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Assessment of feeding problems in children with autism spectrum disorder

Courtney A. Aponte[a,*], Raymond G. Romanczyk[b]

[a] Department of Pediatrics, University of Rochester Medical Center, Rochester, 265 Crittenden Blvd, Rochester, NY 14642, USA
[b] Department of Psychology, State University of New York at Binghamton, Binghamton, NY 13902-6000, USA

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ABSTRACT

There is growing, but inconsistent, literature on feeding problems for children with Autism Spectrum Disorder. The purposes of this study were to (a) investigate the relation of feeding problems to autism severity, (b) assess the validity of parent-report questionnaires widely used to assess feeding problems in terms of their relation to systematic behavior observations, and (c) determine the relation between child feeding behavior and family mealtime environment. Thirty-eight children and their parents participated in the study. Parents completed questionnaires, and both parents and children participated in mealtime observations. Results indicated that autism severity predicted scores on a measure of feeding problems as well as the duration of negative vocalizations during meal observations. Food Frequency Questionnaires better predicted behavior during meals than the Brief Mealtime Autism Behavior Inventory. Family environment alone did not explain feeding difficulties.

1. Introduction

1.1. Prevalence of feeding problems in children with autism spectrum disorder (ASD)

There is a wide range in the reported prevalence of feeding problems in children with ASD, most likely due to differences in the method of recruitment of participants, definition of feeding problems, methods used to measure feeding problems, and definition of ASD. Most studies from a 2006 literature review indicate that over half of children with ASD have behavioral or nutritional concerns related to feeding (Ledford & Gast, 2006).

1.2. Topography of feeding problems in children with an ASD

The term “feeding problems” describes a range of problematic behaviors that repeatedly occur in the meal context. There are few systematic examinations of the specific form of feeding problems in this population. The majority of children with ASD referred to an interdisciplinary feeding clinic exhibited selectivity by type (62%) or texture (31%). Fifteen percent exhibited an oral-motor delay resulting in mechanical difficulties of eating foods, including chewing, moving the tongue, and closing the mouth and 12% had dysphagia or difficulty swallowing foods. Twelve percent exhibited food refusal and were not

* Corresponding author.
E-mail addresses: Courtney_Aponte@URMC.Rochester.edu (C.A. Aponte), rromanc@binghamton.edu (R.G. Romanczyk).

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consuming sufficient calories or satisfying nutritional needs (Field, Garland, & Williams, 2003). Other feeding problems observed in children with ASD include severe behavior problems at mealtime (Levin & Carr, 2001; Raiten & Massaro, 1986).

Results from a meta-analysis found that children with ASD were about five times more likely to experience a feeding problem compared to children without ASD (Sharp et al., 2013). Schreck, Williams, and Smith (2004) systematically compared parent reports of children with and without autistic disorder or PDD-NOS. Parents completed the Children's Eating Behavior Inventory (Archer, Rosenbaum, & Streiner, 1991) and a Food Preference Inventory. The results indicated that parents of children with autistic disorder or PDD-NOS reported behaviors resulting in higher Children's Eating Behavior Inventory total problems scores than parents of children without one of those diagnoses. More specific analysis revealed that children with autistic disorder or PDD-NOS refused more foods, were more likely to require specific presentations and utensils to accept foods, and were more likely to only accept foods of low texture (e.g., pureed) than children without a diagnosis. Additionally, children with autistic disorder or PDD-NOS ate fewer types of fruits, dairy items, vegetables, proteins, and starches than children without a diagnosis.

1.3. Measurement of feeding problems

There is evidence that nutrition and feeding behavior in this population merits special consideration; however, there are limitations to the conclusions that can be drawn from this body of literature mostly because there is a lack of adequate assessment methodology (Matson, Fodstad, & Dempsey, 2009; Hendy, Seiverling, Lukens, & Williams, 2013). The measurement of parent and child behavior and the measurement of comorbid behavior problems are important; however, there are no existing measures that do this that also have strong psychometric properties (Hendy et al., 2013; Schroeder & Gordon, 2002). Three options for assessment include parent report questionnaires, food diaries, and direct behavior observations.

1.3.1. Parent report measures

There are several questionnaires designed to assess feeding problems in children. The Brief Autism Mealtime Behavior Inventory measures feeding problems specifically in individuals with ASD based on parent report. Investigators have assessed its reliability and validity in children with ASD (Lukens & Linscheid, 2008).

Whereas parent report appears to be the most common way of gathering information about children's feeding behaviors (Ledford & Gast, 2006), it has several inherent weaknesses. First, caregivers may be biased in terms of their ability to report feeding behaviors. Second, caregiver report may not be an accurate estimate of which foods the child may accept if the caregiver no longer presents foods that the child refused repeatedly in the past.

1.3.2. Direct behavior observation

Systematic behavior observations are rarely utilized (e.g., Ahearn, Castine, Nault, & Green, 2001). Munk and Repp (1994) developed a method to assess feeding problems in individuals with intellectual and physical disabilities. The feeder presented a variety of foods at different textures and assessed the individual's acceptance and refusal. Although, in general, behavior observations are considered essential for treatment planning (Schroeder & Gordon, 2002), these methods are rarely used in group research designs potentially due to the lengthy procedure involved. By contrast, investigators frequently use direct observation in single-case designs in published research (Girolami & Scotti, 2001; Piazza et al., 2003). Direct observation may yield data that could clarify contradictions from informant methods of assessment (O'Neill et al., 1997). Additionally, observations can provide information about antecedents and consequences of the target behavior if structured to do so. The results of a 2006 literature review indicated that most studies published between 2002 and 2004 used questionnaires to obtain information on children's eating behavior (Ledford & Gast, 2006). Two of the seven utilized audits of reports or referrals, and only one study included systematic and repeated observations. There are, however, several examples in the literature that were not included in this review that utilized direct observation (e.g., Girolami & Scotti, 2001; Piazza et al., 2003).

1.4. Etiology of feeding problems in children with ASD

It is clear that feeding problems are a serious concern for parents of children with ASD (Schreck et al., 2004); however, the mechanism behind the development of these problems is not clear. There are several proposed explanations of why children with ASD tend to exhibit increased feeding problems. One possibility is that the feeding patterns in children with ASD cannot be accounted for by developmental delay alone and may be a manifestation of the restricted interests and activities that children with these diagnoses often exhibit (Ahearn et al., 2001). A second explanation may be that family behavior may influence a child's feeding problems either through decreased exposure to a range of foods (Schreck & Williams, 2006) or through inadvertent reinforcement of problem behaviors surrounding mealtime (Levin & Carr, 2001).

1.4.1. Eating environment

Researchers have hypothesized that family behavior is a component in the development and/or maintenance of feeding problems in children. Specifically, parent–child interactions (Archer et al., 1991; Levin & Carr, 2001; O'Brien, Repp, Williams, & Christophersen, 1991; Williams, Hendy, & Knecht, 2008), modeling a restricted diet, or decreased exposure to a range of foods (Schreck & Williams, 2006) could result in problem behavior surrounding feeding. With respect to parent–child