Developmental Trajectories of Adaptive Functioning and RRBs in Young Autistic Children

Shir Rozenblat, Adi Dolev, Judah Koller
Seymour Fox School of Education, The Hebrew University of Jerusalem

Introduction

Adaptive functioning, the ability to meet daily demands and participate effectively in social contexts, varies widely among autistic children. Although prior research shows considerable heterogeneity in development, with some children improving over time and others showing limited change or decline (Chen et al., 2024), the mechanisms underlying this variability remain unclear. Child-level predictors such as cognitive ability, language, and symptom severity have been examined (Bal et al., 2015; Flanagan et al., 2015), but findings are inconsistent, and parent factors have received limited attention.

RRBs also show variable developmental courses, typically characterized by improvement or stability (Szatmari et al., 2015). Importantly, most studies treat RRBs as a single construct rather than exploring distinct subtypes, limiting understanding of how specific patterns evolve and relate to adaptive functioning.

The present study examined trajectories of adaptive functioning and RRBs over one year in early childhood, their overlap, and child and parent characteristics predicting group membership in adaptive functioning.

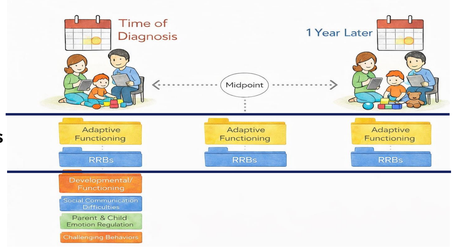
Objectives

(1) Identify developmental trajectories of adaptive functioning and RRBs.

(2) Examine overlap between adaptive functioning and RRB trajectories.

(3) Test prediction of adaptive functioning group trajectory membership from child and parent characteristics.

Study Design



Methodology

Participants: 123 autistic children aged 2-5 (M = 3.23, SD = 0.86; 82.1% male) and their parents.

Data analysis: Growth mixture modeling (GMM) identified latent classes representing trajectories of adaptive functioning and RRBs across three time points. χ^2 test of independence was used to examine the overlap between trajectories. Two regression models were used to predict adaptive functioning trajectories from baseline variables. Descriptive statistics for the sample at time of diagnosis can be found in Table 1 in the Supplement, QR code below.

Conclusions

Early adaptive functioning in young autistic children appears relatively stable during the first year after diagnosis. A subset of children shows modest reductions in RRB frequency and severity, while most remain consistent. Higher levels of RRBs decreasing over the course of one year after diagnosis overlap with lower levels of adaptive functioning, though significantly, reductions in RRBs' frequency and severity do not necessarily relate to changes in adaptive functioning. Child cognitive functioning, challenging behaviors, and elements of child and parent emotion regulation appear to predict belonging to "lower stable adaptive functioning" trajectories. This knowledge may inform the identification of early profiles that support more targeted developmental pathways.

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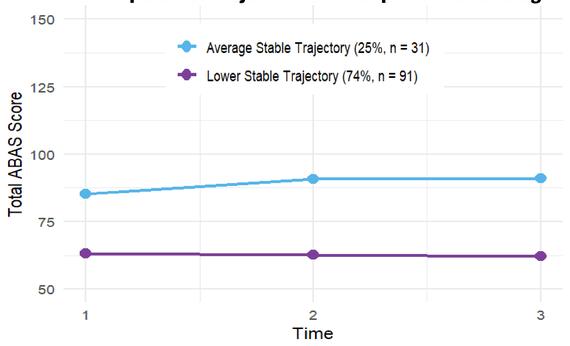
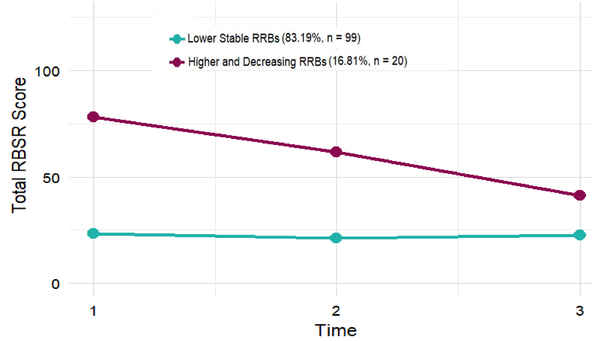
Results

Developmental Trajectories of Adaptive Functioning



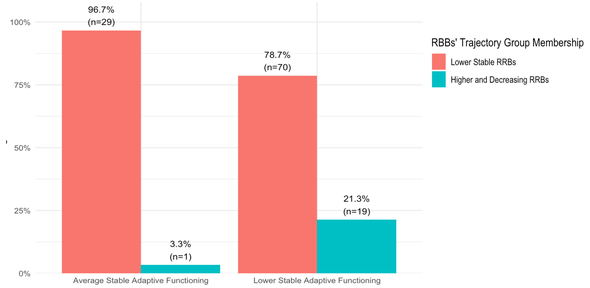
GMM identified two latent classes of adaptive functioning trajectories: average adaptive functioning with stable trajectories and low adaptive functioning with stable trajectories. The Bayesian information criterion was 2171.42, and the average group posterior probabilities were 0.83 for group 1 and 0.92 for group 2. Goodness-of-fit statistics for all tested trajectory models for adaptive functioning frequency are listed in Table 2 in the Supplement, QR code below.

Developmental Trajectories of RRBs



GMM identified two latent classes of RRB frequency trajectories: a high symptom group showing modest reduction, and a low symptom group showing stability. The Bayesian information criterion was 2221.19, and the average group posterior probabilities were 0.99 for group 1 and 0.94 for group 2. Goodness-of-fit statistics for all tested trajectory models for RRBs frequency are listed in Table 2 in the Supplement, QR code below.

Cross Trajectory Group Membership for RRBs and Adaptive Functioning



Cross-trajectory membership between adaptive functioning and RRBs; $\chi^2 = 3.99$, $p < 0.05$, $\varphi = 0.18$. Results indicate a small but statistically significant amount of overlap across the trajectory groups.

Prediction of Likelihood of Group Membership in Adaptive Functioning

Model 1

Predictor	Estimate	Std. Error	Pr(>|z|)	Adjusted[1]
(Intercept)	1.39	1.56	0.37	1
ADOS SA Relative Score	0.08	0.13	0.57	1
IQ/DQ	-0.03	0.01	0.02*	0.12
RBS-R Total Score	0.05	0.02	0.002**	0.02*

Model 2

Predictor	Estimate	Std. Error	Pr(>|z|)	Adjusted[1]
(Intercept)	14.52	6.49	0.03*	0.15
Social Withdrawal (ABC)	0.21	0.12	0.08	0.33
Inappropriate Speech (ABC)	-0.05	0.24	0.85	1
Effortful Control (CBQ)	-3.78	1.51	0.012*	0.09
Expressive Suppression (ERQ)	1.03	0.56	0.07	0.33

Note. *p < 0.05, **p < 0.01. [1]p values after Benjamini-Hochberg correction.

RBS-R total scores, IQ/DQ, and child's effortful control significantly predicted adaptive functioning group trajectory membership, such that children with higher levels of RRBs frequency and severity, lower IQ/DQ, and lower effortful control were more likely to belong to the group with lower adaptive functioning.

Significantly, difficulties in social communication did not emerge as significant predictors. A trend-level effect for child's social withdrawal and parents' expressive suppression was found, suggesting that children with higher levels of social withdrawal and whose parents exhibit higher levels of expressive suppression are more likely to belong to the group with lower adaptive functioning. With Benjamini-Hochberg correction, only RRB frequency and severity remained a significant predictor.