

Background

- Aggression is prevalent in an estimated 22.5-68% of autistic individuals (Carroll et al., 2014; Harley et al., 2008; Kanne & Mazurek, 2011)
- Challenges associated with aggression include increased risk of harm to self and others and reduced opportunities for social relationships and learning (Hodgetts et al., 2013)
- Studies have identified an association between aggression and differences in communication and social skills among autistic individuals (Mazurek et al., 2013) though research on the associations with aggression is limited
- Studies suggest that peer relationships may influence the development of appropriate social functioning and will be important to consider as a moderating variable on the link between aggression and social functioning among autistic children.

Aims

- Analyze a concurrent association between aggression and differences in social functioning among autistic children at baseline (T1)
- Investigate aggression (at T1) as a predictor of social functioning among autistic children six months later (T2)
- Determine whether peer relationships moderate the potential link between aggression and social functioning among autistic children

Methods

Participants

- 399 (ASD - 280) children aged 6-11 who were enrolled in the Autism Biomarkers Consortium for Clinical Trials (ABC-CT) study across five sites in the United States
- Participants in the autism spectrum disorder (ASD) group met criteria for ASD on the ADI-R, ADOS-2, and DSM-5
- IQ between 60 and 150 as measured by the DAS-II

Measures

- Social functioning was measured using the Vineland-3 (VABS-III), a parent interview
- Aggression was measured using the aggression subscale of the Pervasive Developmental Disorder Behavior Inventory (PDDBI), a parent questionnaire
- Peer relationships were measured using a question from the social development and play section of the Autism Diagnostic Interview - Revised (ADI-R), a parent interview
- The peer relationship measure was only collected from the ASD group, so interpretation is limited to the ASD group

