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Validation of the parent mealtime action scale (PMAS) when applied to children referred to a hospital-based feeding clinic☆

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ABSTRACT

The purpose of this study was to validate the Parent Mealtime Action Scale (PMAS) when applied to a clinical sample of 231 children with feeding problems and then to examine its association with demographic variables, diet, and weight. Parents completed questionnaires that included the PMAS, the Child Eating Behavior Questionnaire, and measure of diet variety. Confirmatory factor analysis revealed good fit for the nine dimensions of parent mealtime action found in the original PMAS study. Results from the present study suggest that the PMAS provides a valid tool for measuring parent mealtime actions of hospital samples of children with feeding problems.

Introduction

Because the relationship between children and their parents during meals may be complex and multi-directional (Ventura & Birch, 2008), recent research has developed measures of specific patterns of child feeding problems and specific parent mealtime actions to assist clinicians in evaluating children with feeding problems and guiding parents toward mealtime actions associated with better weight and diet outcomes. For example, the 35-item Child Eating Behavior Questionnaire (CEBQ, Wardle, Guthrie, Sanderson, & Rapoport, 2001) was developed with a sample of average-developing children and it was found to include eight dimensions of specific child feeding problems. In addition, the 31-item Parent Mealtime Action Scale (PMAS, Hendy, Williams, Camise, Eckman, & Hedemann, 2009) was developed with a sample of over 2000 average-developing children and it was found to include nine dimensions of specific parent mealtime action. Unlike many other scales, the PMAS measures actions rather than attitudes. This fact makes it possible to make specific recommendations to caregivers regarding particular mealtime behaviors that can be changed to improve their children's eating.

Purpose of the present study

One purpose of the present study was to psychometrically examine the PMAS when applied to a sample of children referred to a hospital-based feeding clinic to validate its usefulness as a clinical screening tool. More specifically, a confirmatory factor analysis was conducted to determine whether the underlying dimensions of parent mealtime action for clinic children were similar to the nine dimensions that emerged for the average-developing children. Additionally, the internal reliability scores for the nine PMAS subscales were also examined for the current sample when applied to the clinic children and the convergent validity of the nine PMAS subscales was determined by exploring the expected associations of the PMAS subscales with the eight dimensions of child feeding problems measured by the CEBQ. Finally, norms were developed for the nine PMAS subscales using this clinical sample.

A second purpose of the present study was to examine the associations of the PMAS subscales with child variables. More specifically, to guide clinicians in identifying children most likely to receive each types of parent mealtime action, a MANOVA was conducted to examine how children's age, gender, and diagnostic status were associated with the nine PMAS dimensions. Also, to determine which of the nine parent actions were most associated with weight and diet outcome measures of clinical importance for children with feeding problems, stepwise multiple regression analyses compared the nine PMAS dimensions in how well they explained variance in children's weight, as measured by their body

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Table 1
Items within each of nine subscales of the Parent Mealtime Action Scale (PMAS, Hendy et al., 2009), showing Cronbach's alpha values for the present sample of 231 feeding clinic children (mean = .62) and the original sample of 2008 average-developing children (mean = .62).

# Scale item	Cronbach's alpha for clinic sample (n = 231)	Cronbach's alpha for original sample (n = 2008)
Snack limits	.80	.81
25. You set limits for how many sweets the child could have each day		
26. You set limits for how many sodas the child could have each day		
27. You set limits for how many salty snacks the child could have each day		
Positive persuasion	.79	.75
13. You told the child how much you liked the food		
14. You told the child how good the food will taste if he/she tries it		
15. You told the child that his/her friends or siblings like the food		
16. You told the child that a food will make him/her healthy, smart, strong		
Daily FV availability	.58	.70
17. You gave the child fruit each day		
19. You ate fruit each day		
20. You ate vegetables each day		
Use of rewards	.62	.65
1. You made eating the food a game or fun for the child		
6. You gave the child a favorite food as a reward for good behavior		
7. You offered the child a toy or favorite activity as a reward for eating		
8. You offered the child a special dessert as a reward for eating		
Insistence on eating	.68	.68
28. You insisted the child eat even if he/she said "I'm not hungry"		
29. You insisted the child eat when he/she was sleepy, not feeling well		
30 You insisted the child eat when he/she was emotionally upset		
Snack modeling	.55	.54
21. You drank soda each day		
22. You ate candy or sweets each day		
23. You ate salty snacks each day		
Special meals	.53	.45
2. You ate the same foods as those offered to the child (reversed)		
3. You sat with the child, but did not eat		
11. You prepared a special meal for the child, different from the family meal		
31. You placed some of each food on the child's plate (reversed)		
Fat reduction	.43	.59
12. You stopped the child from eating too much		
18. You made changes to the child's food to lower fat		
24. You made changes to your own food to lower fat		
Many food choices	.62	.42
4. You let the child eat whatever he/she wanted		
5. You let the child flavor the food however he/she wanted		
9. You let the child substitute a food for one he/she liked		
10. You let the child choose which foods to eat, but only from those offered		

mass index percentile (BMI%) and diet variety, defined as the number of 84 common foods the children were reported to consume.

Methods

Participants

Participants in the present study included 231 children referred to a hospital-based feeding program (152 boys, 79 girls; mean age = 49.7 months, SD = 39.1). The children fell into three diagnostic groups that included 49 children with autism, 84 children with other special needs, and 98 children with no special needs other than their feeding problems. Children's height and weight were used to calculate body mass index percentile for children 24 months and older (BMI%; mean = 45.3, SD = 39.2), with 40 (27.8%) of children being underweight with BMI% less than the 10th percentile, 76 (52.8%) of children being normal weight with BMI% between 10th and 85th percentile, and 28 (19.4%) of children being overweight with BMI% above the 85th percentile.

Procedures

Parents completed questionnaires that included the five-point ratings (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always) for how often their children showed each of 35 items from the Child Eating Behavior Questionnaire (CEBQ, Wardle et al., 2001), which measures eight dimensions of children's feeding problems that include food fussiness, food responsiveness, food enjoyment, satiety responsiveness, slowness in eating, emotional overeating, desire to drink, and emotional undereating.

Parents also provided three-point ratings (1 = never, 2 = sometimes, 3 = always) for how often in a typical week they used each of the 31 PMAS items (see Table 1). Finally, the questionnaire asked parents to provide a simple measure of their children's diet variety by reporting whether or not their children would eat each of 84 common foods from five food groups that included 16 proteins, 18 starches, 8 dairy, 20 fruits, and 22 vegetables. (NOTE: Some of the 231 parents skipped items on other information requested of them in the questionnaire. Listwise deletion of missing values was used in the analyses described below.)

Results

Confirmatory factor analysis of the 31 PMAS items for feeding clinic children

Confirmatory factor analysis was conducted using Structural Equation Modeling with AMOS (18.0) software to examine how well the 31 items of the PMAS completed by 231 parents of the present feeding clinic children fit the nine subscales identified in the original sample of 2008 parents of average-developing children (Hendy et al., 2009). Results indicate good model fit for the clinic sample according to five commonly used