Patterns of Change in Specific Behaviors of Autism Symptoms for Boys and for Girls Across Childhood

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Abstract : Background: Autism symptoms are comprised of social-communication deficits and restricted/repetitive behaviors (RRB). The severity of these symptoms can change during childhood, with differences between boys and girls. From the literature, it was found that young autistic girls show a stronger tendency to decrease and a weaker tendency to increase their overall autism symptom severity levels compared to young autistic boys. It is not clear, however, which symptoms are driving these sex differences across childhood. In the current study, we evaluated the trajectories of independent autism symptoms across childhood and compared the patterns of change in such symptoms between boys and girls. Method: The study included 183 children diagnosed with autism (55 girls) evaluated three times across childhood, at ages 3, 6 and 11. We analyzed 22 independent items from the Autism Diagnostic Observation Scheudule-2 (ADOS-2), the gold-standard assessment tool for autism symptoms, each item representing a specific autism symptom. First, we used latent growth curve models to estimate the trajectories for the 22 ADOS-2 items for each child in the study. Second, we extracted the factor scores representing the individual slopes for each ADOS-2 item (i.e., slope representing that child's change in that specific item). Third, we used factor analysis to identify common patterns of change among the ADOS-2 items, separately for boys and girls, i.e., which autism symptoms tend to change together and which change independently across childhood. Results: The best-emerging patterns for both boys and girls identified four common factors: three factors representative of changes in social-communication symptoms and one factor describing changes in RRB. Boys and girls showed the same pattern of change in RRB, with four items (e.g., speech abnormalities) changing together across childhood and three items (e.g., mannerisms) changing independently of other items. For social-communication deficits in boys, three factors were identified: the first factor included six items representing initiating and engaging in social-communication (e.g., quality of social overtures, conversation), the second factor included five items describing responsive social-communication (e.g., response to name) and the third factor included three items related to different aspects of social-communication (e.g., level of language). Girls' social-communications deficits also loaded onto three factors: the first factor included five items (e.g., unusual eye contact), the second factor included six items (e.g., quality of social response), and the third factor included four items (e.g., showing). Some items showed similar patterns of change for both sexes (e.g., responsive joint attention), while other items showed differences (e.g., shared enjoyment). Conclusions: Girls and boys had different patterns of change in autism symptom severity across childhood. For RRB, both sexes showed similar patterns. For social-communication symptoms, however, there were both similarities and differences between boys and girls in the way symptoms changed over time. The strongest patterns of change were identified for initiating and engaging in social communication for boys and responsive social communication for girls.

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