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The relation between child feeding problems as measured by parental report and mealtime behavior observation: A pilot study

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ABSTRACT

Because feeding problems have clear negative consequences for both child and caretakers, early diagnosis and intervention are important. Parent-report questionnaires can contribute to early identification, because they are efficient and typically offer a 'holistic' perspective of the child's eating in different contexts. In this pilot study, we aim to explore the concurrent validity of a short screening instrument (the SEP, which is the Dutch MCH-FS) in one of its target populations (a group of premature children) by comparing the total score with the observed behavior of the child and caretaker during a regular home meal. 28 toddlers (aged 9–18 months) and their caretakers participated in the study. Video-observations of the meals were coded for categories of eating behavior and parent–child interaction.

The results show that the total SEP-score correlates with food refusal, feeding efficiency, and self-feeding, but not with negative affect and parental instructions. This confirms that the SEP has a certain degree of concurrent validity in the sense that its total score is associated with specific 'benchmark' feeding behaviors: food refusal, feeding efficiency and autonomy. Future studies with larger samples are needed to generalize the findings from this pilot to a broader context.

1. Introduction

Many parents struggle with the feeding behavior of their young child. Estimations of the prevalence of feeding problems range from around 7%–65%, depending on the definition used (de Moor, Diddens, & Korzilius, 2007). Symptoms in the child include refusing (certain types of) food, acting out during mealtime, and inadequate self-feeding skills (Crist & Napier-Phillips, 2001). Currently, the development of feeding problems is explained by a biopsychosocial model that indicates that these problems stem from the complex interplay between biological, psychological and social factors (Johnson & Harris, 2004; Rommel, De Meyer, Feenstra, & Veereman-Wauters, 2003; Sanders, Patel, Le Grice, & Shepard, 1993). Research has shown that early difficulties, if unaddressed, have a tendency to persist into later childhood and adolescence (Dahl & Sundelin, 1992; Marchi & Cohen, 1990; McDermott et al., 2008). Children with feeding problems often show hampered growth and delayed cognitive development, while their caretakers experience higher levels of stress (Lindberg, Bohlin, Hagekull, & Thunström, 1994; Van den Engel-Hoek, 2006; Garro, Thurman, Kerwin, & Ducette, 2005). For this reason, early diagnosis and intervention are important. There is hardly ever a monocausal explanation for feeding problems, and even in cases with a clear somatic component, the behavioral components and interactions are often also affected. Medical and oral sensory-motor problems can negatively contribute to feeding and often cause more stressful feeding interactions between parent and child. As a result, parents tend to put more pressure on the child, which can cause exacerbation of problems (e.g. Field, Garland, & Williams, 2003; Lindberg, Bohlin, & Hagekull, 1996; Ramsay, Martel, Porporino, & Zygmuntowicz, 2011; Rommel et al. 2003; Tauman et al., 2011). For instance, when a child keeps food in his mouth for too long because of a high oral sensitivity, a caretaker might be tempted to try and speed up the feeding by offering more food. However, in a child that is already over-stimulated, this would lead to increased adverse responses and more food refusal.

Parental feeding style is also relevant. It has been shown that use of a controlling or indulgent feeding style contributes to less optimal self-regulation in children (Birch, Fisher, & Davison, 2003; Frankel et al., 2014). This relation is not unidirectional: feeding style

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contributes to the eating behavior and weight gain of the child, but in turn these influence the concerns and feeding style of the parents (Ventura & Birch, 2008).

Children with medical problems have a higher risk of developing feeding problems (Lukens & Silverman, 2014). One group with an increased prevalence of these problems is the group of premature children (Pridham, Steward, Thoyre, Brown, & Brown, 2006; Samara, Johnson, Lamberts, Marlow, & Wolke, 2009). Due to anatomical, physiological and neurobehavioral immaturity after birth, the achievement of exclusive oral feeding after birth can be challenging (Silberstein et al., 2009). These feeding problems tend to remain later in childhood (Cerro, Zeunert, Simmer, & Daniels, 2002; Gewolb & Vice, 2006). However, the increased risk is largely determined by the medical history of the infants (e.g. neurological impairments (Samara et al., 2009), tube feeding (Jonsson, Van Doorn, & Van Den Berg, 2013)) and not the prematurity itself. In addition, the way caretakers approach such infants may be somewhat more intrusive and less sensitive than it is towards children with a typical development. For instance, mothers of preterm infants are shown to exhibit more gaze aversion and lower adaptability during feeding interactions, as well as less affectionate gaze and touch during other types of interactions (Silberstein et al., 2009). Combined, these vulnerabilities of both preterm children and their caretakers could interact in such a way that they cause a vicious cycle of feeding problems that does not occur as easily in typically developing children. For this reason, premature children have an elevated risk of developing these kinds of problems and therefore pediatricians have to be alert during the regular follow-ups and check-ups in order to ensure early detection.

