

Assessment of ‘subtle’ ASD using the M-ASD questionnaire: a validation study

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Background

Subtle ASD manifestations

- Women: under-recognition of ASD, due to subtler manifestations
- Adults suffer in silence when their autism is not recognized
- Timelier identification could lead to better prognosis, prevent secondary problems, reduce family stress & decrease societal costs
- M-ASD questionnaire (50 items): considers ‘subtle’ ASD manifestations



Objective: Validate M-ASD in clinical setting

Methods

Retrospective diagnostic data

- $N = 603$ adults suspected of having ASD (see Table 1)
- Extensive ASD diagnostic assessment, incl. M-ASD & AQ
- 65% received ASD diagnosis (ASD group)
- Subgroup did M-ASD retest ($n = 21$; max = 2-8 weeks interval)

Analyses

- M-ASD & AQ scores (both range 0-50; dichotomous item-scoring)

Table 1

Descriptives of the research group

Group	ASD	Non-ASD	Total
Women	$n = 224$ age = 31.11 (12.29) AQ = 28.58 (7.56)	$n = 117$ age = 32.49 (11.96) AQ = 22.18 (7.47)	$n = 341$
Men	$n = 167$ age = 35.36 (12.57) AQ = 27.97 (7.73)	$n = 95$ age = 35.82 (12.66) AQ = 21.82 (6.77)	$n = 262$
Total	$n = 391$ age = 32.97 (12.58) AQ = 28.32 (7.63)	$n = 212$ age = 33.98 (12.36) AQ = 22.02 (7.15)	$n = 603$

Note. AQ-scores differed significantly between all ASD and non-ASD (sub)groups ($p < .001$; Cohen's $d = .831-.851$). There were no significant differences between men and women.

Table 2

M-ASD total-scores for different subgroups

Group	ASD M (SD)	Non-ASD M (SD)	Significance p (Cohen's d)
Women	26.17 (19.72)	17.29 (9.70)	$< .001$ (.855)
Men	22.34 (11.53)	14.32 (8.99)	$< .001$ (.751)
Total	24.53 (11.22)	15.96 (9.48)	$< .001$ (.806)

Note. Based on independent samples t-test, two sided.

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Results

Reliability & validity of M-ASD

- Internal consistency: Cronbach's $\alpha = .935$
- Test-retest reliability: $n = 21$, $M_1 = 24.81$, $SD_1 = 11.45$; $M_2 = 25.62$, $SD_2 = 11.96$; $r = .95$, $p < .001$
- Correlation with AQ: $r = .749$, $p < .001$
- ASD > non-ASD (see Table 2, large ES)
- ASD women > ASD men: $p < .001$; Cohen's $d = .346$

Sensitivity & specificity of M-ASD

- Cut-off (based on best Youden's index): 26 for women, 20 for men
- Sensitivity: .527 for women, .569 for men
- Specificity: .838 for women, .747 for men
- PPV: 86% for women, 80% for men
- NPV: 48% for women, 50% for men

Agreement of M-ASD & clinical diagnosis

- 63% of cases: $\chi^2_{\text{women}(1,341)} = 42.46$, $p < .001$
 $\chi^2_{\text{men}(1,262)} = 24.43$, $p < .001$
- Agreement = fair for both women ($K = .309$) & men ($K = .285$)

Conclusions

M-ASD has good psychometric qualities

- Excellent internal consistency
- Excellent test-retest reliability
- ASD women scores are higher than ASD men: indicative of more reported (subtle) ASD problems
- Sensitivity & specificity: cf. other ASD questionnaires in clinical setting

Critical note

- Still 50-52% missed patients
- Diagnosis should never be solely based on a questionnaire

Clinical implications

- Dutch M-ASD questionnaire is open source available
- Norm-scores are available for clinical use
- Data on general population is currently being collected