

Impact of Picky Eating on Level of Family Stress in Healthy Children between the Ages of 3 and 6 Years

Rocío Ramos-Paúl^a, Barbara J. Marriage^b, Roberto Ruiz Debeza^c, Liliana Oliveros Leal^d, Luis Ros Mar^e, Luis Torres Cardona^a and Jennifer A. Williams^{b,*}

^aBIEM Center of Psychology, Madrid, Spain

^bAbbott Nutrition, Columbus, Ohio, USA

^cAbbott Nutrition, Abbott Park, Illinois, USA

^dHospital Universitario 12 de Octubre, Madrid, Spain

^eHospital Universitario Miguel Servet, Zaragoza, Spain

Abstract: *Objective.* One of the goals of this study was to measure the impact of a child's eating habits on a family's level of stress related to meal times in the home.

Methods. A cross-sectional survey study was conducted on 1,090 children between the ages of three and six years, in Madrid, Spain from 2010 to 2011. Questionnaires about the child's eating habits, family stress, and medical history, along with a three-day food record were filled out by parents.

Results. Levels of family stress related to meal time occasions were statistically higher in the picky eater (PE) group compared to the healthy eater (HE) group ($p=0.007$).

Conclusion. This study demonstrates a possible relationship between picky eating behaviors and family stress in the home. Higher levels of family stress can have long-term negative behavioral consequences or changes on the family dynamic, which may further exacerbate feeding disorders.

Key words: Family stress, feeding difficulty, feeding disorder, picky eating.

INTRODUCTION

Although food intake, for both children and adults, is determined by many factors (market supply, economy, cultural norms, eating behavior, consumer marketing campaigns, etc.), of these factors, the parental role is considered essential for instilling good eating habits during childhood. Parents help shape the development of their child's acceptance of foods by determining which foods are offered and the social context for eating meals [1]. Parental attitudes toward feeding and mealtime occasions can help determine how a child internalizes his or her attitudes and ensuing behaviors related to eating. If parents exhibit symptoms of anxiety, nervousness, unease or worry during mealtimes, it is more likely that a child may demonstrate similar negative symptomology; and, as a result, the risk for feeding difficulties, acute or chronic, may increase. The routine of eating is one of the first habits a child learns. Developing healthy eating behaviors will not only pave the way for acquiring other habits later on, such as studying in

academic subjects, but it may also decrease the likelihood of the child becoming a picky eater (PE). Eating is a behavior of children that parents worry about the most. There are intrinsic ideas related to the physiological act of eating, such as: "If my son doesn't eat, he will get sick or not grow properly, and I will be the one responsible for this" or "Why can't my child eat foods that their friends/siblings will eat readily, without argument?" [2].

Because of concerns about proper or healthy eating habits for their child(ren), many parents are accommodating and allow various marginal eating behaviors with their children. An example of this permissive parental behavior would be a seven-year-old child whose diet is limited to a mere ten foods. Additionally, parents may develop strategies for increasing the amount or quality of food consumed; however, if parents are not careful, prodding, rewards or punishment to encourage eating can backfire and exacerbate the picky eating phenomenon [1, 3]. In fact, recent research by Webber, *et al.* showed distinct differences in maternal strategy within families of children according to differing eating behaviors or related perceptions [4]. This same research found that parents were more likely to be restrictive in meals if a child was more responsive to food cues and were more likely to use pressuring strategies if a child was

*Address correspondence to the author at the 3300 Stelzer Road, RP3-2, Columbus, Ohio 43219; Tel: (614) 624-3933; Fax: 614-727-3933; E-mail: Jennifer.williams@abbott.com

fussier or easily sated. Galloway *et al.* found that children who were pressured to eat at home had lower body mass index percentile scores [1]. Additionally, these same authors found that children were more likely to increase their intake of an unfamiliar food if they were not pressured to eat it [1].

