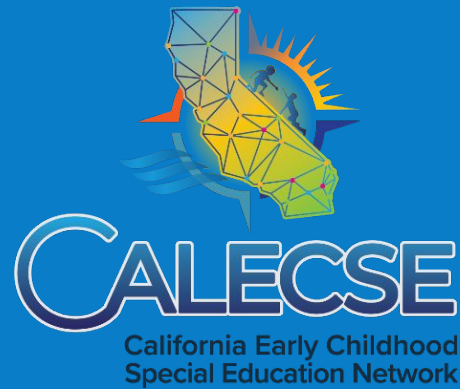**Funded by the California Department of Education (CDE), Special Education Division**

Understanding Gender Differences in Autism: Implications for Assessment and Identification

December 3, 2025

The CalECSE Network
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About the
California Early Childhood Special Education (CalECSE) Network

Funded by the CDE

https://www.calecse.org

CalECSE is a technical assistance project funded under the CCDE that supports Local Educational Agencies (LEAs), Special Education Local Plan Areas (SELPAs), County Offices of Educations (COEs), and other Agency Partners in the areas of Individuals with Disabilities Education Act (IDEA) Part C to B Transitions, Preschool Assessment Practices, and Preschool Child Find by providing technical assistance, professional learning, and demonstration of tangible practices that have been proven successful.

CalECSE leverages collaboration amongst agencies, disseminates resources, highlights existing exemplar practices, and provides direct technical assistance to improve the capacity, knowledge, collaboration, and implementation of evidence-based practices across agencies throughout California.

The CalECSE Network is committed to improving outcomes for children and their families by eliminating and addressing barriers to successful transition for California's youngest children with disabilities.

Interested in joining a local Community of Practice (CoP) for practitioners who support children ages zero to five ?

Find our full schedule of regional CoPs at: https://www.calecse.org/news-resources/communities-of-practice

Communities of Practice

California Early Childhood Special Education Network

Today's Presenters

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What We Will Be Covering Today

- Review of the current research on differences in diagnosis based on gender
- Review of research in the female presentation of Autism
- Implications for assessment

A Statement on Limitations

Research shows that autistic individuals are more likely to identify as gender-diverse, including nonbinary and gender-fluid identities. Much of the existing research on gender differences in autism focuses on binary male–female categories, which limits what we can present today.

This reflects the limits of the research—not the full diversity of autistic gender identities. We aim to be inclusive and acknowledge that more research is needed beyond the gender binary.

What is Autism?

A neurodivergent way of processing information. Autistic individuals process, perceive and interpret the world differently from people with neurotypical processing. Autism primarily manifests in differences in two areas:

Social Communication (Social Reciprocity & Using Verbal/Nonverbal Communication for Social Purposes) and Social Interaction

Preference for Sameness and Routine, Intense Interests, Repetitive Behaviors, and/or Neurodivergent Sensory Processing

Source: American Psychiatric Association, 2022

Current Rate of Males to Females Diagnosed with Autism in the United States

3.4 : 1

Source: Center for Disease Control. 2025.

https://www.cdc.gov/autism/data-research/?CDC_AAref_Val=https://www.cdc.gov/ncbddd/autism/data.html

Average Age of Autism Diagnosis

Males
8.08

Females
9.69

What the Media Is Saying About Autism and Girls

"Invisible Girls."
—American Speech-Hearing Association (ASHA)

"They've been termed the 'lost girls' or 'hiding in plain sight' because they're overlooked or diagnosed late. They don't fit the stereotypes or their symptoms are misinterpreted as something else. And they may be better at hiding the signs, at least when they're young."
—University of California, Davis Child Mind Institute

"'We see on average that girls and women take longer to be diagnosed,' says Laura Hull, a researcher at the University of Bristol. 'They tend to be older when they are diagnosed and they tend to go through more rounds of assessment'."
—National Geographic

Sources: Child Mind Institute. 2025.
https://childmind.org/article/autistic-girls-overlooked-undiagnosed-autism/#:~:text=Epstein%20says%20there%27s%20another%20reason,social%20dysfunction%E2%80%9D%20caused%20by%20autism
American Speech-Language-Hearing-Association (ASHA). 2025.
https://leader.pubs.asha.org/doi/10.1044/leader.FTR1.23042018.48
National Geographic. 2025. https://www.nationalgeographic.com/science/article/autism-diagnoses-increase-symptoms

Consider This About Typical Female Development

Research has consistently shown that, on average, typically developing females tend to demonstrate stronger **social communication and relationship skills** compared to males, and this difference emerges in early childhood and persists into adulthood.

Sources: Adani & Cepanec 2019; Hajovsky et al. 2021; Christov-Moore et al. 2014

Research Shows That We Are Missing Girls

- A large study of people diagnosed with Autism found that females were diagnosed, on average, 18 months later than males and were more likely to be "late diagnosed" (≥13 years). (Harrop et al. 2023)

- Females without Intellectual Disability (ID) or behavioral challenges, are less likely to receive a diagnosis than boys even with the same level of Autistic traits. (Kavanaugh et al. 2023)

- Girls more likely to be given a different diagnosis (anxiety, Attention Deficit Hyperactivity Disorder [ADHD], Obsessive Compulsive Disorder [OCD]) first before later being diagnosed with Autism. (Giarelli et al. 2010)

Research Is Showing That Girls Present With Higher Language Skills

Study of Narrative Skills

- 26 children with ASD (13M, 13F) were assessed with the Expression, Reception, and Recall of Narrative Instrument (ERRNI)
- Girls included more salient story elements
- Girls included more descriptors of planning or intention

Source: Conlon et al. 2019, *J Autism Dev Disord* 49: 1937–1948.
https://link.springer.com/article/10.1007/s10803-018-03873-2

Study of Natural Language Markers

- 87 children including children with ASC (Autism Spectrum Condition) and Neurotypical (NT) had a five-minute "get-to-know-you" conversation with an untrained conversation partner
- Autistic girls spoke more about social groups than ASC boys
- Autistic girls used the pronouns "they" and "them" rather than "we" more often when compared to NT girls
- Findings suggest that autistic girls are more aware of the social groups they are not in
- This may connect with the tendency to learn to mask

Source:
https://acamh.onlinelibrary.wiley.com/doi/10.1111/jcpp.13348

University of North Carolina Study

A study out of the University of North Carolina using over 20 years of diagnostic data (2000–2021) from a state-wide clinical network.

