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## **Defining autism subgroups: A taxometric solution**

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Autism spectrum disorders (ASD) are neuropsychiatric disorders characterized by impaired social interaction, communication, and a restricted repertoire of activities and interests. Inconsistent results in gene-finding studies may be due to considerable phenotypic heterogeneity within ASD, and stratifying subjects into more homogeneous subgroups could overcome this obstacle. Therefore, the purpose of the present study was to use taxometric methods in order to search for putative autism subgroups based on autism symptomology, intelligence, adaptive behavior, and physical dysmorphology. Phenotypic data on 432 subjects with ASD was retrieved from the Autism Genetic Resource Exchange (AGRE), and dysmorphology was obtained on 481 ASD patients seen at the Autism Center at the University of Missouri. Autism symptomology was quantified using the Autism Diagnostic Interview-Revised (ADI-R), intelligence by the Raven's Progressive Matrices (RPM) and Peabody Picture Vocabulary Test (PPVT), everyday adaptive behavior by the Vineland Adaptive Behavior Scales (VABS), and dysmorphology by dysmorphic class and head circumference percentile. The taxometric methods of maximum covariance (MAXCOV) and mean above minus mean below (MAMBAC) were employed in order to test the hypothesis of categorical, rather than dimensional variation in phenotypes. Taxonic and dimensional structures were compared using the Comparative Curve Fit Index (CCFI), which ranges from 0 to 1, with values closer to 1 supporting a taxonic structure. MAMBAC and MAXCOV analyses of the ADI-R yielded results consistent with a dimensional structure, with CCFI's of 0.292 and 0.312, respectively. Similarly, the VABS exhibited a dimensional structure, with MAMBAC and MAXCOV CCFI's of 0.422 and 0.365, respectively. However, MAMBAC analyses of the RPM/PPVT and dysmorphology revealed taxonic structures, with CCFI's of 0.733 and 0.825, respectively. In conclusion, our results support the subgrouping of ASD subjects according to intelligence and dysmorphology, but not autism symptomology or adaptive behavior. Stratifying samples based on taxometric results should increase power in gene-finding studies.