There are many studies that link inadequate nutritional intake to developmental problems [5, 6], altered immune function, a greater risk of infectious diseases [7], and the depletion of micronutrients such as vitamin A, iron, iodine, folic acid, essential fatty acids and calcium [8-10], which can affect a child's cognitive and/or behavioral abilities in the long term. There is less available data on the effects of mealtime difficulties related to picky eating on family dynamics or long-term behavioral issues. Marchi and Cohen found that fighting with one's family over meals in early childhood was associated with increased food avoidance in adolescence [11]. Unfortunately, when parents exert greater control over dietary intakes of their children or utilize food as a bribe or reward, the children show less responsiveness to the caloric density in their diet [12]. Chronic picky eating behaviors or fighting during meals can often lead to coercive child-feeding strategies that can backfire. Because these behaviors and the ensuing conflict can be common in households, it is important to determine the impact this may have on this cyclic family dynamic, which is characterized in Fig. (1) [2].

One of the primary purposes for this cross-sectional survey study was to confirm the impact of picky eating behaviors on family stress in the home, mainly related to meal time occasions.

MATERIALS AND METHODOLOGY

Participants

There were 2,428 children between 36 and 78 months of age who were approached for participation from seven private schools in Madrid, Spain. Of the 1,382 subjects that provided informed consent, 198 of these subjects were not eligible for analysis due to one or more excluded criteria, and 94 of these subjects were not eligible for data analysis due to incomplete data collected; the final sample size for analysis was 1,090 subjects. Of the 1,090 subjects, 55.7% (n=607) were boys and 44.3% (n=483) were girls; this distribution was statistically different (p<0.001). Exclusion criteria were: history of an acute or chronic condition that may affect feeding habits or nutritional status; child had taken any medications to modify appetite or nutritional supplements, including iron, on a daily basis for more than two weeks during the past month prior to screening visit; or child was currently being treated for a feeding problem, i.e., nutritional intervention or nutritional supplementation.

Measures

As described previously by Leal *et al.*, study information was collected from the parents such as the informed consent, medical history, dietary history, eating behaviors, and demographics [13]. School personnel were trained by the clinical research organization Effice on the study protocol, proper use of worksheets, informed consent procedures, maintenance of essential study documents and any other study procedures at, or before, study initiation. This survey