Methods

- Sample: 10,247 individuals diagnosed between 2000–2021 (8,319 males; 1,928 females) from autism clinics.

Key Findings

- Late diagnosis (age 13+) was more likely in females than in males: across the sample ~15.4% had late diagnosis; females had a significantly greater odds of late diagnosis.
- Among those without co-occurring intellectual disability (ID), females were *especially* likely to be diagnosed late compared to males without ID.

Implications

- Persistent later age of diagnosis for females remains a concern—this may delay access to early intervention and supports.

- Diagnostics and referral pathways must account for the *female phenotype* (subtler or masked presentations, fewer externalizing behaviors) to reduce delays in supports.

- The finding that later diagnoses are especially common in females without intellectual disability suggests that girls who are more cognitively able may be particularly overlooked early.

- Clinical services, screening tools, referral systems, training and awareness need to adapt to capture diagnoses earlier in females.
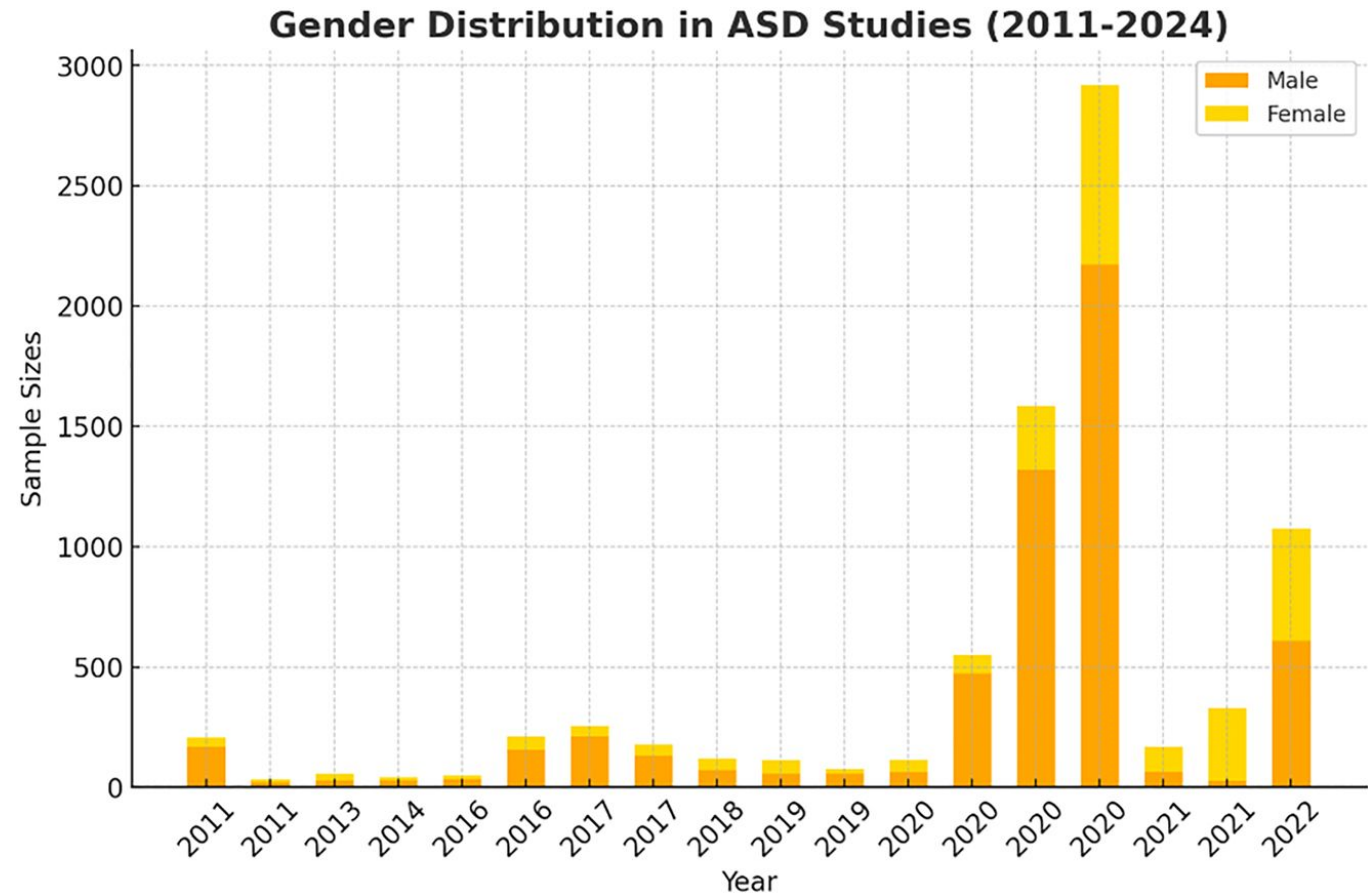
Research Shortcomings

- There is a lack of research on girls with Autism who do not have Intellectual Disabilities (ID)/language impairments and therefore a lack of standardized assessment measures for these females, at this time. (D'Mello 2022)

