A Review of the Clinical Utility and Psychometric Properties of the Autism Spectrum Quotient (AQ): Gender-Specific Norms, Percentile Rankings, and Qualitative Descriptors

The Autism Spectrum Quotient (AQ) was developed by Baron-Cohen and colleagues (2001). It is a 50-item self-report measure that assesses autistic traits in adults and people as young as 16 years. This technical review provides clinicians with gender-specific normative data, percentile rankings, and qualitative descriptors to enhance the interpretation and clinical utility of AQ scores.

View the AQ on NovoPsych.com.au

November 2024

Developer

The Autism Spectrum Quotient (AQ) was developed by Baron-Cohen and colleagues (2001):

> Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): Evidence from Asperger syndrome/high-functioning Autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders, 31*(1), 5-17. https://doi.org/10.1023/a:1005653411471

This document was developed by NovoPsych to review contemporary literature and to describe original scoring methodologies and to provide interpretation material, enhance normative data and provide qualitative descriptors.

Author Information

(not in authorship order)

Ben Buchanan DPsych

CEO, NovoPsych

Adjunct Research Fellow, Monash University, Melbourne, Australia

David Hegarty PhD

Head of Psychometrics, NovoPsych

Adjunct Professional Fellow, Southern Cross University, Coffs Harbour, Australia

Simon Baker PhD

Research Fellow, NovoPsych

Carla Smyth PhD

Research Fellow and Clinical Liaison, NovoPsych

Emerson Bartholomew MHealthPsych

Research Fellow and Psychometrician, NovoPsych

Correspondence

For inquiries about this document, contact:

Dr David Hegarty

Email: david@novopsych.com

Citation

Baker, S., Smyth, C., Bartholomew, E., Buchanan, B., & Hegarty, D. (2024). A Review of the Clinical Utility and Psychometric Properties of the Autism Spectrum Quotient (AQ): Gender-Specific Norms, Percentile Rankings, and Qualitative Descriptors. Retrieved from:
https://novopsych.com.au/assessments/diagnosis/autism-spectrum-quotient/

Description

The Autism Spectrum Quotient (AQ) is a 50 item self-report measure that assesses autistic traits in adults and people as young as 16 years (Baron-Cohen et al., 2001). The AQ has five subscales, each representing a specific trait relevant for the identification of Autistic individuals:

- **Social Skill**, which reflects confidence and ease in social situations, including preferences for social activities and comfort with social interaction.
- **Attention Switching**, which reflects the ability to switch focus between tasks or activities, and adaptability to changes in routine or unexpected events.
- **Attention to Detail**, which relates to a heightened focus on details and patterns in the environment, often to the exclusion of the bigger picture.
- **Communication**, which reflects the ability to engage in reciprocal communication, understand conversational cues, and interpret social language nuances.
- **Imagination**, which focuses on imaginative thinking, such as the capacity for pretend play, hypothetical thinking, and enjoyment of fiction or creative scenarios.

The AQ is one of the most widely used self-report measures of autistic traits. Research indicates that it effectively captures autistic-like trait levels and can help differentiate between Autistic and Non-Autistic individuals, even though there is no consensus on the optimal cut-off score (Baron-Cohen et al., 2001; Broadbent et al., 2013; Woodbury-Smith et al., 2005).

While the AQ provides valuable insights into autistic traits and can be used as one part of a comprehensive assessment, scores may also reflect phenomena other than, or co-occurring with, Autism. It is important to interpret the results within the context of the individual's developmental history and other personal characteristics.

Psychometric Properties

The Autism Spectrum Quotient (AQ) comprises 50 items, with 10 items for each of five theoretically derived subscales representing specific trait dimensions associated with autism (Baron-Cohen et al., 2001). Specifically, the items were selected to reflect the "triad" of autistic "symptoms" (i.e., social difficulties, communication issues, and repetitive behaviors) as well as "areas of cognitive abnormality" associated with autism (Baron-Cohen et al., 2001, p. 6).

The AQ was originally validated in Autistic adults (i.e., "adults with Asperger syndrome or high-functioning autism") and adults drawn from the general population (Baron-Cohen et al., 2001). This initial study found that the AQ's total scale score is normally distributed and has good test-retest reliability, and that the AQ's five subscale scores have acceptable internal consistency, with Cronbach's alpha values between 0.63 and 0.77.

Baron-Cohen and colleagues (2001) suggested that a total scale cut-off score of 32 and above could be used to distinguish between Autistic and Non-Autistic individuals. However, this has been challenged by others such as Woodbury-Smith and colleagues (2005) and Broadbent and colleagues (2013) who reported optimal cut-off scores of 26 and 29, respectively.

In the general population, males typically score higher than females, while Autistic females typically score higher than Autistic males (Baron-Cohen et al., 2001; Broadbent et al., 2013; Ruzich et al., 2015). The consistent differences in AQ scores between males and females highlight the importance of gender-specific norms and cut-off scores. NovoPsych has therefore established gender-specific norms and thresholds, grounded in data from the existing literature, to enhance the interpretability and classification accuracy of AQ scores, as described in Supporting Information (pp. 7-19).

The respondent's AQ scores are converted to gender-specific percentiles, providing useful information about the degree to which they exhibit autistic traits relative to typical levels among Autistic adults and adults in the general population of the same gender.
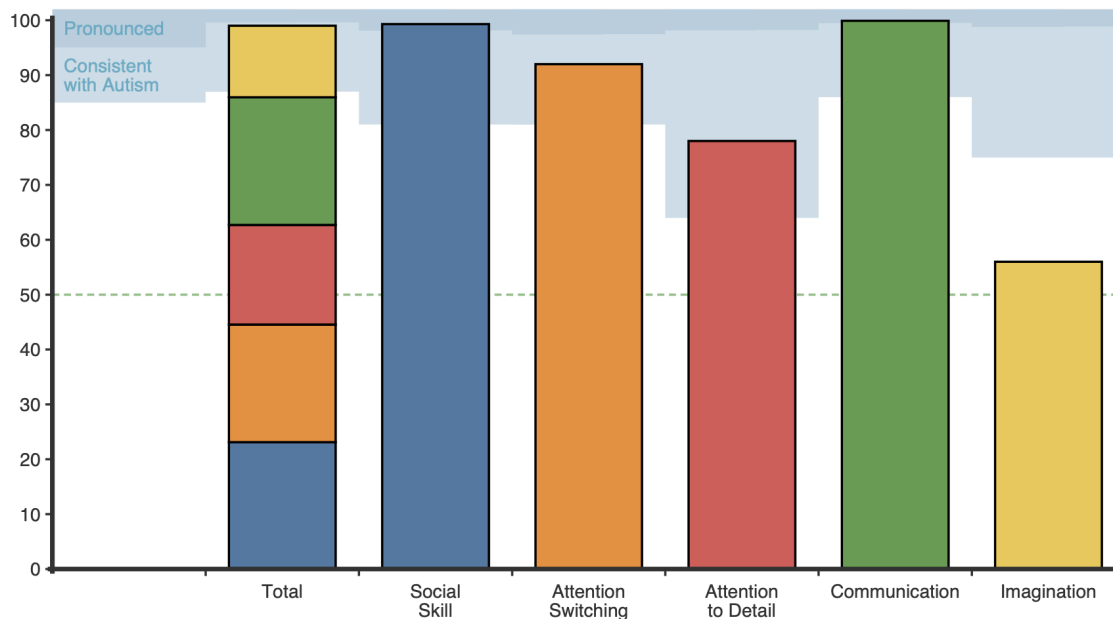
Scoring & Interpretation

Autism Spectrum Quotient (AQ) scores are presented as a total scale score as well as scores on five subscales. Higher total scale scores are indicative of higher overall levels of autistic traits. A higher subscale score is indicative of a higher level of the specific trait that is associated with Autism.