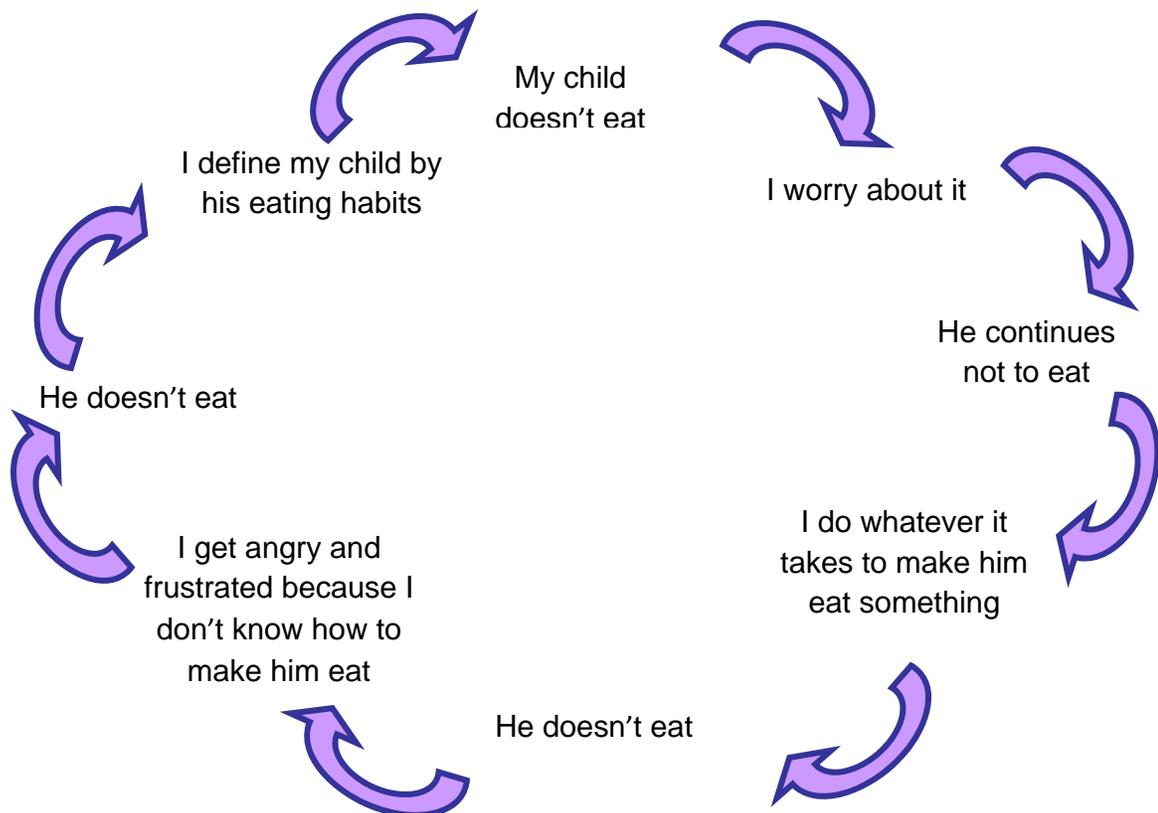


Fig. (1). The cycle of the picky eater at home. (Ramos-Paul & Cardona, 2010).

study was approved by school authorities and filed with the Fiscalía de Menores de Madrid (Minor’s Prosecuting Office in Madrid). For the classification of subjects as picky eaters (PE) or healthy eaters (HE), the nutritional intake of the students was collected and analyzed *via* three-day food records.

For the purpose of this study, family stress was defined as symptoms of anxiety, nervousness or unease caused by difficulties with children in the family, particularly with children who are picky eaters, and related to mealtime occasions. To measure this variable, the family stress questionnaire was designed by psychologists Ramos-Paul and Cardona, also study authors. The two psychologists designed the questionnaire by combining data from other validated tools and from their personal expertise and experience with children. This tool is a Likert-type of scale with 5 answers ranging from “fully disagree” to “fully agree” for each of 12 questions that parents completed based on their degree of agreement-disagreement with the idea described. The 12 questions were designed to encompass common behaviors related to picky eating and the responses therein. This tool is presented in Table 1 exactly as it was presented to parents for the collection of this data.

Classification of Subjects

The criteria for classifying a child as a picky eater in this study was consumption of less than 65% of the average daily

recommended intake for at least four out of six food groups. This classification was loosely based on the enKid Spanish pediatric study that defined nutritional risk categories using 2/3 of Reference Nutrient Intake (RNI) values [14]. The six food groups are meat (including fish and eggs); vegetables; fruit; dairy; starch carbohydrates (pasta, bread, rice); and legumes. These classification criteria divided the sample into two groups: 81.6% HE (n=889) and 18.4% PE (n=201). As described by Leal *et al.*, this criteria was utilized due to lack of a validated definition for picky eating behavior(s) [13]. While this definition is not validated for detecting true picky or choosy eating behaviors, it was corroborated by eating behavior data presented in the Leal paper. The picky eaters had significantly greater scores for the following eating behaviors from the Children’s Eating Behaviour Questionnaire: food fussiness; slowness in eating; satiety responsiveness; desire to drink; and enjoyment of food [13, 15].

Data Analysis

One of the major hypotheses for this research was that there would be a relationship between picky eating behaviors and family stress in the home. Other goals for the study were to determine the relationship between picky eating and attention or nutritional intake, presented by Leal *et al.* [13]. Qualitative variables were described using frequency and percentage. To analyze differences in family stress between

Table 1. Family stress tool.

Instructions for Parent:

For each question, choose from options 1 to 5 the answer that best reflects your attitude regarding your son/daughter.

1. Completely disagree
2. Disagree
3. Neither agree nor disagree: undecided
4. Agree
5. Completely agree

	Fully disagree (1)	Disagree (2)	Undecided (3)	Agree (4)	Fully agree (5)
If my son/daughter doesn’t eat, he/she will become sick, and I will be responsible.					
I am willing to do whatever is necessary to get my son/daughter to eat.					
I am not able to make my son/daughter eat.					
My son/daughter gets away with whatever he/she wants with me.					
I scold/punish him/her more than I reward him/her.					
If my son/daughter’s eating would improve, we would all be more calm.					
In my family, we are all paying attention to whether my son/daughters eats or not.					
Meals always finish in a quarrel.					
I feel myself getting more anxious as meal time approaches.					
I argue with my son/daughter more than I enjoy spending time with him/her.					
Trouble at meal times makes me annoyed with my son/ daughter.					
I get worried if my son/daughter skips a meal.					

