

Associations Between ASD-Related Traits, Restricted and Repetitive Behaviors, and Sensory Reactivity in Children



With and Without ASD Sapir Soker-Elimaliah^{1,2} & Jennifer Wagner^{1,2}



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BACKGROUND

- Hypo- and hyper-reactivity to sensory input is a sub-criterion of restricted and repetitive behaviors (RRB) for ASD diagnosis.
- Hypo-reactivity patterns have been found to distinguish autistic children from their non-autistic (non-ASD) peers (Ben-Sasson et al., 2009).
- However, studies have found that the hyper-reactivity patterns of sensory processing are most often associated with RRB (e.g., Boyd et al., 2010).
- Hyper-reactivity can lead to experienced overstimulation that might cause distress, and this might need to be regulated with the first available self-regulation method. This could lead to basic level behaviors such as RRB (Baker et al., 2008).
- Recent research suggests that the association between RRB and sensory reactivity might also be found in children and young adults without ASD (Schulz & Stevenson, 2019).

The current study expands on recent work to further examine the relationships between ASD-related traits, RRB, and sensory reactivity in children with and without ASD.

METHOD

Participants

- The current sample included 13 children ($M_{age} = 6.63$ years, $SD = 2.14$ years; range: 3.83-10.91; non-ASD: $n = 11$; ASD: $n = 2$).

Procedure

- As part of a larger study, caregiver questionnaires assessed:
 - Two measures of ASD-Related Traits
 - Social Responsiveness Scale, Second Edition (SRS-2) (Constantino & Gruber, 2012)
 - Repetitive Behavior Scale-Revised (RBS-R) (Bodfish et al., 1999), to further characterize RRB frequency and intensity
 - Two measures of Sensory Reactivity
 - Short Sensory Profile, Second Edition (SSP-2) (Dunn, 2014), to assess overall sensory reactivity
 - Sensory Experiences Questionnaire (SEQ) (Baranek et al., 2006), to assess hypo- and hyper-reactivity patterns

Data Analysis

- Total scores were calculated for the SRS-2, RBS-R, and SSP-2.
- Hyper- and hypo-reactivity scores were calculated from the SEQ.
- Participants were divided into groups low and high on ASD-related traits based on SRS-2 cutoff scores:
 - Low ASD-related traits: T-score ≤ 59 , $n = 8$
 - High ASD-related traits: T-score > 59 , $n = 5$ (including ASD children)

RESULTS

Correlations Between ASD-Related Traits, RRB, and Sensory Reactivity

- Across the full sample, a significant positive correlation was found between SSP-2 and SRS-2 scores ($r(11) = .76$, $p = .003$), suggesting that increased atypical sensory reactivity patterns are associated with elevated levels of ASD-related traits (see Figure 1).