AQ Results

	Score	Percentile	Descriptor
Total (0-50)	35	99	Overall consistent with Autism
Social Skill (0-10)	9	99.3	Pronounced
Attention Switching (0-10)	7	92	Consistent with Autism
Attention to Detail (0-10)	7	78	Consistent with Autism
Communication (0-10)	9	99.9	Pronounced
Imagination (0-10)	3	56	-

- **Social Skill** (Items 1, 11, 13, 15, 22, 36, 44, 45, 47, 48) assesses difficulties and discomfort with social situations, including difficulties with social interactions and avoidance of some social situations.
- **Attention Switching** (Items 2, 4, 10, 16, 25, 32, 34, 37, 43, 46) describes difficulties in shifting focus between tasks or activities and adapting to changes in routine or unexpected events.
- **Attention to Detail** (Items 5, 6, 9, 12, 19, 23, 28, 29, 30, 49) relates to a heightened focus on specific details and patterns in the environment, which can sometimes lead to challenges in seeing and understanding the broader context.
- **Communication** (Items 7, 17, 18, 26, 27, 31, 33, 35, 38, 39) describes difficulties in engaging in reciprocal communication and interpreting indirect communication and social cues.
- **Imagination** (Items 3, 8, 14, 20, 21, 24, 40, 41, 42, 50) focuses on challenges related to imaginative thinking, including difficulties with hypothetical scenarios (e.g., pretend play).

The client's total and subscale scores are expressed as (gender-specific) percentiles based on normative data for adults in the general population (Baron-Cohen et al., 2001; Ruzich et al., 2015). The percentiles contextualise the client's scores relative to the typical scores of adults in the general population. For example, the 50th percentile represents the typical levels of autistic traits among adults in the general population, while scores on the 90th percentile fall within the top 10% when compared to adults in the general population. Scores in this higher range are more consistent with those of Autistic adults than adults in the general population. For the total AQ score, 13% of males and 4% of females score in the range that aligns with the typical scores of Autistic males and females, respectively.

AQ Normative Percentiles (Males)

A score is classified as "Consistent with Autism" if it more closely resembles the scores of Autistic adults than those of adults in the general population. To this end, the "Consistent with Autism" thresholds are calculated as the weighted midpoint between the distribution of scores among the Autistic and Nonclinical/Community samples (Jacobson & Truax, 1991).

A score is considered "Pronounced" if it is in the upper half of the Autistic distribution, reflecting higher levels of autistic traits. As such, the "Pronounced" thresholds represent scores on or above the 50th percentile when compared to Autistic adults.

For the Attention to Detail subscale, a higher "Pronounced" threshold reflecting scores on or above the 90th percentile within the Autistic sample was chosen due to significant overlap between the score distributions of the Autistic and Community samples.

Scores classified as either "Consistent with Autism" or "Pronounced" suggest that the client exhibits autistic traits at a level consistent with Autistic adults. Gender-specific distributions of scores, and their classifications, among Autistic adults and adults in the general population are presented in Supporting Information (pp. 7-19).

The thresholds for the total AQ score are as follows.

- **Males:** 26 and above is "Consistent with Autism"; 37 and above is "Pronounced"
- **Females:** 27 and above is "Consistent with Autism"; 39 and above is "Pronounced"
- **Combined (Males and Females):** 26 and above is "Consistent with Autism"; 36 and above is "Pronounced"

It is important to note that many measures of Autism, including the AQ, were developed primarily with male characteristics of Autism in mind and may therefore have less sensitivity in measuring Autism in females. Therefore, when a female respondent's total AQ score is just below the "Consistent with Autism" threshold (e.g., 23-26), it should be interpreted with caution and considered alongside other sources of information as part of a comprehensive assessment.

Graphs comparing the total and subscale scores to the normative distribution of scores among Autistic adults and adults in the general population are presented, with shaded areas corresponding to scores between the 25th and 75th percentile. These graphs contextualise the client's scores relative to typical levels of autistic traits among Autistic adults and adults in the general population.

AQ Scores Compared to Community and Autistic Distributions (Males)
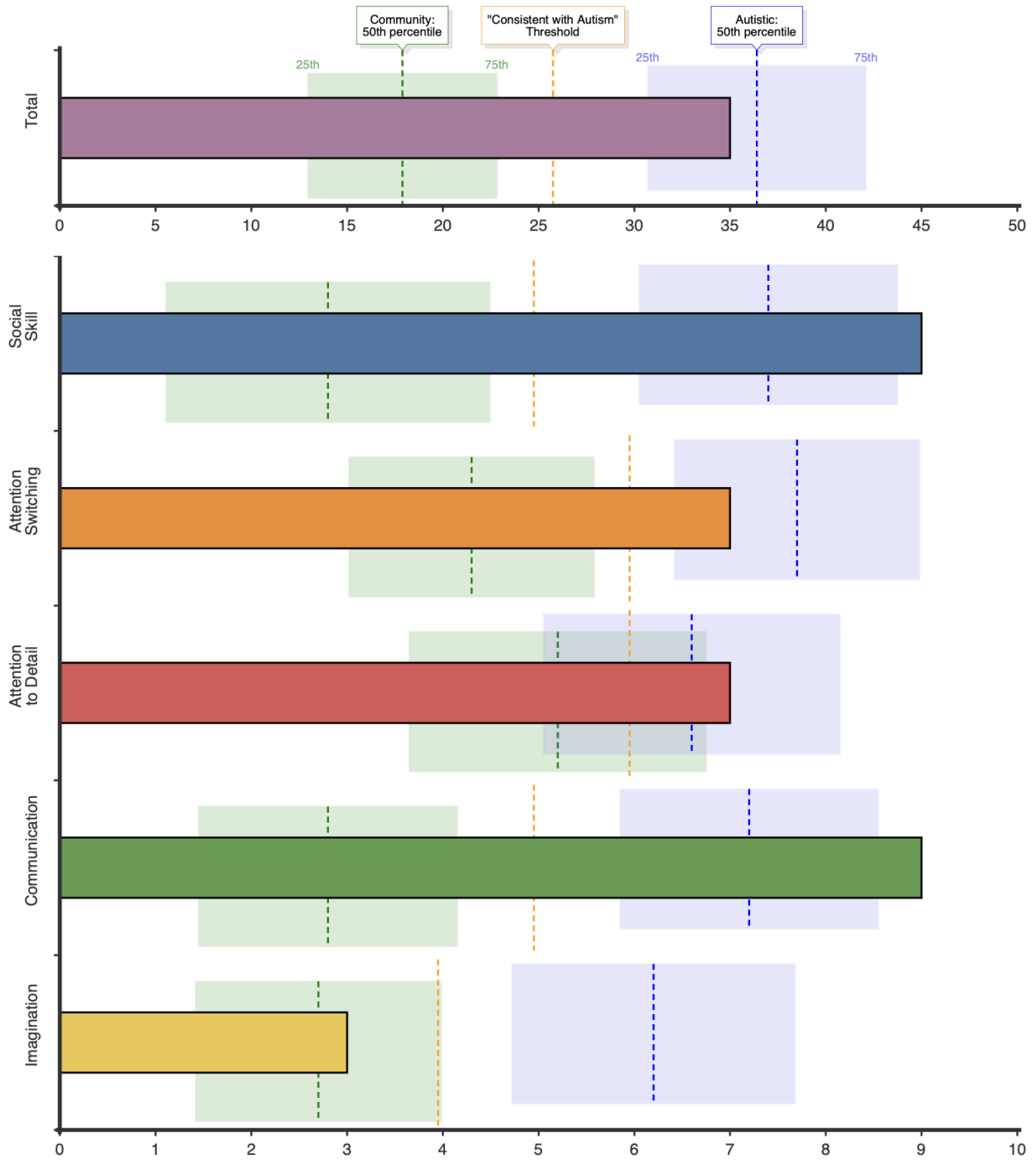
Supporting Information

This section outlines NovoPsych's development of gender-specific norms for the AQ based on data obtained from a systematic review by Ruzich and colleagues (2015) and a study by Baron-Cohen and colleagues (2001). By accounting for gender differences, these norms enhance the interpretability of AQ scores, enabling clinicians to assess autistic traits with greater nuance.

This section also outlines NovoPsych's development of gender-specific classification thresholds and qualitative descriptors for AQ scores. These descriptors provide clinicians with clear and consistent classifications of levels of autistic traits, supporting better understanding and communication of AQ scores.

Lastly, this section describes the structure and logic of the automated interpretive text that NovoPsych provides in AQ reports. This interpretive text adapts to the respondent's scores and gender, providing clinicians with comprehensive, tailored interpretations of AQ results.

Percentile Calculations

Means and standard deviations for the total AQ score and AQ subscale scores are shown in Table 1. The pooled means and standard deviations for the total AQ score are based on data from 73 studies included in a comprehensive systematic review of the literature on the AQ (Ruzich et al., 2015). The pooled data includes 1,374 Autistic adults (363 males and 298 females) and 4,931 adults (872 males and 1,378 females) from "nonclinical" samples. The means and standard deviations for the AQ subscale scores are from a sample of 58 Autistic adults (45 males and 13 females) recruited from various sources (including the National Autistic Society UK, specialist clinics carrying out diagnostic assessments, and advertisements in newsletters and web pages for Autistic adults), and a community sample of 174 adults (76 males and 98 females) recruited through a mailout in the East Anglia area in the East of England (Baron-Cohen et al., 2001).