- Diagnostic criteria and research is overwhelmingly based on white males. (Trafton 2022)

- There are currently no research-proven, standardized assessment measures available that account for the presentation differences found in research in females with Autism. (Navarro-Pardo et al. 2021) (Stuijfzand et al. 2023)
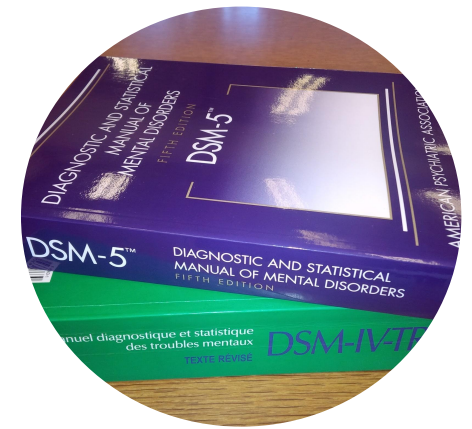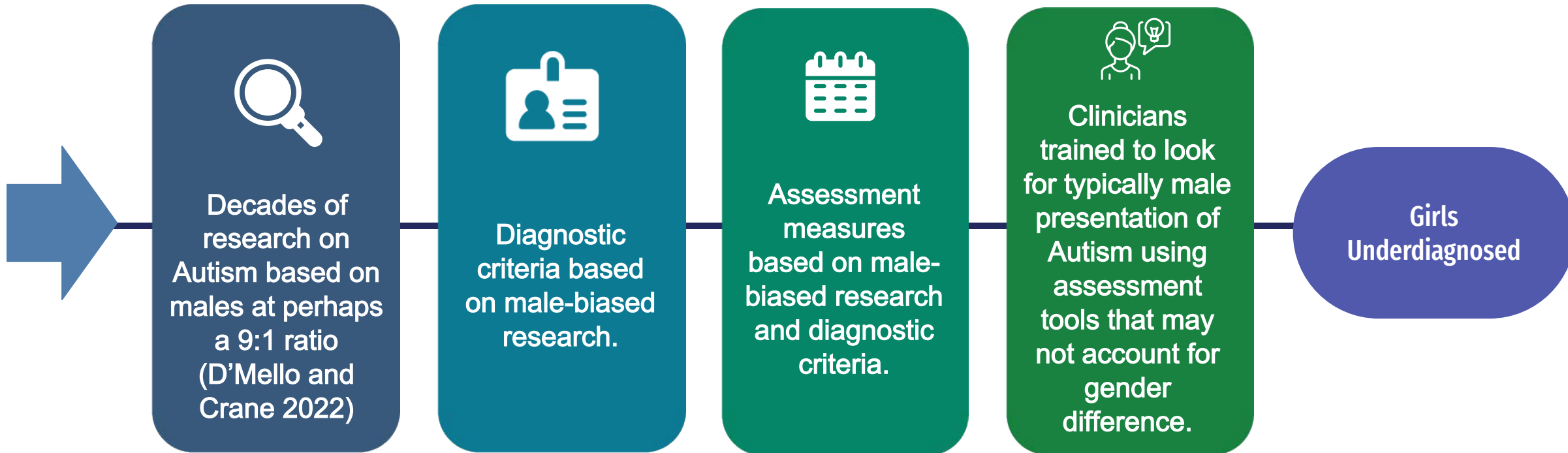
Research Disportionately Focuses on Males with Autism

Studies show a "leaky recruitment-to-research pipeline" for autistic females (D'Mello et al. 2022) estimating male to female ratios in studies at 9:1.
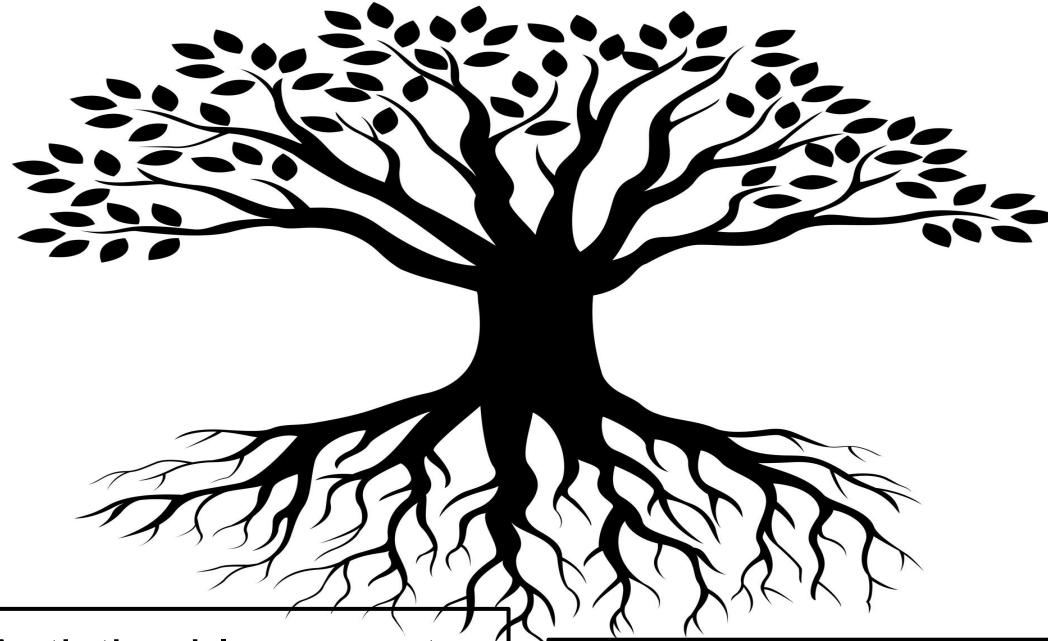

Source: Mao et al. 2024

How Did We Get Here?