PE children and HE children for the Cumanin age ranges (described in months), a Chi-square test was used to compare the “relevant” proportion of responses between the groups [16]. Cumanin is a validated battery of tests used in Spain for child development assessments in children ages 36-78 months.

RESULTS

Baseline characteristics of subjects were presented previously [13]. For the family stress data as a mean global score, there were statistically significant differences between PE and HE groups ($p=0.020$). Additionally, based on an initial subset of subjects ($n=251$), a cut-off point of ≥ 26 was established on the scale (12-60) as “relevant”, and the difference between the percentage of individuals with relevant stress in both groups (PE and HE) is statistically higher in the PE group ($p=0.007$) as shown in Fig. (2). This difference between the two groups is especially evident in the 49-54 month age group as shown in Fig. (3) ($p=0.003$), but not easily explained in a survey type of study.

DISCUSSION

The results from this cross-sectional survey study show distinct differences in mealtime stress between the two groups of children. Families with picky eaters are more likely to be talking about food constantly; parents are more likely to feel responsible for their child's behavior; mealtimes are more likely to end in long quarrels; and, parents are more likely to characterize their child based on their food consumption behaviors [12]. Stress in the family related to

picky eating behaviors can aggravate a child's relationship with his or her family and food itself. For example, previous research has shown that parental pressure on a child to eat during mealtimes can lead to negative results and more pickiness, a seemingly counterproductive cycle [9]. A recent longitudinal study found that both child and maternal temperaments had an effect on picky eating behavior, especially maternal negative affectivity [17].

Because of the cyclical nature of picky eating, a behavioral intervention with PE children and their family could be very productive. The following recommendations can be utilized by parents who have a PE child [2]:

- Focus on the PE child's positive behaviors, rather than the negative.
- Create a calm setting for mealtimes, at the same time each day, eating meals as a family and without distractions.
- Include new foods repeatedly but with patience, without forcing but without giving alternatives, until the child tries a small amount of the food that he or she does not like, then praise him or her for taking that positive step.
- Combine small portions of new foods with others that the child likes.
- School meals may be a good opportunity to increase the variation of foods in the child's diet through imitation of his or her fellow students.
- Allow the child to help prepare the family meal so that he or she feels responsible for it.

