

Correlates and Turning Points of Adaptive Functioning Trajectories & Longitudinal Associations with Autism Symptoms from Early Childhood to Adolescence

Yun-Ju (Claire) Chen, Eric Duku, Peter Szatmari, Isabel M. Smith, Lonnie Zwaigenbaum, Teresa Bennett, Annie Richard, Tracy Vaillancourt, Mayada Elsabbagh, Wendy J. Ungar, Anat Zaidman-Zait, Connor Kerns, Stelios Georgiades



Background

VABS Trajectory Studies Szatmari 2015* (VABS-2 composite)—3 subgroups Quadratic Meyer 2018 (VABS-1 composite or Vineland Social Maturity Scale [1953]) Heterogenous Franchini 2018 (VABS-2 composite and four sub-domains) Linear adaptive outcomes in autism have been observed in previous longitudinal studies. Gentles et al. (2023). Trajectory research in children with an autism diagnosis: A scoping review. Autism

Evidence Gaps

Associated characteristics beyond baseline (e.g., autism symptoms)

Turning points of adaptive functioning trajectories to inform opportunities for change

Family characteristics as covariates of trajectories (e.g., SES, immigrant status)

Global vs. Domain Score as unit of analysis

Data Wave vs. Chronological Age as time metrics person change were conflated.

Research Questions

- What is the *best-fitting shape* of the latent trajectories of VABS subdomains? Are there *turning points* at certain ages?
- How many *VABS trajectory subgroups* can be identified? Is the subgroup membership associated with *child and family* characteristics?
- Do these VABS trajectory subgroups differ by *the changes of autism symptoms* from early to late childhood?

Methods

Participants



pathways

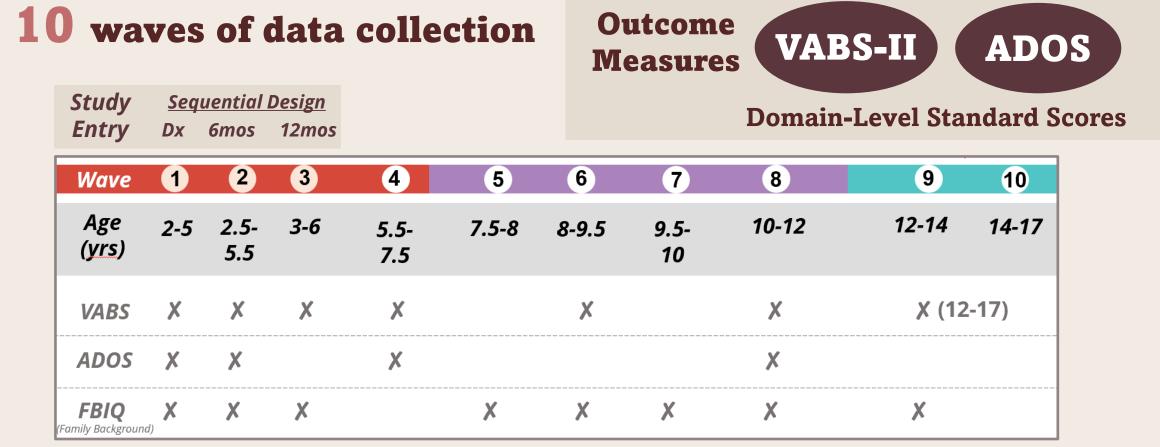
406 children diagnosed with autism at ages 2-5

 ≥ 15 years of follow-up

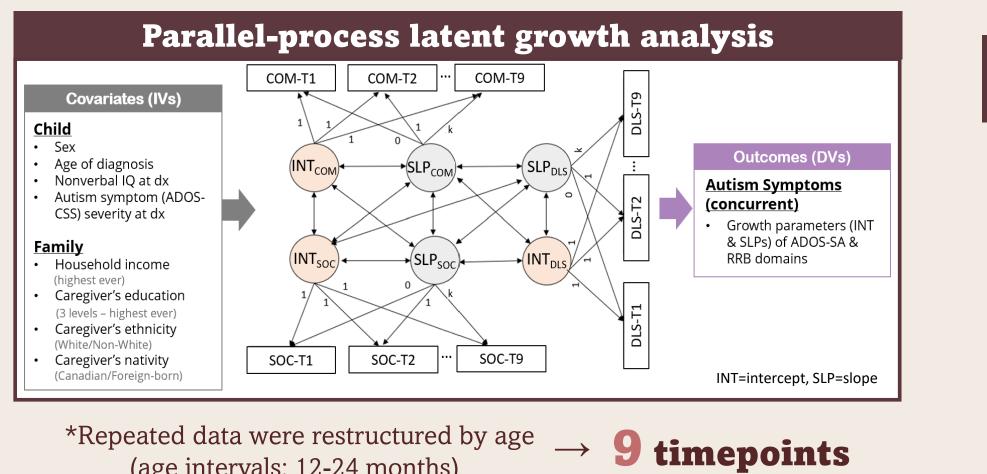
(Y2005-current)

