." If the participant is interested in the radiators in the room because he or she likes to look at it, as shown by peering at it while sitting his or her head, rocking from side to side, and jiggling his or her hands, this should be coded under "D2. Hand and Finger and Other Complex Mannerisms," but it may also be coded here because of the sensory component involved. If the participant likes to look out of the corner of his or her eye at the radiators, the corners of the room, the doors on the cabinets, and the slats of the window blinds, but does not become overly preoccupied with any of these objects and does not move in unusual ways as he or she does so, he or she should be coded here for unusual sensory interests but not under "Hand and Finger and Other Complex Mannerisms" or under item "D4. Excessive Interest..."

If the ADOS-2 assessment occurs in a room with a one-way mirror, looking into the mirror is not coded as an unusual sensory interest. Do not code here the touching the pins on. Sensory preferences are also not coded here.

#### D2. Hand and Finger and Other Complex Mannerisms

Rate unusual and/or repetitive movements or posturing of the hands and fingers, arms, or body, repetitive clapping may be coded here. Do not include body rocking unless it involves more than the torso. Finger rapping, nail biting, hair twisting, and thumb sucking are also not coded here. The participant does not have to watch the movements of his or her fingers or hands for the movements to be coded here.

☐ 0 = None

☐ 1 = Unusual and/or repetitive hand and finger mannerisms or complex mannerisms not as clear as specified below for a rating of 2.

☐ 2 = Definite finger flicking or twisting, AND/OR hand or finger or complex mannerisms, stereotypic, or posturing. May be brief and/or rare if clear.

☐ 3 = Mannerisms, as described above, occur frequently, during at least two different tasks or activities, and/or may interfere with the ADOS-2 assessment.

Specify: \_\_\_\_\_

#### D3. Self-Injurious Behavior

Rate behaviors that involve any kind of aggressive act to self, even if not clearly harmful.

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To ADOS or Not to ADOS

B

Reciprocal Social Interaction

Code in comparison to nonverbal mental age.

B1. Unusual Eye Contact

Coding for this item requires that clear, flexible, socially modulated, and appropriate gaze that is used for a variety of purposes be distinguished from gaze that is limited in flexibility, appropriateness, or contexts. If the participant is shy initially, and his or her gaze changes markedly and consistently as he or she becomes more comfortable, do not base the code on earlier impressions. However, if eye contact never improves, coding must be based on what is observed, even if the participant seems shy. Do not code eye contact that occurs between the participant and individuals other than the examiner who may be in the ADOS-2 assessment room.

0 = Appropriate gaze with subtle changes meshed with other communication.

2 = Uses poorly modulated eye contact to initiate, terminate, or regulate social interaction.

B3. Language Production and Linked Nonverbal Communication

The purpose of this item is to code the degree to which, when the participant vocalizes, the vocalization is accompanied by subtle changes in gaze, facial expression, and gesture. This item should be coded on the basis of the vocalizations used, regardless of their frequency. Code the most typical occurrences, not merely the best ones. When assigning a rating, include vocalizations used to maintain interaction or to respond to the examiner, as well as initiations. A rating of 8 (uncodable) should be assigned by default if one or more of the following behaviors coded earlier in this protocol received a rating of 2: "Unusual Eye Contact," "Facial Expressions Directed to Examiner," or "Descriptive, Conventional, Instrumental, or Informational Gestures."

0 = Vocalization usually accompanied by subtle and socially appropriate changes in gesture, gaze, and facial expression.

To ADOS or Not to ADOS

C

Imagination

Code this item in comparison to expressive language skills.

C1. Imagination/Creativity

This item should be assigned a rating that reflects the degree to which any of several forms of creativity/inventiveness are exhibited by the participant throughout the ADOS-2 evaluation, either in his or her use of objects or through verbal descriptions.

0 = Several different spontaneous, inventive, creative activities or comments in conversation.

1 = Some creative or make-believe actions, but limited in range or occurring only in response to one structured situation (e.g., creating a story).

2 = Little spontaneous creative or make-believe actions. OR only actions that are repetitive OR stereotyped in quality.

3 = No creative or inventive actions (not even stereotyped or repetitive).

To ADOS or Not to ADOS

D

Stereotyped Behaviors and Restricted Interests

Code in relation to chronological age expectations.

