



Autism Symptom Severity and Self-Injurious Behavior among Individuals with ASD-Associated Disruptive Mutations

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INTRODUCTION

- Previous research examining associations between autism symptom severity and self-injurious behavior (SIB) is limited and inconclusive, with variable results across studies and samples (Gulsrud et al., 2018; Richman et al., 2013; Steinfeldt-Kristensen et al., 2020)
- Identification of SIB correlates in monogenetic syndromes may clarify mechanisms of SIB in ASD (Minshawi et al., 2015).
- Individuals with disruptive mutations to ASD-associated genes exhibit variable autism symptom severity and may or may not meet full diagnostic criteria for ASD (Beighley et al., 2020; Guo et al., 2018)
- Heterogeneity allows for examination of associations between ASD severity and other phenotypic characteristics in the context of genetic risk

METHOD

Participants:

- 124 individuals (mean age = eight years, 48.4% female) with a likely pathogenic mutation to one of eight high-confidence ASD-associated genes (Table 1)
- 66.9% met DSM-5 criteria for ASD

Measures:

- Autism Diagnostic Interview—Revised (ADI-R; Lord et al., 1994), Autism Diagnostic Observation Schedule, Second Edition (ADOS-2, Lord et al., 2013); Repetitive Behavior Scale—Revised (RBS-R; Bodfish et al., 2000), Social Responsiveness Scale-2 (SRS-2; Constantino & Gruber, 2012), appropriate cognitive assessment

Table 1

Participants with ASD-Associated Disruptive Mutations

Gene	n
ADNP	21
ARID1B	7
CHD8	21
CTNNA1	7
DYRK1A	27
FOXP1	6
GRIN2B	13
SCN2A	22
Total	124

Caregiver-reported (but not clinician-observed) social communication challenges and restricted/repetitive behaviors are modestly associated with self-injury severity and status in people with rare ASD-associated disruptive mutations.

Associations between autism symptom severity and SIB in ASD may be minor or explained by measurement factors.

Analyses:

- A dichotomous current SIB variable was created from the ADI-R per Dempsey and colleagues (2016), while the self-injury subscale of the RBS-R was used as a measure of SIB severity
- ADOS-2 calibrated severity scores (CSS) for Social Affect (SA) and Restricted and Repetitive Behaviors (RRB; Hus et al., 2014; Hus & Lord, 2014) and SRS-2 subscales were used as measures of autism symptom severity
- Logistic regression was used to determine whether autism symptom severity predicted SIB status after controlling for age and full scale IQ (FSIQ)
- Linear regression was used to determine whether autism symptom severity predicted SIB severity after controlling for age and FSIQ
- Bonferroni corrected significance level of $\alpha = .01$ was used for SRS-2 subscale analyses

RESULT

- ADOS-2 SA CSS, ADOS-2 RRB CSS, and ASD diagnosis were not associated with SIB prevalence or severity
- SRS-2 social communication impairment was modestly associated with SIB status ($\beta = 0.10$, $p = .006$, OR = 1.11) and SIB severity ($\beta = 0.42$, $p < .001$, $\Delta R^2 = .17$) after controlling for age and FSIQ
- RRB severity as measured by the SRS-2 was also modestly associated with SIB status ($\beta = 0.07$, $p = .005$, OR = 1.08) and SIB severity ($\beta = 0.31$, $p = .004$, $\Delta R^2 = .09$) after controlling for age and FSIQ

DISCUSSION

- Caregiver-reported social communication challenges and RRBs were modestly associated with SIB status and severity among individuals with ASD-associated disruptive mutations, while clinician-observed symptoms and ASD diagnosis were not associated with SIB
- Associations between autism symptom severity and SIB may be present but minor or related to measurement factors (caregiver report vs. clinician judgment; Richman et al., 2013), which could account for discrepant results across studies
- Future research should examine factors that may better account for SIB in ASD-associated genetic disorders, such as pain, executive functioning, or specific genetic mechanisms

Funding: National Institutes of Mental Health [MH100047 to RAB; MH101221 to EEE]