

Parental Stress and Sensory Integration Disorder as Risk Factors for Eating Disorders Poor Nutrition and Growth Delay Among Toddlers

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Selective eating among toddlers is a well-known phenomenon which is characterized by varied factors including nutritional deficits and a unique and challenging sensory profile. Our clinical experience in a multidisciplinary feeding and eating clinic, in Hadassah Medical Center of Jerusalem binds specific feeding and eating patterns with high levels of parental stress. Parental stress is combined by three domains: parental general approach of satisfaction, the quality of interaction with child and child's temperament, as perceived by parent. Our cross-sectional research includes 42 pairs of parents and their children, referring the clinic due to selective eating and suspected sensory integration disorder. Our study includes a broad nutritional assessment, questionnaires testing parental stress (PSI-4) and questionnaires testing sensory integration (Toddler Sensory Profile-2) and anthropometric indices. Our study's results are relevant family physicians and pediatricians working in the community, who address diagnosis like autistic spectrum disorder, attention deficit hyperactive disorder, developmental delay, and learning disabilities that interface with domains of parental stress and experience of parenting interaction and child temperament, as well as sensory integration and limited eating and nutrition. Research results are significant in the field of locating babies and families needing early intervention and as a base of promoting intervention programs of prevention and treatment of toddlers and their parents. It is important to apply suitable intervention programs based on a reflective manner about dyadic and triadic eating and feeding relations, in the family unit, considering the cultural context.

Keywords: sensory integration, parental stress, child temperament, feeding relations, under eating disorder, multidisciplinary feeding clinic, nutrition deficiency

Introduction

Eating and feeding disorders are a well-known phenomenon among toddlers and appear in varied manners and situations. The latest two main diagnoses in the diagnostic classification of mental health and developmental disorders of infancy and early childhood (Zero to Three, 2016) are defined as over eating vs. under eating.

Selective patterns of eating are one possible form of under eating, which can include underweight children and those who suffer from failure to thrive, but in other cases the child's weight might appear in the normal range. Selective eating is one of the common eating patterns addressed in feeding clinics for children and in

extreme cases appears as Avoidant/Restrictive Food Intake disorder (ARFID). Infants with ARFID may be difficult to feed or appear withdrawn, and in some cases parent-child interaction—as interpreting infant's avoiding style as rejection or aggression—might contribute to infant's feeding problem (APA, 2013).

The conceptual framework originally described by Dunn (1977), an interaction between neurological thresholds and self-regulatory behavioral responses is proposed, and the interaction of these two continua results in four sensory processing patterns: bystanders (the registration type), seekers (the seeking type), sensors (the sensitivity type), and avoiders (the avoiding type).

The avoiding type represents low neurological thresholds with an active self-regulation strategy. Children of that type tend to create routines and order because they need “sameness”. They try to reduce unanticipated sensory input and tend to move away from unfamiliar or over whelming activities and may prefer to work alone (Dunn, 2014). Parents dealing with feeding avoiders might experience stress or uncomfortable relationship and therefore create an eating environment that could lead to non-recommended feeding styles and stressful interactions at mealtimes (Chatoor, 2002; Segal et al., 2014; APA, 2013).

Children and parents who are referred to feeding clinics in the community or in dedicated medical centers for treating feeding and eating disorders of childhood do not necessary seem undernourished, and do not suffer from low weight in relation to their age in quite a few cases. In those cases the main concern is not the body weight which can be appropriate to age and even above norm range for weight, but the narrow range of textures and tastes that the child is exposed to. In those cases and in varied situations of picky eating, from mild cases of selective eating to extreme cases of avoidant/restrictive food intake disorder, we meet address and treat the issue of parental knowledge or lack of parental knowledge about nutrition. As a multidisciplinary team treating feeding and eating disorders of childhood, we focus on an appropriate attitude to manners of feeding, the quality of the environment at meal times, and the appropriate attitude to the subject of macronutrients (macro food groups). In the case of a child with a very fast eating habit while pushing food into his mouth, overweight in relation to his height and age and tendency to base his meals on the carbohydrate group, we will address the challenge from varied professional aspects. Treatment will include monitoring of the child's physical growth with nutritional counseling on balanced macro food groups. Taking a comprehensive approach will address eating behavior and pace as well, and consider the parental experience in the face of eating that may be perceived as gluttony causing many parents discomfort and even stress.