D1. Unusual Sensory Interest in Play Material/Person

Rate the participant's interest in or unusual behaviors associated with sensory aspects of play or surroundings (e.g., sniffing, repetitive feeling of textures, licking, mouthing, or biting, unusually strong interest in the repetition of certain sounds, unusual or prolonged visual examination).  
If the participant has a preoccupation that is based on a sensory interest, this may be coded here as one unusual sensory interest. For example, if he or she shows an interest in radiators or plumbing, that is coded later in this section of the protocol under "D4. Excessive Interest in or References to Unusual or Highly Specific Topics or Objects or Repetitive Behaviors." If the participant is interested in the radiator in the room because he or she likes to look at it, as shown by peering at it while sitting in his or her chair, rocking from side to side, and jiggling his or her hands, this should be coded under "D2. Hand and Finger and Other Complex Mannerisms," but it may also be coded here because of the sensory component involved. If the participant likes to look out of the corner of his or her eye at the radiator, the corner of the room, the doors on the cabinets, and the slats of the window blinds, but does not become overly preoccupied with any of these objects and does not move in unusual ways as he or she does so, he or she should be coded here for unusual sensory interests but not under "Hand and Finger and Other Complex Mannerisms" or under item "D4. Excessive Interest..."  
If the ADOS-2 assessment occurs in a room with a one-way mirror, looking into the mirror is not coded as an unusual sensory interest. Do not code here the touching the pin art. Sensory preferences are also not coded here.

D2. Hand and Finger and Other Complex Mannerisms

Rate unusual and/or repetitive movements or posturing of the hands and fingers, arms, or body. Repetitive clapping may be coded here. Do not include body rocking unless it involves more than the torso. Finger rapping, nail biting, hair twisting, and thumb sucking are also not coded here. The participant does not have to watch the movements of his or her fingers or hands for the movements to be coded here.

0 = None.

1 = Unusual and/or repetitive hand and finger mannerisms or complex mannerisms not as clear as specified below for a rating of 2.

2 = Definite finger flicking or twisting, AND/OR hand or finger or complex mannerisms, stereotypic, or posturing. May be brief and/or rare if clear.

3 = Mannerisms, as described above, occur frequently, during at least two different tasks or activities, and/or may interfere with the ADOS-2 assessment.

D3. Self-Injurious Behavior

Rate behaviors that involve any kind of aggressive act in self, even if not clearly harmful.

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To ADOS or  
Not to ADOS

CONVERTING ITEM CODES TO ALGORITHM SCORES

- Convert assigned ratings of the algorithm scores of 0-2
- Convert assigned ratings other than 0, 1, 2, or 3 to 0, 1, 2, or 3 as follows
- Transfer assigned ratings of 0, 1, and 2 directly to the algorithm form (do not convert)

**Communication**

Stimulated/Idiosyncratic Use of Words or Phrases ..... (A-4)

Conversation ..... (A-6)

Descriptive, Conversational, Instrumental, or Informational Gestures ..... (A-10)

Emphatic or Emotional Gestures ..... (A-12)

**COMMUNICATION TOTAL** .....

**Reciprocal Social Interaction**

Unusual Eye Contact ..... (B-1)

Facial Expressions Directed to Examiner ..... (B-2)

Comments on Others' Emotions/Empathy ..... (B-5)

Responsibility ..... (B-9)

Quality of Social Overtures ..... (B-11)

Quality of Social Response ..... (B-12)

Amount of Reciprocal Social Communication ..... (B-13)

**SOCIAL INTERACTION TOTAL** .....

**COMMUNICATION + SOCIAL INTERACTION TOTAL** .....

See the back of this form for guidance on how to convert the Communication Total, Social Interaction Total, and Communication + Social Interaction Total to the ADOS-2 Classification

**Imagination/Creativity** ..... (C-1)

**Stereotyped Behaviors and Restricted Interests**

Unusual Sensory Interest in Play Material/Person ..... (D-1)

Hand and Finger and Other Complex Manoeuvres ..... (D-2)

Excessive Interest in Obscure or Highly Specific Topics/Objects or Repetitive Behaviors ..... (D-4)

Compulsions or Rituals ..... (D-6)

**STEREOTYPED BEHAVIORS AND RESTRICTED INTERESTS TOTAL** .....

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To ADOS or Not to ADOS

Converting the Communication Total, Social Interaction Total, and Communication + Social Interaction Total to the ADOS-2 Classification

Compare the Communication Total, Social Interaction Total, and Communication + Social Interaction Total to the cutoff scores below for Module 4:

	COMMUNICATION	SOCIAL INTERACTION	COMMUNICATION + SOCIAL INTERACTION
autism	3	6	10
autism spectrum	2	4	7

**Assign the ADOS-2 Classification:**

**autism** All three totals (Communication Total, Social Interaction Total, combined Communication + Social Interaction Total) are equal to or greater than the three separate corresponding autism cutoffs.

