

Introduction

- Autism Spectrum Disorder (ASD) is characterized by deficits in social processing and social cognition.¹
- Social interaction is rewarding and engages the limbic system (associated with social cognition/reward/emotion).²
- The amygdala is involved in social/reward circuitry, with previous studies showing that amygdala volume is positively correlated with limbic system connectivity.³

While prior studies have focused on how amygdala function relates to social reward, a relationship between amygdala volume and social reward has not been previously assessed in ASD or TD groups.

Current Study

Aim 1: Assess how aspects of social reward varies between ASD and TD groups

Aim 2: Assess how bilateral amygdala volumes vary between ASD and TD groups

Aim 3: Assess how social reward and amygdala volumes vary when controlling for age, gender, group

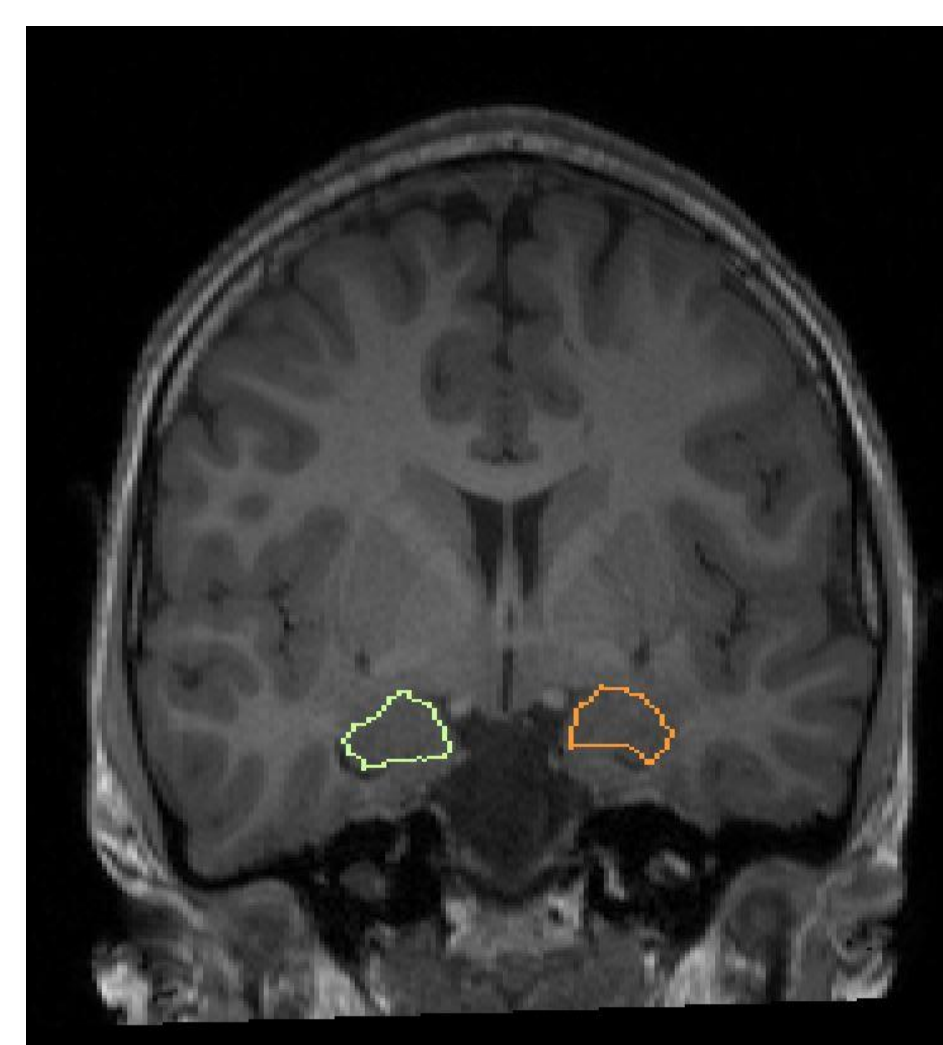
Methods

31 typically developing children (12 females) were used, $M = 10.84$ ($SD = 1.32$).

21 children with ASD diagnosis (4 females) were used, $M = 11.04$ ($SD = 1.97$).