The state of a very selective eater at home can be very inconvenient for families and stressful for parents who might experience the situation as being rejected by the child, and may also judge their parenting as incomplete and even experience parenting failure. Often these parents are misinterpreting eating and eating situations at meal time, as well as other behavioral challenges in daily life, missing the basic point that the child who is avoiding different foods does not intend to upset the parents or sabotage the relationship with his parents but is busy protecting himself seeking and ensuring maximum comfort on a daily basis. The child is with an avoiding sensory profiles dealing with his own personal issues of coping with sensory sensitivities and difficulties with new situations and taste (Dunn, 2014) with no intent to annoy the caregiver. Challenging child-parent interaction as described might outcome in pathological feeding patterns including forced feeding conditional distraction and prolonged meals (Segal et al., 2014) and soon and easily, feeding relations and mealtimes might end as a mutual experience of struggling.

Our four research questions deal with possible correlations between: specific sensory systems (oral vs. movement) with parental stress, specific sensory profiles (seeker, avoider, sensor, bystander) with parental

stress, behavioral responses associated with sensory processing (being clingy or bothered by new settings), and general processing (*unpredictable eating and sleeping patterns* or *becoming anxious*) with parental stress.

Method

Our cross-sectional research included 42 parents and children with selective eating and suspected sensory integration disorder.

The research included approval from institutional ethics committee (Helsinki committee).

In our research the toddlers were assessed by a dietitian, and growth figures were followed. Current growth measures were discussed with parents comparing them to age norms and relating child's growth curves since infancy. Anthropometric indices were included as well. A team of dieticians and physicians discussed with parents about parental genetic data and parental expectations of their child regarding physical growth. The clinic team was also able to identify culture-dependent expectations in different sectors of the population, and to tailor specific care to a given family unit.

Our study included two types of questionnaires—one testing parental stress (PSI-4) and the other testing sensory integration (Toddler Sensory Profile-2). Both tools are structured on five possible answers (1-5 points) on the Likert scale.

The record/profile form by Abidin (2012) includes 36 questions to be filled by toddler's parent. Those are divided into three groups of 12 questions each, checking three different domains of parental stress.

The first domain relates to parental general approach to life using statements like the following: *Since having a child, I feel that I am almost never able to do new and different things* or *I feel alone and without friends*. The second domain relates to quality of interaction as perceived by parent and includes statements like the following: *My child smiles at me less than I expected* or *My child rarely does things for me that make me feel good*. The third and last domain of parental stress deals with child temperament as perceived by parents and includes statements like the following: *My child generally wakes up in a bad mood* or *My child makes more demands on me than most children*.

The toddler short form sensory profile questionnaire by Dunn (2014) includes 54 questions that divide into a group checking general sensory processing, five groups of questions checking auditory, visual, touch, movement, and oral sensory processing, and a last group of questions checking behavioral responses associated with sensory processing like *My child stays calm only when being held*. The 54 questions divide and create four specific sensory profiles—the seeking, avoiding, sensitivity, and registration type.