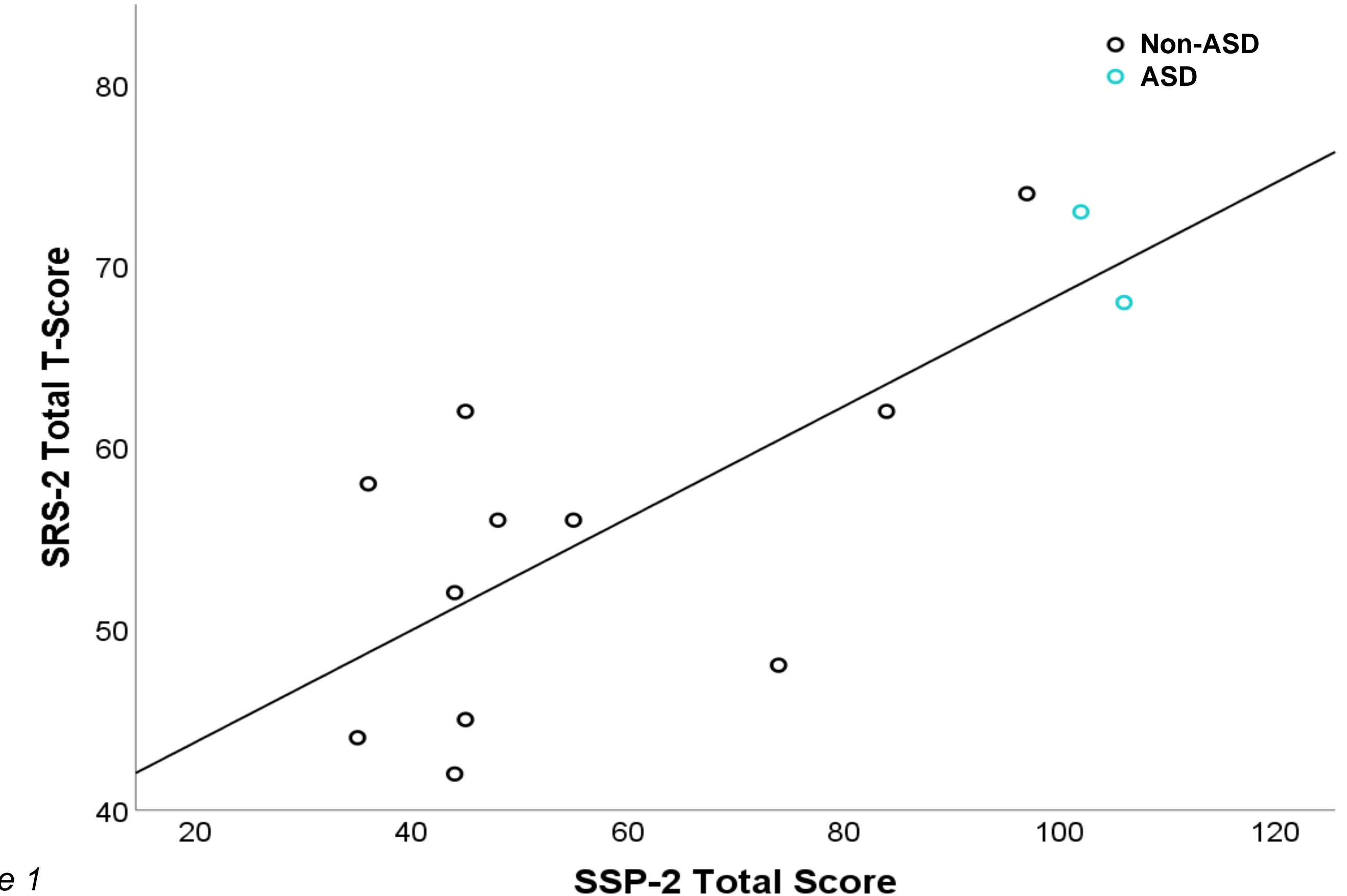


Figure 1

- Across the full sample, significant positive correlations were found between RBS-R and SSP-2 ($r(11) = .76$, $p = .003$; see Figure 2), and with both SEQ hypo- and hyper-reactivity subscales ($ps < .042$), suggesting that increased atypical sensory reactivity is associated with more RRB.