Table 1. Mean (SD) total and subscale scores.

	Community			Autistic		
	All	Male	Female	All	Male	Female
Total AQ	16.94 (6.94)	17.89 (7.31)	14.88 (7.14)	35.19 (7.72)	36.40 (8.45)	38.87 (7.01)
Social Skill	2.6 (2.3)	2.8 (2.5)	2.3 (2.2)	7.5 (1.9)	7.4 (2.0)	7.9 (1.4)
Attention Switching	3.9 (1.9)	4.3 (1.9)	3.6 (1.8)	8.0 (1.8)	7.7 (1.9)	8.9 (1.0)
Attention to Detail	5.3 (2.3)	5.2 (2.3)	5.4 (2.3)	6.7 (2.3)	6.6 (2.3)	6.9 (2.1)
Communication	2.4 (1.9)	2.8 (2.0)	2.1 (1.8)	7.2 (2.0)	7.2 (2.0)	7.3 (2.1)
Imagination	2.3 (1.7)	2.7 (1.9)	1.9 (1.5)	6.4 (2.1)	6.2 (2.2)	7.0 (1.5)

Sources: Ruzich et al. (2015) and Baron-Cohen et al. (2001).

NovoPsych has used the above means and standard deviations to convert AQ scores to percentiles, as shown in Tables 2 and 3.1 to 3.5, according to the following equation.

$$Percentile = 100 \times \Phi((x - M)/SD)$$

Where:

- *x* is the score
- *M* is the mean
- *SD* is the standard deviation
- Φ is the [standard normal cumulative distribution function](#)

This equation first standardises the score to a z-score by subtracting the mean and dividing by the standard deviation, then converts the z-score to a percentile by applying the standard normal cumulative distribution function and multiplying by 100.

These percentiles contextualise each score relative to typical scores among Autistic adults and adults in the general population, offering a clearer perspective on how the respondent's levels of autistic traits compare to those of their peers.

Percentile Tables

Table 2. Percentiles for total AQ scores relative to pooled Nonclinical and Autistic samples, stratified by gender.

	Total					
	Nonclinical			Autistic		
Score	All	Male	Female	All	Male	Female
0	0.7	0.7	1.9	0.01	0.01	0.01
1	1.1	1	2.6	0.01	0.01	0.01
2	1.6	1.5	3.6	0.01	0.01	0.01
3	2.2	2.1	5	0.01	0.01	0.01
4	3.1	2.9	6	0.01	0.01	0.01
5	4	3.9	8	0.01	0.01	0.01
6	6	5	11	0.01	0.02	0.01
7	8	7	13	0.01	0.03	0.01
8	10	9	17	0.02	0.04	0.01
9	13	11	21	0.03	0.06	0.01
10	16	14	25	0.06	0.09	0.01
11	20	17	29	0.09	0.1	0.01
12	24	21	34	0.1	0.2	0.01
13	29	25	40	0.2	0.3	0.01
14	34	30	45	0.3	0.4	0.02
15	39	35	51	0.4	0.6	0.03
16	45	40	56	0.6	0.8	0.06
17	50	45	62	0.9	1.1	0.09
18	56	51	67	1.3	1.5	0.1
19	62	56	72	1.8	2	0.2
20	67	61	76	2.5	2.6	0.4
21	72	66	80	3.3	3.4	0.5
22	77	71	84	4	4	0.8
23	81	76	87	6	6	1.2
24	85	80	90	7	7	1.7
25	88	83	92	9	9	2.4
26	90	87	94	12	11	3.3
27	93	89	96	14	13	5
28	94	92	96.7	18	16	6
29	96	94	97.6	21	19	8
30	97	95	98.3	25	22	10
31	97.9	96.4	98.8	29	26	13
32	98.5	97.3	99.2	34	30	16
33	99	98.1	99.4	39	34	20
34	99.3	98.6	99.6	44	39	24
35	99.5	99	99.8	49	43	29
36	99.7	99.3	99.8	54	48	34
37	99.8	99.6	99.9	59	53	39
38	99.9	99.7	99.94	64	58	45
39	99.93	99.8	99.96	69	62	51
40	99.96	99.9	99.98	73	66	56
41	99.97	99.92	99.99	77	71	62
42	99.98	99.95	99.99	81	75	67
43	99.99	99.97	99.99	84	78	72
44	99.99	99.98	99.99	87	82	77
45	99.99	99.99	99.99	90	85	81
46	99.99	99.99	99.99	92	87	85
47	99.99	99.99	99.99	94	90	88
48	99.99	99.99	99.99	95	92	90
49	99.99	99.99	99.99	96	93	93
50	99.99	99.99	99.99	97	95	94

Table 3.1. Percentiles for Social Skill subscale scores relative to Community and Autistic samples, stratified by gender.

Score	Social Skill					
	Community			Autistic		
	All	Male	Female	All	Male	Female
0	13	13	15	0.01	0.01	0.01
1	24	24	28	0.03	0.07	0.01
2	40	37	45	0.2	0.3	0.01
3	57	53	62	0.9	1.4	0.02
4	73	68	78	3.3	4	0.3
5	85	81	89	9	12	1.9
6	93	90	95	21	24	9
7	97.2	95	98.4	40	42	26
8	99.1	98.1	99.5	60	62	53
9	99.7	99.3	99.9	79	79	78
10	99.94	99.8	99.98	91	90	93

Table 3.2. Percentiles for Attention Switching subscale scores relative to Community and Autistic samples, stratified by gender.

Score	Attention Switching					
	Community			Autistic		
	All	Male	Female	All	Male	Female
0	2	1	2	0.01	0.01	0.01
1	6	4	7	0.01	0.02	0.01
2	16	11	19	0.04	0.1	0.01
3	32	25	37	0.3	0.7	0.01
4	52	44	59	1.3	2.6	0.01
5	72	64	78	5	8	0.01
6	87	81	91	13	19	0.2
7	95	92	97.1	29	36	3
8	98.5	97.4	99.3	50	56	18
9	99.6	99.3	99.9	71	75	54
10	99.93	99.9	99.98	87	89	86

Table 3.3. Percentiles for Attention to Detail subscale scores relative to Community and Autistic samples, stratified by gender.

	Attention to Detail					
	Community			Autistic		
Score	All	Male	Female	All	Male	Female
0	1	1	1	0.2	0.2	0.05
1	3	3	3	0.7	0.7	0.2
2	8	8	7	2.1	2.3	1.0
3	16	17	15	5	6	3.2
4	29	30	27	12	13	8
5	45	47	43	23	24	18
6	62	64	60	38	40	33
7	77	78	76	55	57	52
8	88	89	87	71	73	70
9	95	95	94	84	85	84
10	97.9	98.2	97.7	92	93	93

Table 3.4. Percentiles for Communication subscale scores relative to Community and Autistic samples, stratified by gender.

	Communication					
	Community			Autistic		
Score	All	Male	Female	All	Male	Female
0	10	8	12	0.02	0.02	0.03
1	23	18	27	0.1	0.1	0.1
2	42	34	48	0.5	0.5	0.6
3	62	54	69	1.8	1.8	2.0
4	80	73	85	5	5	6
5	91	86	95	14	14	14
6	97.1	95	98.5	27	27	27
7	99.2	98.2	99.7	46	46	44
8	99.8	99.5	99.95	66	66	63
9	99.97	99.9	99.99	82	82	79
10	99.99	99.98	99.99	92	92	90

Table 3.5. Percentiles for Imagination subscale scores relative to Community and Autistic samples, stratified by gender.

	Imagination					
	Community			Autistic		
Score	All	Male	Female	All	Male	Female
0	9	8	10	0.1	0.2	0.01
1	22	19	27	0.5	0.9	0.01
2	43	36	53	1.8	2.8	0.04
3	66	56	77	5	7	0.4
4	84	75	92	13	16	2.3
5	94	89	98.1	25	29	9
6	98.5	96	99.7	42	46	25
7	99.7	98.8	99.97	61	64	50
8	99.96	99.74	99.99	78	79	75
9	99.99	99.95	99.99	89	90	91
10	99.99	99.99	99.99	96	96	98

Descriptors

In addition to gender-specific norms, NovoPsych has established gender-specific classification thresholds and qualitative descriptors for the total AQ score and AQ subscale scores (see Table 4).

