

Early Sociocognitive Battery (ESB) in detecting early signs of autism in two-year-old toddlers

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Background

Early Sociocognitive Battery (ESB) is a novel, quick, standardized test to detect 2- to 4-year-old children with concerns of language or social development. Some earlier studies (e.g. Taylor et al., 2020) have shown associations with ESB and concurrent and later autistic traits and language skills. However, there is still very limited evidence whether the ESB results are associated with early signs of autism in the youngest age group i.e., 2-year-old children. As it is important to detect autism traits in young age to enable early interventions, investigating validity of assessments methods in this age group is essential.

Methods

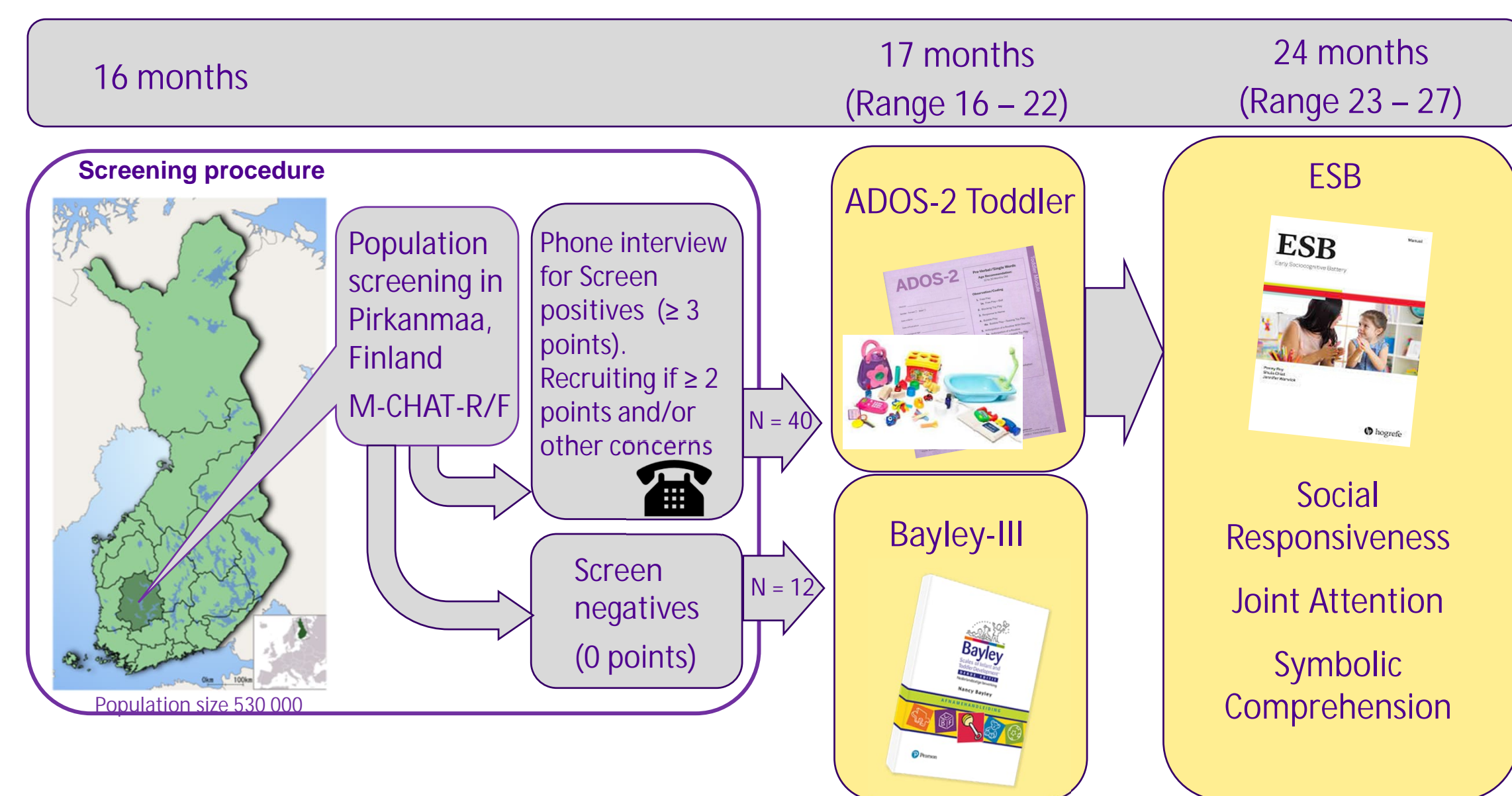


Figure 1: Study procedure. The study is part of the ongoing Gaze@Toddler-project.

