Growth Mixture Models of Adaptive Behavior in Adolescents with Autism Spectrum Disorder

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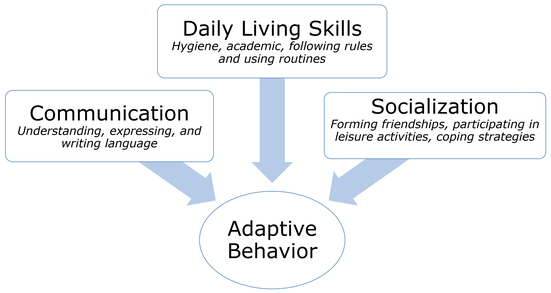
CSESA The Center on Secondary Education for Students with Autism Spectrum Disorders

Introduction

Extant research on adaptive behavior in adolescents and young adults with Autism Spectrum Disorder (ASD) suggests adaptive behavior deficits across the full range of cognitive abilities (Duncan & Bishop, 2015). Adaptive behavior is associated with employment and quality of life during adulthood (Bishop-Fitzpatrick et al., 2016; Taylor & Mailick, 2014). Yet, there are few comprehensive studies with diverse and large samples characterizing the development of adaptive behavior from a teachers perspective in high school students with ASD. Growth mixture modeling is a statistical approach that identifies subgroups within a sample rather than characterizing average change of the entire sample. Identifying subgroups of individuals with ASD allows for the potential to develop targeted interventions for subgroups of individuals with differential patterns of development.



Research Objectives

1. Identify groups of individuals with ASD who have similar developmental trajectories during high school on the adaptive behavior domains of communication, daily living skills, and socialization as reported by teachers using growth mixture modeling.
2. Test for group differences in demographic variables (age, biological sex, ethnicity, maternal education), phenotypic characteristics (IQ, autism severity), and school factors (location of school, school quality).
3. Examine the extent to which school quality predicted group membership.

Results

Participants were drawn from the control group of a randomized controlled trial of a comprehensive treatment model for high school students with ASD, the Center on Secondary Education for Students with Autism Spectrum Disorder (CSESA, N=244). Participants were receiving services as usual in 30 high schools across central North Carolina, central and northern Wisconsin, and southern California.

Participant Characteristics	M(SD) or %
Age (in years)	16.4(1.5)
Biological Sex (% Male)	84.8
Race/Ethnicity(% White)	63.7
Location (% Urban)	88.5
Maternal Education(% > High School)	81.5

Adolescents and young adults with ASD were assessed at up to four time points across two and a half years of high school. Measures included:

- Nonverbal IQ
  - *Leiter-3*
- Teacher reported
  - *Vineland Adaptive Behavior Scales-2nd edition* Teacher Rating Form (VABS-II)
  - *Social Responsiveness Scale-2nd edition* (SRS-2)
- Parent reported
  - Demographic information
  - *Social Communication Questionnaire* (SCQ)
- School quality
  - *Autism Program Environment Rating Scale* (APERS; Odom et al., 2018)

Figure 1. APERS Domain Descriptions

Learning
- Classroom and school environment

Climate
- Staff behaviors and interactions with students

Assessment
- Development and data collection on Individualized Education Program goals and transition planning

Instruction
- Instructional format, clarity, opportunities, and implementation

Communication
- Use of assessments to inform modes of communication and instruction on communication goals and use of communication systems

Social
- Arranging opportunities for social interactions, modeling social skills and relationships, explicit social skill instruction, and inclusion of peers

Independence
- Support and strategies to support student's self-advocacy, independence in routines and activities, self-management, and planning

Functional Behavior
- Address interfering behaviors

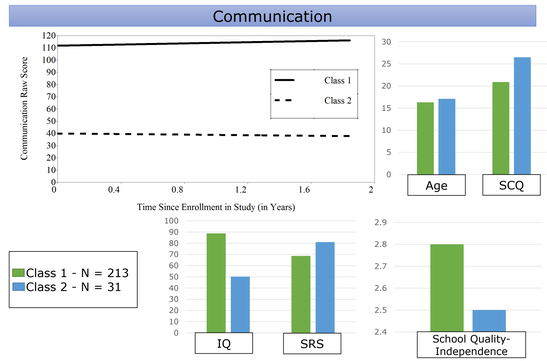
Family
- Team members development of relationships and frequent communication with family members

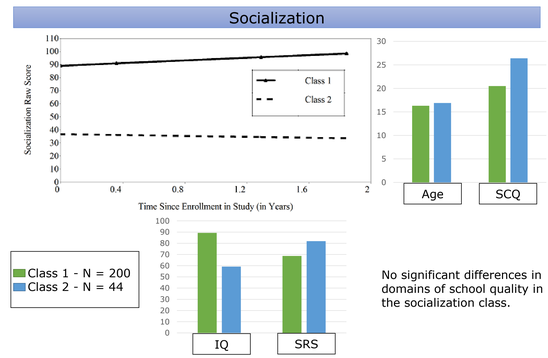
Teaming
- Team members experience and involvement in providing services to students

Results

Two distinct groups were identified for each domain of adaptive behavior: (Class 1) Moderately Low Adaptive Behavior + Growth, and (Class 2) Low Adaptive Behavior + No Growth.

Trajectories and Significant Class Differences





No significant differences in domains of school quality in the socialization class.

Results

Table 3. Logistic Regression for likelihood of being in the Moderately Low Adaptive Behavior + Growth Class

Predictor	Communication		Daily Living Skills	
	B(SE)	Odds Ratio	B(SE)	Odds Ratio
Age	-.27(.13)	.77*	-.21(.14)	.81
Maternal Education	-.09(.61)	.92	.16(.62)	1.18
Autism Symptoms	-.13(.04)	.88**	-.13(.04)	.87**
School Quality-Independence	.87(.38)	2.39*	.86(.39)	2.35*

*p<.05 **p<.01

Conclusions

This study contributes to the literature on adaptive behavior in high school students with ASD in the school context. Students demonstrated heterogeneity of adaptive behavior over time. Higher Independence ratings of school quality were associated with membership in the moderately low and improving communication and daily living skills classes. Support and strategies to support student's self-advocacy, independence in routines and activities, self-management, and planning may play a role in improving adaptive behavior outcomes during the high school years.

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