- At least one of the following is true: Communication Total is 3 or higher AND Social Interaction Total is 6 or higher AND Communication + Social Interaction Total is 10 or higher

**autism spectrum** All three totals (Communication Total, Social Interaction Total, combined Communication + Social Interaction Total) are equal to or greater than the three separate corresponding autism spectrum cutoffs, but at least one is less than its corresponding autism cutoff.

- At least one of the following is true: Communication Total is 2 or higher AND Social Interaction Total is 4 or higher AND Communication + Social Interaction Total is 7 or higher
- AND
- At least one of the following is also true: Communication Total is 2; Social Interaction Total is 4 or 5; Communication + Social Interaction Total is 7 or 9

**non spectrum** Any one of the three totals (Communication Total, Social Interaction Total, combined Communication + Social Interaction Total) is less than the autism spectrum cutoff.

- At least one of the following is true: Communication Total is 1 or lower; Social Interaction Total is 3 or lower; Communication + Social Interaction Total is 6 or lower

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To ADOS or Not to ADOS (New Algorithm)

**ADOS Algorithm for DSM-5/ICD-10 Autism Diagnosis**  
(convert scores of 3 on the protocol to 2, and treat all scores other than 0-3 as 0)

**Language and Communication**

Conversation ..... (A-8) \_\_\_\_\_

Emphatic or Emotional Gestures ..... (A-10) \_\_\_\_\_

**Reciprocal Social Interaction**

Unusual Eye Contact ..... (B-1) \_\_\_\_\_

Facial Expressions Directed to Examiner ..... (B-2) \_\_\_\_\_

Communication of Own Affect ..... (B-5) \_\_\_\_\_

Insight into Typical Social Situations and Relationships ..... (B-7) \_\_\_\_\_

Quality of Social Overtures ..... (B-9) \_\_\_\_\_

Quality of Social Response ..... (B-11) \_\_\_\_\_

Amount of Reciprocal Social Communication ..... (B-12) \_\_\_\_\_

Overall Quality of Rapport ..... (B-13) \_\_\_\_\_

**Social Affect Total** .....

Continued

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## To ADOS or Not to ADOS (New Algorithm)

Continued

### Restricted and Repetitive Behaviours

Speech Abnormalities Associated with Autism	(A-2) _____
Stereotyped/Idiosyncratic Use of Words or Phrases	(A-4) _____
Unusual Sensory Interest in Play Material/Person	(D-1) _____
Hand and Finger and Other Complex Mannerisms	(D-2) _____
Excessive Interest in or References to Unusual or Highly Specific Topics or Objects or Repetitive Behaviours	(D-4) _____

**Restricted and Repetitive Behaviour Total** \_\_\_\_\_

Continued

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## To ADOS or Not to ADOS (New Algorithm)

Continued

**Social Affect and Restricted and Repetitive Behaviour Total** \_\_\_\_\_  
(Cut-off = 8)

### Diagnosis

ADOS Classification: \_\_\_\_\_

Overall Diagnosis: \_\_\_\_\_

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## Broadly Considering Comorbid Conditions in ASD

International Classification of Diseases, Ninth Revision codes from patients aged at least 15 years and a diagnosis of ASD were obtained from electronic medical records. These codes were aggregated by using phenotype-wide association studies categories and processed into 1350-dimensional vectors describing the counts of the most common categories in 6-month blocks between the ages of 0 to 15. Hierarchical clustering was used to identify subgroups with distinct courses.

*Pediatrics*. 2014 Jan; 133(1): e54–e63.  
doi: [10.1542/peds.2013-0819](https://doi.org/10.1542/peds.2013-0819)

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### Broadly Considering Comorbid Conditions in ASD

- Four subgroups were identified. The first was characterized by seizures ( $n = 120$ )
- The second ( $n = 197$ ) was characterized by multisystem disorders including gastrointestinal disorders, auditory disorders and infections.
- The third was characterized by psychiatric disorders ( $n = 212$ )
- The last group ( $n = 4316$ ) could not be further resolved. The prevalence of psychiatric disorders was uncorrelated with seizure activity ( $P = .17$ ), but a significant correlation existed between gastrointestinal disorders and seizures ( $P < .001$ ). The correlation results were replicated by using a second sample of 496 individuals from a different geographic region.