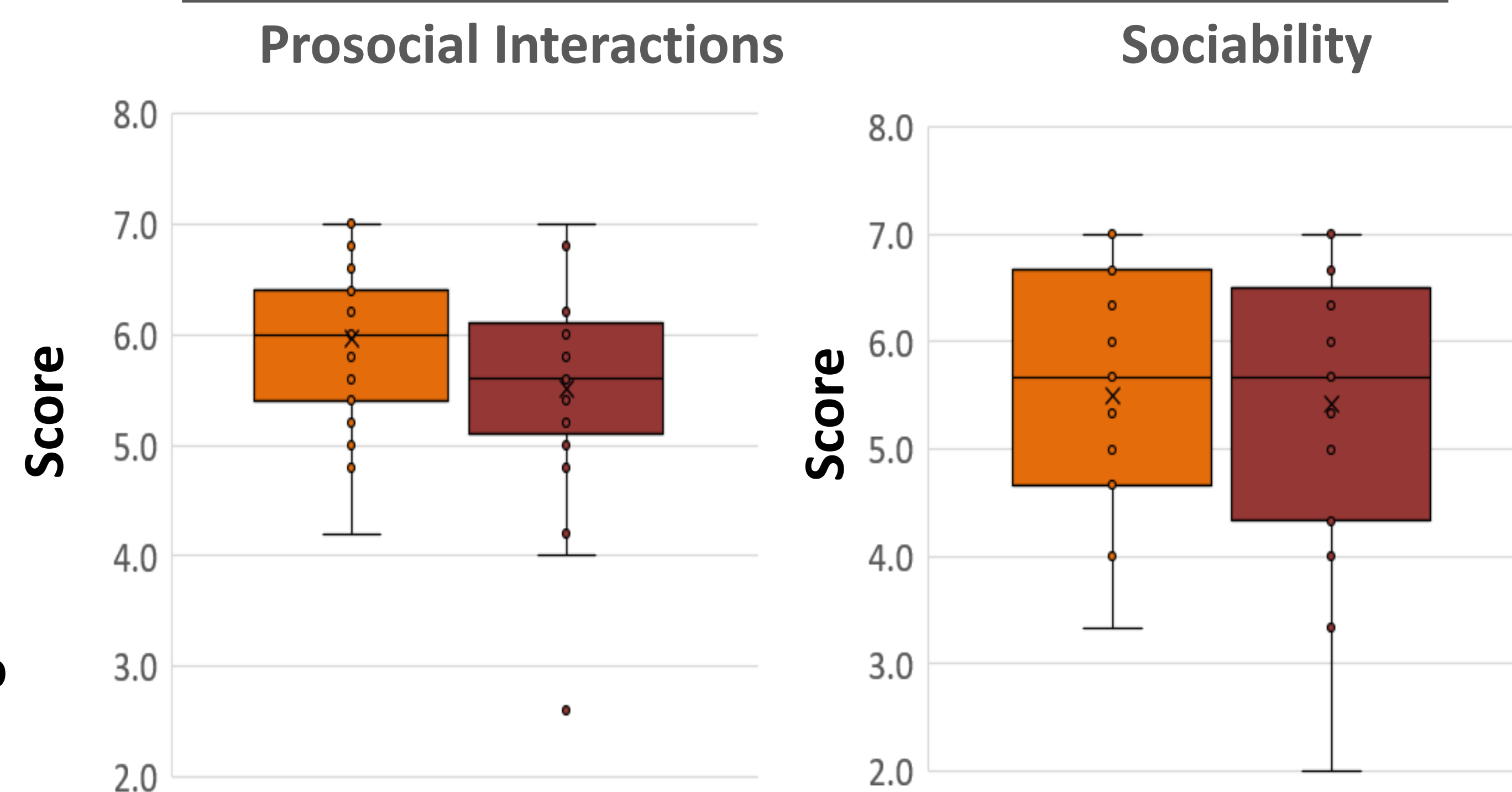
Measures

- Two Social Reward Questionnaire (SRQ) subscales: Prosocial Interactions (5 questions) and Sociability (3 questions)⁴
 - Questions rated on a 1-7 Likert scale, averages used for total score
 - Examples: "I enjoy making someone feel happy" (Prosocial Interactions), "I enjoy going to parties" (Sociability)
- Bilateral amygdala volumes and total gray matter volumes acquired using MRICloud (example to the right)⁵



