

The Autism–Tics, ADHD and other Comorbidities inventory (A–TAC)

Validity, reliability, and the measurement of autism in males and females

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal 2119, Arvid Wallgrens backe (Hälsövetarbacken: hus 2, entré F), torsdagen den 5 maj 2022, klockan 09.00.

av Caroline Mårland

Fakultetsopponent:

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Avhandlingen baseras på följande delarbeten

- I. Mårland C, Lichtenstein P, Degl’Innocenti A, Larson T, Råstam M, Anckarsäter H, Gillberg C, Nilsson T, & Lundström S. The Autism–Tics, ADHD and other Comorbidities inventory (A–TAC): Previous and predictive validity. *BMC Psychiatry*. 2017;17:403.
- II. Mårland C, Lubke G, Degl’Innocenti A, Råstam M, Gillberg C, Nilsson T, & Lundström S. The development of a brief screener for autism using item response theory. *BMC Psychiatry*. 2019;19:337.
- III. Lundström S, Mårland C, Kuja-Halkola R, Anckarsäter H, Lichtenstein P, Gillberg C, & Nilsson T. Assessing autism in females: The importance of a sex-specific comparison. *Psychiatry Research*. 2019;282:112566.
- IV. Mårland C, Nilsson T, Larsson H, Gillberg C, Lubke G, & Lundström S. Measuring autism in males and females with a differential item functioning approach: Results from a nation-wide population-based study. *Submitted*

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Validity, reliability, and the measurement of autism in males and females

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Abstract

The Autism–Tics, ADHD and other Comorbidities inventory (A–TAC) is a broad-band screening instrument for neurodevelopmental disorder (e.g., autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), and learning disorder (LD)), and commonly co-occurring disorders within child and adolescent psychiatry (e.g., oppositional defiant disorder (ODD)). The overarching aim of this thesis is to further evaluate the psychometric properties of the A–TAC, with a particular focus on ASD. All papers are based on data from the Child and Adolescent Twin Study in Sweden, which includes a parental interview with the A–TAC and provides a linkage to the National Patient Register in Sweden. **Paper I** examines the previous and predictive validity of the A–TAC. The results show that the A–TAC is particularly strong as a screening instrument for ASD, ADHD, LD and ODD. In **paper II** a *short form* of the ASD domain is developed by utilizing item response theory. Four items were selected for the *short form*, which showed excellent previous validity. **Paper III** aims to compare males and females with regard to degree of ASD symptomatology by way of a sex-specific standardized score. The results indicate that females diagnosed with ASD represent an even more extreme end of the distribution of ASD traits in the general population of females than do males diagnosed with ASD. **Paper IV** examines the items in the ASD domain in the A–TAC for differential item functioning and investigates whether a subset of items are better at capturing ASD traits in males and females. The results show that the ASD domain is largely equivalent (i.e., the same construct is measured across sexes). **In conclusion**, the A–TAC is a well-validated broad-band screening instrument that can be used in research and clinical practice. The ASD *short form* can be particularly useful in large-scale studies. Females with ASD may present with quantitatively fewer symptoms of ASD, which highlight the need to consider the quality of the manifest symptoms during clinical assessments. The limited psychometric difference between males and females diminishes the need for sex-specific scoring for the ASD domain. However, the possible differences in the manifestation of ASD across sex and age need to be further examined in order to ensure content validity and the usage of appropriate cut-off values.

Keywords: neurodevelopmental disorders, autism, ADHD, A–TAC, screening, sex, item response theory, differential item functioning