

# SCREENING AND DIAGNOSIS OF AUTISM SPECTRUM DISORDERS

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## ABSTRACT

**Objectives:** Develop and examine a new screening and diagnostic framework for autism spectrum disorders (ASD), and study the prevalence of ASD in 2-year-old children in Gothenburg. **Methods:** Psychometric properties of the Swedish version of the Diagnostic Interview for Social and Communication disorders (DISCO) were examined in 91 patients aged 2-40 years referred for assessment of ASD. Twenty-one children screening positive for language delay at the Child Health Centres (CHCs) at 2.5 years were followed up with comprehensive neuropsychiatric assessments at 7.5 years. Another CHC general population sample of several thousand 2.5-year-olds was screened for ASD using the Modified Checklist for Autism in Toddlers (M-CHAT) and a new joint attention observation measure, the JA-OBS. Children screening positive for ASD were given very comprehensive ASD diagnostic assessments (including the DISCO) in a specialised centre. Prevalence rates for ASD in one age cohort were estimated. Some psychometric properties of the CHC screening instruments were examined. **Results:** The psychometric properties of the DISCO were found to be good to excellent. In the "language cohort" 13/21 children had a neuropsychiatric disorder at the age of 7 years (of whom several had ASD). The prevalence of ASD in 2-year-olds in 2010 was 0.80%. Corresponding rates for 2-year-olds referred to the specialised centre in 2000 and 2005 (when no population screening had occurred) were 0.18% and 0.04%. The Positive Predictive Value (PPV) for the combination of M-CHAT (+ M-CHAT interview) and the JA-OBS was 90%, and the sensitivity 96%. **Discussion:** ASD is a relatively common neurodevelopmental disorder that can be detected at high rates already at child age 2 years (prevalence 0.80%). The DISCO appears to be a good instrument in diagnostic assessment both for clinical use and in research. A positive language screen at age 2.5 years should be regarded as an indicator of other possible neurodevelopmental problems, Early Symptomatic Syndromes Eliciting Neurodevelopmental Clinical Examinations (ESSENCE), including ASD. The combination of instruments, M-CHAT and JA-OBS, has excellent PPV and sensitivity and the new screening programme shows promise for early detection of ASD as a routine in the developmental program at CHCs. Trained medical staff is a basic requirement and enables earlier detection and the use of screening tools also beyond routine population screening regardless of the age at which a suspicion of autism is raised. Crucial for screening are effective routines for further diagnostic assessments and interventions without delay.

**Keywords:** autism spectrum disorder (ASD), prevalence, early symptoms, screening, diagnostic assessment, M-CHAT, JA-OBS, DISCO, ESSENCE

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- I.* Nygren, G., Hagberg, B., Billstedt, E., Skoglund, Å., Gillberg, C., Johansson, M. (2009) The Swedish version of the Diagnostic Interview for Social and Communication Disorders (DISCO-10). Psychometric properties. *Journal of Autism and Developmental Disorders*, 39, 730-741. DOI: 10.1007/s10803-008-0678-z
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- III.* Nygren, G., Cederlund, M., Sandberg, E., Gillstedt, F., Arvidsson, T., Gillberg, I.C., Westman Andersson, G., Gillberg, C. (2011) The prevalence of autism in toddlers: A population study of 2-year-old Swedish children. *Journal of Autism and Developmental Disorders*, Nov 3. 2011. DOI: 10.1007/s10803-011-1391-x
- IV.* Nygren, G., Sandberg, E., Gillstedt, F., Ekeröth, G., Arvidsson, T., Gillberg, C. (2011) A new screening programme for autism in a general population of Swedish toddlers (submitted)

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