*Pediatrics*, 2014 Jan; 133(1): e54–e63.  
doi: [10.1542/peds.2013-0819](https://doi.org/10.1542/peds.2013-0819)

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### Considering Co-morbidity

- Considerable overlap exists between ASD and other mental health disorders.
- High rates of overlap are significant as they affect the nature and types of problems displayed by persons with ASD.
- ADHD, Anxiety and Depressive Disorders are the most common.
- ASD symptom presentation is similar whether ASD occurs alone or with other conditions.
- Multiple assessments are often required to make co-morbid diagnoses.
- Symptoms of ASD often emerge earlier in development than other conditions.

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### Case #1: Kyle (age 34)

- Kyle reported that he has been told he was evaluated at three years of age and was delayed in development.
- As a preschooler he was fearful of tornadoes and sirens. He often talked excessively with peers to the point of annoyance and was bullied both verbally and physically for poor hygiene and disheveled appearance.
- He reported that he had temper tantrums as a youth and excessive bouts of anxiety and frustration.
- He would strike out at objects.
- As a youth he reported problems with language delay.
- His kindergarten teacher thought he had odd eccentricities.
- Kyle recalled being anxious, worried and inattentive as a youth.
- He described having few friends, being withdrawn, restless, irritable and difficulty concentrating.
- His medical history has been generally unremarkable.

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## Case #1: Kyle

- Kyle reported he was confused by social dynamics in middle school and as a youth often alone.
- He noted, however, he had one or two friends.
- He disliked school. His best areas were in math, English, research and writing. He struggled with physics and making presentations.
- He graduated from Champagne Central High School in with a strong grade point average.
- He dated some in high school but was generally socially isolated.
- He wanted to go on an prosthytizing mission for his church but did not go. He expressed concern that he never felt "worthy" to enter the missionary service.
- Kyle is not active in any church currently.

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## Case #1: Kyle

- Kyle noted difficult engaging in small talk with others.
- He reported that others often mistake his comments for negative intentions.
- Nonetheless, as a youth he was able to engage in imaginative play.
- He rarely initiated interactions.
- He acknowledged that he has had interests that at times are excessive.
- He reported that he can become angry easily but internalizes it.
- He was evaluated by a psychologist over twenty years ago and briefly participated in counseling.
- Kyle noted problems with sadness, depression, anxiety, nervousness, stress, sleep problems and getting angry quickly.
- Kyle worked with a child psychologist at age twelve.
- He saw a psychiatrist as a young adult and was treated with Prozac and Klonopin.

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## Case #1: Kyle

- Kyle is single and has never married.
- He does not have ongoing relationships and spends most of his free time alone.
- Kyle reported, however, that he has girlfriend whom he sees once a week. She is a single mother and 15 years older than him. They text daily but rarely talk. They met about a year ago.

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## Case #1: Kyle

- Kyle noted that it is difficult for him to figure out how to do new things, problem solve, plan ahead, change a plan and think quickly when needed.
- He has a hard time doing things in the right order.
- He has difficulty with word finding and expressing his thoughts. Kyle reported problems being unaware of time, distractible, losing his train of thought easily and difficulty doing more than one thing at a time.
- He reported difficulty making decisions and problems with short term memory.
- He tends to lose and misplace things daily.
- He noted problems being easily frustrated and at times not caring.
- He noted headaches from caffeine ingestion.

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## Case #1: Kyle

- Kyle is an assistant librarian at Stevens Henneger College.
- He noted it is stressful for him to deal with people.
- He enjoys the work.
- He also works as a shelver and customer service specialist for the Salt Lake County Library.
- Kyle enjoys role playing games.
- He spends quite a bit of time online with a gaming group

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## Case #1: Kyle

- Kyle tended to sit stiffly in the chair.
- No habitual mannerisms were noted.
- Activity level was normal. Kyle was not distracted.
- He appeared moderately confident in his abilities.
- Comprehension was good.
- Kyle related adequately with the examiner.
- He smiled appropriately.
- His thoughts appeared logical, focused and generally relevant.

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## Case #1: Kyle

- Eye contact was generally average.
- Kyle maintained and initiated conversation, although conversation often was one sided. Receptive and expressive language appeared adequate.
- Kyle was neither anxious or sad. Overall his affect was generally neutral. Kyle was emotionally stable.
- Kyle was alert, attentive and concentrated well.
- He shared joint attention. Body and object use as well as visual and listening response were normal.
- No atypical sensory behaviors were observed. Instrumental and informative gestures at times were excessive.
- Quality of social overture and social response were somewhat limited as was reciprocal, social communication.