Table 4. Thresholds.

	"Consistent with Autism" Threshold			"Pronounced" Threshold		
	All	Male	Female	All	Male	Female
Total AQ	26	26	27	36	37	39
Social Skill	5	5	6	8	8	8
Attention Switching	6	6	7	8	8	9
Attention to Detail	6	6	6	10	10	10
Communication	5	5	5	8	8	8
Imagination	4	4	4	7	7	7

The "Consistent with Autism" thresholds were calculated as the weighted midpoint between the score distributions of the Autistic and Nonclinical/Community samples according to the following equation (Jacobson & Truax, 1991).

$$c = \frac{s_0 M_1 + s_1 M_0}{s_1 + s_0}$$

where M_0 and s_0 are the mean and standard deviation of the Nonclinical/Community sample, and M_1 and s_1 are the mean and standard deviation of the Autistic sample.

Scores that meet or exceed this threshold more closely resemble those of Autistic adults than those of adults in the general population, indicating that the respondent exhibits autistic traits, or the specific autistic trait, at a level consistent with Autistic adults. Scores classified as "Consistent with Autism" are coloured lighter blue in Tables 2 and 3.1 to 3.5.

The "Pronounced" threshold represents scores on the 50th percentile or above within the Autistic sample. Scores meeting or exceeding this threshold fall within the upper half of the Autistic distribution, reflecting a more "Pronounced" level of autistic traits, or a specific autistic trait.

For the Attention to Detail subscale, a higher "Pronounced" threshold reflecting scores on or above the 90th percentile within the Autistic sample was chosen due to significant overlap between the score distributions of the Autistic and Community samples. Scores classified as "Pronounced" are coloured darker blue in Tables 2 and 3.1.

It is important to note that many measures of Autism, including the AQ, were developed primarily with male characteristics of Autism in mind and may therefore have less sensitivity in measuring Autism in females. Therefore, when a female respondent's total AQ score is just below the "Consistent with Autism" threshold (e.g., 23-26), it should be interpreted with caution and considered alongside other sources of information as part of a comprehensive assessment.

Using the gender-specific norms and thresholds established above, Figures 1 and 2 show the distributions of the total AQ score and AQ subscale scores among adults in the general population and Autistic adults, separately for males and females. Figure 3 shows these distributions for the combined samples (i.e., males and females). The shaded areas indicate scores between the 25th and 75th percentiles within each sample.

Figure 1. Distribution of AQ scores among males in the general population ("Community") and Autistic males.
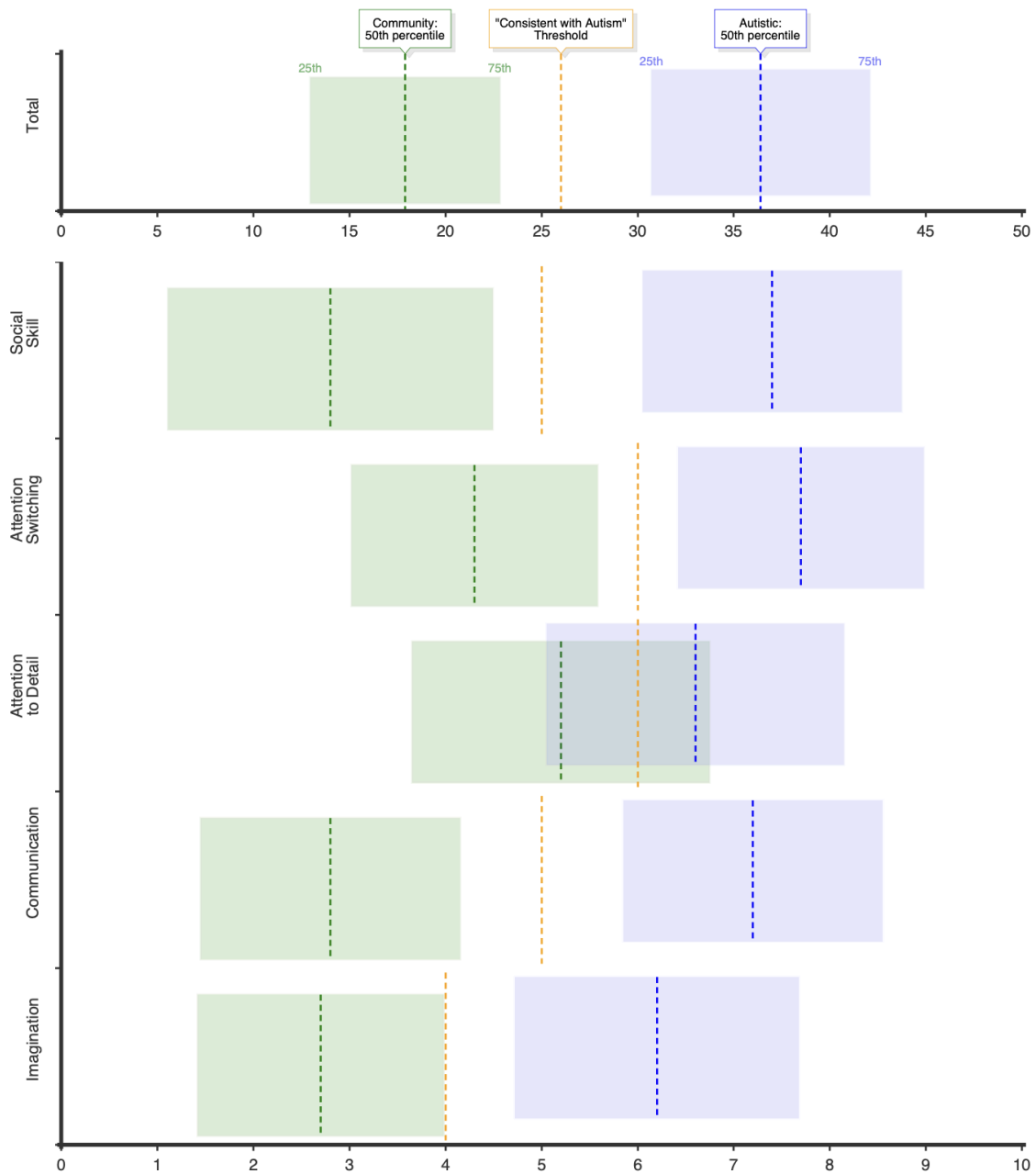
Figure 2. Distribution of AQ scores among females in the general population ("Community") and Autistic females.
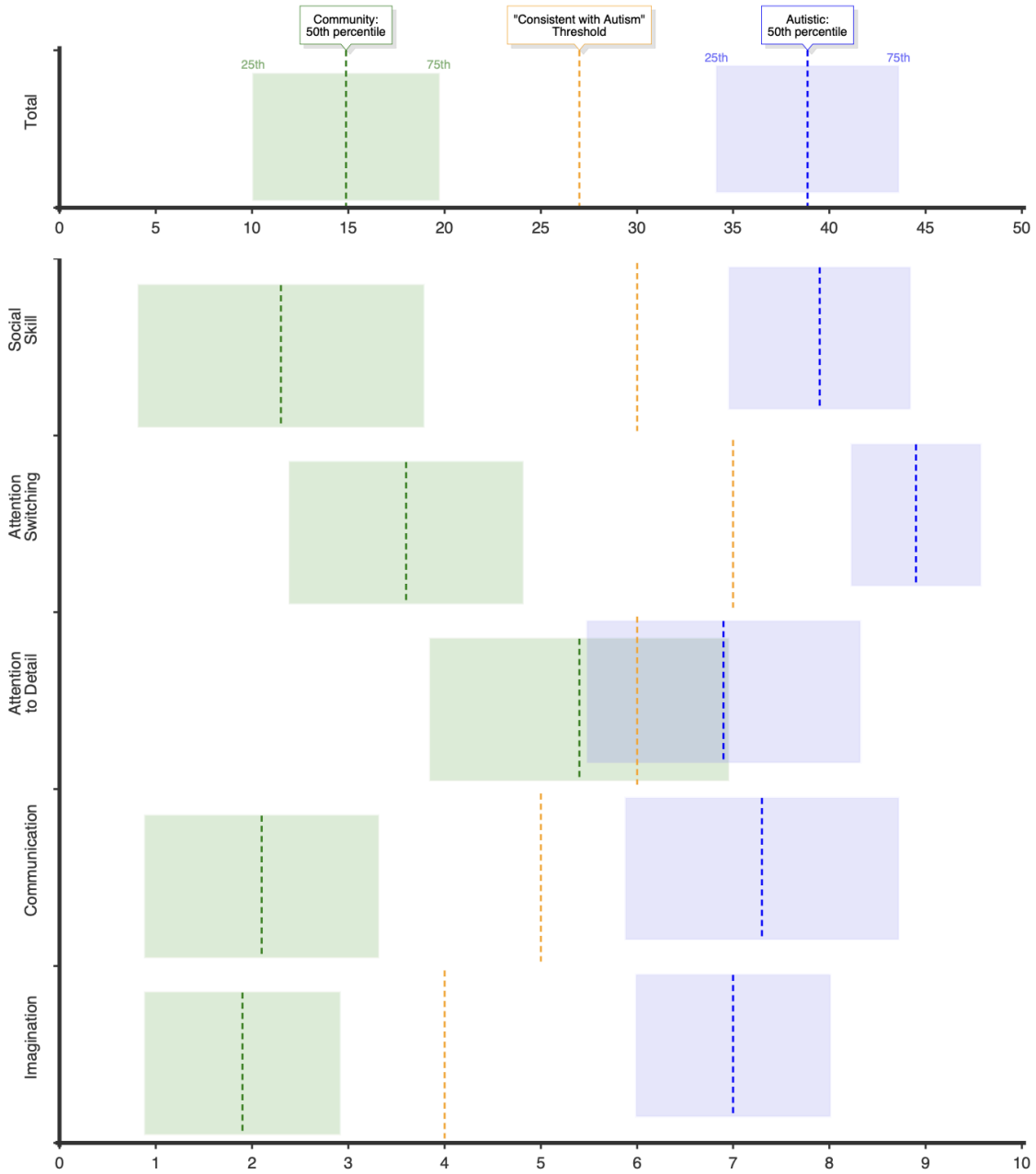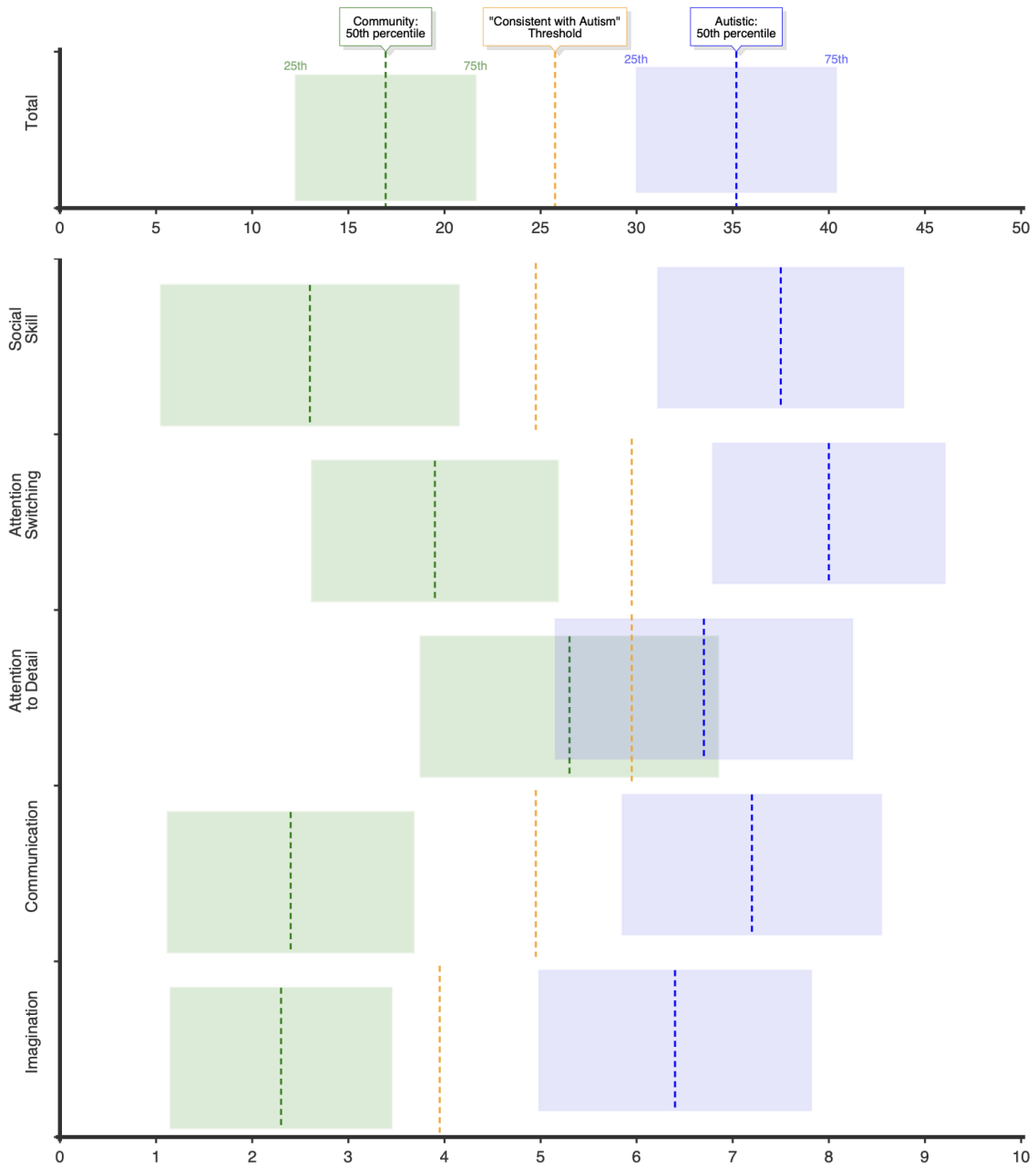
Figure 3. Distribution of AQ scores among adults in the general population ("Community") and Autistic adults.