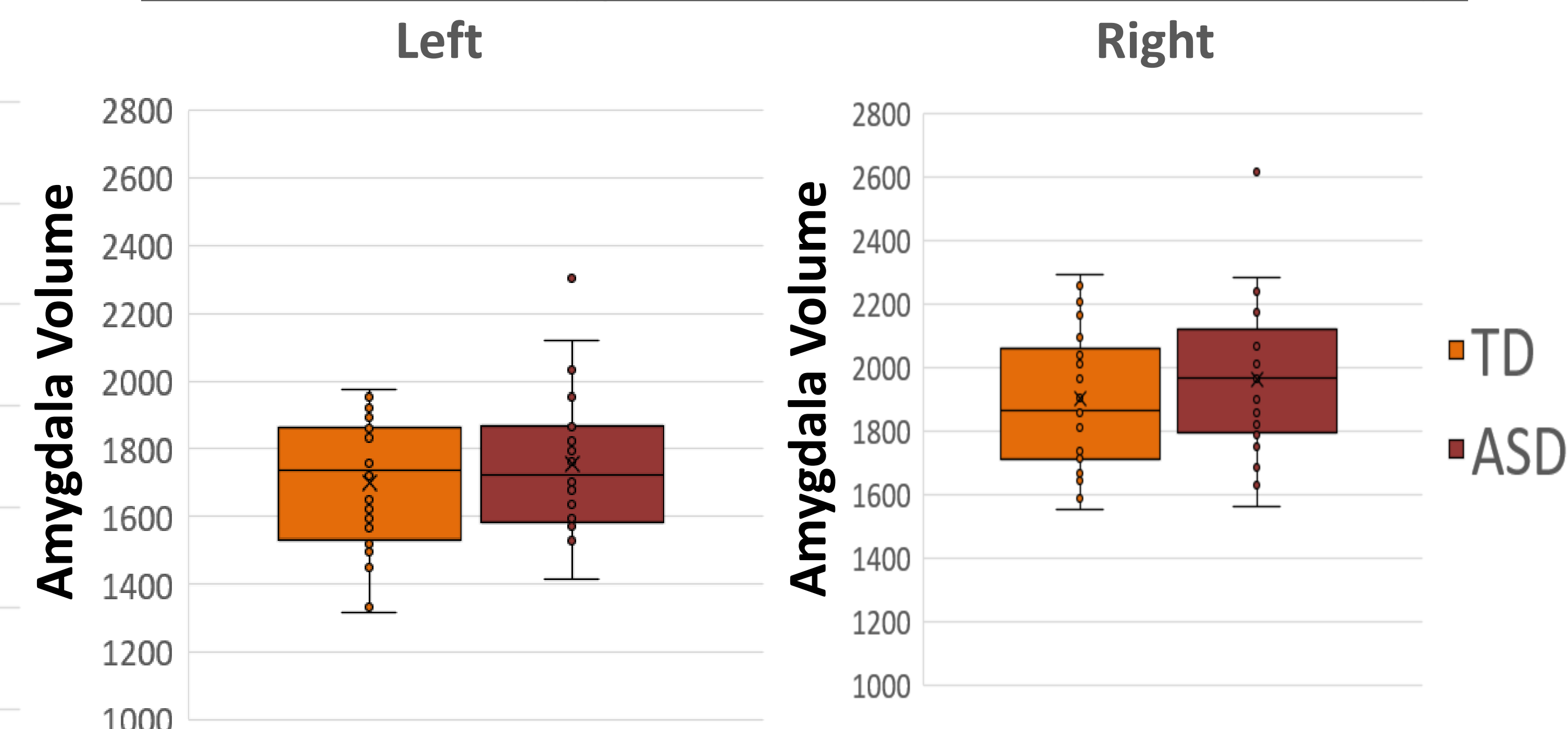
Results

Distribution of ASD and TD Scores on SRQ Subscales



An independent samples t-test revealed no significant difference between ASD and TD groups in the Prosocial Interactions ($p = 0.090$) and Sociability ($p = 0.817$) scores.