Decades of research on Autism based on males at perhaps a 9:1 ratio (D'Mello and Crane 2022)

Diagnostic criteria based on male-biased research.

Assessment measures based on male-biased research and diagnostic criteria.

Clinicians trained to look for typically male presentation of Autism using assessment tools that may not account for gender difference.

Girls Underdiagnosed

Autistic Girls Are Misdiagnosed Or Diagnosed Late

Research on primarily males versus females (9:1)

Diagnostic criteria and current tools based on male biased research

Females may have more internalizing behaviors/less likely to be referred

Autistic girls present differently: Female Phenotype

Current training based on male-biased research

Assessment tools are based on male presentation

"Masking" and "social mimicry" more common in girls, only see behaviors at home

Gender differences in Autism are a relatively new field of study

Girls more likely to receive alternative diagnoses first

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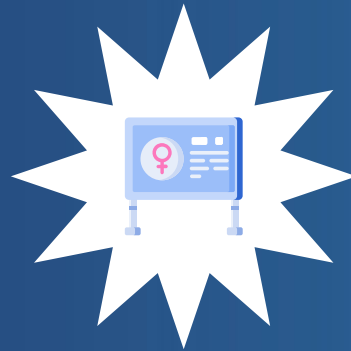# We Are Trained to Look for Typically Male Presentation
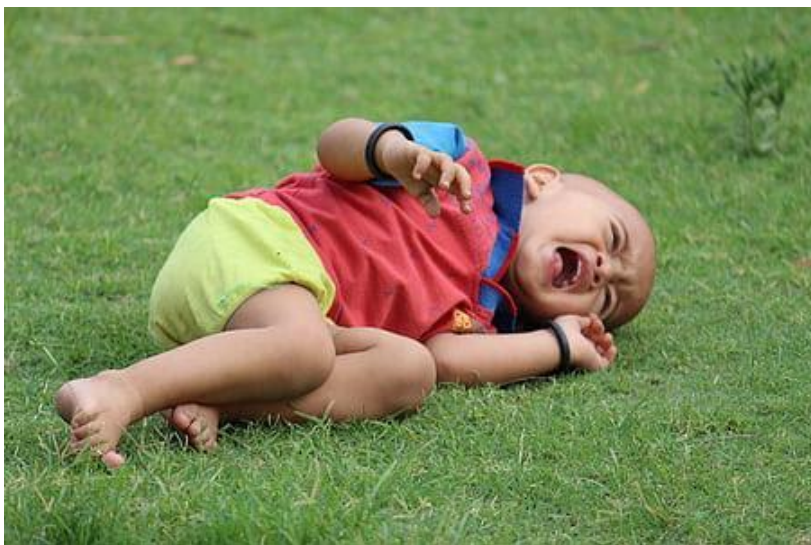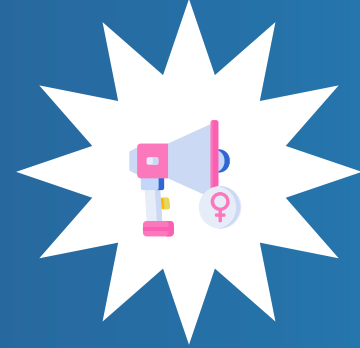
Does it Matter?

Mental Health Struggles

Higher rates of depression, anxiety, and suicidality

Missed Support

Missed accommodations and interventions

Vulnerability to Abuse, Social Isolation and Bullying

Undiagnosed autistic women may be more vulnerable to emotional, physical, or sexual abuse, due to social naivety

Importance of Diagnosis

- Increased access to support
- More understanding from friends and family
- Reduced self-criticism
- Helps foster a positive sense of identity

"Four women explained how they had used their diagnosis of Asperger's as a tool to give them more confidence asserting their opinion. Women commented that before having a diagnosis they would have "just kept quiet" (P10) but now they were able to ask people for clarification or explanations when they were unsure of a situation."

(Bargiela et al. 2016)

Source: Bargiela et al. 2016. https://link.springer.com/article/10.1007/s10803-016-2872-8

Female Autism Phenotype

Review of Terms

Phenotype means the observable characteristics or traits of a person that result from the interaction between their genes and their environment.

In contrasts with **genotype**, which refers to the person's underlying genetic makeup.

Female Phenotype of Autism

When researchers talk about the "female autism phenotype," they are referring to the pattern of autistic traits that tends to be more common or more observable in girls and women.

It does not mean every girl presents this way—it means there is a pattern that emerges in research.