Figure 1. Distribution of VABS-III Social Functioning Scores

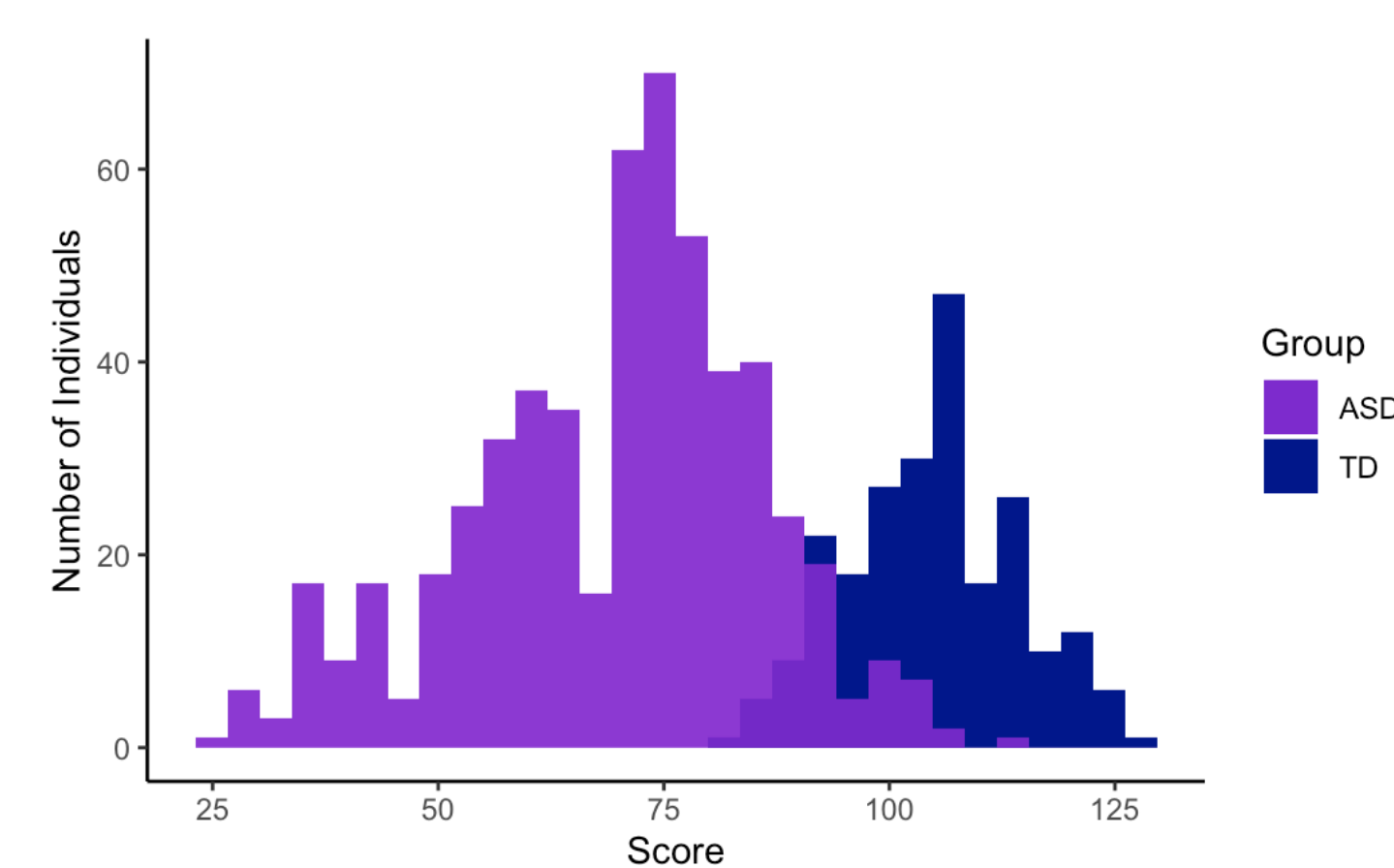
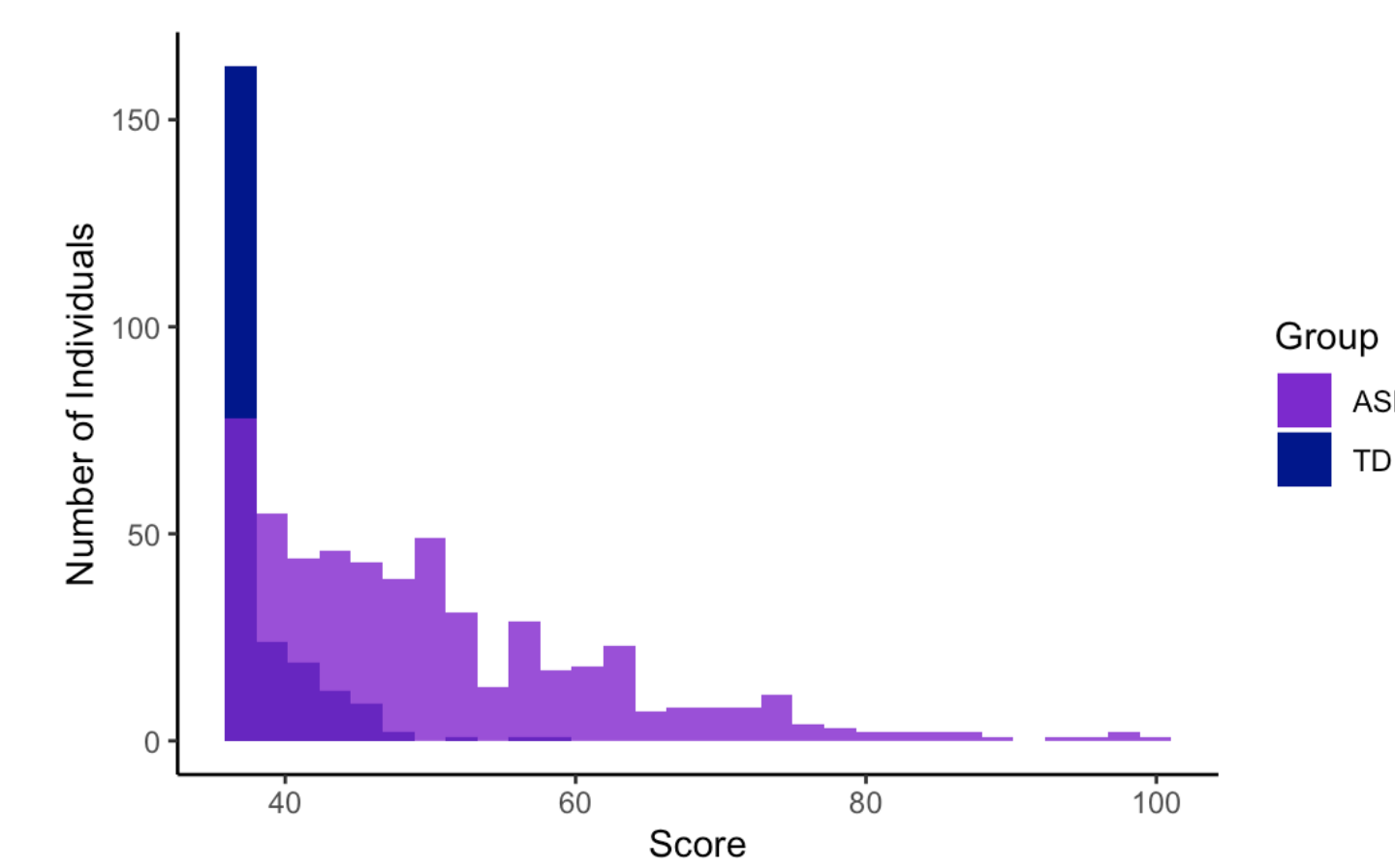


