Validity testing of a social communication classification system of functioning for preschool children with autism spectrum disorder (ASD)

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Background
- The Autism Classification System of Functioning: Social Communication (ACSF:SC) is a 5 level descriptive system (Figure 1) based on the ICF with evidence of consistency in ratings of capacity and typical performance by parents and professionals of preschool children with ASD.1,2
- Aim - to examine the construct validity of the ACSF:SC from the parents’ perspective across home and clinical settings of ASD preschoolers.

Methods
- ACSF:SC Tool
- We tested a priori hypotheses based on Pearson correlation coefficients between concurrent ACSF:SC ratings with sub-domains of other measures to assess:
  (1) convergent validity: ACSF:SC with domains related to social communication;
  (2) discriminant validity: ACSF:SC with functional domains unrelated to social communication;
- Professionals and parents completed the ACSF:SC, and a concurrent self-report measure (Social Responsiveness Scale 2nd edition [SRS-2]).
- Parents also completed two interview-based measures: the Vineland Adaptive Behavior Scales 2nd edition (VABS-2) and the Autism Diagnostic Interview-Revised (ADI-R) algorithm (only Social Interactions and Communication).
- Sample included 36 children whose ACSF:SC and SRS-2 were by their parents. Mean age (SD) was 4.3 (0.9) years (85% male).
- 27 (75%) parents completed the VABS-2 and ADI-R algorithm.
- Children categorized as either verbal or non-verbal based on the ADI-R algorithm had ACSF:SC across all of the 5 levels (Table 1).

Table 1: Frequency of ACSF:SC rating across raters for capacity

<table>
<thead>
<tr>
<th>Rater</th>
<th>Sample Size</th>
<th>Level V</th>
<th>Level IV</th>
<th>Level III</th>
<th>Level II</th>
<th>Level I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent</td>
<td>36</td>
<td>5</td>
<td>1</td>
<td>11</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Verbal Child*</td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Non-Verbal Child*</td>
<td>12</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Professional</td>
<td>33</td>
<td>5</td>
<td>4</td>
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<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

Note: *Based on ADI-R

- Mean composite parent scores on the SRS-2 and VABS-2 were generally increasing across improved functioning on the 5 ACSF:SC levels (i.e., ACSF:SC rating of I= best ability) (Table 2).

Table 2: SRS-2 & VABS-2 scores across parent-rated ACSF:SC capacity

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<tr>
<td>SRS-2*</td>
<td>76.0(8.9),n=5</td>
<td>85(–),n=1</td>
<td>74(13.4),n=11</td>
<td>69(10.4),n=13</td>
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<tr>
<td>VABS-2**</td>
<td>61(13.7),n=4</td>
<td>59(–),n=1</td>
<td>65(7.2),n=10</td>
<td>74(14.4),n=10</td>
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Note: *=T-score; **=Composite Standard Score

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- Convergent validity testing between the SRS-2 subdomain (Social Communication and Interaction [SCI]) and ACSF:SC showed statistically significant correlations for capacity (95% confidence interval [CI]), for parents: 0.52 (0.23,0.73) and for professionals: 0.63 (0.36,0.80), respectively.
- Discriminant validity comparing ACSF:SC with an unrelated sub-domain of function on the VABS-2 (Motor Skills) demonstrated no significant correlations for capacity, -0.34(–0.64, 0.04).

Conclusions
- Without a gold standard, testing validity of a novel tool is challenging, requiring construct validation against other measures that may be only partly related to its core constructs (i.e., Social Communication Functioning).
- ACSF:SC ratings by both parents and professionals were related to SRS-2-defined social communication.
- Parent ratings of children identified as having both verbal and non-verbal abilities also demonstrated abilities across most of the 5 ACSF:SC levels, indicating that social communication ability is not contingent on verbal ability.
- These data are a promising starting point for an ongoing validation process of the ACSF:SC.

References

Acknowledgements
Thank you to all of the parents and professionals who donated their time and energy towards this testing of the ACSF:SC.