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## Case #1: Kyle

- Kyle is able to engage in nearly all activities of every day living without significant problems.
- He struggles to handle unexpected changes and interact with people.
- Kyle reports challenges with behaviors related to executive functioning involving flexibility, self-monitoring and working memory.
- He notes symptoms of depression, anxiety and inattention.
- Kyle demonstrates superior vocabulary with above average oral language.
- Memory, however, was assessed as well below average, primarily due to marked variability in subtest scores.
- Kyle also experienced mild difficulty on a task of sustained attention.
- His personality profile is characteristic of individuals who struggle with social and personal attainments, characteristic of social pragmatic communication problems accompanied by anxiety.

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## Case #1: Kyle

- On the ADOS he struggled with conversation and empathic gestures.
- He had a difficult time with social overture and reciprocal social communication.
- His presentation is characteristic of an Autism Spectrum Disorder in an adult.
- Kyle meets the DSM-5 diagnostic criteria for:
  - Autism Spectrum Disorder, w/o intellectual deficits
  - Unspecified Anxiety Disorder
  - Unspecified Attention Deficit Hyperactivity Disorder

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Case #1: Kyle

Autism Diagnostic Observation Schedule - 2 (Module 4)		
<b>Communication</b>		
Stereotyped/idiosyncratic Use of Words or Phrases		1
Conversation		2
Descriptive, Conventional, Instrumental or Informational Gestures		0
Emphatic or Emotional Gestures		2
<b>Reciprocal Social Interaction</b>		
Unusual Eye Contact		0
Facial Expression Directed to Others		1
Comments on Others' Emotions/Empathy		0
Responsibility		0
Quality of Social Overtures		2
Quality of Social Response		1
Amount of Reciprocal Social Communication		2
<b>Stereotyped Behaviors and Restricted Interests</b>		
Unusual Sensory Interest in Play Material/Person		0
Hand and Finger and Other Complex Manicuring		1
Excessive Interest in Unusual or Highly Specific Topics/Objects or Repetitive Behaviors		1
Compulsions or Rituals		1
<b>Communication Total</b>		
Social Interactions Total		5
Communication + Social Interaction Total		6
Stereotyped Behaviors and Restricted Interests Total		3
<b>Autism Cutoff</b>		
Autism Spectrum		10
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Case #1: Kyle

Woodcock-Johnson IV: Tests of Cognitive Abilities		
<b>Standard Scores</b> (mean = 100; s.d = 15)		
Oral Vocabulary		131
Number Series		128
Verbal Attention		100
VOCABULARY		128
<b>Woodcock-Johnson IV: Tests of Oral Language</b>		
<b>Standard Scores</b> (mean = 100; s.d = 15)		
Picture Vocabulary		121
Oral Comprehension		97
Understanding Directions		98
ORAL LANGUAGE		110
BROAD ORAL LANGUAGE		107
LISTENING COMPREHENSION		97
VOCABULARY		128

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Test of Memory and Learning - 2

<b>(mean = 100; s.d = 15)</b>		
Verbal Memory Index		77
Non-Verbal Memory Index		82
Composite Memory Index		76
Verbal Delay Recall Index		76
Attention Concentration		97
Sequential Recall		78
Free Word Recall Index		97
Associative Recall Index		91
Learning Index		73

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## Lydia: Case #2 (Age 53)

- Lydia noted that she has always had difficulty interacting with people.
- Her medical history is noted by a compressed skull fracture at age eighteen. She is uncertain if this adversely affected her cognitive functioning.
- She had her thyroid removed in 2017. She currently takes thyroid medication.
- Lydia has tried multiple psychiatric medications but has disliked the side effects. She notes that St. John's Wort is beneficial.
- Lydia is single and has never married.
- She has not dated in twenty years.
- She described herself as a "rabid feminist" and noted that "no one ever asked me to marry them."
- Lydia noted that she has always been argumentative in relationships.
- Most relationships have not worked out.
- Lydia indicated seven years ago she had a few dates from "a website."
- Lydia has no close friends or family

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## Lydia: Case #2

- As a youth, Lydia described herself as clumsy.
- She has always had trouble with small talk.
- She is blunt in relationships.
- She does not have a "clue" about her earlier childhood communication.
- She recalled that as a child she believed she joined in games.
- She is still friendly with some of her childhood friends but is rarely visited by friends.
- She reported that she has not been emotionally stable until she moved to to her current city.
- She noted that she has difficulty keeping her apartment clean.

