The predictive value of AQ and SRS-A in adults with suspected ASD

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Introduction

Background

The **Autism Spectrum Quotient** (AQ; Baron-Cohen et al., 2001, via open source) and the **Social Responsiveness Scale for Adults** (SRS-A; Constantino & Todd, 2005, via paid source) measure the degree to which adults with a normal intelligence exhibit autistic traits. In the Netherlands, both questionnaires are often used as **screeners** in the assessment of adults with suspected ASD. Their diagnostic value depends on their capability to properly assess the likelihood that the disorder is present (sensitivity: true positives) or not (specificity: true negatives).

In former research, we have proven the AQ to be moderately valuable for ASD case identification in a general mental health care population (Bezemer & Blijd-Hoogewys, 2016). Comparing the predictive value of AQ and SRS-A, in the same ASD assessment procedure, has not been done yet.

Objectives

The aim was to compare the predictive value of the AQ and the SRS-A for ASD diagnostic classification in a general mental health care population with suspected ASD.

Methods

At INTER-PSY, a general mental health care facility in Groningen, adult patients, who were **referred for ASD assessment**, filled in both an AQ and a SRS-A self-report at the beginning of the diagnostic process.

An **independent researcher** scored the questionnaires. The results remained unknown to the clinician and the patient until after the ASD diagnosis was officially confirmed or rejected, resulting in an ASD-group and a non-ASD group. In doing so, the results of the questionnaires could not play any role in the diagnostic conclusion (blind).

ASD diagnostic was based on an extensive psychiatric examination, a standardized ASD interview, and a developmental interview with (one of the) parents, in the presence of the patient.

In total, there were **92 participants** (M = 33.51 years, SD = 12.33), of which 68% received an ASD diagnosis (*n* = 63). The ASD and non-ASD group did not differ considerably on important characteristics, such as age (M = 33.68 vs. M = 33.14) and gender ratio (1.3:1 vs.1.4:1).

For analyses, AQ raw scores and SRS-A T-scores were used. Descriptive statistics, correlations, T-tests and ROC-analyses were performed.

Table 2 *Total score and subscale scores of AQ and SRS-A (ASD vs. non-ASD)*

	ASD (n = 63) M (SD)	Non-ASD (n = 29) M (SD)	Effect size (Cohen's d)	AUC value (CI 95%)
AQ total	29.17 (7.75)**	20.97 (8.13)	1.03	.78 (.68-.88)
Subscales:				
- Social	6.70 (2.19)**	3.86 (2.72)	1.29	.78 (.68-.89)
- Attention switching	7.10 (2.43)*	5.66 (2.79)	0.55	.65 (.53-.77)
- Local details	5.48 (2.62)*	4.14 (2.34)	0.54	.66 (.54-.78)
- Communication	5.38 (2.22)**	3.45 (2.16)	0.88	.74 (.63-.85)
- Imagination	4.52 (2.14)*	3.86 (2.15)	0.31	.59 (.47-.72)
SRS-A total	70.87 (10.76)*	63.59 (12.56)	0.62	.69 (.56-.81)
Subscales:				
- Social awareness	66.44 (11.68)*	60.59 (12.80)	0.48	.64 (.51-.76)
- Social communication	70.56 (9.93)*	63.83 (12.36)	0.60	.66 (.53-.78)
- Social motivation	70.17 (11.20)**	62.59 (12.26)	0.65	.68 (.56-.80)
- Restricted interests & repetitive behavior	68.78 (13.85)	63.24 (14.71)	0.39	.62 (.50-.75)

Significant difference ASD vs. non-ASD, p < 0.05
**Significant difference ASD vs. non-ASD, p < .01 (correction for multiple testing 0.05/11= 0.0045)*
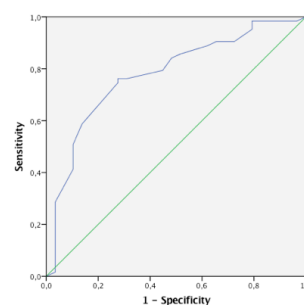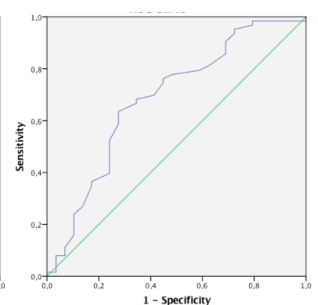

Figure 1: ROC of AQ total score
Figure 2: ROC of SRS-A total score

Results

The **ASD group had significant higher scores** than the non-ASD group on both the AQ (M = 29.17, SD = 7.75; M = 20.97, SD = 8.13 respectively; t = 4.65, df = 90, p < .001, Cohen's d = 1.03) and SRS-A (M = 70.87, SD = 10.76; M = 63.59, SD = 12.56 respectively; t = 2.86, df = 90, p < .01, Cohen's d = 0.62) (see Table 2).

The **correlation between both questionnaires** was high (r = .80, p < .001).

The **ROC-analysis** for the **AQ** yielded an AUC of .78 (p < .001) for ASD vs. non-ASD. A cut-off total score of 26 is recommended for screening use by Woodbury-Smith and colleagues (2005). This cut-off was also determined by the best Youden's Index in our research. In that case, the AQ had a sensitivity of .76 and a specificity of .72 for ASD (see Figure 1).

The **ROC analysis** for the **SRS-A** yielded an AUC of .69 (p < .01) for ASD vs. non-ASD. A cut-off T-score of 70 (determined by the best Youden's Index) had a sensitivity of .63 and a specificity of .72 for ASD (see Figure 2).

Discussion

Both questionnaires could differentiate between the ASD and the non-ASD group. However, the **AQ** had a **higher effect size** than the SRS-A (large vs. medium), a **better predictive reliability** (moderate vs. poor) and a **higher sensitivity**.

Based on the current results, the **AQ seems to be superior as a screening tool** for general mental health care patients with suspected ASD. Replication studies are needed before advising which one to use for clinical practice. Also, note that a questionnaire is not intended to be diagnostic in itself. If there are clinically significant levels of autistic traits, a comprehensive diagnostic evaluation is warranted.

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