



CURRENT TRENDS IN

AUTISM SPECTRUM DISORDER

Across the Lifespan

DR. SAM GOLDSTEIN, PHD

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TODAY'S PRESENTER:

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SESSION AGENDA

Overview & background

- New research on children, adolescence & adults with ASD
- Current trends on assessment
- Current trends on intervention
- Time for questions from attendees

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What benefits do we derive from socialization?

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

Copyright © 201 Multi-Health Systems, In All rights reserve The social development of autistic children is qualitatively different from other children





In normal children 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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A BRIEF RESEARCH UPDATE:

ADVANCES IN ASD INTERVENTION



FRYE R.E., et al. (2018)

Folinic acid improves verbal communication in children with autism and language impairment: a randomized double-blind placebo-controlled trial

er RE, Slattery I, Delhey L, et al. (2018). Folinic acid improves verbal communication in children with irm and longuage impairment: a randomized double-blind placebo-controlled trial. *Mol Psychiatry*, and an annual second In this small trial of children with non-syndromic ASD and language impairment, treatment with high-dose folinic acid for 12 weeks resulted in improvement in verbal communication as compared with placebo

 particularly in those participants who were positive for FRAAs²

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MORGAN L., et al. (2018)

Cluster randomized trial of the classroom SCERTS intervention for elementary students with autism spectrum disorder

Mangan L., Hooker J.L., Sparagani N., Reinhardt V.P., Schatschneider C., Wetherby A.M. (2018). Cluster randomized trial of the clustroom SCRATS intervention for elementary students with aution spectrum Other findings support the preliminary efficacy of CSI, a classroom-based, teacher-implemented intervention, for improving active engagement, adaptive communication, social skills, executive functioning, and problem behavior within a heterogeneous sample of students with ASD.

This is a significant contribution to the literature as it demonstrates efficacy of a classroom-based teacher-implemented intervention with a heterogeneous group of students with ASD using both observed and reported measures³

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LADAROLA, S., et al. (2018)

In the largest trial assessing PT in ASD on parent outcomes, PT was found to: • reduce disruptive behavior in children • improve parental competence while reducing parental stress and parental strain⁴

Teaching parents behavioral strategies for autism spectrum disorder: Effects on stress, strain and competence

⁴Ladarols S., Levato L., Harrison R., Smith T., Lecavaller L., Johnson C., Swiezy N. et al. (2018). Teaching parents behavioral interogete for aution spectrum disouter (ASD): Effects on stress, strain and competence. 7 Aution Dev Disoura (4(6)), 1031–1040.

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A BRIEF RESEARCH UPDATE:

ADVANCES IN THE BIOLOGY OF ASD

SHEN M.D., et al. (2018)

Extra-axial cerebrospinal fluid in high-risk and normal risk children with autism ages 2-4 years: a casecontrol study

Shen M.D., Nordahl C.W, LD.D., et al. (2018). Extra-solal cerebrospinal fluid in high-risk and normal risi children with audum ages 2-4 years: a case-control study. Lancet Psychiatry. 5 (11), 885-904. Increased extra-axial CSF volume is a reliable brain anomaly that has now been found in three independent cohorts, comprising both high-risk and normal-risk children with autism spectrum disorder.

Increased extra-axial CSF volume is detectable using conventional structural MRI scans from infancy through to age 3 years.

These results suggest that increased extra-axial CSF volume could be an early stratification biomarker of a biologically based subtype of autism that might share a common underlying pathophysiology.¹

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BILBO S.D., et al. (2018)

Beyond infection: Maternal immune activation by environmental factors, microglial development and relevance for autism spectrum disorders

olton J.I., et al. (2018). Reyond infection: Maternal immune activation by environe elogment and relevance for aution spectrum disorders. *Sup Neurol.* 289, 241-251 The heterogeneous clinical and biological phenotypes observed in ASD strongly suggest that in genetically susceptible individuals, environmental risk factors combine or synergize to create a tipping or threshold point for dysfunction.