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## Lydia: Case #2

- Lydia was alert, attentive and concentrated reasonably well.
- Her ability to share joint attention was adequate.
- Reciprocal social communication was generally appropriate.
- No muscular tension nor habitual mannerisms were noted.
- Lydia's thought processes appeared focused and relevant.
- She was teary multiple times during the history session when re-telling her life story.

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## Lydia: Case #2

- This profile is characteristic of someone who may be apprehensive and distancing from others. Individuals with this profile often markedly deprecate their self-worth.
- They are generally socially shy and awkward. They often want closeness and affection from others but fear abandonment and experience a recurrent pervasive despondency, a general state of sadness and mood disharmony.
- Deprecation of aptitudes and sporadic avoidance of independent behavior are noted by individuals with this personality profile. They are often conciliatory and submissive to others.
- Their self-image is often weak, fragile, anxious and depressive. They typically seek a passive life style. They are often apathetic and indifferent.
- Such individuals are very conscientious, abiding by what they view as social propriety and decorum. They often attend closely to the behavior of others. This pattern of presentation is characteristic of a schizoid personality.

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## Lydia: Case #2

- Lydia recalled a troubled childhood, including a mother with chronic mental health problems and abusive treatment at home.
- Nonetheless, she graduated successfully from college and has been able to work at multiple jobs throughout the world.
- For the last eleven years she has worked at a job that is consistent and predictable but below her capabilities.
- Lydia does not report significant challenges with activities of every day living other than interacting with others and socializing.
- She acknowledges she has become increasingly more socially withdrawn.

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## Lydia: Case #2

- Current assessment suggests that her presentation, while just below the autism cutoff on a screening measure for adult autism is above the threshold for consideration of Autism Spectrum Disorder.
- Further, current testing suggests Lydia experiences problems with sustained attention, an issue that is characteristic of some individuals with Autism, as well as individuals with the Inattentive Type of Attention Deficit Hyperactivity Disorder.
- Lydia reports minimal symptoms of depression and anxiety.
- Her current personality profile is characteristic of a somewhat schizoid pattern. Such individuals are often apprehensive and distancing from others. They deprecate their self-worth. They tend to be generally shy and awkward.
- Lydia meets the DSM-5 diagnostic criteria for Autism Spectrum Disorder with average intellect and minimal support needs.

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## Lydia: Case #2

<b>Autism Diagnostic Observation Scale - 2 (Module 4)</b>	
<b>Communication</b>	
Stereotyped/Idiosyncratic Use of Words or Phrases	0
Conversation	1
Descriptive, Conventional, Instrumental or Informational Gestures	0
Emphatic or Emotional Gestures	1
<b>Communication Total</b>	<b>2</b>
<b>Reciprocal Social Interaction</b>	
Unusual Eye Contact	0
Facial Expression Directed to Others	1
Comments on Others' Emotions/Empathy	0
Responsibility	0
Quality of Social Overtures	1
Quality of Social Response	1
Amount of Reciprocal Social Communication	1
<b>Social Interaction Total</b>	<b>4</b>
<b>Stereotyped Behaviors and Restricted Interests</b>	
Unusual Sensory Interest in Play Material/Person	0
Hand and Finger and Other Complex Manipulations	0
Excessive Interest in Unusual or Highly Specific Topics/Objects or Repetitive Behaviors	1
Compulsions or Rituals	1
<b>Stereotyped Behaviors and Restricted Interests Total</b>	<b>2</b>
<b>Overall Total</b>	<b>8</b>
<b>Autism Cutoff</b>	<b>10</b>
<b>Autism Spectrum</b>	<b>7</b>

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## Lydia: Case #2

- Lydia's TOVA results are not within normal limits and are suggestive of attentional problems. Omission errors and response variability were below expected for typical individuals.
- Beck Depression Inventory - II Total Score - 3 (minimal symptoms)
- Beck Anxiety Inventory - II Total Score - 1 (minimal symptoms)

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## Autism Spectrum Disorder in Adults: Diagnosis, Management and Health Services Development

We conclude that health services research for adults with ASD is urgently warranted. In particular, research is required to better understand the needs of adults with ASD, including health, aging, service development, transition, treatment options across the lifespan, sex, and the views of people with ASD. Additionally, the outcomes of recent international legislative efforts to raise awareness of ASD and service provision for adults with ASD are to be determined. Future research is required to identify high-quality, evidence-based, and cost-effective models of care. Furthermore, future health services research is also required at the beginning and end of adulthood, including improved transition from youth to adult health care and increased understanding of aging and health in older adults with ASD.