Interpretive Text

The interpretive text for the AQ follows a structured format that adapts based on the respondent's scores and gender. The text begins with a general statement about the respondent's overall level of autistic traits based on the classification of the total score and its corresponding (gender-specific) percentile.

For scores below the (gender-specific) "Consistent with Autism" threshold, the general statement varies based on the (gender-specific) percentile, and includes a (gender-specific) percentile comparison to a reference group of adults in the general population:

Below the 85th percentile:

"The respondent's Autism Spectrum Quotient (AQ) score is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population. Their total AQ score is below the level considered to be consistent with Autism and is more consistent with those of <adults | males | females> in the general population."

85th percentile or higher:

"The respondent's Autism Spectrum Quotient (AQ) score is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population. This means that their score falls within the top XX percent when compared to their peers and is higher than typical. However, their score is below the level considered to be consistent with Autism."

For "Consistent with Autism" or "Pronounced" scores, the general statement includes (gender-specific) percentile comparisons to both general population and autistic reference groups:

"The respondent's Autism Spectrum Quotient (AQ) score is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population. When compared to Autistic <adults | males | females>, the respondent's score is on the XXst/nd/rd/th percentile. As such, their total AQ score falls within the top XX percent when compared to <adults | males | females> in the general population and is more consistent with those of Autistic <adults | males | females>. It is important to note that scores may also reflect phenomena other than, or co-occurring with, Autism. Therefore, scores should be interpreted within the context of the individual's developmental history and other personal characteristics."

The text then lists any subscales that score in the "Consistent with Autism" or "Pronounced" ranges (hereafter referred to as "notable" subscales), both of which suggest that the respondent exhibits the specific autistic trait at a level consistent with Autistic adults. These subscales are listed in order, first by classification ("Pronounced" before "Consistent with Autism") and then by (gender-specific) percentile value. The text also highlights any subscales that score in the "Pronounced" range. For example:

"The respondent's scores on the Communication and Social Skills subscales are consistent with Autism. In particular, the respondent's score on the Communication subscale is Pronounced."