Figure 2. Distribution of PDDBI Aggression Scores



Results

H1: Aggression and social functioning will be concurrently associated.

Results: *Aggression at each timepoint (T1 or T2) showed a modest relation with social functioning in both groups.*

Table 1. Correlation Coefficients between aggression and social ability

Variables	Social Functioning (T1)	Social Functioning (T2)
Aggression (T1)	-0.640***	-
Aggression (T2)	-	-0.656***
Aggression_ASD (T1)	-0.383***	-
Aggression_ASD (T2)	-	-0.443***
Aggression_TD (T1)	-0.294***	-
Aggression_TD (T2)	-	-0.338***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.'

Table 2. AIC Scores and CV Errors

Variables Entered in Model	AIC Score	CV Error
null	3481.087	478.897
age	3452.296	477.791
sex	3478.815	477.290
agg	3281.385	320.911
group	3186.789	225.386
age_sex	3450.529	475.806
age_agg	3273.651	319.255
age_group	3157.639	222.010
sex_agg	3279.709	317.864
sex_group	3186.603	224.271
agg_group	3084.977	191.525
age_sex_agg	3272.183	321.912
age_sex_group	3157.771	221.341
age_agg_group	3075.897	192.121
sex_agg_group	3084.695	190.758
age_sex_agg_group	3075.79	189.193

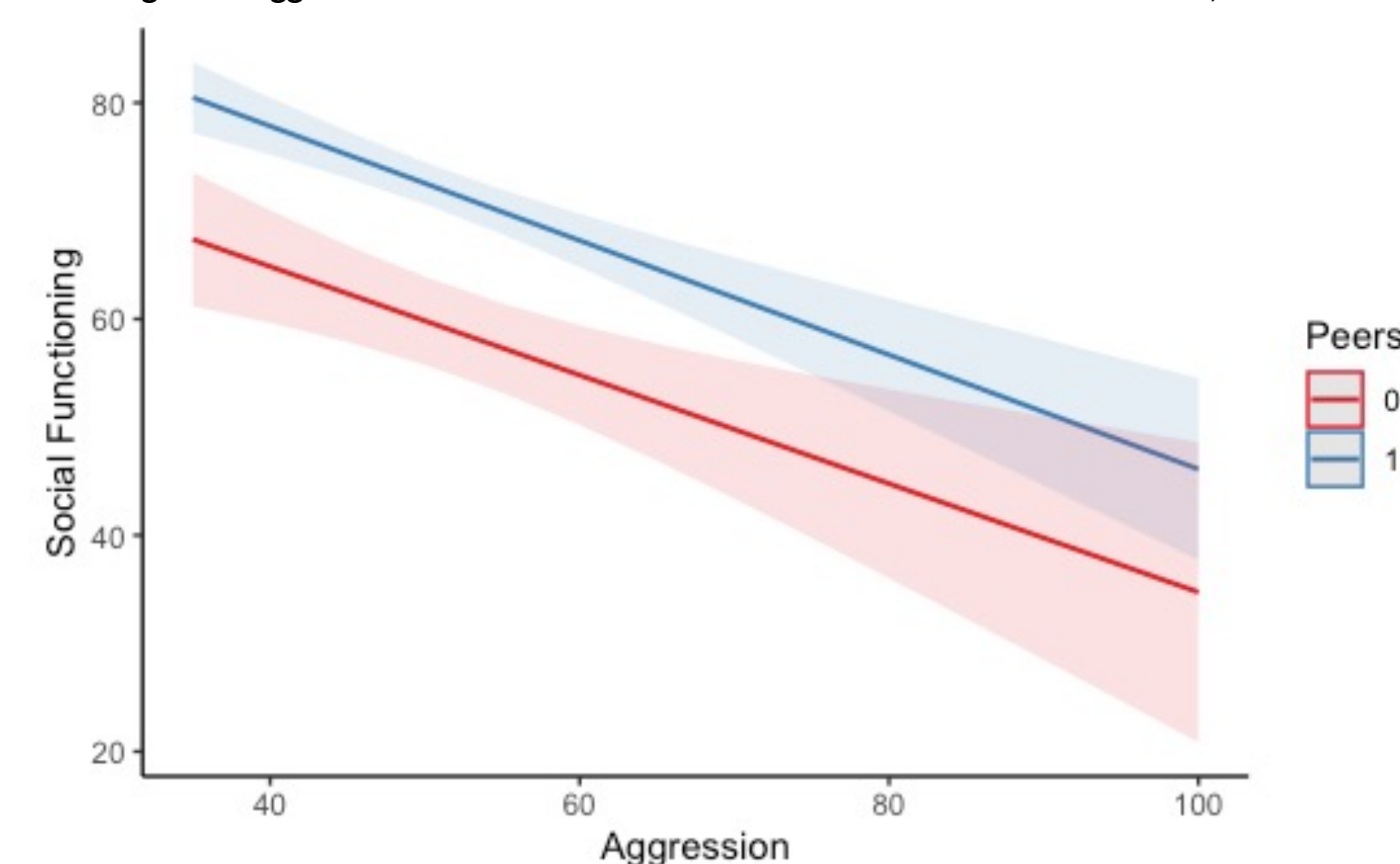
Note: highlighted rows indicate best-fit models

