

Where Does Motor Impairment Fit within the Broader Framework of Autism Spectrum Disorder?

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A growing body of research suggests that motor problems are evident and clinically significant in individuals with autism spectrum disorder (ASD) [1,2]. Despite the high prevalence of motor impairment in children with ASD, it is not considered among the diagnostic criteria, nor specifiers within the DSM-V. Moreover, clinicians and caregivers do not consistently recognize motor problems in children with ASD and they often remain unaddressed due to a lack of effective motor screening and assessment. Given the high occurrence rates and the fact that motor problems are easily overlooked and often remain underdiagnosed, it has been recommended to include motor assessment as part of the routine clinical investigation of children with ASD. Due to the heterogenic nature of motor impairment in children with ASD, a comprehensive motor assessment is warranted. However, there is also a subset of children with ASD who do not demonstrate motor problems. In these cases, a comprehensive assessment is time-consuming, expensive, and redundant; especially since the procedures can put a substantial burden on the child as they can be challenging and can cause significant stress. Therefore, screening for motor problems can provide valuable information to guide the decision whether referral to a full motor assessment is required.

Purpose

The first objective is to examine the prevalence, severity, and heterogeneity of motor problems in children with ASD, across the full range of cognitive abilities. The second objective is to examine the precision of the Developmental Coordination Disorder Questionnaire (DCDQ) as a screening tool for co-occurring motor problems in children with ASD.

Methods

Children referred to the Expertise Center for Autism (Leuven, Belgium) receive an extensive multidisciplinary diagnostic assessment protocol, allowing a rigorous examination of each developmental domain. A comprehensive motor assessment battery is included in the standard assessment procedure. The motor abilities of children aged 4-17 years old (n = 288) were examined using the Movement Assessment Battery for Children, 2nd edition (MABC-2), the Beery-Buktenika Developmental test of Visual-Motor Integration, 6th edition (VMI-6) and the Systematic Detection of Handwriting problems, 2nd edition (SOS-2). In a subsample (n = 115, aged 5-15 years), the DCDQ was also administered. The internal consistency, concurrent validity, discriminant validity, sensitivity, specificity, positive predictive value, and negative predictive value of the DCDQ was examined.

Results

The majority of the children demonstrated significant motor problems. Based on the MABC-2 scores, 46.3% and 15.5% of the children were categorized as definite motor problems or borderline motor problems, respectively. However, a significant subset of the sample, was identified with motor abilities in the normal range (38%). Moreover, 39.2% of the children demonstrated significant problems in visual motor integration and 45.5% were identified with problems in fine motor coordination. Finally, 55.5% of the children demonstrated problems in handwriting quality, and 44.4% in handwriting speed.



The examination of the precision of the DCDQ to screen for co-occurring motor problems in children with ASD, demonstrated excellent internal consistency and a moderate positive correlation ($r = .60$) with the MABC-2 score (concurrent validity). Moreover, the DCDQ can discriminate between children with ASD with or without co-occurring motor problems. Appropriate sensitivity of the DCDQ was found, indicating the usefulness of the questionnaire as an initial screener for co-occurring motor problems in children with ASD [3].

Conclusion and Implication

There is a high prevalence of motor problems in children with ASD. The DCDQ can reliably be used in a population of children with ASD as an initial screener for co-occurring motor problems, without specific adaptations needed. The high levels of heterogeneity in motor profiles and the existing subset of children with ASD without motor problems, suggests that motor impairment should be considered as a specifier within the diagnostic criteria for ASD in the DSM-V.

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Ethical Approval: This research has been granted ethical approval of the Ethics Committee Research UZ/KU Leuven.

Informed Consent: All participants provided their informed assent and parents/legal guardians provided informed consent prior to the start of the study.

Competing Interests: We have no conflicts of interest to declare.

References

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