Importantly, animal studies showing a link between maternal immune activation (MIA) and ASD-like outcomes in offspring involve different species and diverse environmental factors associated with ASD in humans, beyond infection, including toxin exposures, maternal stress, and maternal obesity, all of which impact inflammatory or immune pathways.²

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A BRIEF RESEARCH UPDATE:

INCIDENCE, PREVALENCE & EARLY IDENTIFICATION

BAIO, J., et al. (2018)

Prevalence of autism spectrum disorder among children ages 8 years – Autism and Developmental Disabilities Monitoring Network, 11 sites, United States, 2014

Raio 1, et al. Prevalence of autism spectrum disorder among children ages 8 years-autism and developmental disabilities monitoring network, 11 sites, United states, 2014. (2018) MMWR Surveil Beginning with surveillance year 2016, the DSM-5 case definition will serve as the basis for the ADDM estimates of ASD prevalence in future reports.

 The DSM-IV-TR case definition will be phased out and applied in a limited area to offer data for comparison

Future analyses will examine trends in the use of DSM-IV-TR diagnoses, such as ASD, PDD-NOS, and Asperger disorder in health & education records, documentation of symptoms consistent with DSM-5 terminology, and how trends influence estimates of ASD prevalence over time.

The latest findings provide evidence that the prevalence of ASD is higher than reported estimates and varies among certain racial/ethnic communities. The need for behavioral, educational, residential, and occupational services as well as increased research on genetic & nongenetic risk factors for ASD remains high.¹

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KOGAN, M.D., et al. (2018)

The prevalence of parentreported autism spectrum disorder among US children Parents of an estimated 1.5M US children aged 3-17 yrs (2.50%) reported their child received an ASD diagnosis and currently had the condition. Children with parent-reported ASD were more likely to have greater health care head hones with and without occessing health care than those with and without other emotional/behavioral disorders.

Of children with current ASD, 27% were taking medication for ASD-related symptoms whereas 64% received behavioral treatments in the last year.

 with variations by sociodemographic characteristics and co-occurring conditions
 The estimated prevalence of US children with a parent reported ASD diagnosis is 1 in 40, with rates of ASDspecific treatment usage varying by children's sociodemographic and co-occurring conditions.³

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KIM, S.H., et al. (2018)

Variability in autism symptom trajectories using repeated observations from 14-36 months of age

Xim S.H., Bal V.H., Benrey N., et al. (2018): Variability in autism symptom trajectories using repeate observations from 14 to 36 months of age. J Am Acad Child Adolesc Psychiatry. 57(11), 837-848.

Another study found significant variability in symptom trajectories among toddlers referred for possible ASD.

 Changes in social and restricted and repetitive behavior domain scores did not always co-occur
 Similarly, item-level trajectories did not always align

with trajectories of overall severity scores These findings highlight the importance of monitoring individual symptoms within broader symptom domains when conducting repeated assessments for young children with suspected ASD.4

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A BRIEF RESEARCH UPDATE:

GENETICS

BRANLDER, W.M., et al. (2018)

Paternally inherited cisregulatory structural variants are associated with autism About 1/4 of genetic variants that are associated with autism spectrum disorder are due to de novo mutations in protein-coding genes. This study aimed to determine whether changes in noncoding regions of the genome are associated with autism.

They applied whole-genome sequencing to \sim 2600 families with at least 1 affected child. Children with ASD had inherited structural variants in noncoding regions from their father.

Regulatory regions of some specific genes were disrupted among multiple families, supporting the idea that a component of autism risk involves inherited noncoding variation.¹

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GANDAL, M.J., et al. (2018)

Shared molecular neuropathology across major psychiatric disorders parallels polygenic overlap

³Sandal M.J., Haney J.R., Paritshak N.N., et al. (2018). Shared molecular neuropathology across ma populatric disorders parallels polygenic overlap. Science, 359 (6376), 692-697 Many genome-wide studies have examined genes associated with a range of neuropsychiatric disorders. However, the degree to which the genetic underpinnings of these diseases differ or overlap is unknown.

Gandal *et al.* performed meta-analyses of transcriptomic studies covering five major psychiatric disorders and compared cases and controls to identify co-expressed gene modules.

They found that some psychiatric disorders share global gene expression patterns. This overlap in polygenic traits in neuropsychiatric disorders may allow for better diagnosis and treatment.²

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A BRIEF RESEARCH UPDATE:

ADULTS

ROGGE, N. & JANSSEN, J. (2019)	Approximately 50 papers covering multiple countries (US, UK, Australia, Canada, Sweden, the Netherlands, etc.) were analyzed. Six types of costs are discussed in depth: i. medical and healthcare service costs, ii. therapeutic costs, iii. (secial) education costs.
The economic costs of autism spectrum disorder: A	 v. costs of production loss for adults with ASD, v. costs of informal care and lost productivity for family/careeivers, and
literature review	vi. costs of accommodation, respite care, and out-of- pocket expenses. Individuals with ASD and families with children with ASD have higher costs including education which appears to be a major cost component. ³
Yogge, N., & Linkski, J. (2019). In e-closinic costs of Justim spectrum disorder: A steristice review. Journal of Aution and Developmental Disorders, 49, 2874–2600	Copyright 62019, MMHS Matt-Johann Spatners, Inc. All sight reserved.