*Neuropsychiatr Dis Treat*. 2016; 12: 1669–1686.  
Published online 2016 Jul 7. doi: [10.2147/NDT.S65455](https://doi.org/10.2147/NDT.S65455).

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Review Journal of Autism and Developmental Disorders  
June 2015, Volume 5, Issue 2, pp 115–127 | CDB 88

### Trends in Employment for Individuals with Autism Spectrum Disorder: a Review of the Research Literature

Authors

Authors and affiliations

June L. Chen, Geraldine Leader , Connie Sung, Michael Leahy

Employment is fundamental to the well-being of individuals including those with autism spectrum disorder (ASD). The purposes of this review are to provide an overview of employment-related research in individuals with ASD and increase our understanding of the factors that affect the employment situation of this population. Topics explored are employment outcomes revealed from adult outcome studies and national datasets as well as internal and external challenges that people with ASD may face in finding and maintaining employment. Social difficulties, comorbidity, education level, family support, employers' attitudes, access to services, and disability incentives have been implicated as factors that play an important role in predicting employment. Existing research evidence for specific employment training programs and strategies to successful employment are also introduced in regards to supported employment, transition services, assistive technology, and multidisciplinary collaboration. Finally, implications from both clinical practice and research perspective are provided.

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## Formulating a Treatment Plan for Adult ASD




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## Formulating a Treatment Plan for Adult ASD

- Structured behavioral treatment
- Counseling support (CBT?)
- Family involvement
- Support through transition
- Intensive intervention
- Social skill development
- Focus on generalization of skills
- Vocational training
- Appropriate school or work setting
- Medication?

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## Some Possible Challenges to Treating Adult ASD

- Concrete thinkers
- Difficulty with humor
- Problems regulating affect
- Difficulty interpreting other's feelings
- Rule bound
- Diminished empathy
- Decreased desire to please others.

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## Pharmacotherapy with Adult ASD

### Pharmacotherapy of ADHD in Adults With Autism Spectrum Disorder: Effectiveness and Side Effects

Journal of Attention Disorders  
1-10  
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DOI: 10.1177/108705471986255  
journals.sagepub.com/home/jad  
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J. J. Mui<sup>1</sup> , N. Bothof<sup>1,2</sup>, and C. C. Kan<sup>1</sup>

#### Abstract

**Objective:** Symptoms of ADHD are expected to be more difficult to treat in patients with a combination of ADHD and autism spectrum disorder (ASD) as opposed to only ADHD. Little evidence is available on the influence of ASD on the effects of pharmacotherapy in adults with ADHD. This study addresses this gap. **Method:** 60 adults with ADHD and comorbid ASD were selected from an outpatient clinic and compared with 226 adults from the same clinic with only ADHD. Similar treatment regimens were received. **Results:** Significant decreases in symptoms of ADHD were found in both groups. A diagnosis of ASD did not affect the reduction in symptoms of ADHD. No significant group differences in side effects or vital signs were found. **Conclusion:** Results show that medication for ADHD can effectively and safely be prescribed to patients with ADHD and comorbid ASD. Suggestions for future research are discussed. (*J. of Att. Dis.* XXXX; XX(X) XX-XX)




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## Self Help Volumes




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Clinical Volumes



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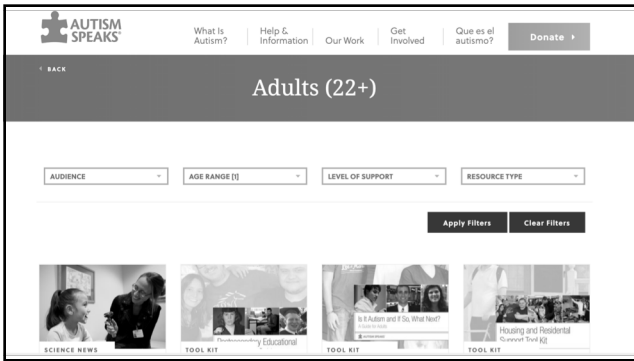
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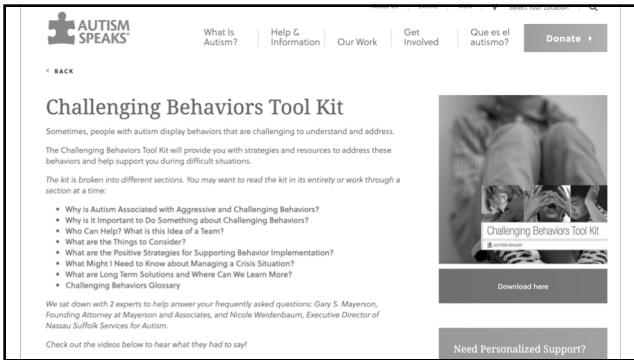
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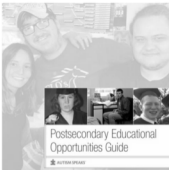
## Postsecondary Educational Opportunities Guide