(with ≥ 1 timepoint of VABS data available)

Measures & Timeline



Analysis



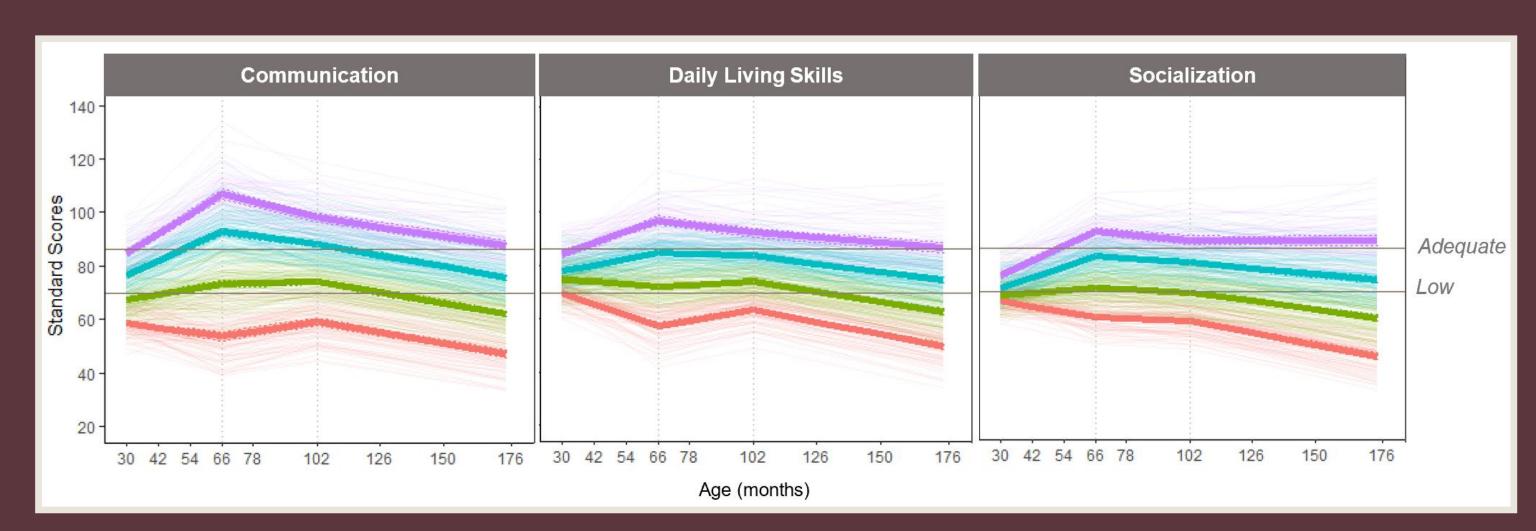
Latent growth curve modeling

Determine best-fitting functional form (linear, quadric, or piecewise) Latent class growth analysis

Identify trajectory subgroups

Key Findings

4 VABS trajectory subgroups with varying levels & change rates of functioning were parsed among 406 autistic children from ages 2 to 15.



Class 1 (n=87, 21%)

(age intervals: 12-24 months)

- Overall low functioning
- Early decrease + late catch-up after entering school age
- Lower NVIQ at dx More elevated autism symptom at dx
- Lower family SES

Class 2 (n=113, 28%)

VABS change patterns

- Between low and adequate range
- Overall stable trajectories & autism symptoms until age
- Family SES similar to

(COM1)

Class 3 (n=140, 35%)

- Near adequate range of functioning Early improvement across domains Later diagnosed
- Autism symptoms at dx & family SES didn't differ from C4

"Doing Well"

(COM-)(SOC-)

Class 4

(n=66, 16%)

Above adequate level

& early improvement

Higher NVIQ at dx

(*1/3 with IQ<70)