For each notable subscale, the text then provides a description including:
- The subscale's (gender-specific) percentile comparisons to both general population and autistic reference groups
- The implications of high scores in this area
- The specific questionnaire items that received the highest ratings

For "Consistent with Autism" or "Pronounced" scores on the Social Skills subscale:

> *"The respondent's score on the Social Skills subscale is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population and the XXst/nd/rd/th percentile when compared to Autistic <adults | males | females>. This suggests possible difficulties with social confidence and comfort in interactions, which may lead them to feel less at ease in social situations or less inclined to engage in group activities. They may find social norms unclear or challenging to navigate, impacting their preference for or enjoyment of social gatherings. The items with the highest ratings were:"*

For "Consistent with Autism" or "Pronounced" scores on the Attention Switching subscale:

> *"The respondent's score on the Attention Switching subscale is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population and the XXst/nd/rd/th percentile when compared to Autistic <adults | males | females>. This suggests a preference for predictability and routines, and they may experience increased stress in response to unexpected changes. They might find it challenging to shift focus quickly, impacting their ability to adjust to new activities or interruptions. The items with the highest ratings were:"*

For "Consistent with Autism" or "Pronounced" scores on the Attention to Detail subscale:

> *"The respondent's score on the Attention to Detail subscale is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population and the XXst/nd/rd/th percentile when compared to Autistic <adults | males | females>. This suggests a heightened focus on details or patterns, which may lead them to prioritise specifics over the broader context. This strong attention to detail may support certain analytical tasks, though it might also limit flexibility in more fluid situations. The items with the highest ratings were:"*

For "Consistent with Autism" or "Pronounced" scores on the Communication subscale:

> *"The respondent's score on the Communication subscale is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population and the XXst/nd/rd/th percentile when compared to Autistic <adults | males | females>. This indicates potential difficulties in conversational flow and understanding indirect communication cues, such as tone of voice, body language, or facial expressions. They may find interpreting these social cues challenging, which could contribute to occasional misunderstandings in social exchanges. The items with the highest ratings were:"*

For "Consistent with Autism" or "Pronounced" scores on the Imagination subscale:

> *"The respondent's score on the Imagination subscale is on the XXst/nd/rd/th percentile when compared to <adults | males | females> in the general population and the XXst/nd/rd/th percentile when compared to Autistic <adults | males | females>. This suggests a preference for concrete, linear or factual thinking over hypothetical or imaginative scenarios. They may find it more difficult to engage in activities involving abstract thinking or fiction, which may lower their preference for certain creative or social experiences. The items with the highest ratings were:"*

Developer

Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): Evidence from Asperger syndrome/high-functioning Autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders, 31*(1), 5-17. https://doi.org/10.1023/a:1005653411471

References

Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): Evidence from Asperger syndrome/high-functioning Autism, males and females, scientists and mathematicians. *Journal of Autism and Developmental Disorders, 31*(1), 5-17. https://doi.org/10.1023/a:1005653411471

Broadbent, J., Galic, I., & Stokes, M. A. (2013). Validation of autism spectrum quotient adult version in an Australian sample. *Autism Research and Treatment, 2013,* 984205. https://doi.org/10.1155/2013/984205

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting and Clinical Psychology, 59*(1), 12-19. https://doi.org/10.1037//0022-006x.59.1.12

Ruzich, E., Allison, C., Smith, P., Watson, P., Auyeung, B., Ring, H., & Baron-Cohen, S. (2015). Measuring autistic traits in the general population: A systematic review of the Autism-Spectrum Quotient (AQ) in a nonclinical population sample of 6,900 typical adult males and females. *Molecular Autism, 6,* 2. https://doi.org/10.1186/2040-2392-6-2

Woodbury-Smith, M. R., Robinson, J., Wheelwright, S., & Baron-Cohen, S. (2005). Screening adults for Asperger Syndrome using the AQ: A preliminary study of its diagnostic validity in clinical practice. *Journal of Autism and Developmental Disorders, 35*(3), 331-335. https://doi.org/10.1007/s10803-005-3300-7

Assessment Questions

NovoPsych

Autism Spectrum Quotient (AQ)

Instructions:

Choose one response that best describes how strongly each item applies to you

		Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
1	I prefer to do things with others rather than on my own	0	0	1	1
2	I prefer to do things the same way over and over again	1	1	0	0
3	If I try to imagine something, I find it very easy to create a picture in my mind	0	0	1	1
4	I frequently get so strongly absorbed in one thing that I lose sight of other things	1	1	0	0
5	I often notice small sounds when others do not	1	1	0	0
6	I usually notice car number plates or similar strings of information	1	1	0	0
7	Other people frequently tell me that what I've said is impolite, even though I think it is polite	1	1	0	0
8	When I'm reading a story, I can easily imagine what the characters might look like	0	0	1	1
9	I am fascinated by dates	1	1	0	0
10	In a social group, I can easily keep track of several different people's conversations	0	0	1	1
11	I find social situations easy	0	0	1	1
12	I tend to notice details that others do not	1	1	0	0
13	I would rather go to a library than a party	1	1	0	0
14	I find making up stories easy	0	0	1	1
15	I find myself drawn more strongly to people than to things	0	0	1	1
16	I tend to have very strong interests, which I get upset about if I can't pursue	1	1	0	0
17	I enjoy social chit-chat	0	0	1	1

Page 1 of 3

NovoPsych

		Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
18	When I talk, it isn't always easy for others to get a word in edgeways	1	1	0	0
19	I am fascinated by numbers	1	1	0	0
20	When I'm reading a story, I find it difficult to work out the characters' intentions.	1	1	0	0
21	I don't particularly enjoy reading fiction	1	1	0	0
22	I find it hard to make new friends	1	1	0	0
23	I notice patterns in things all the time	1	1	0	0
24	I would rather go to the theatre than a museum	0	0	1	1
25	It does not upset me if my daily routine is disturbed	0	0	1	1
26	I frequently find that I don't know how to keep a conversation going	1	1	0	0
27	I find it easy to "read between the lines" when someone is talking to me	0	0	1	1
28	I usually concentrate more on the whole picture, rather than the small details	0	0	1	1
29	I am not very good at remembering phone numbers	0	0	1	1
30	I don't usually notice small changes in a situation, or a person's appearance	0	0	1	1
31	I know how to tell if someone listening to me is getting bored	0	0	1	1
32	I find it easy to do more than one thing at once	0	0	1	1
33	When I talk on the phone, I'm not sure when it's my turn to speak	1	1	0	0
34	I enjoy doing things spontaneously	0	0	1	1
35	I am often the last to understand the point of a joke	1	1	0	0
36	I find it easy to work out what someone is thinking or feeling just by looking at their face	0	0	1	1
37	If there is an interruption, I can switch back to what I was doing very quickly	0	0	1	1

NovoPsych

		Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
38	I am good at social chit-chat	0	0	1	1
39	People often tell me that I keep going on and on about the same thing	1	1	0	0
40	When I was young, I used to enjoy playing games involving pretending with other children	0	0	1	1
41	I like to collect information about categories of things (e.g. types of car, types of bird, types of train, types of plant, etc.)	1	1	0	0
42	I find it difficult to imagine what it would be like to be someone else	1	1	0	0
43	I like to plan any activities I participate in carefully	1	1	0	0
44	I enjoy social occasions	0	0	1	1
45	I find it difficult to work out people's intentions	1	1	0	0
46	New situations make me anxious	1	1	0	0
47	I enjoy meeting new people	0	0	1	1
48	I am a good diplomat	0	0	1	1
49	I am not very good at remembering people's date of birth	0	0	1	1
50	I find it very easy to play games with children that involve pretending	0	0	1	1

Developer Reference:

Baron-Cohen, S., Wheelwright, S., Skinner, R., Martin, J., & Clubley, E. (2001). The Autism-Spectrum Quotient (AQ): Evidence from Asperger syndrome/high-functioning Autism, males and females, scientists and mathematicians. Journal of Autism and Developmental Disorders, 31(1), 5-17. https://doi.org/10.1023/a:1005653411471

Administer Now

Page 3 of 3

Sample Results

Autism Spectrum Quotient (AQ)

Client Name	Generic Client	Date administered	12 Nov 2024
Date of birth (age)	1 Jan 1990 (35)	Time taken	6 min 2s
Assessor	Dr Simon Baker		

AQ Results

	Score	Percentile	Descriptor
Total (0-50)	35	99	Overall consistent with Autism
Social Skill (0-10)	9	99.3	Pronounced
Attention Switching (0-10)	7	92	Consistent with Autism
Attention to Detail (0-10)	7	78	Consistent with Autism
Communication (0-10)	9	99.9	Pronounced
Imagination (0-10)	3	56	-

AQ Normative Percentiles (Males)