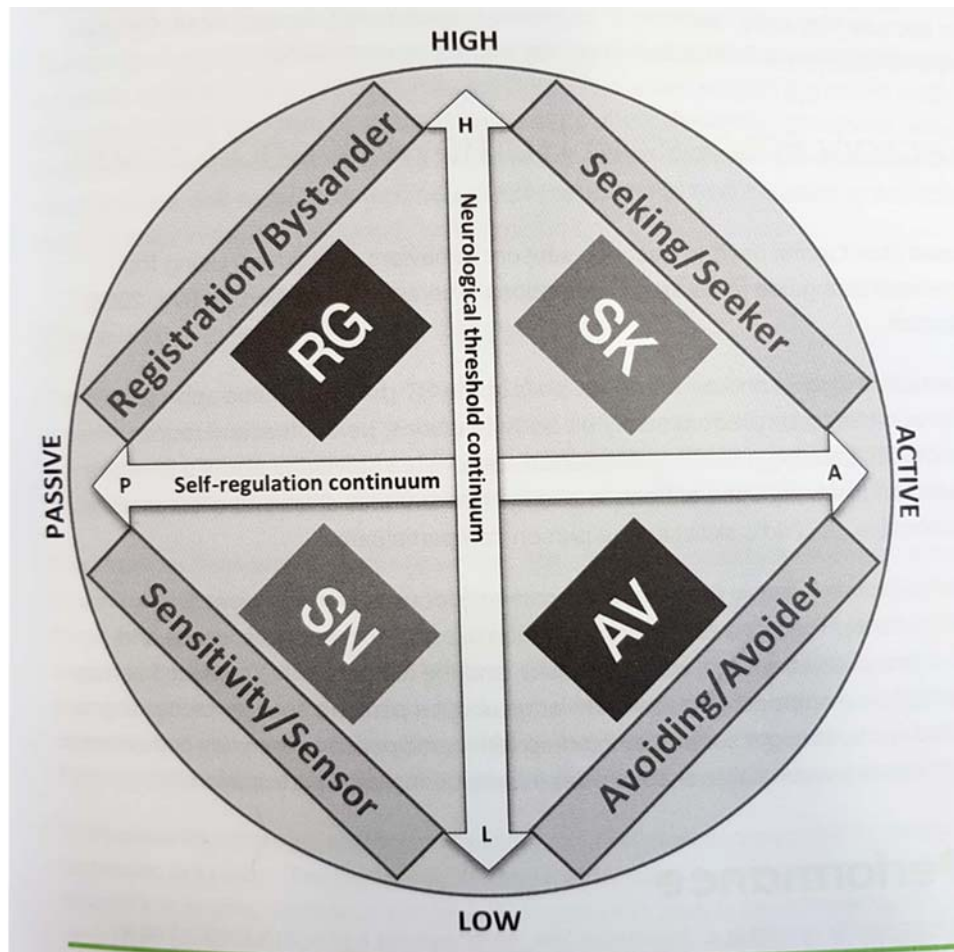


Figure 1. Dunn's sensory processing framework.

Results

The analysis of data was carried out by using ASA 9.04. Data were analyzed with linear regression models. The dependent variable is the number of 4-5 point score answers for relevant part or total questionnaire. Explanatory variable (or independent variable) is the number of 4-5 point score answers for relevant part or total questionnaire.

The results include data of 42 children aged 12 to 36 months. The results appear as appendix one and two.

We found that specific sensory systems (like oral processing vs. movement processing) and specific sensory profile (avoidant type, for instance vs. seeking type) do not correlate with parental stress.

Strong correlations on the other hand were found in the two next cases.

Behavioral responses associated with sensory processing (being clingy or being bothered by new settings or situations) correlate with child's temperament as perceived by parent (p value 0.0127).

In addition, general processing and self-regulation (unpredictable eating and sleeping patterns or becoming anxious in new situations, for instance), correlate with child's temperament, as perceived by parent (p value 0.0001).

The results show no evidence of correlation between parental stress and oral processing. Oral processing, like oversensitivity, specifically in the mouth area, could be related to feeding and eating difficulties without

being meditated with parental perceptions or emotions like stress. On the other hand, we found that the toddlers' behaviors in everyday life, and not necessarily at mealtimes or in the context of daily regulations, may affect parental experience when measured by the parental stress test questionnaire.

The impact of undesirable behaviors on the parental experience does not focus on the general approach of parents to life. The impact of undesirable behaviors on the parental experience also does not focus on the parent's perception of the quality of his or her interaction with the toddler. On the other hand, the effect of undesirable behaviors associated with sensory processing, such as those that characterize a toddler who has difficulty with transitions and changes, is related to how the parent perceives the child's behavior as measured in terms of temperament.