Higher family SES

Adaptive social

outcomes in

adolescence

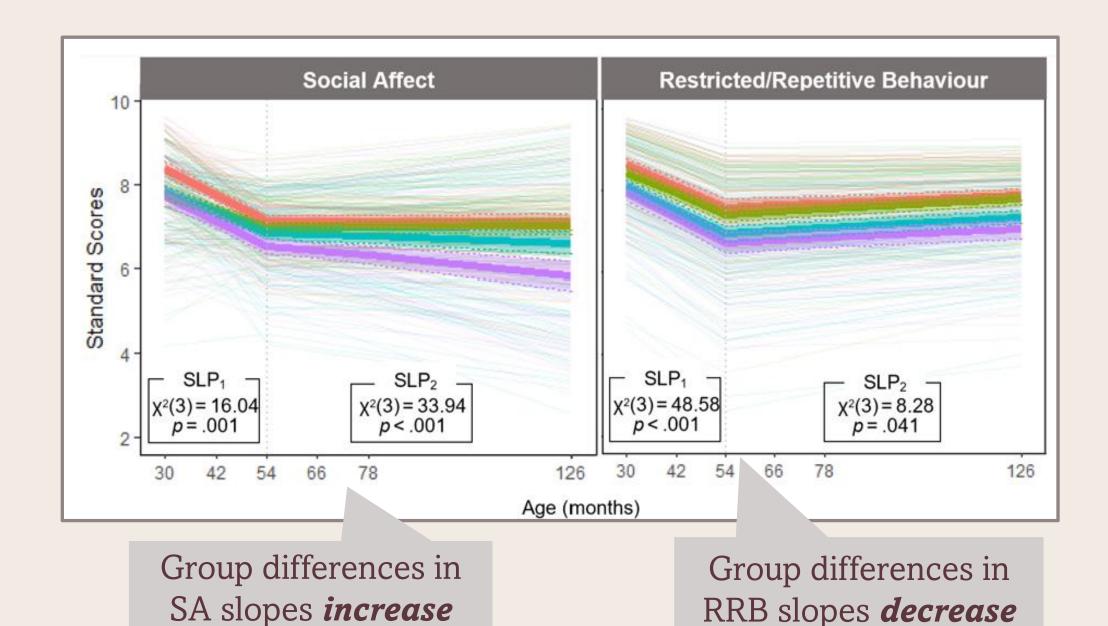
Z turning points at ages 5-6 and 9-10 (Transitions into school age and early adolescence).

NVIQ at diagnosis & household income are key correlates of VABS trajectories.

Covariates	C1 (n=87)	C2 (n=113)	C3 (n=140)	C4 (n=66)	Multinomial Logistic Regression
Male	75 (86%)	92 (81%)	120 (86%)	55 (83%)	No sig. group difference
Age of	36.01	37.96	39.89	38.92	C4>C2, C3>C4
diagnosis (m)	(8.69)	(7.84)	(9.20)	(8.67)	
NVIQ	34.85	52.36	65.49	82.54	C2>C1, C3>C1, C4>C1, C3>C2 C4>C2, C4>C3
(Merrill-Palmer-R cog.)	(15.20)	(16.84)	(20.65)	(25.78)	
ADOS-total	8.49	7.30	7.38	7.21	C1>C2, C1>C3, C1>C4
CSS	(1.51)	(1.67)	(1.67)	(1.70)	
		Fa	mily Charac	teristics	
Household	8.45	8.56	9.44	10.49	C3>C1, C4>C1, C3>C2, C4>C2
Income	(2.72)	(2.78)	(2.41)	(1.27)	C4>C3
Caregiver's	30	42	75	38	C3>C1, C4>C1, C3>C2 , C4>C2
Education	(34%)	(37%)	(54%)	(58%)	
(Bachelor's Degree+)	. ,	. ,			
Caregiver's	51	68	111	51	C3>C1, C3>C2, C4>C2
Race (White)	(59%)	(60%)	(79%)	(77%)	
Caregiver's	30	39	27	12	C3>C1, C4>C1, C3>C2, C4>C2
Nativity	(34%)	(35%)	(19%)	(18%)	
(Foreign-born)	•		•	•	

Bolded beta coefficient values represent significant effects (p < .05) in the adjusted model.

Differential associations with ADOS were observed across time.



Intervention targets may vary across developmental stages for better supporting autistic children's functional needs.

Implications



~16% of our autistic participants showed good social adaptive outcomes by adolescence.

When

Entering school age is associated with challenge or **opportunities** for improvement in functioning.

Various responses to transitions



~21% were in the low-functioning range and more likely from a low-SES family.

Support for **early** access to services

Overall **decreasing trends** in adaptive functioning were observed in adolescence despite stable or decreasing ADOS-SA scores.

over time.

Environmental supportiveness

over time.