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Autism Spectrum Quotient (AQ):
Gender-Specific Norms and Thresholds

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Research consistently highlights gender-based differences in Autism Spectrum Quotient (AQ) scores, with males in the general population typically scoring higher than females, and autistic females often scoring higher than autistic males (Baron-Cohen et al., 2001; Broadbent et al., 2013; Ruzich et al., 2015). Despite these findings, AQ scores are still commonly interpreted without gender-specific norms or cut-off scores, which may contribute to misinterpretations or inaccuracies in assessing autistic traits. To address this gap, NovoPsych has developed gender-specific norms and thresholds, grounded in data from the existing literature, to enhance the interpretability and classification accuracy of AQ scores.

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)

NovoPsych has used the above (pooled) means and standard deviations to convert AQ scores to gender-specific percentiles, as shown in Tables 2 and 3.1 to 3.5. 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.

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.

	Social Skill					
	Community			Autistic		
Score	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.

	Attention Switching					
	Community			Autistic		
Score	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

In addition to gender-specific norms, NovoPsych has established gender-specific thresholds 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. The shaded areas indicate scores between the 25th and 75th percentiles within each sample.

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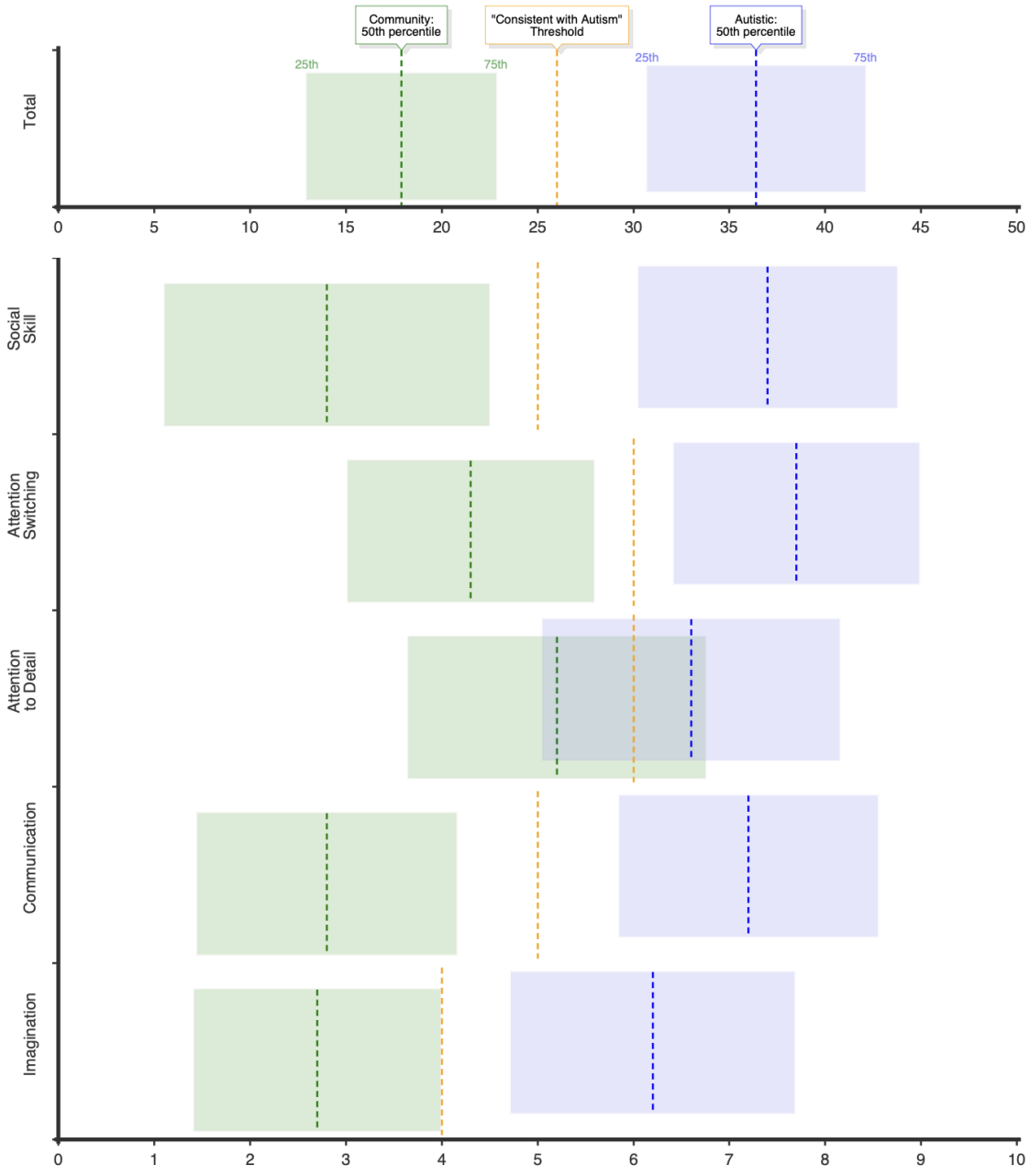

Figure 1. Distribution of AQ scores among males in the general population ("Community") and Autistic males.