Because feeding problems are multifactorial and interactive in nature, a diagnosis is required considering many different aspects, such as oral motor skills, feeding history, and behavioral and interactional issues (Sanchez, Spittle, Allinson, & Morgan, 2015). Regular diagnostic procedures therefore often consist of reviewing anamnestic information, a physical examination, and a behavior observation (Arvedson, 2008). It has been argued that questionnaires that ask for parental report are relatively efficient and also provide important information. They typically offer a more 'holistic' perspective, because caretakers observe feeding behaviors across various meals and occasions (Arvedson, 2008). Several parental report instruments are available, such as the Behavioral Pediatrics Feeding Assessment Scale (BPFAS; Crist et al., 1994), the Children's Eating Behavior Questionnaire (CEBQ; Wardle, Guthrie, Sanderson, & Rapoport, 2001), the Children's Feeding Assessment Questionnaire (CFAQ; Harris & Booth, 1992), and the Mealtime Behavior Questionnaire (MBQ; Berlin et al., 2010). However, these instruments consist of between 31 and 40 questions each, and are not suited for a quick identification of problems during a single consultation session. In order to meet this need, a one-page screening list was developed, called the *Montreal Children's Hospital Feeding Scale* (MCH-FS) (Ramsay et al., 2011). The administration and scoring together take only 10 minutes or less in this case. The MCH-FS consists of only 14 items, but still covers most important domains of feeding problems (oral motor dysphagia, selectivity by type and food refusal) (Sanchez et al., 2015). The scale is based on the finding that clinical and non-clinical groups engage in similar behaviors, but that children with feeding difficulties show these behaviors at a higher frequency (Crist & Napier-Phillips, 2001). The questionnaire measures seven main constructs: parental concern, family reactions, compensatory strategies, appetite, mealtime behaviors, oral sensory behavior and oral motor behavior. The MCH-FS has been validated for French, English and Dutch children and has been demonstrated to have a good sensitivity and specificity (Sanchez et al., 2015).

The Dutch version of the MCH-FS is named the 'Screeningslijst Eetgedrag Peuters' (SEP, translated as the 'screening list eating behavior toddlers') and has been administered to a large normative sample (n = 1448) of children under the age of 4 years (see van Dijk, Timmerman, Martel, & Ramsay, 2011). The data indicate a robust internal consistency and meaningful latent variable structure with two factors: 1) Negative mealtime behaviors and 2) Negative causes and consequences. However, there is a high correlation between these two factors, which suggests that a one-factor solution is also sufficient when the primary goal is the rapid identification of feeding problems. In addition, the SEP is able to differentiate between the scores of parents who have sought help for feeding difficulties and the scores of those who have not. Finally, slight but significantly larger scores on the SEP were found for the older children. On the basis of these findings, norms were constructed for four age groups (between 6 months and 1 year, between 1 and 2 years, between 2 and 3 years and between 3 and 4 years) that can also be used to compare the score of an individual child. This leads to a percentile score or a T-score. The aim of the SEP is to screen for significant feeding problems that warrant intervention, which are operationalized in a statistical sense (a T-score above 65 and 70 to indicate moderate and severe problems). However, we first need to know how this score relates to the 'benchmark' of behavior observation in a relevant population.

This current study aims to compare feeding difficulties as reported by parents on this screening instrument (MCH-FS/SEP) with feeding behavior as observed during a regular meal in one of its target groups. We see this pilot study as a first attempt at studying the concurrent validity of the instrument. Previous studies have indicated that parental report scales are related to the observation of feeding behavior, such as meal duration and parental coaxing (Piazza-Waggoner, Driscoll, Gilman, & Powers, 2008; Reau, Senturia, Lebailly, & Christoffel, 1996; Whelan & Cooper, 2000). Children frequently show problematic behaviors such as eating small meals, slow eating, preferring drink to food, and refusing certain types of food (Hofman-van den Hoogen, 1998; de Moor et al., 2007). Young children with feeding problems often display difficult behaviors such as whining, crying, and spitting out food as ways of refusing food. As a response, parents are more likely to use strategies such as coaxing, posing threats, force-feeding, or making multiple meals (Crist & Napier-Phillips, 2001). Pickiness and disturbing behaviors during mealtimes are associated with the use of multiple types of parental management techniques (positive, negative and general management) and the use of many different strategies simultaneously (Hofman-van den Hoogen, 1998; de Moor et al., 2007). We therefore hypothesize that the overall score on the SEP will correspond significantly with observed mealtime behavior.

2. Method

Participants: The study is part of a larger project called *Tailored Care for Preterm Infants* (Luinge, 2011). This project was initiated to gather knowledge on social development and feeding in preterm born children. For the current study, we have focused on a population that has an elevated risk of developing feeding problems and therefore visits the pediatrician at regular intervals. For this reason, preterm born children are one of the target groups for the use of the SEP.

The current study is based on a sample of 30 premature children (aged 9–18 months) and their primary caretakers (biological fathers or mothers). (A-priori power analysis (with a two-tailed alpha of 0.05 and a minimum power of 0.80) indicated that a sample of 29 participants is sufficient to pick up large effect sizes.) The inclusion criterion was that the child was eating solid food. Exclusion criteria were intraventriculair hemorrhage, asphyxia and syndromatic