M-ASD

Supplementary material

Reference of this questionnaire

Blijd-Hoogewys, E.M.A. & Bezemer, M.L. (2023). M-ASD questionnaire V1.0: A questionnaire on the subtle autism phenotype. Female Autism Network of the Netherlands.
https://www.fann-autisme.nl/informatie/producten/m-asd/

Introduction

The M-ASD is a Dutch questionnaire. Dutch psychometric data are available (see Dutch manual). Follow-up research is ongoing, aimed at psychometric data within the general population. Upon multiple requests, we shared an English version of the questionnaire along with this supplement with more explanation. An international article is in preparation. After publication, we will publish an English manual on our website.

Following international guidelines, the diagnostic of ASD requires a comprehensive assessment. For adults without cognitive disabilities, this consists of a general psychiatric examination of the characteristics of ASD and possible co-morbidity. Also, a thorough (early) developmental history is assessed with a relative (preferably the primary caregiver) and possibly an interview with another informant (e.g. a partner or friend). Additionally, questionnaires may be used. Questionnaires can play a role in decisions concerning whether a referral for ASD assessment is needed (i.e., for screening purposes and case identification), as well as in support of formal ASD assessment (i.e., for diagnostic purposes). Note that the result on a questionnaire is never conclusive. One should also be aware that the results on questionnaires reflect the view of the respondent.

Description of the M-ASD

The M-ASD is a 50-item self-report questionnaire that aims to measure autism characteristics, including characteristics of a more 'subtle' autism phenotype. The questionnaire was originally developed to measure autism in females but can also be used in males. The M-ASD can be used for multiple purposes, including:

- gain insight into the degree of autism characteristics a person recognizes in her/himself
- gain insight into different autism domains in which a person experiences symptoms compared to the average of a specific group
- case identification of autism
- scientific research (a modified questionnaire is used for this purpose, contact fann.netwerk@gmailcom)

Note that the former are all based on Dutch data, which consisted of mental health care adult patients suspected of having ASD, with one subgroup receiving this diagnosis, while the other did not.

Filling in and scoring the M-ASD

The M-ASD is appropriate for adults, without an intellectual development disorder and/or reading comprehension problems, with suspected autism.

The M-ASD is a self-report questionnaire. It takes 10 to 15 minutes to complete.

The M-ASD consists of 50 items. Each item consists of a statement in which the respondent is asked to what extent it applies to her/him. The response options always consist of 1 = not true, 2 = slightly true, 3 = reasonably true and 4 = very true.

Afterwards, the responses need to be re-scored by the clinician in a dichotomous manner, assigning an item score of 0 to responses 1 and 2, and an item score of 1 to responses 3 and 4.

The clinician can calculate the following scores:

- Total score: add up all 50 item scores (range 0-50)
- Social-communicative scale score: add the item scores of items 1, 5, 8, 12, 15, 19, 22, 26, 29, 33, 36, 42, 44, 46, 48 and 50 (range 0-16)
- Rigidity scale score: add the item scores of items 2, 9, 16, 23, 30, 37, 43, 45 and 49 (range 0-9)
- Sensory scale score: add the item scores of items 6, 13, 20, 27, 34 and 40 (range 0-6)
- Camouflage scale score: add the item scores of items 3, 7, 10, 14, 17, 21, 24, 28, 31, 35, 38, 41 and 47 (range 0-13)
- Information processing scale score: add the item scores of items 4, 11, 18, 25 and 32 (range 0-5)

The clinician should check for missing or duplicate answers when receiving the completed questionnaire. If necessary, correct this with the respondent. If this is not possible (anymore), in case of duplicate responses, the average can be taken where a 1.5 is re-scored to an item score of 0 and a 3.5 is re-scored to an item score of 1. An average response of 2.5 should be recorded as a missing item.

Interpretation of the M-ASD

Interpretation of the M-ASD should be done by a clinician with testing and diagnostic experience. For all scores (total and scale scores), the higher the score, the more statements the respondent found applicable to her or himself. This means that the respondent recognizes more autism traits in her/himself overall or within the domain in question.

Total score

The total score indicates the extent to which the respondent recognizes overall autism traits in her/himself. In Table 1, the Dutch cut off scores can be found.

Table 1

Cut-off points for total score based on Dutch data

Total group	Women	Men
Cut-off point > 26	Cut-off point > 26	Cut-off point > 20

Note. A ROC analysis was done based on data from a group of patients suspected of having ASD, with one subgroup receiving this diagnosis, while the other did not. The cut-off points are based on the optimal ratio of the related sensitivity/specificity.

Scales

The scales can be interpreted in terms of content as follows:

- Social-communicative scale: this scale contains items dealing with difficulty with social contact, having conversations and assessing emotions.
- Scale Rigidity: this scale contains items dealing with the need for predictability, acting (in)flexible and having specific interests.
- Sensory Scale: this scale contains items that deal with being over- and/or under-sensitive to various stimuli.
- Camouflage scale: this scale contains items that deal with hiding and/or modifying behavior so that (social) problems are less noticeable and one appears more "normal".
- Information Processing Scale: this scale contains items that deal with difficulty processing information (such as focusing too much on details, difficulty generalizing and switching).

The scales are theoretically constructed. The advice is to interpret them descriptively. The following was found in the Dutch sample (of people suspected of ASD who ultimately did not receive this diagnosis):

- Social-communicative scale: percentile 95 was at score 10
- Rigidity scale: percentile 95 was at score 7
- Sensory Scale: percentile 95 was at score 4
- Scale Camouflage: percentile 95 was at score 10
- Information Processing Scale: percentile 95 was at score 5

Background information of the M-ASD

Development of the M-ASD

The M-ASD was developed using extensive literature review (including scientific articles & autobiographical accounts), clinical experience, and data analysis of item responses from males and females on commonly used autism questionnaires. The final formulated items of the M-ASD cover the DSM-5-TR diagnostic autism criteria, more subtle autism manifestations and the camouflaging and compensatory strategies commonly used in this regard.

The pilot version of the M-ASD consisted of 120 items (2016). It was shortened (and partly supplemented) to 50 items through advice from a focus group consisting of clinical experts and autistic adults, feedback from respondents, analysis of the individual items and consultation of new literature. Also, textual/content adjustments took place (2018).

Psychometric data of the M-ASD in a Dutch clinical population (N = 603)

Test-retest reliability was good ($r = .95$, $p < .001$) as well as internal consistency (Cronbach's $\alpha = .935$), concept validity (with mostly medium & large effect sizes) and convergent validity (correlation with AQ: $r = .749$, $p < .001$). All analyses concerning the psychometric data of the M-ASD do not lead to significantly different conclusions when continuous scoring is used (instead of dichotomous). We will elaborate on these findings in the international article (in preparation).

Publications on the M-ASD

- May 2023. INSAR / Poster presentation: Assessment of 'subtle' ASD using the M-ASD questionnaire: a validation study. Marleen Bezemer, Hans van de Sluis & Els Blijd-Hoogewys. Download the poster here.
- May 2019. INSAR / Poster presentation: Assessment of the female ASD phenotype. The M-ASD questionnaire. Marleen Bezemer, Rachel Grondhuis & Els Blijd-Hoogewys. Download the poster here.
- May 2018. INSAR / Poster presentation: Miss ASD: A new screening tool for women with ASD. Rachel Grondhuis, Marleen Bezemer & Els Blijd-Hoogewys. Download the poster here.