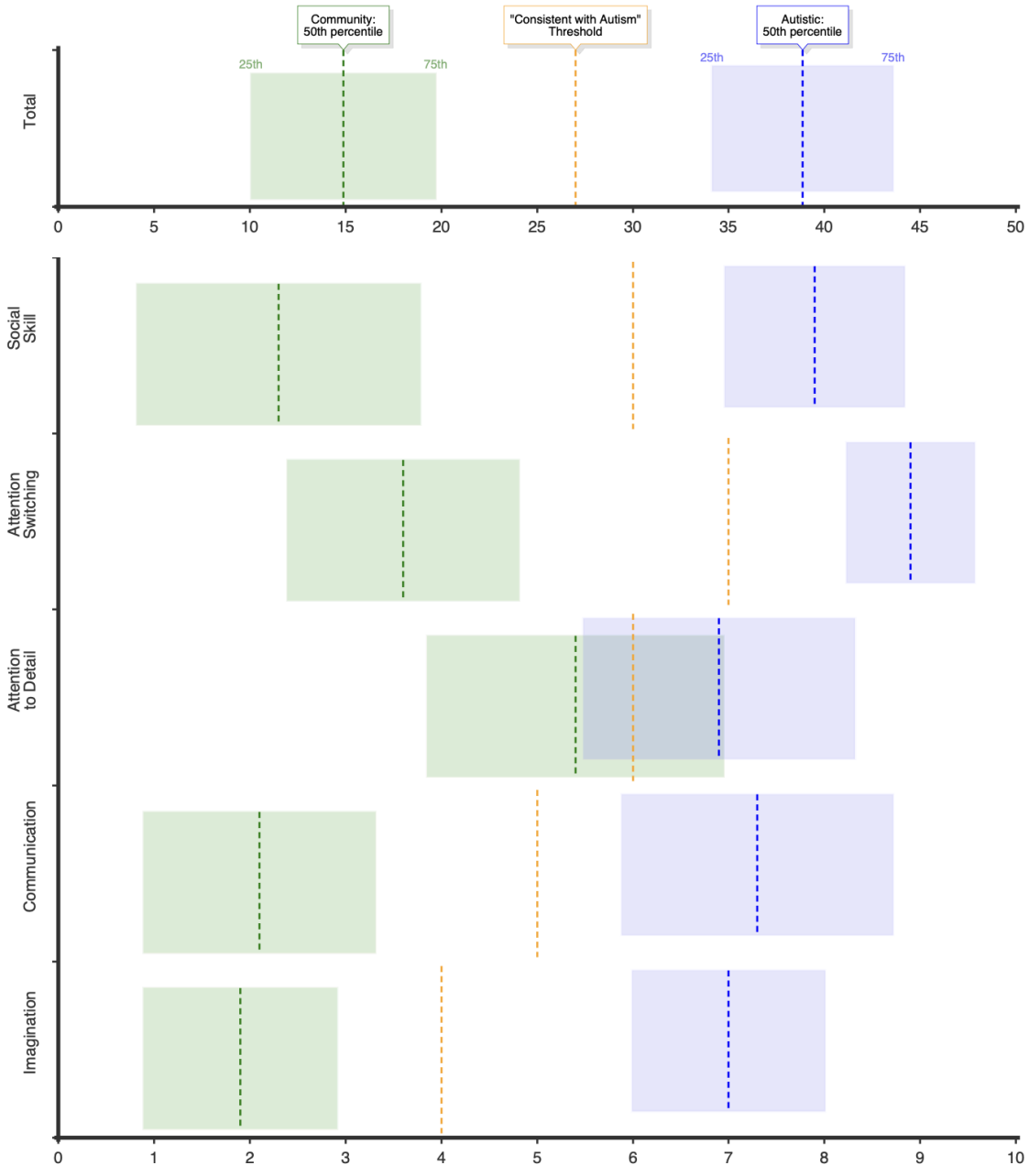

Figure 2. Distribution of AQ scores among females in the general population ("Community") and Autistic females.

Conclusion

This document outlines NovoPsych's development of gender-specific norms and thresholds for the AQ. By accounting for gender differences, these norms and thresholds enhance the interpretability and classification accuracy of AQ scores, enabling clinicians to assess autistic traits with greater nuance and precision.

References

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