Three Key Areas of Challenge in Social Communication and Social Interaction

1. Deficits in social-emotional reciprocity.

2. Deficits in nonverbal communicative behaviors used for social interaction.

3. Deficits in developing, maintaining, and understanding relationships.

Source: American Psychiatric Association, 2022

What We Are Used to Looking For in Early Childhood

- Limited joint attention
- Limited eye contact
- Limited interest in peers
- Limited pretend play
- Solitary play
- Limited reciprocal conversational ability
- Inability to read social cues
- Limited nonverbal gestures
- Language delays or atypical language
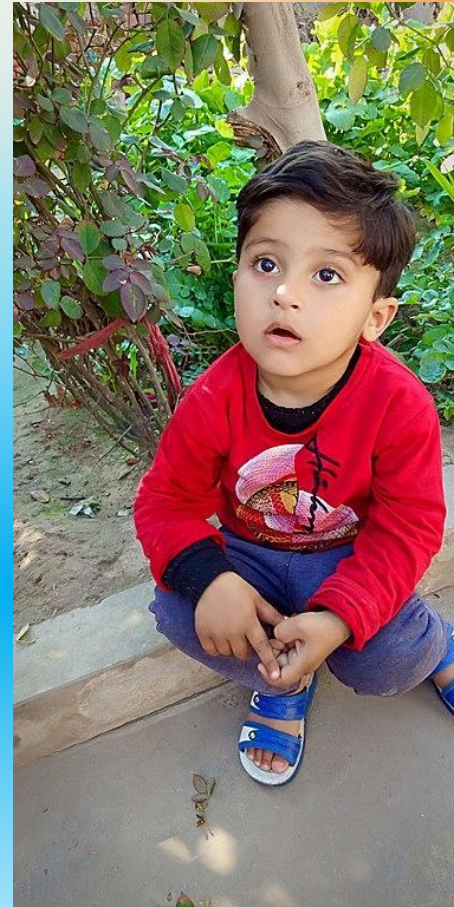
Female Phenotype of Autism—Core Characteristics Better Early Language and Social Communication Skills (On the Surface)

Research shows girls with autism may:

- have stronger early vocabulary

- use more gestures

- show more eye contact

- engage in imaginative/pretend play

- appear socially reciprocal in brief interactions

But these skills often mask deeper comprehension/social-cognitive challenges.

Sources: Hull et al. 2020; Navarro-Pardo et al. 2021; Ratto et al. 2018.

Female Phenotype of Autism—Core Characteristics Stronger Social Motivation and Social Camouflage

Girls often:

- want to fit in socially

- imitate peers' behavior

- rehearse social scripts

- use observation of others to "blend in"

- appear socially capable but with significant internal effort

This is known as **camouflaging** or **masking**, and is one of the biggest reasons girls are overlooked especially during assessments.

Sources: Hull et al. 2020; Navarro-Pardo et al. 2021; Ratto et al. 2018.

Girls With Autism Are More Likely Than Boys To:

- ○ Have higher motivation for friendships/have friends
- ○ Share interests and engage in reciprocal conversations
- ○ Demonstrate pretend play
- ○ Have average to above average language
- ○ Have less externalizing behaviors (meltdowns, aggression)
- ○ Higher nonverbal communication (more frequent eye contact, gesture use, social smiles)
- ○ Engage with peers in play

Sources: Song et al. 2021; Lawrence et al., 2020

- Difficulty reading social cues.
- Speech can be overly verbose/formal, repetitive questioning, monopolizes conversations, frequent interruptions of others
- Mimicking others as a form of masking.
- May be called "bossy" by peers.
- Difficulty sharing items.
- Difficulty having more than one friend at a time.
- Overly dependent on adults or desire to play with adults over peers.
- Difficulty sustaining friendships/more peer conflict.
- "Flitting" between peers on the playground.
- Awkward overtures, undersharing or oversharing.
- Exhaustion after social events from masking/imitating.
- Challenges with social events/team activities.
- Need for others to follow the rules.

- Stereotyped or repetitive motor movements, use of objects, or speech.

- Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior.

- Highly restricted, fixated interests that are abnormal in intensity or focus.

- Hyper- or hyporeactivity to sensory input or unusual interest in sensory aspects of the environment.

Source: American Psychiatric Association, 2022

What We Are Used To Looking For

- Obvious restricted interests
- Repetitive motor movements
- Interest in parts of objects
- Echolalia
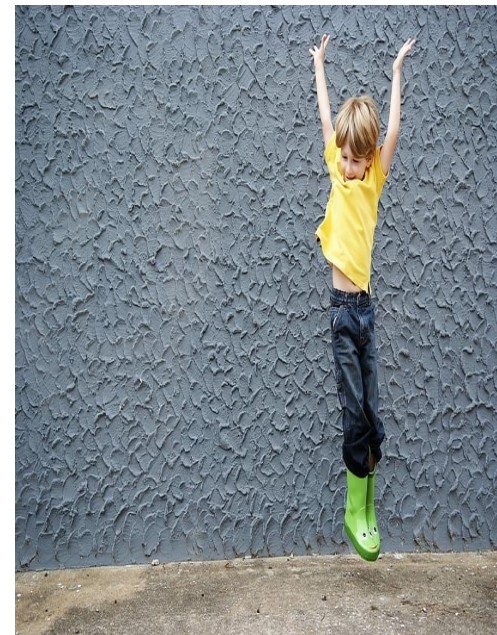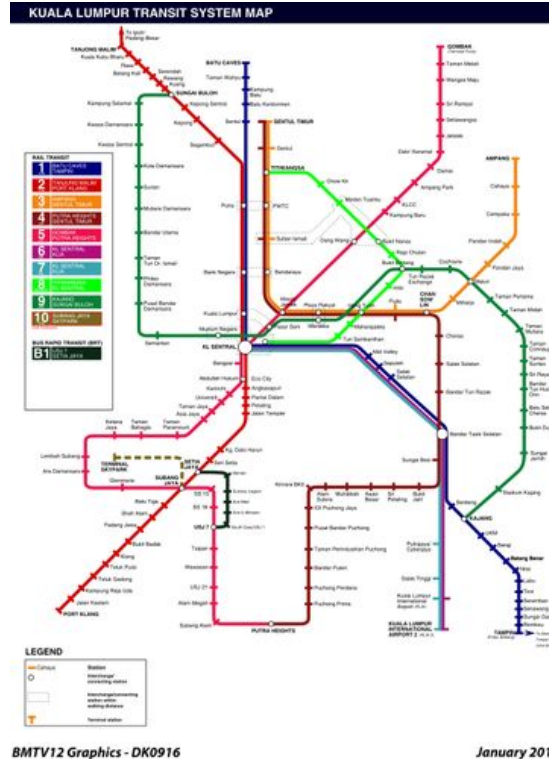
Female Phenotype of Autism—Core Characteristics Fewer or Subtler Restricted and Repetitive Behaviors (RRBs)