PALLATHRA, A.A, WONG, K. & BRODKIN, E.S. (2019)

Psychological interventions targeting social functioning in adults on the autism spectrum: A literature review.

²Pallashra, A.A., Cordero, L., Wong, K., & Brodkin, K.S. (2019). Psychological interventions targeting functioning in adults on the autism spectrum: A literature review. *Current Psychiatry Reports*, 22 (1): 301-302.

The studies reviewed demonstrated substantial variability in treatment objectives, intervention procedures, assessment methods, and methodologic quality.

The results indicate a strong need for additional research to develop and rigorously test interventions for autistic adults that target the many behavioral components of social functioning and that include procedures to promote generalization of knowledge and skills to community settings.²

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VELIKONJA, T., FETT, A.K. & VELTHORST, E. (2019)

Patterns of nonsocial and social cognitive functioning in adults with autism spectrum disorder. A systematic review and metaanalysis

(a), T., Fett, A.K., & Velthortt, 5. (2019). Patterns of nonsocial and tocial cognitive functioning in adultion from sportrain. *Bioindex A network to regime and meth-analysis. IMMA Psychiatry*, 76(1): 126-151. Results of this systematic review and meta-analysis suggest that adults with ASD show impairments in social cognitive domains and in specific nonsocial cognitive domains.

These findings contribute to the understanding of the patterns of cognitive functioning in adults with ASD and may assist in the identification of targets for cognitive interventions.³

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The estimation of current and lifetime prevalence for adults with ASD were: HOLLOCKS, M.J., et al. 27% & 42% for any anxiety disorder 23% and 37% for depressive disorder (2019) Further analyses revealed: the use of questionnaire measures and the presence of ID may significantly influence prevalence estimates. Anxiety and depression in The literature suffers from heterogeneity in study method and an overreliance on clinical samples. These results highlight the importance of adults with autism spectrum disorder community-based studies and the identification and inclusion of well-characterized samples This can reduce heterogeneity & bias in prevalence estimates for comorbidity in adults with ASD and populations with complex psychiatric presentations.⁴ iati, I, & Meiser-Stedman, R. (2019), Copyright © 2010. Mad5-Health Systems, Inc. All fights reserved.



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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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 add, 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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SYMPTOMS PRESENT BEFORE 24

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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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	 Autism is a dimensional condition; traits are distributed across the population with a cut-off point at the extreme end.
ASSESSMENT OF ASD	 All individuals in the general population possess some level of autistic traits.
	 Some individuals with ASD especially adults may camouflage these to varying extents, reducing impairment.
	 Camouflaging is similar to impression management: behaviors occurring in front of others are manipulated 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 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.

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DSM-5 or ICD-10 criteria must be met.

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ASRS VALIDITY

And an updated view of ASD

Factor analysis is a valuable tool to understand how items group. But we also need to know if the items have validity. Discriminating children with ASD from the regular population is important. Discriminating children with ASD from those who are not in the regular population but not ASD is very important.







































ages 6-21 received services under the special education classification of "Autism" (U.S. 2011)

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

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· Social camouflaging is defined as the use of strategies by autistic people to minimize the challenges of autism during social situations (Lai **EVALUATING** et al., 2011). COMPENSATORY Social camouflage has recently been a focus of researchers, but has been recognized by **BEHAVIOURS:** clinicians as coping strategies. It is now recommended that clinicians evaluate masking or coping behaviors when assessing autism in Social Camouflage in ASD 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. ≋MHS' Copyright () 20 Multi-Health Systems, & All richts reserve



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 tatus and their overt behavior (external autistic presentation)?







SOCIAL CAMOUFLAUGE: 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 CAMOUFLAUGE: 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 CAMOUFLAUGE: 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 situationsForce self to interact with others.
- Pretending to be normal.
- Need support of others to socialize.
- Cannot be oneself while socializing.

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Decreased desire to please others.

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