Discussion

Feeding and eating disorders during childhood is one of the common reasons that encourage parents to seek professional consultation with preschool specialists. Feeding disorders are common in children with an estimated incidence of 25 percent or higher in children with normal development and higher incidence in children with chronic diseases or premature background (Rudolph & Link, 2002).

Referred parents to feeding clinics come from a variety of reasons and a variety of cultural backgrounds. Parental perceptions and thoughts about eating behaviors, physical growth and development vary accordingly.

Parents of toddlers were referred to our multidisciplinary feeding clinic claiming delayed growth in some cases combined with selective eating which interferes at home, and sometimes in preschool systems as well. Our clinical experience of parents tends to see the child's feeding difficulties at home as worse than those found in kindergarten, led us to investigate the parental stress component as a possible cause of the disorder. Parental stress relates to general satisfaction, interaction with child, and type of child temperament.

Current results show that parents are concerned of overt behaviors and self-regulation of their child, rather than being concerned of specific sensory issues, like the child's mouth functions or oral oversensitivity. While treating families, we must consider specific behaviors that are undesirable or are perceived as extreme in certain families or cultures. Some consider pushing in food as an embarrassing behavior while others would encourage any style of eating within children thrives failing.

In our study we found that in cases where children violate norms or show overt negative behavior, their parents tend to perceive child temperament as difficult, but parental perception of interaction with child and general parental satisfaction are not negatively influenced.

We assume that parental report about challenging behavioral responses or self-regulation might relate to characteristics of difficult temperament, our slow to warm temperament (Thomas & Chess, 1977).

According to our clinical experience of multi sensitivities among children with feeding selectivity or those diagnosed with ARFID (APA, 2013), we expected to significant correlation between parental pressure and sensory processing in the oral area or other specific areas, and these correlations were not found. The absence of the finding raises the possibility that seven items on the sensory profile questionnaire that measure oral processing, especially those divided into two sub-subjects of taste versus contact (Dunn, 2014), are insufficient. We may assume as well, that parental stress in all three components would appear in cases of selective eating accompanied by very low body weight and masa.

Results are relevant for family physicians and pediatricians addressing diagnosis like Attention deficit hyperactivity disorder, or Autistic spectrum disorder that interfaces with domains of parental stress as a

response to child temperament, regulatory disorders, and behavioral responses in the context of sensory integration (APA, 2013; Dunn, 2014; Dunn, Saiter, & Rinner, 2002; Zero to Three, 2016). Those should be addressed in a flexible manner considering family and cultural needs and expectations.

Results are significant in the field of locating babies and families needing intervention, like fussy babies, slow adaptors or babies with intensive responses (Thomas & Chess, 1977) and promoting intervention programs of prevention and treatment-medical centers, baby care units, and feeding clinics, with emphasis on consolidation of safe and secure parent-child relations. Early intervention is essential because we know about the long-term effects of feeding and eating disorders mediated by insecure attachment styles in toddlers and children in the latency stage (Ammaniti, Lucarelli, Climino, D'Olimpio, & Chatter, 2012; Hertz, Adad, & Ronel, 2012).

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Appendix A

Correlation of No. of 4 or 5 answers in parental perception of child as difficult in Abidin Questionnaire and No. of 4 or 5 answers in general processing in Dunn's Sensory Profile Questionnaire.