Assessment powered by

NovoPsych
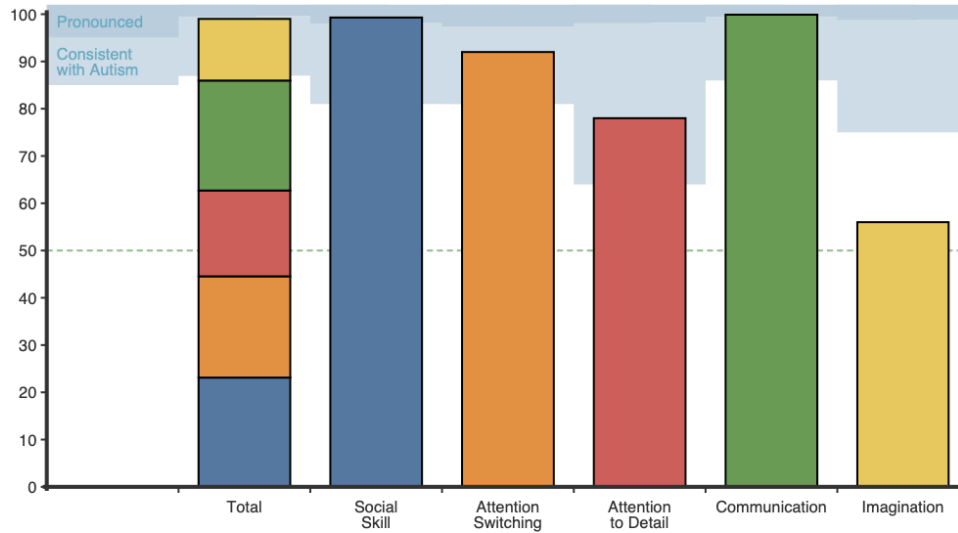
| **Client Name** | Generic Client |

AQ Scores Compared to Community and Autistic Distributions (Males)

Assessment powered by

NovoPsych
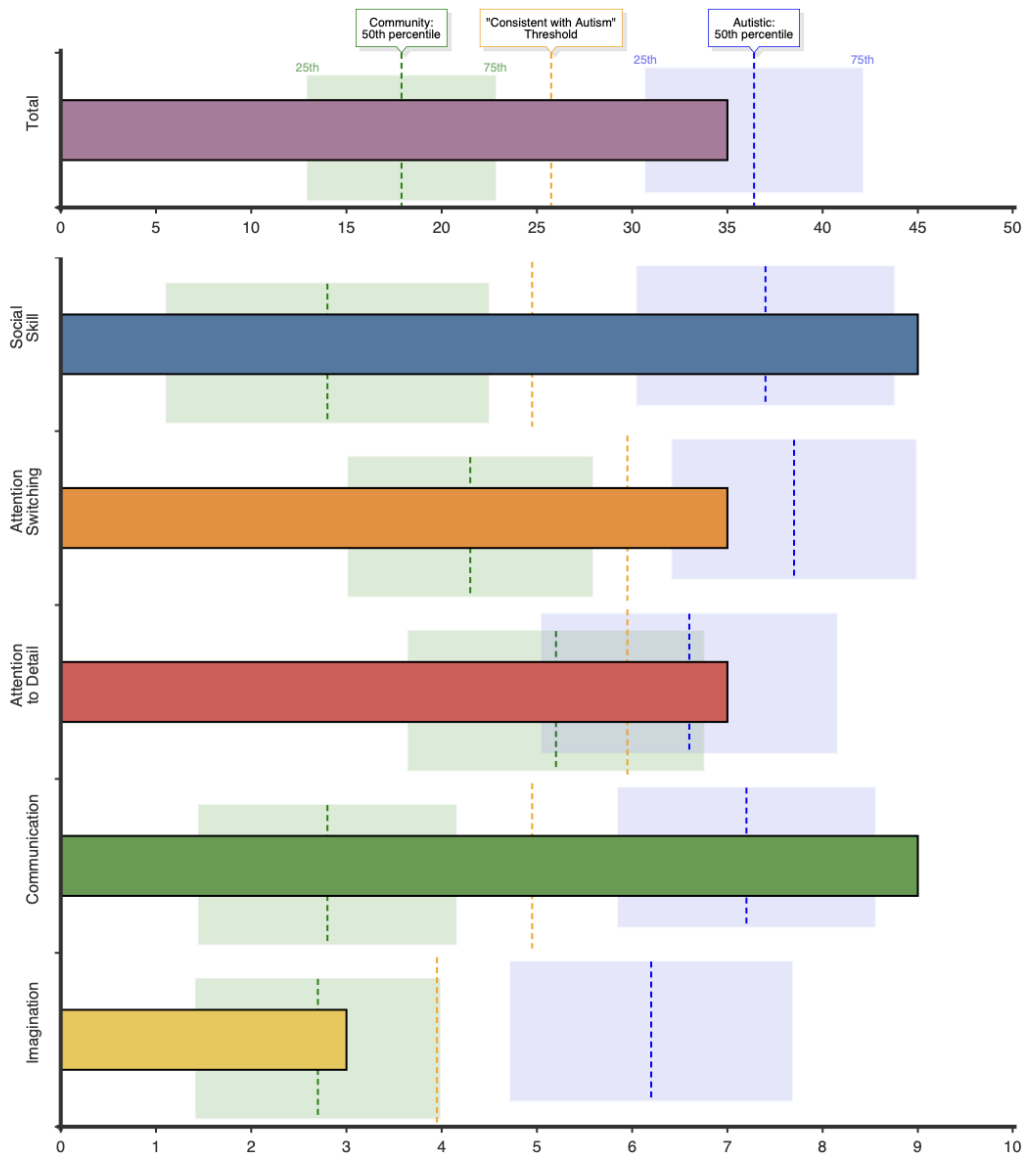
Client Name	Generic Client

Interpretation

The respondent's Autism Spectrum Quotient (AQ) score is on the 99th percentile when compared to males in the general population. When compared to Autistic males, the respondent's score is on the 43rd percentile. As such, their total AQ score falls within the top 1 percent when compared to males in the general population and is more consistent with those of Autistic males. It is important to note that scores may also reflect phenomena other than, or co-occurring with, Autism. Therefore, scores should be interpreted within the context of the individual's developmental history and other personal characteristics.

The respondent's scores on the Communication, Social Skill, Attention Switching, and Attention to Detail subscales are consistent with Autism. In particular, the respondent's scores on the Communication and Social Skill subscales are Pronounced.

The respondent's score on the **Communication** subscale is on the 99.9th percentile when compared to males in the general population and the 82nd percentile when compared to Autistic males. This indicates potential difficulties in conversational flow and understanding indirect communication cues, such as tone of voice, body language, or facial expressions. They may find interpreting these social cues challenging, which could contribute to occasional misunderstandings in social exchanges. Endorsed items within this subscale include:
- 17. I enjoy social chit-chat (R) (Definitely Disagree)
- 38. I am good at social chit-chat (R) (Definitely Disagree)
- 7. Other people frequently tell me that what I've said is impolite, even though I think it is polite (Slightly Agree)
- 26. I frequently find that I don't know how to keep a conversation going (Slightly Agree)
- 27. I find it easy to "read between the lines" when someone is talking to me (R) (Slightly Disagree)

The respondent's score on the **Social Skill** subscale is on the 99.3rd percentile when compared to males in the general population and the 79th percentile when compared to Autistic males. This suggests possible difficulties with social confidence and comfort in interactions, which may lead them to feel less at ease in social situations or less inclined to engage in group activities. They may find social norms unclear or challenging to navigate, impacting their preference for or enjoyment of social gatherings. Endorsed items within this subscale include:
- 11. I find social situations easy (R) (Definitely Disagree)
- 22. I find it hard to make new friends (Definitely Agree)
- 44. I enjoy social occasions (R) (Definitely Disagree)
- 1. I prefer to do things with others rather than on my own (R) (Slightly Disagree)
- 13. I would rather go to a library than a party (Slightly Agree)

The respondent's score on the **Attention Switching** subscale is on the 92nd percentile when compared to males in the general population and the 36th percentile when compared to Autistic males. This suggests a preference for predictability and routines, and they may experience increased stress in response to unexpected changes. They might find it challenging to shift focus quickly, impacting their ability to adjust to new activities or interruptions. Endorsed items within this subscale include:
- 25. It does not upset me if my daily routine is disturbed (R) (Definitely Disagree)
- 32. I find it easy to do more than one thing at once (R) (Definitely Disagree)
- 34. I enjoy doing things spontaneously (R) (Definitely Disagree)
- 43. I like to plan any activities I participate in carefully (Definitely Agree)

Assessment powered by

NovoPsych

Client Name	Generic Client

Interpretation (cont.)