Table 1: Descriptives (mean, range) of participant's (N = 52) ADOS-2 and Bayley III scores

ADOS-2 Toddler module (algorithm scores)	
Social Affect	M = 9.33 (Range: 1 – 19)
Restricted and Repetitive Behavior	M = 1.37 (Range: 0 – 7)
Total	M = 10.71 (Range 2 – 23)
Bayley Scales III (standard scores)	
Cognitive	M = 9.43 (Range: 4 – 15)
Expressive communication	M = 7.40 (Range: 2 – 19)
Receptive communication	M = 9.43 (Range: 1 – 19)
Language index	M = 90.96 (Range: 50 – 153)

Aim

To investigate the associations between early signs of autism with ADOS-2 Toddler module, and socio-cognitive skills measured with ESB, when language skills are controlled.

Results

- Significant correlations (Fig. 2) were found between ADOS-2 Social Affect (SA) scale and ESB total, Social Responsiveness (SR) and Symbolic Comprehension (SC) scales.
- Bayley-III Language index correlated significantly with ADOS-2 and ESB. After controlling for Bayley III Language index with partial correlations, correlations remained significant between ADOS-2 SA and ESB SC ($r = -.35, p = .012$), but not for SR ($r = -.23, p = .109$) or ESB total ($\rho = -.224, p = .118$).
- Additional analysis for subscores of Joint Attention scales: Gaze Switch and Gaze monitoring showed significant correlation between ADOS-2 Social Affect and Gaze Switch ($\rho = -.35, p = .012$), which, however, was not significant after controlling for Bayley-III Language index ($\rho = -.13, p = .355$).

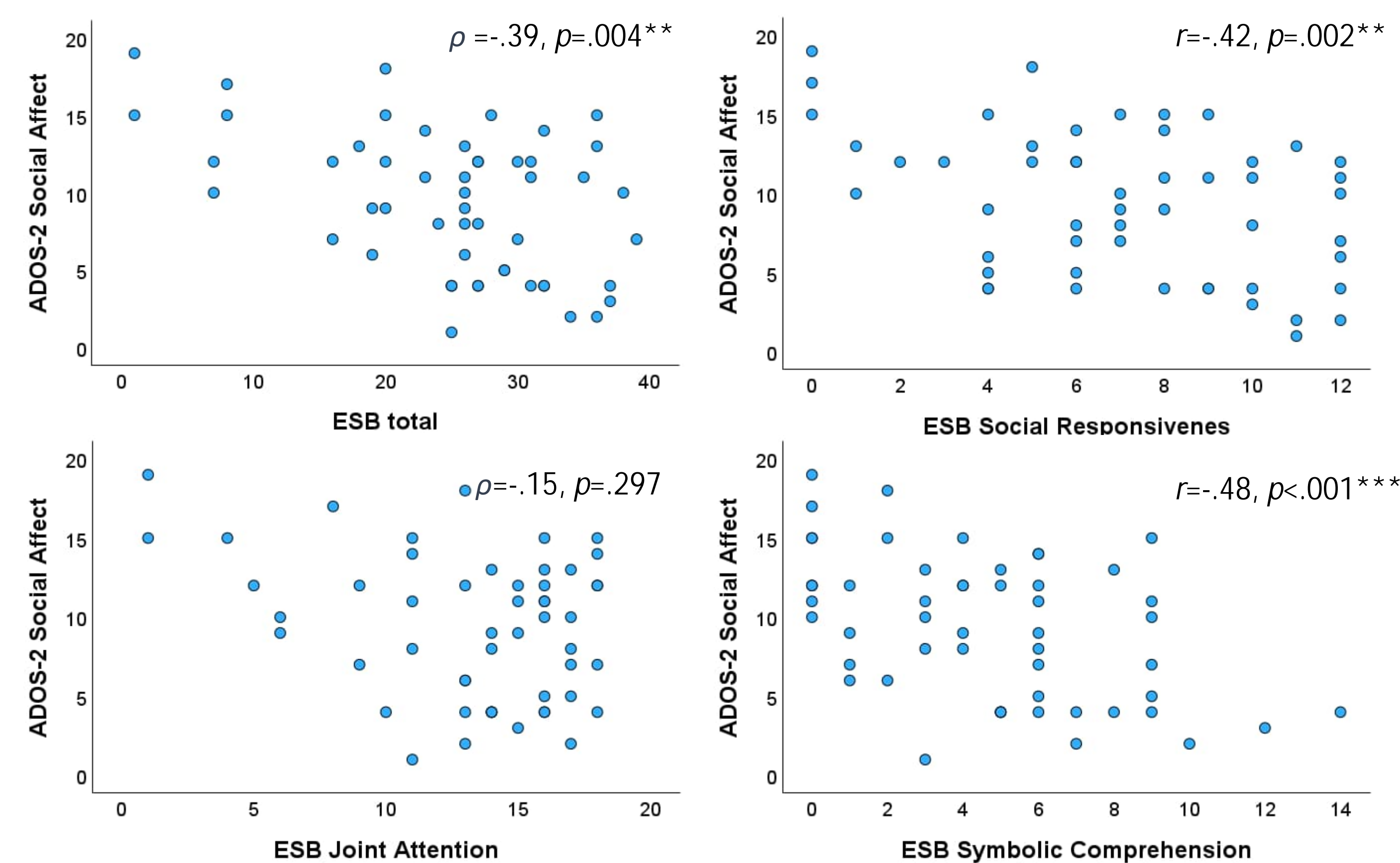


Figure 2: Correlations (before controlling for language index) between ADOS-2 toddler module Social Affect algorithm scores and ESB raw scores.