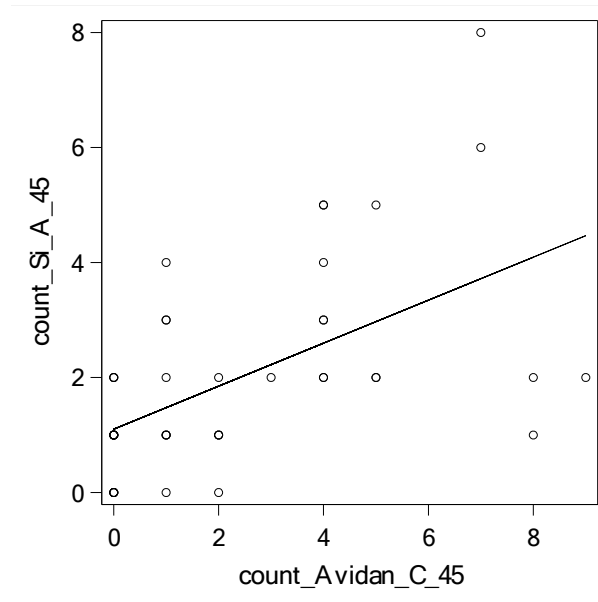


Table A

Adjusting the Regression Model to No. of 4 or 5 Answers for the General Processing Section in Dunn's Sensory Profile Questionnaire

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	1	40.49	40.49	18.39	0.0001
Error	42	92.49	2.2021		
Parameter estimates					
Variable	DF	Parameter estimate	Standard error	t value	Pr > t
Intercept	1	1.1	0.3	3.64	0.0007
Count_Abidin_C_45 1	1	0.4	0.1	4.29	0.0001
R-square			0.30		

There is a significant correlation between No. of 4 or 5 answers in the parental perception of child as difficult in the Abidin Questionnaire to parents and No. of 4 or 5 answers in the general processing section in Dunn's Sensory Profile Questionnaire.

For every additional No. 4 or 5 answers in the parental perception of child as difficult in the Abidin Questionnaire, there is on average 0.4 more 4 or 5 answers in the general processing section of Dunn's Sensory Profile Questionnaire to parents (p value 0.0001).

Appendix B

Correlation of No. of 4 or 5 answers in parental perception of child as difficult in Abidin Questionnaire and No. of 4 or 5 answers in behavioral responses of Dunn's Sensory Profile Questionnaire.

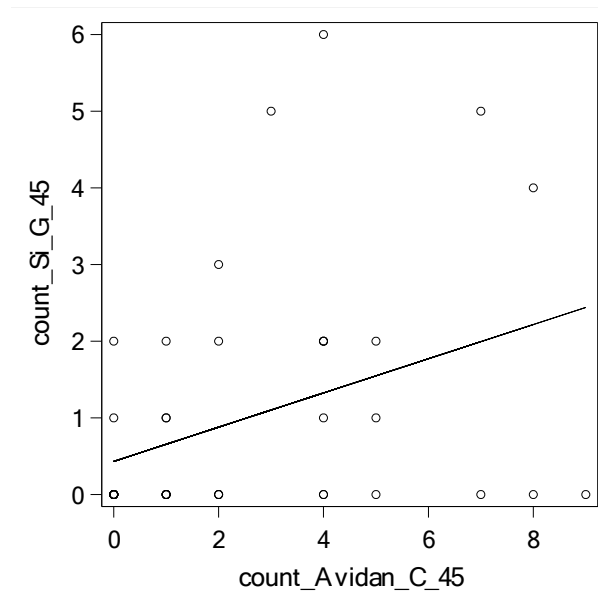


Table B

Adjusting the Regression Model to No. of 4 or 5 Answers for Some of the Behavioral Responses in the Dunn Sensory Profile Questionnaire

Analysis of variance					
Source	DF	Sum of squares	Mean square	F value	Pr > F
Model	1	14.43	14.43	6.77	0.0127
Error	42	89.48	2.1304		
Parameter estimates					
Variable	DF	Parameter estimate	Standard error	t value	Pr > t
Intercept	1	0.4	0.3	1.45	0.1541
Count_Abidin_C_45 1	1	0.2	0.1	2.60	0.0127
R-square			0.14		

A significant correlation between No. of 4 or 5 answers in parental perception of child as difficult in Abidin Questionnaire and No. of 4 or 5 answers in behavioral responses in Dunn's Sensory Profile Questionnaire.

For additional No. 4 or 5 answers in parental perception of child as difficult in Abidin Questionnaire, there is on average 0.4 more No. 4 or 5 answers in behavioral responses of Dunn's Sensory Profile Questionnaire to parents (p value 0.0127).