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Gender Differences in the Manifestation of Autism: Can Males Be Better Characterised by 'Female Autism'?

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Abstract

Recent evidence suggesting a female-specific manifestation of Autism Spectrum Disorder (ASD) implies distinct manifestations of these conditions among females. Although this phenotype has only been associated with females, this may also be the case for males, independent of diagnostic status. The present study investigated the possibility of diagnosed males being better characterized by a female manifestation of ASD. In order to do so, scores on a traditional ASC screening questionnaire were compared with scores on its female version. Results showed that, although the female version was significantly better at identifying ASD traits in females, there were a number of males who obtained a higher score on the female version. These results suggest that, as there are females with a male presentation, there are males with a female presentation of ASD. Potential implications include an increase in the number of diagnosed individuals.

Introduction

Recent evidence of a distinct female ASD phenotype has provided a potential explanation for the strong male bias that characterises ASD. Of relevance is evidence suggesting that females show greater 'camouflaging of the symptoms' (Dean, Harwood & Kasari, 2017), and that symptoms may be manifested in a less traditional pattern (Szatmari *et al*., 2011). Overall, a female phenotype may be behind a diminished ability to identify ASD in females.

By offering a better characterisation of females with ASD, the female phenotype has contributed to an increase in diagnoses among females. However, this distinct presentation has not been examined in relation to males: can the female phenotype characterise a subsample of males within the spectrum better than the more traditional, male-based presentation?

The present study examined this hypothesis by comparing the scores of males and females on a traditional, male-based and a female version of a screening instrument.

It was hypothesised that some males are better characterised by a female ASD phenotype.

Methods and Materials

Data for this study were collected by means of conducting an online survey using Qualtrics.

The sample for this study consisted of 290 participants with a diagnosis of an ASD, with 158 (54.5%) males and 132 (45.5%) females. From the total sample, 241 (83.1%) consisted of self-reported data, and 49 (16.9%) consisted of parent-reported data.

Materials consisted of the Autism Spectrum Screening Questionnaire (ASSQ: Ehlers, Gillberg & Wing, 1999) and the Autism Spectrum Screening Questionnaire - Girl (ASSQ-Girl: Kopp & Gillberg, 2011). The use of these two versions of the ASSQ allowed for a comparison in terms of scores between a traditional, male-based manifestation of ASD, and a female-oriented version.

Additionally, 195 participants without a diagnosis of an ASD diagnosis were also included in the second part of the study. This allowed for investigating males in which the score on the ASSQ-Girl would suggest further screening regarding the presence of an ASD not indicated by the score on the ASSQ.

Results

Descriptive statistics confirmed the expected gender differences in questionnaire scores, with females scoring relatively higher on the ASSQ-Girl (X=18.791 *vs*. X=15.84), and males scoring higher on the original ASSQ (X=29.85 *vs*. X=29.67).

A series of Mann Whitney tests showed that these differences were only statistically significant for the ASSQ-Girl: U=13,135.50, Z=3.81, p<.001, r=.22. Additional Friedman tests were conducted to compare the scores on both questionnaires for males and females. These yielded significant differences for both males (X^2(1)=139.41, p<.001) and females (X^2(1)=102.52, p<.001).

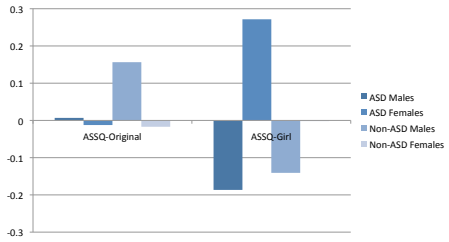
Additional statistical tests analysed standardised scores on the two versions of the ASSQ. This was limited to males whose standardised scores on the ASSQ-Girl were higher than their standardised scores on the ASSQ (N=66). A Friedman test showed that these differences were statistically significant (X^2(1)=48.02, p<.001).

The latter subset of statistical tests were also conducted for males without an ASD diagnosis (N=35). Results showed statistically significant differences on the ASSQ-Girl (X^2(1)=35.00, p<.001), suggesting that some undiagnosed males may exhibit a female manifestation of ASD.

Table 1. Descriptive statistics for the ASSQ by Gender.

Gender	Measure	Min-Max	Mean	Std. Dev
Male (N=158)	ASSQ-Original	7-53	29.85	4001
	ASSQ-Girl	3-32	15.84	290
Female (N=132)	ASSQ-Original	7-51	29.67	976
	ASSQ-Girl	6-31	18.79	301

Chart 1. Distribution of z scores on the AASQ by Gender.



Discussion

The present study confirmed the notion that a female version of the ASSQ provides a better characterization of females with an ASD. Additionally, the results also suggest that a subsample of males with a diagnosis of an ASD may be better characterised by the female ASD phenotype.

The latter suggests that the female ASD phenotype may also characterise a number of males within the spectrum, which questions gender specific manifestations of the symptoms.

The additional finding that some undiagnosed males demonstrate a greater degree of a female ASD phenotype relative to a more traditional manifestation raises questions regarding the adequateness of the traditional ASD screening questionnaires for males.

Conclusions

The suggested gender-specific manifestation of ASD symptoms has been regarded as essential in diagnosing females previously unidentified by the traditional male-based ASD phenotype.

The present study suggests that this distinct manifestation of ASD may have the potential of identifying a number of males who present a less traditional ASD phenotype.

Based on these results, the female ASD phenotype may be associated not only with a better characterisation and diagnostic for females with these conditions, but also for a subset of males characterised by a female ASD phenotype and presently not being identified by more traditional diagnostic tools.

Future Directions

The present results suggest that some diagnosed males can be better characterised by a female ASD phenotype. Future research should attempt to identify undiagnosed males with a female ASD phenotype. If some females present a male phenotype, it is possible that some males present a female phenotype.

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