



# The Feeding Assessment for Children with Autism Spectrum Disorders: Confirmatory Factor Analysis

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## Introduction

- Feeding challenges are estimated to occur in 46-89% of children with autism spectrum disorder (ASD) <sup>1</sup>
- Restrictive feeding patterns and preferences may lead to nutrient deficient diets, limited participation in family mealtimes, challenging behaviors, and increased caregiver stress during mealtime <sup>2, 3, 4, 5, 6</sup>
- Two commonly used feeding questionnaires in this population, the BAMBIC and Eating Profile, have significant limitations including limited scope, lack of design for use with children with ASD, and lack of evaluation for validity and reliability <sup>7, 5</sup>
- The Feeding Assessment for Children with Autism Spectrum Disorder was developed (1) to provide a more complete understanding of characteristics of children with ASD that relate to feeding disorders and (2) to confirm validity of the assessment for use in research and clinical settings.

**Study Objective:** The purpose of this study was to determine the construct validity of the Feeding Assessment for Children with Autism Spectrum Disorders.

## Research Methods

### Study Design

- Online survey study design, large national sample

### Participants

- 406 caregivers of children age 2-12 years with ASD
- Convenience sampling used to recruit participants through Interactive Autism Network (IAN)
- Exclusion criteria: Rett syndrome, Childhood Disintegrative Disorder, significant visual, hearing, or physical impairments, and other conditions known to co-occur with ASD (e.g., Fragile X)

### Measures

- Background Information Questionnaire: demographic information
- Feeding Assessment for Children with Autism Spectrum Disorders: 101-question caregiver-report questionnaire developed to characterize feeding challenges in children age 2-12 years diagnosed with ASD

### Procedures

- All procedures approved by IRB at University of Wisconsin-Madison
- Participants completed all consent and questionnaire forms online and were allowed to discontinue participation at any time
- Participants received \$5.00 gift card following completion of study

### Data Analysis

- Fifty-one questions from the Feeding Assessment for Children with Autism were included in the CFA to test for the four proposed underlying constructs: sensory, behavior, health, and oral motor skills
- Exploratory factor analysis, internal consistency, model fit indices, factor loadings, and between-factor correlation matrix were conducted to determine construct validity

## Results

**Table 1: Child and Family Characteristics**

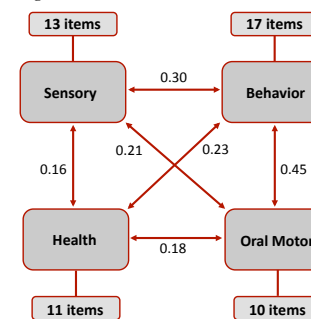
<b>Gender (N=406)</b>	
% Male	83.5
SRS/SRS-P Total Score (SD) (n=328)	83.1 (9.2)
Chronological Age (SD) (N=406)	8.2 (2.9) years
<b>IQ Score (N=406) (%)</b>	
<40	4.7
41-55	4.7
56-70	9.9
71-85	11.0
86-115	19.2
115-130	15.7
>130	11.0
Unknown	22.1
Choose not to answer	1.7
<b>Maternal College Education (N=406) (%)</b>	
Partial High School or Lower	0.4
High School or GED	14.8
Associates/Partial College	25.4
Bachelor or Master Degree	54.2
Advanced Degree	6.2
Choose not to answer	1.0
<b>Annual Household Income (N=406) (%)</b>	
Less than \$20,000	10.6
\$20,000 to \$39,999	12.6
\$40,000 to \$59,999	14.3
\$60,000 to \$79,999	14.0
\$80,000 to \$99,999	7.9
\$100,000 or more	31.0
Choose not to answer	9.6
<b>Race/Ethnicity (allowed to select one or more) (N=406) (%)</b>	
African-American	7.3
American Indian/Alaskan Native	4.6
Asian	4.2
Native Hawaiian/Pacific Islander	1.2
Other	4.1
White	88.5
Hispanic or Latino Origin	13.5



**Table 2: Model Fit Indices**

Statistic	Values
Chi-Square	(4829.04) 1218*
RMSEA	.086 (.083 to 0.088)
SRMR	.098

**Figure 1: Between Factor Correlation Matrix**



- Exploratory Factor Analysis confirmed a four-factor model was appropriate for the questionnaire items when conducting a confirmatory factor analysis.
- Internal consistency was high at 0.87, indicating all questionnaire items highly relate to the overall construct of feeding.
- Distribution of questionnaire items on the CFA were as follows: sensory – 13, behavior – 17, health – 11, oral motor – 10. CFA model fit indices (Table 2) indicate moderate fit of questionnaire items into the four predetermined constructs.
- Factor loadings for all four theoretical factors were adequate and statistically significant ( $p \leq .001$ ) with all loadings  $> .22$ .
- All between factor correlations (Figure 1) were statistically significant ( $p < .02$ ) with positive small-medium correlations. Behavior factor had medium positive correlations with both oral-motor (.45) and sensory factors (.3).

## Conclusions

- Findings of this study provide preliminary confirmation of the construct validity of the Feeding Assessment for Children with Autism.
- Relatively small correlation between factors indicate that although the factors are related they are identifying four distinct areas of feeding challenges.
- Highest correlations were seen between behavior and all other factors, in particular oral motor and sensory. We believe this finding lends support to the hypothesis that mealtime behaviors in children with ASD are in response to other challenges these children face including sensory responsiveness, underlying health concerns, and delayed oral motor skills.
- Limitations: Caregiver-report only, non-representative sample, only one measure of construct validity

## Implications for Practice

- This tool provides researchers and clinicians a more comprehensive and psychometrically sound feeding assessment for children with ASD
- Assessment provides more detailed characterization of feeding challenges with this population, and will therefore help optimize individualized and targeted interventions for children with ASD
- Individualized interventions will promote child participation in family mealtime and help foster the associated social and emotional benefits for the child and family
- Additional research is necessary to further confirm the validity and reliability of the Feeding Assessment for Children with Autism as well as association with core characteristics of ASD

## References

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