RRBs in girls tend to be:

- less obvious

- more socially acceptable (animals, celebrities, books, Disney)

- intense but age-typical (special interests that fly under the radar)

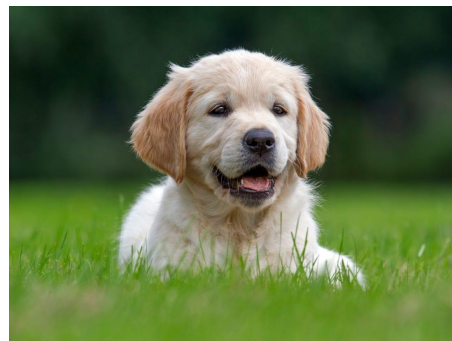- internalized (mental routines, invisible sensory rituals)

This contrasts with stereotypical "male" autism traits (vehicles, spinning objects, mechanical systems).

Sources: Hull et al. 2020; Navarro-Pardo et al. 2021; Ratto et al. 2018.
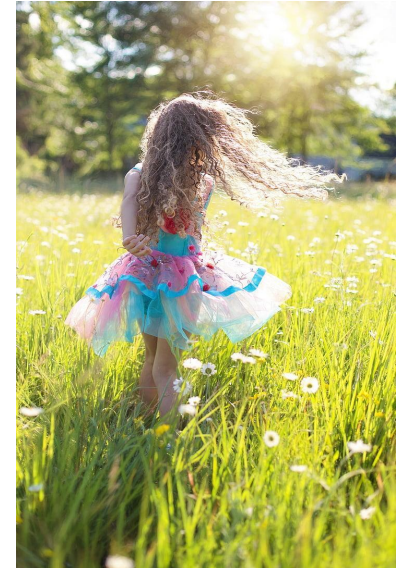
Research shows Autistic girls are more likely to show intense interests that are:

Socially acceptable so may be missed

Autistic girls are more likely to show repetitive behaviors like:
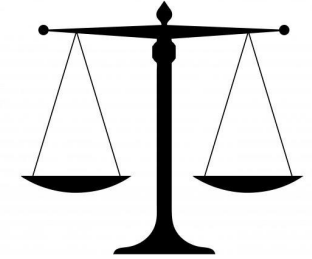
- Skin picking, scratching, nail picking
- Twirling, rocking
- Unique/subtle/tic-like movements
- Repetitive, formal or made-up language
- Displaying toys/objects, rather than playing with them
- Hoarding items (keeping collections), difficulty letting go of items
- Organizing of items and becoming upset if items are touched or moved
- Repetitive play scenarios

Autistic girls are more likely to show rigid behaviors like:

- Rule-following behavior
- Need for others to follow rules
- Black-and-white thinking
- Need for group work to be completed their way
- "Bossiness" "Stubbornness"
- Inflexibility on assignments or difficulty not finishing tasks
- Difficulty making mistakes or perfectionism
- Literal interpretations
- Must do things in a specific order
- Strong sense of justice
- Cannot let go of things that happened a long time ago
- Difficulty with change in routines

CLASSROOM RULES

We respect each other	We encourage each other
We listen	We try our best
We ask for help	We share
We are kind	We are honest
We say please and thank you	We have lots of fun

Female Phenotype of Autism—Core Characteristics Higher Internalizing Symptoms

Girls are more likely to develop:

- anxiety

- depression

- social burnout

- perfectionism

- school refusal

- emotional shutdowns

These internalizing patterns often overshadow autistic traits, leading clinicians to mislabel girls with anxiety disorders or ADHD.

Sources: Hull et al. 2020; Navarro-Pardo et al. 2021; Ratto et al. 2018.

Female Phenotype of Autism—Core Characteristics "Quiet Distress" Instead of Externalizing Behavior

Instead of meltdowns or aggressive behaviors (more common in boys), girls may:

- withdraw

- freeze ("fawn" response)

- shut down

- internalize emotional overwhelm

These presentations are often misinterpreted as shyness or emotional sensitivity.

Sources: Hull et al. 2020; Navarro-Pardo et al. 2021; Ratto et al. 2018.

A Consideration

Autistic behaviors in girls tend to be more internalizing versus externalizing.

Girls are less likely to be referred for assessment in the first place.

Updated in 2022, no changes made to diagnostic criteria but gender differences were addressed.

1. Increased Recognition of Sex and Gender Differences in Autism Presentation

The DSM-5-TR expands its discussion of how autistic females may present differently than autistic males, noting that:

- Girls may show fewer obvious restricted/repetitive behaviors.
- Girls may display more socially acceptable or "camouflaged" behaviors, which mask symptoms.
- Girls may have stronger social imitation skills, making symptoms less recognizable.

2. Acknowledgment of Camouflaging/Masking Concealing Autistic Traits

DSM-5-TR notes that these behaviors can make diagnosis more difficult and may lead to a later age of identification.

Source: American Psychiatric Association, 2022

3. Clarification That Autism May Present Differently Across Genders

DSM-5-TR states that symptom presentation can differ by sex and gender, and that clinicians should consider:

- The more subtle manifestation common in girls
- Higher social motivation or desire for friendships in some females
- Internalizing symptoms (anxiety, depression) that may overshadow autistic traits

These differences can lead to misdiagnoses such as: anxiety, ADHD, OCD, depression, especially in autistic girls.