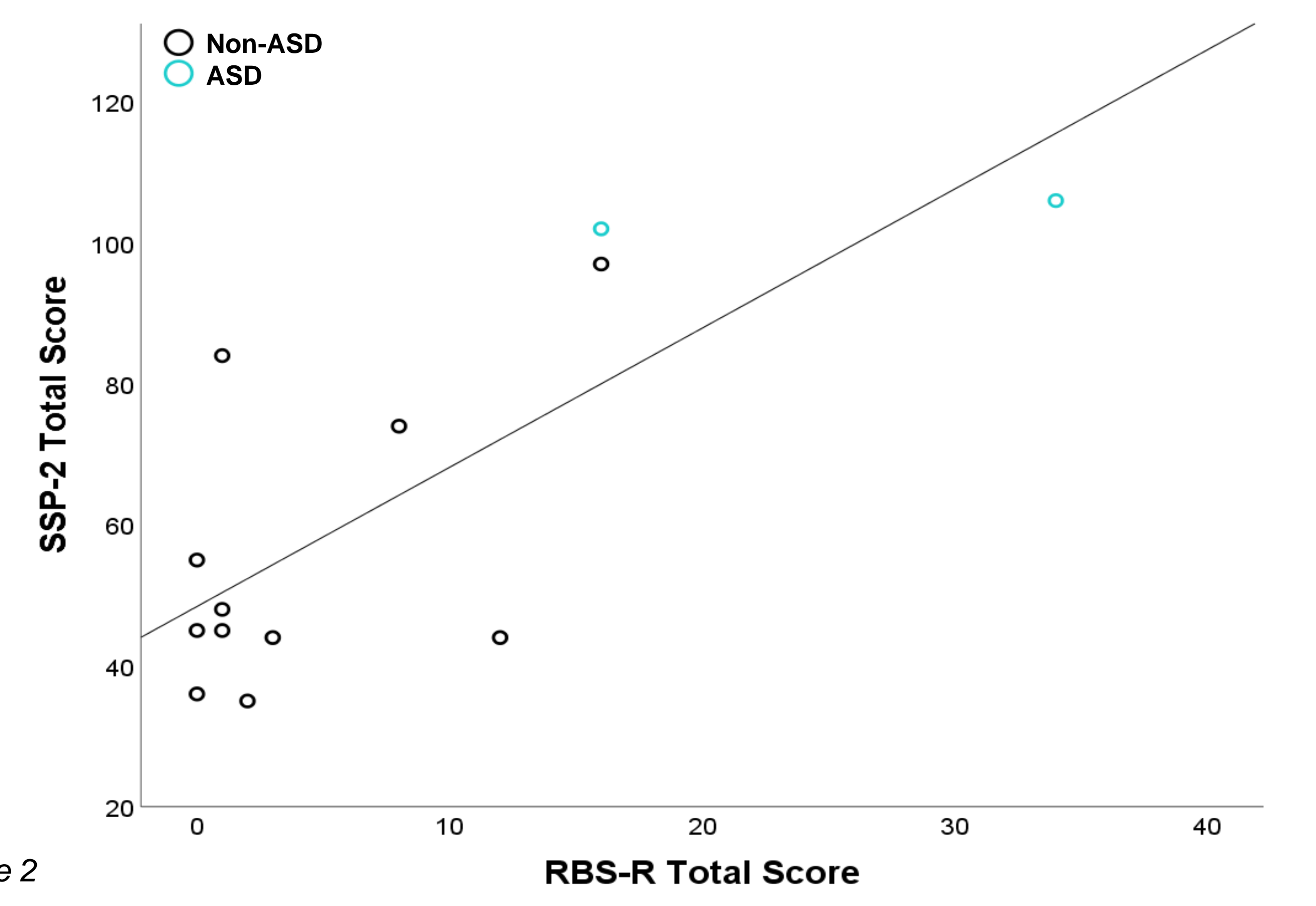


Figure 2

- When children with ASD were excluded, associations remained significant between SSP-2 and SRS-2 ($p = .039$), but RBS-R was no longer related to SSP-2 or the SEQ subscales ($ps > .078$).

RESULTS, continued

Differences Between Groups High vs. Low on ASD-Related Traits

- The High ASD-related Traits group had significantly higher SSP-2 scores ($t(11) = 3.83$, $p = .003$; see Figure 3) and marginally higher RBS-R and SEQ hyper-reactivity scores (but not hypo-reactivity) than the Low Traits group ($ps < .082$).
- When excluding the children with ASD, groups differed only on SSP-2 ($p = .038$).