Deciding what to do after high school can be a difficult process. This guide will help you and your family explore the various options available to you.

The guide provides a closer look at four-year universities, community colleges, vocational/technical school, life skills programs and more. The information will help you find the program that is right for you.

The Postsecondary Educational Opportunities Guide is broken up into the following sections:

- Introduction
- Preparing for Postsecondary Education
- Types of Postsecondary Education Programs
- Obtaining Services and Asking for Accommodations
- Life on Campus
- Learning to Live Independently: A Personal Perspective
- Peer-to-Peer Advice
- Advice for Parents
- Alternative Learning for People With Autism: A Personal Perspective
- A Retrospective on Postsecondary Educational Opportunities
- Resources



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Need Personalized Support?  
Our Autism Response Team (ART) is

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## Employment Tool Kit

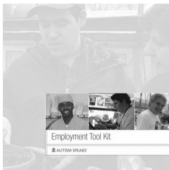
Autism Speaks would like to help you find the right job by providing you with tools and resources, including our Employment Tool Kit.

We have written this kit to help you research, find and keep employment. We compiled job-related stories, tips and information from a collaboration of people, including adults with autism.

Although this guide is written for you, we know that it will also be helpful for family members, service providers, business leaders and anyone who is helping someone with autism find and keep a job.

The Employment Tool Kit is divided into the following sections:

- Introduction
- Self Advocacy
- What Job is Right For You?
- Benefits and Funding
- Employment Models: What Option is Best For You?
- Your Job Search
- Transportation Options
- Resumes, Cover Letters and Applications
- The Job Interview
- Accommodations and Disclosure
- Soft Skills: Understanding the Social Elements of Your Job
- Success Stories and Lessons Learned



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Need Personalized Support?  
Our Autism Response Team (ART) is

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### Autism After Age 21

**What happens when my child is no longer in school?**  
**Where will he live when he no longer wants to live with me?**  
**What is going to happen to my child when I'm no longer around, or able to care for him?**

These are just a few questions that Easterseals hears from concerned parents of kids with autism. Most children with autism are eligible to receive special education services through the school system until age 21. As the nation's largest provider of services and support for

**Explore Resources**

**Living With Autism**

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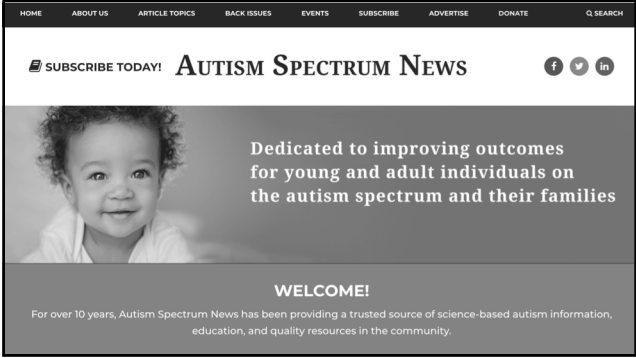
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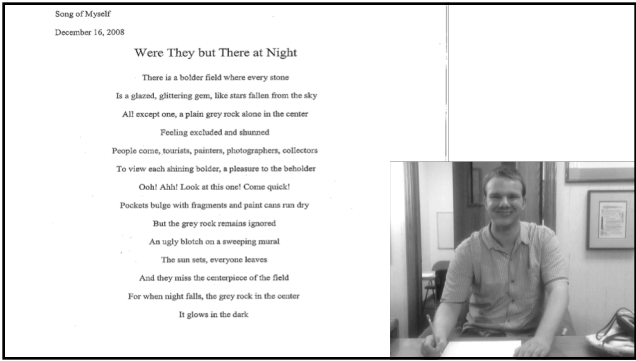
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Questions?

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TEDx: <https://www.youtube.com/watch?v=isfw8JJ-eWM>

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