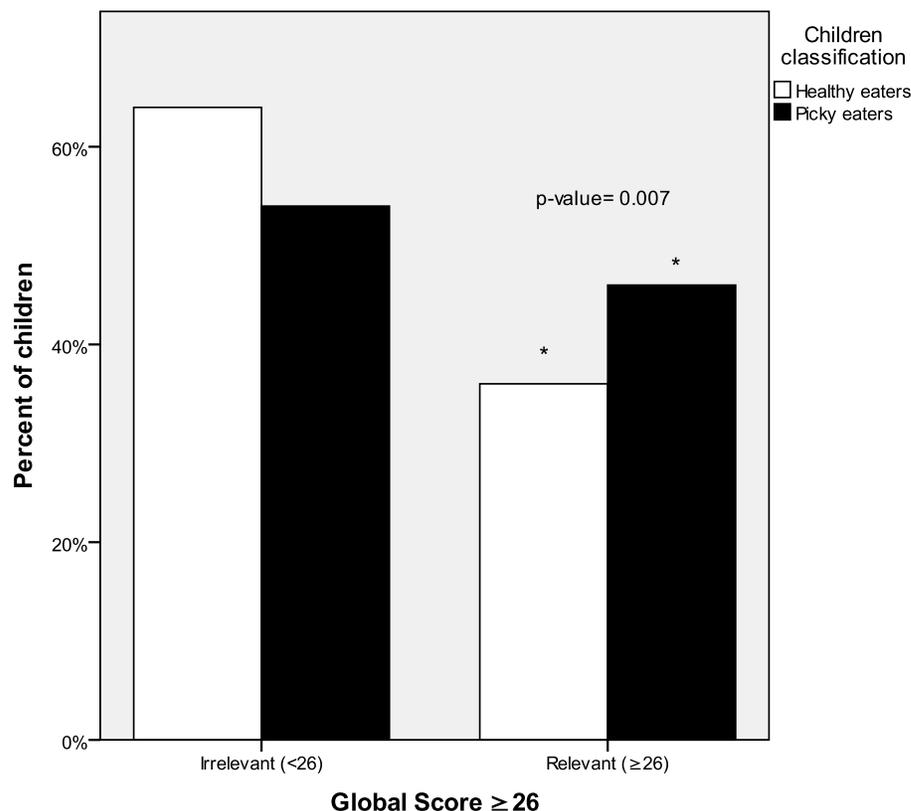


Fig. (2). Family stress comparison in healthy eating children and picky eating children.

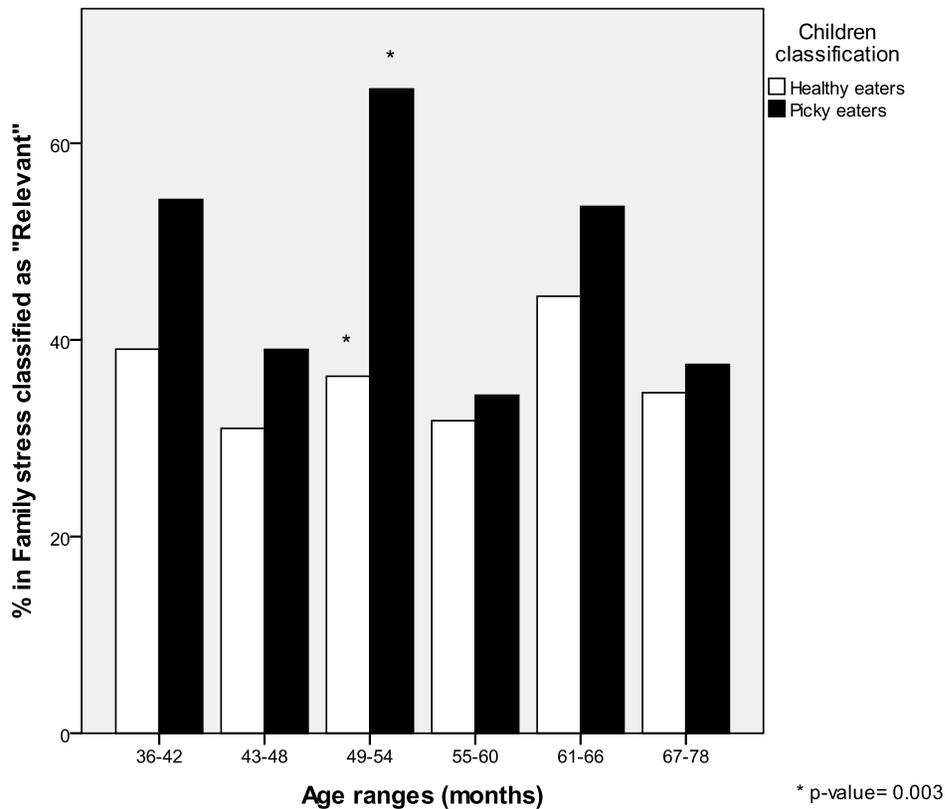


Fig. (3). Family stress levels by age group.

- Prepare the food attractively.
- Avoid distractions at meals, to help increase attention of the child to their internal signs of hunger and fullness.
- Find time to have fun with the child, when food is not the center of attention.
- Refrain from discussing the eating problem behavior in front of the child to avoid giving attention to the child and their behavior, so the child cannot use to his or her own advantage (gaining more attention, etc).