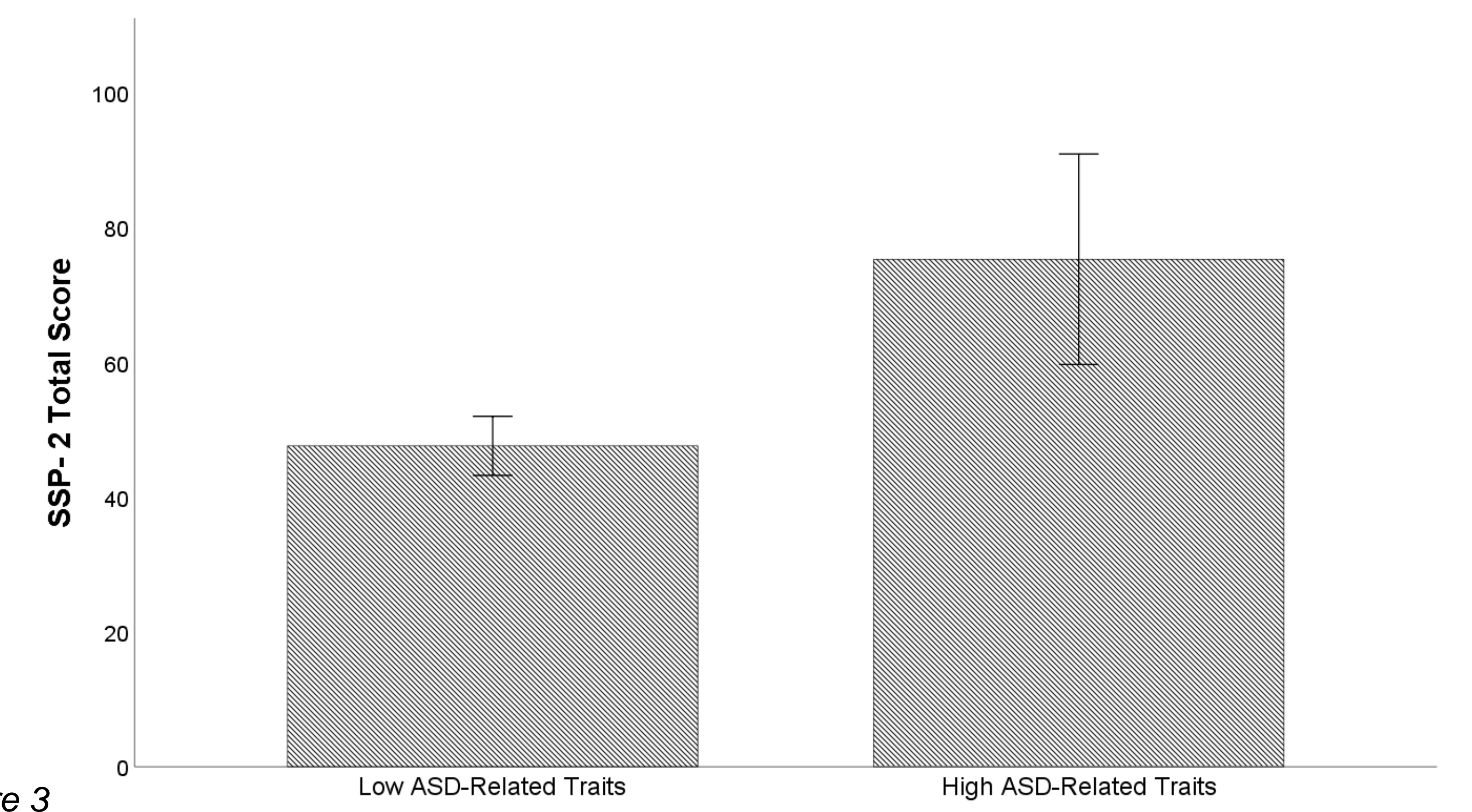


Figure 3

DISCUSSION

- Overall, atypical sensory processing was associated with more ASD-related traits and more RRB.
- When the sample included children with ASD, similar to past work (Boyd et al., 2010), more RRB were related to hyper-reactivity patterns, but also to hypo-reactivity.
- Although children with more ASD-related traits exhibited greater atypical sensory processing, hypo-reactivity did not distinguish children high and low on ASD-related traits. Future work will continue to examine how sensory reactivity patterns vary between autistic and non-autistic children with varying levels of ASD-related traits.
- Data collection for the current study has now transitioned online, which holds promise to greatly increase the current sample size.
- Additionally, future work will examine the underlying physiological measures that might play a role in RRB and sensory reactivity.

REFERENCES



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