- 2. I prefer to do things the same way over and over again (Slightly Agree)

The respondent's score on the **Attention to Detail** subscale is on the 78th percentile when compared to males in the general population and the 57th percentile when compared to Autistic males. This suggests a heightened focus on details or patterns, which may lead them to prioritise specifics over the broader context. This strong attention to detail may support certain analytical tasks, though it might also limit flexibility in more fluid situations. Endorsed items within this subscale include:
- *12. I tend to notice details that others do not (Definitely Agree)*
- *19. I am fascinated by numbers*
(Definitely Agree)
- *23. I notice patterns in things all the time*
(Definitely Agree)
- *28. I usually concentrate more on the whole picture, rather than the small details (R) (Definitely Disagree)*
- *29. I am not very good at remembering phone numbers (R) (Slightly Disagree)*

Scoring and Interpretation Information

For comprehensive information on the AQ, see here.

Autism Spectrum Quotient (AQ) scores are presented as a total scale score as well as scores on five subscales. Higher total scale scores are indicative of higher overall levels of autistic traits. A higher subscale score is indicative of a higher level of the specific trait that is associated with Autism.

- Social Skill (Items 1, 11, 13, 15, 22, 36, 44, 45, 47, 48) assesses difficulties and discomfort with social situations, including difficulties with social interactions and avoidance of some social situations.

- Attention Switching (Items 2, 4, 10, 16, 25, 32, 34, 37, 43, 46) describes difficulties in shifting focus between tasks or activities and adapting to changes in routine or unexpected events.

- Attention to Detail (Items 5, 6, 9, 12, 19, 23, 28, 29, 30, 49) relates to a heightened focus on specific details and patterns in the environment, which can sometimes lead to challenges in seeing and understanding the broader context.

- Communication (Items 7, 17, 18, 26, 27, 31, 33, 35, 38, 39) describes difficulties in engaging in reciprocal communication and interpreting indirect communication and social cues.

- Imagination (Items 3, 8, 14, 20, 21, 24, 40, 41, 42, 50) focuses on challenges related to imaginative thinking, including difficulties with hypothetical scenarios (e.g., pretend play).

The client's total and subscale scores are expressed as (gender-specific) percentiles based on normative data for adults in the general population (Baron-Cohen et al., 2001; Ruzich et al., 2015). The percentiles contextualise the client's scores relative to the typical scores of adults in the general population. For example, the 50th percentile represents the typical levels of autistic traits among adults in the general population, while scores on the 90th percentile fall within the top 10% when compared to adults in the general population. Scores in this higher range are more consistent with those of Autistic adults than adults in the general population. For the total

Client Name	Generic Client

Scoring and Interpretation Information (cont.)

AQ score, 13% of males and 4% of females score in the range that aligns with the typical scores of Autistic males and females, respectively.

A score is classified as "Consistent with Autism" if it more closely resembles the scores of Autistic adults than those of adults in the general population. To this end, the "Consistent with Autism" thresholds are calculated as the weighted midpoint between the distribution of scores among the Autistic and Nonclinical/Community samples (Jacobson & Truax, 1991).

A score is considered "Pronounced" if it is in the upper half of the Autistic distribution, reflecting higher levels of autistic traits. As such, the "Pronounced" thresholds represent scores on or above the 50th percentile when compared to Autistic adults.

For the Attention to Detail subscale, a higher "Pronounced" threshold reflecting scores on or above the 90th percentile within the Autistic sample was chosen due to significant overlap between the score distributions of the Autistic and Community samples.

Scores classified as either "Consistent with Autism" or "Pronounced" suggest that the client exhibits autistic traits at a level consistent with Autistic adults. Gender-specific distributions of scores, and their classifications, among Autistic adults and adults in the general population are presented in NovoPsych's review of the AQ (Baker et al., 2024).

The thresholds for the total AQ score are as follows.

- Males: 26 and above is "Consistent with Autism"; 37 and above is "Pronounced"

- Females: 27 and above is "Consistent with Autism"; 39 and above is "Pronounced"

- Combined (Males and Females): 26 and above is "Consistent with Autism"; 36 and above is "Pronounced"

It is important to note that many measures of Autism, including the AQ, were developed primarily with male characteristics of Autism in mind and may therefore have less sensitivity in measuring Autism in females. Therefore, when a female respondent's total AQ score is just below the "Consistent with Autism" threshold (e.g., 23-26), it should be interpreted with caution and considered alongside other sources of information as part of a comprehensive assessment.

Graphs comparing the total and subscale scores to the normative distribution of scores among Autistic adults and adults in the general population are presented, with shaded areas corresponding to scores between the 25th and 75th percentile. These graphs contextualise the client's scores relative to typical levels of autistic traits among Autistic adults and adults in the general population.

Client Responses

Assessment powered by
NovoPsych

		Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
1	I prefer to do things with others rather than on my own	0	0	1	1
2	I prefer to do things the same way over and over again	1	1	0	0
3	If I try to imagine something, I find it very easy to create a picture in my mind	0	0	1	1
4	I frequently get so strongly absorbed in one thing that I lose sight of other things	1	1	0	0
5	I often notice small sounds when others do not	1	1	0	0
6	I usually notice car number plates or similar strings of information	1	1	0	0
7	Other people frequently tell me that what I've said is impolite, even though I think it is polite	1	1	0	0
8	When I'm reading a story, I can easily imagine what the characters might look like	0	0	1	1
9	I am fascinated by dates	1	1	0	0
10	In a social group, I can easily keep track of several different people's conversations	0	0	1	1
11	I find social situations easy	0	0	1	1
12	I tend to notice details that others do not	1	1	0	0
13	I would rather go to a library than a party	1	1	0	0
14	I find making up stories easy	0	0	1	1
15	I find myself drawn more strongly to people than to things	0	0	1	1
16	I tend to have very strong interests, which I get upset about if I can't pursue	1	1	0	0
17	I enjoy social chit-chat	0	0	1	1
18	When I talk, it isn't always easy for others to get a word in edgeways	1	1	0	0
19	I am fascinated by numbers	1	1	0	0
20	When I'm reading a story, I find it difficult to work out the characters' intentions.	1	1	0	0

Client Name | Generic Client

Assessment powered by

NovoPsych

Client Name	Generic Client

Client Responses (cont.)

		Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
21	I don't particularly enjoy reading fiction	1	1	**0**	0
22	I find it hard to make new friends	**1**	1	0	0
23	I notice patterns in things all the time	**1**	1	0	0
24	I would rather go to the theatre than a museum	0	0	1	**1**
25	It does not upset me if my daily routine is disturbed	0	0	1	**1**
26	I frequently find that I don't know how to keep a conversation going	1	**1**	0	0
27	I find it easy to "read between the lines" when someone is talking to me	0	0	**1**	1
28	I usually concentrate more on the whole picture, rather than the small details	0	0	1	**1**
29	I am not very good at remembering phone numbers	0	0	**1**	1
30	I don't usually notice small changes in a situation, or a person's appearance	0	0	**1**	1
31	I know how to tell if someone listening to me is getting bored	0	0	**1**	1
32	I find it easy to do more than one thing at once	0	0	1	**1**
33	When I talk on the phone, I'm not sure when it's my turn to speak	1	**1**	0	0
34	I enjoy doing things spontaneously	0	0	1	**1**
35	I am often the last to understand the point of a joke	1	**1**	0	0
36	I find it easy to work out what someone is thinking or feeling just by looking at their face	0	0	**1**	1
37	If there is an interruption, I can switch back to what I was doing very quickly	0	0	**1**	1
38	I am good at social chit-chat	0	0	1	**1**
39	People often tell me that I keep going on and on about the same thing	1	**1**	0	0

Assessment powered by

NovoPsych

Client Name	Generic Client

Client Responses (cont.)

		Definitely Agree	Slightly Agree	Slightly Disagree	Definitely Disagree
40	When I was young, I used to enjoy playing games involving pretending with other children	0	0	1	1
41	I like to collect information about categories of things (e.g. types of car, types of bird, types of train, types of plant, etc.)	1	1	0	0
42	I find it difficult to imagine what it would be like to be someone else	1	1	0	0
43	I like to plan any activities I participate in carefully	1	1	0	0
44	I enjoy social occasions	0	0	1	1
45	I find it difficult to work out people's intentions	1	1	0	0
46	New situations make me anxious	1	1	0	0
47	I enjoy meeting new people	0	0	1	1
48	I am a good diplomat	0	0	1	1
49	I am not very good at remembering people's date of birth	0	0	1	1
50	I find it very easy to play games with children that involve pretending	0	0	1	1