CONCLUSION

In conclusion, this study showed a relationship between family stress related to meal times and children who do not meet their daily nutritional recommendations. The study data shows that parents of children who do not consume enough of specific food groups feel stress over mealtime occasions, as demonstrated by statements in the study family stress tool, such as “I feel myself getting more anxious as meal time approaches” or “Meals always end in a quarrel”. Because of possible deleterious effects of picky eating behaviors over time, it is important to modify or improve these behaviors, especially for the health of the family and their relationships. Additionally, negative eating behaviors appear to be cyclical if parents react adversely with controlling, threatening, angry, or permissive actions. Picky eating behaviors do tend to decrease with age; however, some children continue to retain undesirable eating behaviors later in life with possible effects on physical, mental, and psychosocial facets of a child’s life [11, 18] Picky eating behaviors should be

considered worthy of discernment, and a strategy should be developed for modifications and improvement.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

ACKNOWLEDGEMENTS

Authors JAW, BJM, and RRD are employees of the sponsor Abbott Nutrition. Abbott Nutrition provided financial sponsorship and oversight for the trial.

REFERENCES

- [1] Galloway AT, Fiorito LM, Francis LA, Birch LL. Finish your soup: Counterproductive effects of pressuring children to eat on intake and affect. *Appetite* 2006; 46: 318-23.
- [2] Ramos-Paul R, Cardona LT. *Mi hijo no come*. Madrid: Aguilar 2010.
- [3] Carruth BR, Skinner J, Houck K, Moran J, Coletta F, Ott D. The phenomenon of “picky eater”: A behavioral marker in eating patterns of toddlers. *JACN* 1998; 17: 180-6.
- [4] Webber L, Cooke L, Wardle J. Maternal perception of the causes and consequences of sibling differences in eating behaviour. *Eur J Clin Nutr* 2010; 64: 1316-22.
- [5] Krugman SD, Dubowitz H. Failure to thrive. *Am Fam Physician* 2003; 68: 879-84.
- [6] Olsen EM. Failure to thrive: Still a problem of definition. *Clin Pediatr* 2006; 45: 1-6.
- [7] Alarcon PA, Lin LH, Noche M, *et al.* Effect of oral supplementation on catch-up growth in picky eaters. *Clin Pediatr* 2003; 42: 209-17.
- [8] Dubois L, Famrer A, Girard M, Peterson K, Tatone-Tokuda F. Problem eating behaviors related to social factors and body weight

- in preschool children: A longitudinal study. *Int J Behav Nutr Phys Act* 2007; 4: 1-10.
- [9] Galloway AT, Fiorito L, Lee Y, Birch LL. Parental pressure, dietary patterns and weight status among girls who are picky eaters. *J Amer Diet Assoc* 2005; 105: 541-8.
- [10] Lindberg L, Ostberg M, Isacson IM, Dannaeus M. Feeding disorders related to nutrition. *Acta Paediatr* 2006; 95: 425-9.
- [11] Marchi M, Cohen P. Early childhood eating behaviors and adolescent eating disorders. *J Am Acad Child Adolesc Psychiatry* 1990; 29: 112-7.
- [12] Johnson SL, Birch LL. Parents' and children's adiposity and eating style. *Pediatrics* 1994; 94: 653-61.
- [13] Leal LO, Salto RRP, Cardona LT, *et al.* Dietary habits and nutrient intakes of a cohort of healthy children in Spain. *Open Nutr J* 2012; 6: 123-30.
- [14] Serra-Majem L, Ribas L, Perez-Rodrigo C, Garcia-Closas R, Pena-Quintana L, Aranceta J. Determinants of nutrient intake among children and adolescents: Results from the enKid study. *Ann Nutr Metab* 2002; 46: 31-8.
- [15] Wardle J, Guthrie CA, Sanderson S, Rapoport L. CEBQ: Development of the children's eating behaviour questionnaire. *J Child Psychol Psychiatr* 2001; 42: 963-70.
- [16] Portellano JA, Mateos R, y Martínez AR, Granados MJ y Tapia A. Cumanin, cuestionario de madurez neuropsicológica infantil. Ed Tea, 1999.
- [17] Hafstad GS, Abebe DS, Torgersen L, von Soest T. Picky eating in preschool children: The predictive role of the child's temperament and mother's negative affectivity. *Eat Behav* 2013; 14: 274-7.
- [18] Mascola AJ, Bryson SW, Agras WS. Picky eating during childhood: A longitudinal study to age 11 years. *Eat Behav* 2010; 11: 253-7.

Received: June 06, 2014

Revised: October 02, 2014

Accepted: October 14, 2014

© Ramos-Paúl *et al.*; Licensee *Bentham Open*.

This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.