Source: American Psychiatric Association, 2022

4. Update Emphasizing That Diagnostic Criteria Apply Across Genders

DSM-5-TR explicitly reminds clinicians that the diagnostic criteria are non–gender-specific, but clinical interpretation must account for:

- Different behavioral expectations for boys versus girls
- Different socialization patterns
- How autistic traits may manifest differently depending on gender norms

5. Discussion of Bias in Assessment

DSM-5-TR also includes updated commentary (not criteria) acknowledging that:

- Existing tools and symptom descriptions are often normed on male samples
- This may contribute to gender bias in diagnosis
- Clinicians must be cautious not to rely solely on stereotypical male-presenting autism features

Source: American Psychiatric Association, 2022

ADOS-2 and the Risk of Missing Girls (Toddler Module, Modules 1 & 2)

- **Male-based item calibration:** ADOS-2 was normed primarily on male samples, raising concerns that Modules 1–2 may be less sensitive to early-childhood female presentations.

- **Girls show subtler scores:** Young autistic girls often display more typical eye contact, gestures, pretend play, and social imitation, which can result in lower ADOS-2 Social Affect scores—even when autism is present.

- **Evidence of sex-related item bias:** Large item-response studies of the ADOS-2 (including Modules 1 and 2) reveal differential item functioning on some behaviors (e.g., hand mannerisms), meaning those items are less likely to be scored as atypical in girls, potentially reducing total scores.

Sources: Kalb et al. 2022; Ronkin et al. 2022; Burrows et al. 2025; Krapf 2022.

ADOS-2 and Under-Identification of Autistic Girls in Early Childhood, Continued

- **Toddler module findings:** Although some toddler items show statistical invariance, researchers emphasize the clinical risk: girls often demonstrate strengths in pretend play and social engagement during the structured ADOS-2 session, masking core symptoms.

- **Camouflaging in young girls:** Even in early childhood, some autistic girls demonstrate social compensation that lowers ADOS-2 scores, especially in Modules 1–2 where interaction is heavily scaffolded.

- **Clinical implication:** ADOS-2 results for girls—particularly those with higher social interest or subtler restricted behaviors—should be interpreted alongside **developmental history, caregiver report, and real-world observations**, not in isolation.

Sources: Kalb et al. 2022; Ronkin et al. 2022; Burrows et al. 2025; Krapf 2022.

Review of Autism Assessment Measures

Assessment	Autism Spectrum Rating Scale (ASRS)	Social Responsiveness Scale, Second Edition (SRS-2)	Autism Diagnostic Observation Schedule, Second Edition (ADOS-2)	Childhood Autism Rating Scale, Second Edition (CARS-2)
Drawbacks found in research Sources: Burrows et al. 2025; Ratto et al. 2018; Lai et al. 2014; Kalb et al. 2022; Ronkin et al. 2022.	Normed largely on male samples Heavily weighted toward externalizing behaviors Girls often present with internalizing traits, social anxiety, subtle communication differences Camouflaging reduces caregiver/teacher endorsement	Research shows girls often score below clinical cutoffs despite meeting diagnostic criteria Items emphasize overt social impairments, more common in boys Girls may show higher social imitation, masking, and friendship motivation	Developed from male-majority clinical samples Girls show more eye contact, gestures, and pretend play during structured tasks Item-level studies show sex-related measurement bias (e.g., RRBs less detectable in girls) Camouflaging during assessment lowers Social Affect and RRB scores	Scales emphasize observable social withdrawal and overt repetitive behaviors Girls often show more nonverbal communication and cooperative play, reducing scores Subtle or internally focused RRBs may not score as autistic
Bottom line	May under-identify girls with subtle, socially motivated presentations.	May miss girls who appear socially engaged but struggle internally.	Structured format may not reveal female-typical autistic traits, especially in early Modules 1–2.	More sensitive to "classic" male autism; girls may be rated mild or non-spectrum.

- More obvious restricted interests reported (e.g., fixation on port-a-potties)

- More likely to show interest in parts of objects

- More repetitive motor movements (e.g., hand-flapping, pacing, jumping)

- More likely to engage in solitary play, have limited peer interactions

- Repetitive play more stereotypical of Autism (e.g., lining up objects, driving a car back and forth in front of eyes)

- Less likely to show pretend play

- May be more likely to have externalizing behaviors (aggression, meltdowns, disruptive, self-injury, behavior in the preschool setting that result in referrals)

How Autism May Present Girls in Early Childhood

- Restricted interests more "socially acceptable" (e.g., "collections" and displaying/organizing toys, intense interest in animals/stuffies/character)

- Better sharing of interests–will converse with others (e.g., talk with peers/adults about interests)

- Higher social motivation for friendships

- Higher nonverbal communication (more frequent eye contact, gesture use, social smiles), but difficulty reading nonverbal cues persists

- Better conversational skills (but speech can be overly verbose/formal, repetitive questioning, monopolizes conversations, frequent interruptions of others)

- May be called "bossy" by peers, difficulty sharing items

- Better pretend play/ability to imitate (repetitive play schemes that look imaginative)

- "Flitting" between peers on the playground

- Can appear "shy" or to suffer from anxiety

Look for Patterns of Responses and Borderline Scores

- In clinician and teacher ratings, many autistic girls only "somewhat met" certain DSM-5 social-communication criteria—meaning behaviors were present sometimes but infrequently.

- These subtler, borderline presentations can cause diagnostic thresholds to be missed.