Table 3. Coefficients for Best-fit Models (Dashes indicate that variable was not entered in the model)

Model Number	1	2	3	4
Age	-	-0.002 (0.002) .	-	-0.002 (.002) .
Sex	-	-	-2.441 (1.621)	-2.339 (1.620)
Aggression	-0.543 (0.067) ***	-0.539 (0.067) ***	-0.543 (0.067) ***	-0.539 (0.067) ***
Group	28.259 (1.758) ***	28.293 (1.755) ***	28.099 (1.759) ***	28.141 (1.755) ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 '

Figure 3. Aggression and Peers Interaction Effect Plot Note: 0 = no friends; 1 = some friends



H3: Peer relationships will moderate the relationship between aggression and social functioning.

Results: *The interaction between aggression and peer relationships was not significant, suggesting that peer relationships do not play a moderating role.*

Discussion

- These findings provide support for previous research suggesting that there is an association between aggression and core ASD traits.
- To date, there has been little longitudinal research focusing on the link between aggression and social functioning. These findings suggest a significant relationship between these components.
- The correlation between aggression and social functioning suggests that autistic children with higher levels of aggression were rated as having lower social functioning. This may be because aggression limits opportunities for age-appropriate social functioning.
- Age and sex were not significant covariates in the best fit model. Consistent with the literature, aggression among autistic children does not tend to vary by sex, though aggression is usually found to decrease with age. Findings regarding sex differences in social functioning are mixed. It will be important to understand the interactions between each of the variables in future research.
- Previous literature suggests that interventions aimed at improving social functioning have been the least successful among autistic children (Kasari & Patterson, 2012). These findings may provide useful information in identifying appropriate interventions to successfully improve social functioning.
- Interventions aimed at reducing aggression may be useful to both decrease the negative consequences of aggression and improve social functioning among autistic children.
- While peer relationships did not moderate the link between aggression and social functioning, they did predict social functioning among autistic children. Therefore, increasing the number or quality of peer relationships may be another important element to focus on in interventions aimed at improving social functioning.
- Interventions aimed at reducing aggression and increasing the quantity or quality of peer relationships to improve social functioning are important as they may allow autistic individuals to become more integrated in their communities and function independently.
- Peer relationships were only measured among autistic children and only at one time point. It will be important to understand the effect of peer relationships among the entire sample and at all time points to get a better understanding of how they may influence aggression and social functioning.
- It will be important to also understand how social functioning may affect aggression in future research.

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