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Autism Spectrum Disorder

<table>
<thead>
<tr>
<th>DSM-5 Diagnostic Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Impairments in social communication and interaction</strong></td>
</tr>
<tr>
<td>➢ Deficits in</td>
</tr>
<tr>
<td>➢ Social-emotional reciprocity</td>
</tr>
<tr>
<td>➢ Nonverbal communication</td>
</tr>
<tr>
<td>➢ Developing, maintaining, and understanding relationships</td>
</tr>
<tr>
<td><strong>Restricted, repetitive interests, activities, or patterns</strong></td>
</tr>
<tr>
<td>➢ At least two of the following:</td>
</tr>
<tr>
<td>➢ Repetitive motor movements, use of objects, or speech</td>
</tr>
<tr>
<td>➢ Inflexibility</td>
</tr>
<tr>
<td>➢ Restricted and fixated interests</td>
</tr>
<tr>
<td>➢ Hyper-or hyporeactivity to sensory stimulus</td>
</tr>
</tbody>
</table>

(American Psychiatric Association, 2013)
Heterogeneity in Autism Symptoms

- Between-individual variation in symptom severity
- Within-individual variation in symptom severity with age

(Georgiades et al., 2013; Howlin et al., 2014; Kim et al., 2016; Louwerse et al., 2015; Seltzer et al., 2003, 2004; Shattuck et al., 2007; Wallace et al., 2017; Woodman et al., 2015)
Phenotypic Profiles in Autism

Adaptive behavior

Age at diagnosis

Cognition

Language

Sensory Processing

What about Adolescence and Adulthood???

(Georgiades et al., 2013; Klopper et al., 2017; Kim et al., 2016; Matthews et al., 2015; Wiggens et al., 2017)
Additional Adolescence and Adulthood Phenotype Characteristics

Self-determination

Support Needs

(Biggs & Carter, 2016; Carter et al., 2013; Chou et al., 2017; Gotham et al., 2015; Shogren et al., 2017; Wehmeyer et al., 2010; Woodman et al., 2015, 2016)
Research Goal

To identify underlying subgroups of adolescents with autism across autism symptom severity, cognition and adaptive behavior, self-determination, and supports at home and in the classroom.
## Methods

<table>
<thead>
<tr>
<th>Variable</th>
<th>Assessment</th>
<th>Students</th>
<th>Parents</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonverbal IQ</td>
<td>Leiter-3 BRIEF IQ (Roid, Miller, Pomplun, &amp; Koch, 2013)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>Woodcock Johnson III Passage Comprehension/ Academic Knowledge (Woodcock, McGrew, &amp; Mather, 2007)</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptive Behavior</td>
<td>Vineland-II Teacher Form (Sparrow et al., 2005)</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Autism symptoms</td>
<td>Social Responsiveness Scale (Constantino &amp; Gruber, 2012)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Social Communication Questionnaire (Constantino, 2002)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Self-Determination</td>
<td>AIR Self-Determination Scale (Wolman et al., 1994)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Support</td>
<td>Supports Intensity Scale (Thomson et al., 2004)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Self-Determination Scale
Student and Teacher

Self-Determination

Capacity
- Ability
- Knowledge
- Perception

Opportunity
- Home
- School

(Wolman et al., 1994)
Self-Determination Scale
Parent

Self-determination

Ability
Opportunity

Things my Child Does
Home
School

(Wolman et al., 1994)
## Supports Intensity Scale

<table>
<thead>
<tr>
<th>Home Living</th>
<th>Community &amp; Neighborhood</th>
<th>School Participation</th>
<th>School Learning</th>
<th>Health and Safety</th>
<th>Social</th>
<th>Advocacy</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>No extra support needed</th>
<th>Medium support needed</th>
<th>Total support needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

(Thompson et al., 2004)
## Results

### Model Fit Statistics

<table>
<thead>
<tr>
<th>No. of Profiles</th>
<th>AIC</th>
<th>BIC</th>
<th>Entropy</th>
<th>LMR</th>
<th>BLRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>20,469.75</td>
<td>20,612.39</td>
<td>.898</td>
<td>1177.75***</td>
<td>1191.59***</td>
</tr>
<tr>
<td>3</td>
<td>20,090.31</td>
<td>20,294.08</td>
<td>.867</td>
<td>404.68**</td>
<td>409.44***</td>
</tr>
<tr>
<td>4</td>
<td>19,965.98</td>
<td>20,240.87</td>
<td>.840</td>
<td>152.53(ns)</td>
<td>154.32***</td>
</tr>
</tbody>
</table>

***p < .001  **p < .05
Results

Overall Latent Profiles

Class 1 N = 178
Class 2 N = 81
Class 3 N = 176
Cognition and Adaptive Behavior

103.13
83.421
46.884
46.884
73.317
54.077
513.558
491.76
424.589

Nonverbal IQ
Adaptive Behavior Composite
Passage Comprehension and Academic Knowledge

Class 1
Class 2
Class 3
Autism Symptoms

Social Communication Questionnaire (Parents)
- Class 1: 17.794
- Class 2: 20.796
- Class 3: 26.47

Social Responsiveness Scale (Teachers)
- Class 1: 61.685
- Class 2: 73.394
- Class 3: 80.823
Self-Determination

Class 1
- Teachers: 3.597
- Parents: 3.502
- Students: 3.807

Class 2
- Teachers: 3.024
- Parents: 3.281
- Students: 3.688

Class 3
- Teachers: 2.251
- Parents: 2.937
- Students: 3.285
Family and School Supports

- Class 1: Parents 2.754, Teachers 2.38
- Class 2: Parents 3.55, Teachers 3.482
- Class 3: Parents 4.085, Teachers 4.426
Conclusion

Class 1
- High cognition, adaptive behavior, & self-determination
- Low autism symptoms and support needs

Class 2
- Mid cognition, adaptive behavior, & self-determination
- Mid autism symptoms and support needs

Class 3
- Low cognition, adaptive behavior, & self-determination
- High autism symptoms and support needs
Discussion

• Heterogeneity present in large sample of diverse adolescents
• Classes may require different targeted interventions to promote skills
• Next Steps: Examining LPA as a moderator of CSESA treatment
Acknowledgements

The entire CSESA research team as well as all of the students, families, teachers, and schools who are a part of the project!

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