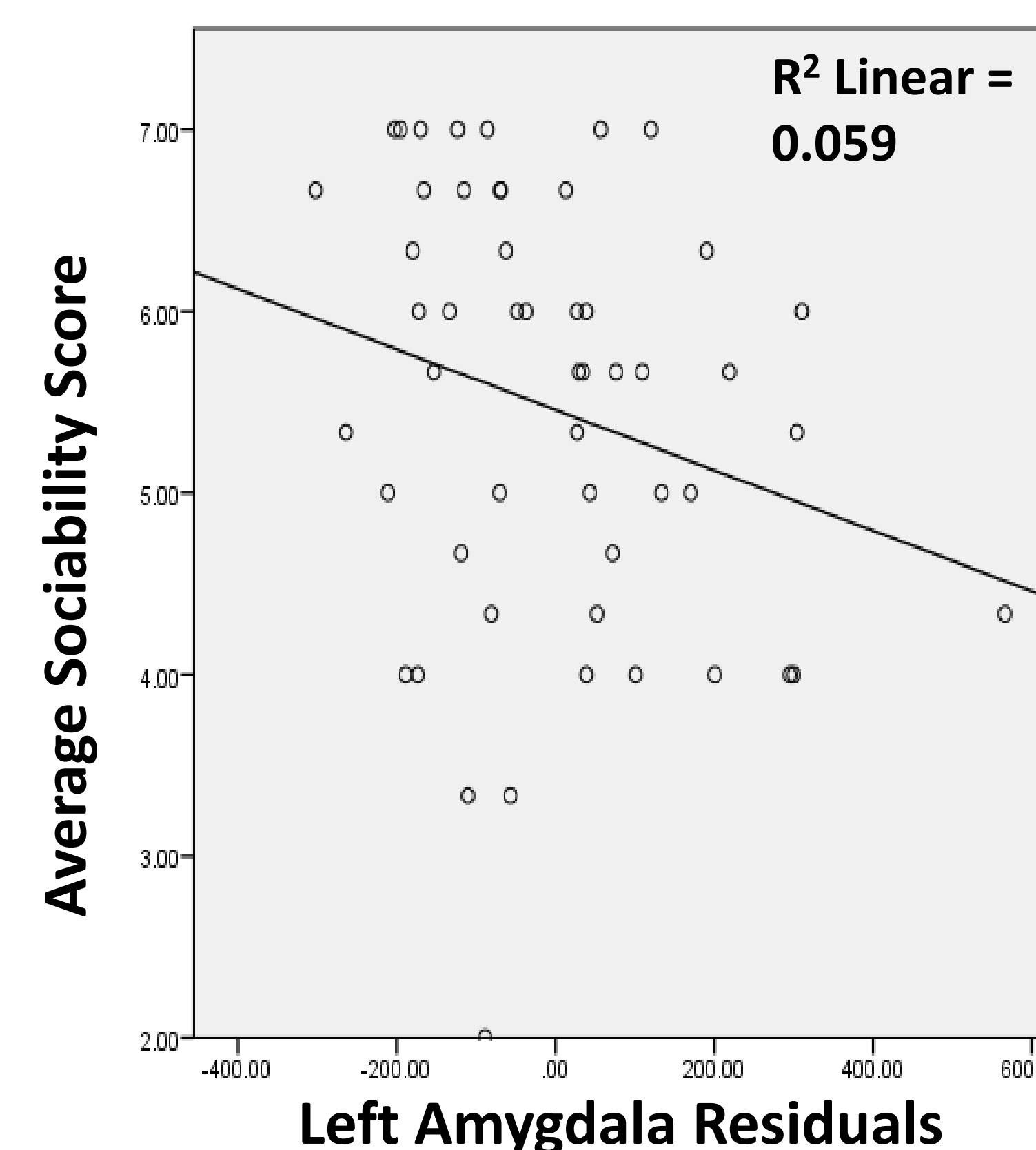
Distribution of Amygdala Volumes for ASD and TD Groups



An analysis of covariance revealed no significant difference between ASD and TD groups in left amygdala volume ($F = 0.001$, $p = 0.339$) or right amygdala volume ($F = 0.008$, $p = 0.339$).

Regression For Prosocial Interactions

Independent Variable	Standardized Beta	p-value
Left Amygdala Volume	0.011	0.961
Right Amygdala Volume	0.109	0.648
Age	0.169	0.211
Sex	0.457	0.001
Diagnostic Group	-0.165	0.211



Unstandardized residuals of the left and right amygdala volumes were created, controlling for total gray matter. Graph shows significant relationship ($p < 0.05$) between Left Amygdala Volume and Sociability scores.

Regression for Sociability

Independent Variable	Standardized Beta	p-value
Left Amygdala Volume	-0.548	0.033
Right Amygdala Volume	0.416	0.113
Age	-0.052	0.720
Sex	0.185	0.210
Diagnostic Group	0.004	0.976

Discussion

Results largely did not support the hypotheses associated with aims 1 and 2 of the study, with non-significant results. The hypothesis for aim 3, that there would be a significant relationship between social reward and amygdala volume, was partially supported, although not in the expected direction. Left amygdala volume was negatively associated with Sociability, which is counter to prior studies, having found that amygdala volume is positively correlated with sociability and extraversion.⁶

Limitations/Future Directions

This study was limited by the sample size, especially within the ASD sample. ASD is a very broad spectrum, and this sample only catches a specific cross-section of these individuals. Future studies should use a larger, more representative sample, and could potentially look at a live stimulus to better represent social reward than a self-report measure.

Acknowledgements:

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References (Scan Me!):