- Jamison et al. surveyed a large group of experienced clinicians; they report that clinicians often perceive girls as more complex, harder to recognize, and more likely to present atypically or "on the borderline."
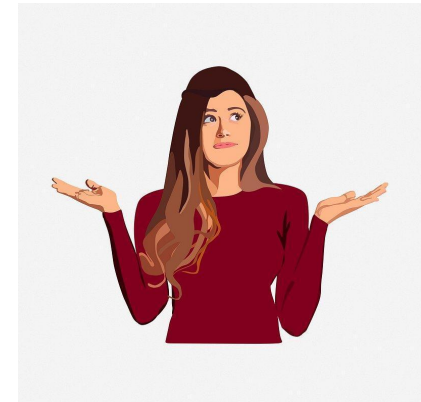
Sources: Hiller, Young & Weber, 2014; Jamison et al. 2017

# What Is the Best Tool for Identifying Girls With Autism?

No single tool is the "best."

A multi-method, multi-informant approach dramatically improves identification for girls. Research across the last decade shows that girls—especially those with average language, social motivation, or masking skills—are routinely under-identified by all major standardized tools when used alone (ADOS-2, CARS-2, SRS-2, ASRS).

Interviews are the single strongest source of diagnostic information for autistic girls. (Lai et al. 2015; Ratto et al. 2018; Burrows et al. 2025)

The best tool currently for identifying autistic girls is not a test—it's a clinician who knows what female autism looks like.

How Can We Better Identify Girls: Take Away for Clinicians
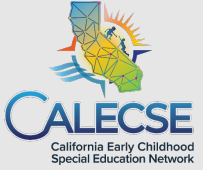
1. Don't be quick to rule out Autism when assessing a girl. Even if a girl is not eligible in early childhood, document observed traits and concerns that the team notices. A documented history of concerns is essential: beware of making a rule out.

2. Use diagnostic or eligibility criteria as a guide, but look to recent research on how girls may show Autistic traits. Remember your training was based on male presentation. Females may present with less disruptive and less stereotypically obvious behaviors.

3. Attend trainings and learn about on females and Autism: the research is happening now.

4. Recognize that most standardized assessment tools are based on research on male presentations of Autism. Consider borderline and at-risk results significant.

How Can We Better Identify Girls: Take Away for Clinicians
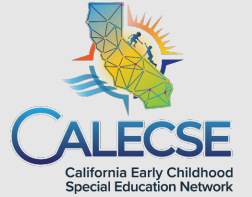
5. Use multi-modal methods of obtaining data including multiple observations, developmental history, interviews with caregivers and teachers, and records review.

6. Look for specific patterns of rigidity, sensory challenges, peer challenges, social communication difficulties, repetitive interests, need for routine/sameness, and challenges with/exhaustion after social events that the research has shown are consistent with the female phenotype of Autism.

Questions?

Share Your Feedback for a Chance to Win CalECSE 2026 Symposium Registration
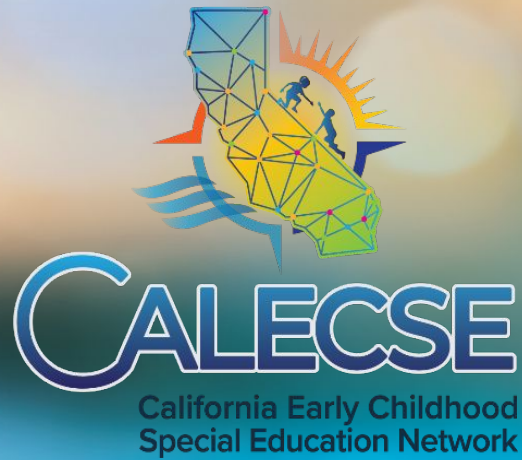
Please help us improve our practice and complete the zoom survey following this session.

After doing so, you will be entered into a raffle to win a free registration to CalECSE's 4th Annual Symposium to be held in Northern California October 20–21, 2026. Valued at over $500.

Interested in joining a local Community of Practice (CoP) for practitioners who support children ages zero to five ?
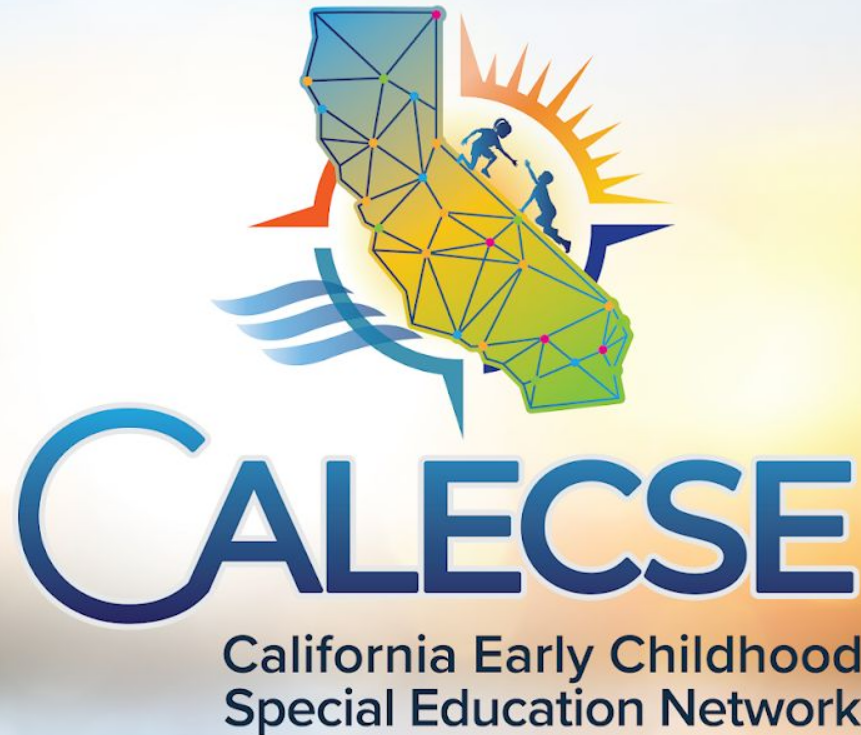

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