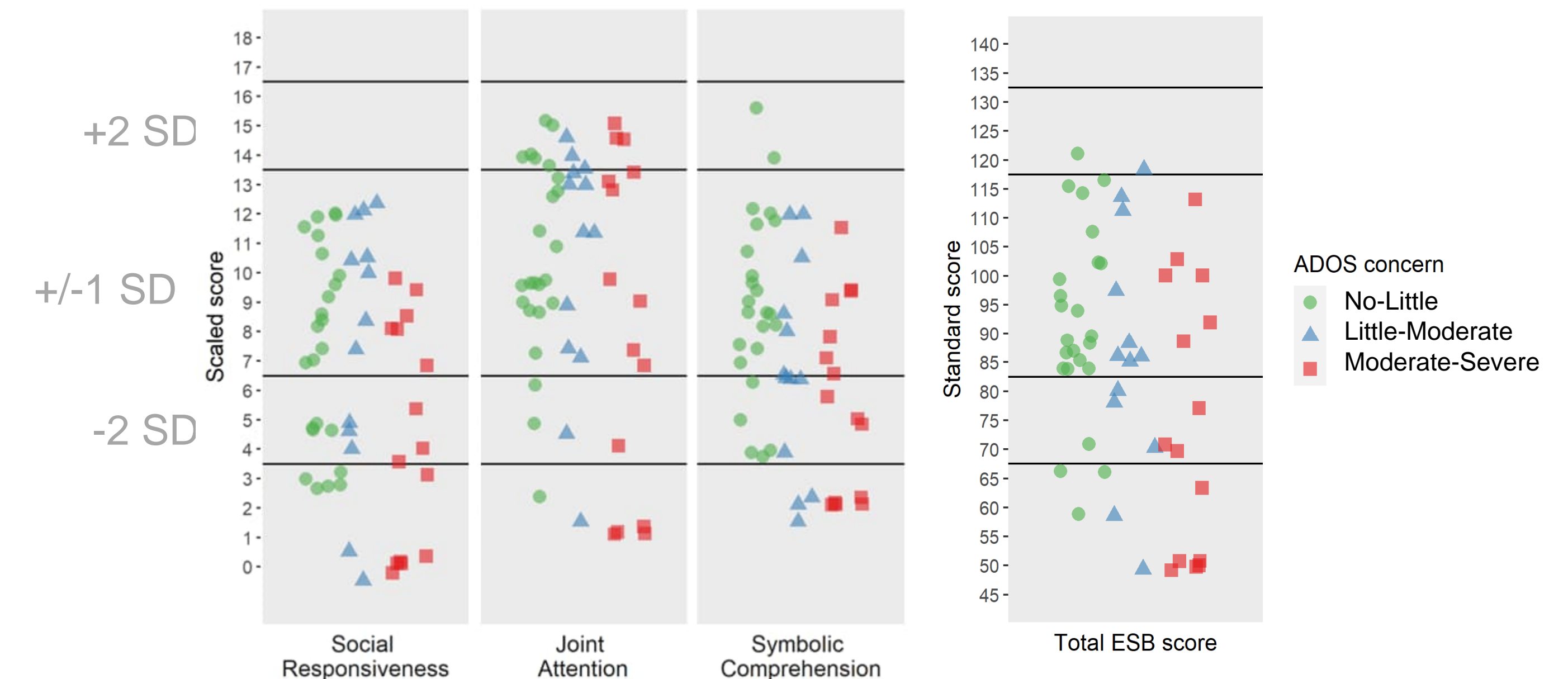


Figure 3: ESB scaled and standard scores (UK norms), grouped by ADOS-2 toddler module classification for autism related concern.

Conclusions

- Significant associations between ADOS-2 toddler module and ESB provide validity information for ESB.
- However, language skills contributed significantly to associations between ADOS-2 and ESB scales.
- Significant association was found between ADOS-2 and Gaze Switch subscore, but not between ADOS-2 and total Joint Attention scale. In future, further investigation separately on performance in two Joint Attention subscores should be considered.
- Many toddlers with autism related traits scored above, and some with no/little traits below cut-offs in ESB (Fig 3): Sensitivity and specificity for autism should be studied further.
- Limitations: Diagnostic outcome for these participants not yet known.

References

Taylor, L. J., Charman, T., Howlin, P., Slonims, V., & Green, J. (2020). Brief Report: associations between preverbal social communication skills, language and symptom severity in children with autism: an investigation using the early sociocognitive battery. *JADD, 50*(4), 1434-1442.

