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FEEDING DISORDERS AND CHILDREN WITH AUSTISM: PAIRING FEEDING WITH PLEASURE

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FEEDING DISORDERS AND CHILDREN WITH AUSTISM: PAIRING FEEDING
WITH PLEASURE

by

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Research Paper
Submitted in Partial Fulfillment of the Requirements for the
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FEEDING DISORDERS AND CHILDREN WITH AUSTISM: PAIRING FEEDING
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A Research Paper Submitted in Partial

Fulfillment of the Requirements

for the Degree of

Masters of Science

in the field of Communication Disorders and Sciences

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Introduction

Many parents of children with autism spectrum disorders (ASD) report that their children have feeding difficulties; feeding difficulties have been observed and documented since the earliest diagnostic descriptions of ASD (Kanner, 1968). The various needs and characteristics of children with ASD, bring about a wide variety of additional influences on feeding and behavior (Twachtman-Reiley, Amaral, & Zebrowski, 2008). The Diagnostic and statistical Manual of Mental Disorder (DSM-5) establishes the criteria for a diagnosis of feeding disorder in infancy and childhood, this diagnosis was recently re-labeled as *Avoidant/Restrictive Food Intake Disorder*, and is described as the following:

Substantially restrict their food intake and experience significant associated physiological or psychosocial problems but do not meet criteria for any DSM-IV eating disorder. Avoidant/restrictive food intake disorder is a broad category intended to capture this range of presentations. (American Psychiatric association, 2013)

While abnormal dietary patterns are not considered a diagnostic symptom for ASD, aberrant eating habits were an early defined feature, including: food selectivity, food refusal and

disruptive mealtime behaviors (Johnson, Handen, Mayer-Costa & Sacco, 2008). Furthermore, feeding disorders are most commonly associated with poor dietary intake values.

In addition to nutritional concerns, problems revolving around a child's ability to appropriately function during mealtimes arise. Avoidant/restrictive food intake disorders can impact the physical, social and psychological development in children with ASD and their families. Hence, it is essential to present structured methods to associate feeding with a pleasurable activity to assist in the management of feeding difficulties in children less than three years of age. Therefore, the purpose of this review is to compile structured treatment options to assist in the development of a more pleasurable eating experience for children with ASD and their families.

Nutritional Intake Values

Nutrition is one of many factors that influence the development of the brain, and therefore, the cognitive development in children (Bryan, Osendarp, Hughes, Calvaresi, Baghurst & Willem VanKlinken, 2004). There are a variety of factors that can impact cognition and brain development, the majority of these factors fall into two broad categories: genetic or environmental (Bryan et al., 2002). Despite the challenges, nutrition should be modified in order to improve cognitive functioning (Bryan et al., 2002). Therefore it is

important for care givers and care providers to understand and provide the recommended daily nutritional values.

Past research has compared the nutritional status of children with ASD, to typically developing children indicating a limited variance in the nutritional intake values between the two groups (Graf-Myles et al., 2013; Herndon, DiGuseppi, Johnson, Leiferman & Reynolds, 2008). Yet interestingly enough, most research has found that neither group of children obtain the recommended daily nutritional intake values (Graf-Myles et al., 2013; Herndon et al., 2008; Cornish, 2002). Herndon et al., (2008) conducted a study where parents of typically developing children and parents of children with ASD were given a food diary. The parents were then asked to record all food and beverages ingested by their children. Researchers found that children with ASD obtained a wider range of intake values in most nutrients, than that of their typically developing peers (Herndon et al., 2008).

The importance of obtaining the proper nutritional requirements to promote healthy brain development was stated above, it is especially important for caregivers placing their children on strict dietary plans. A trending new commonality is for children with ASD to be placed on specialized diets to help alleviate or improve certain autism characteristics and or symptoms (Cornish, 2002). Thus it is important for care givers

who are considering a specialized diet to understand how to provide the nutrients needed to promote healthy cognition while on a restricted dietary plan.

One of the most popular diets used with children with ASD is the gluten-free, casein-free diet (GF/CF). This specialized diet involves avoiding foods that contain gluten which is found in many breads and cereals, and casein which is found in dairy products (Elder, Shankar, Shuster, Theriaque, Burns & Sherrill, 2006). The avoidance of these particular products is believed to lead to improvements of behavior and physiological symptoms due to gastrointestinal conditions (Elder et.al, 2006). There is a growing interest in the possibility that dietary involvement can help in the treatment of ASD, but there are also concerns that the removal of major dietary staples could place children with ASD at risk for nutrient deficiencies (Cornish, 2002). Unfortunately, it seems that diets such as the GF/CF are similar to previously stated results; children typically are not receiving the set nutritional requirements (Herdon et al., 2008).

Although it is commonly hypothesized that children with ASD consume a more narrow range of nutrients, it has been proven that many consume an average amount of nutrients in relation to their typically developing peers. Therefore, it can be disproven that that children with ASD who consume a limited variety of foods typically result in abnormal nutritional intake values,

[compared to their peers]. The more prominent problem is that children with ASD exhibit more aberrant mealtime behaviors and refusal of food.

Food Intake Disorder

The term avoidant/restrictive food intake disorder can typically be referred to as a pattern of oral or enteral consumption of nutrients that significantly deviates from the norm, and results in negative social and health conditions (Laud, Girolami, Boscoe & Gulotta, 2009). Pediatric feeding difficulties typically manifest as food selectivity, food refusal and disruptive mealtime behaviors. These difficulties are common in children with ASD and can disrupt a family's daily life. It is important to note that medical conditions (i.e. gastroesophageal reflux disease) should be ruled out before providing treatment for feeding difficulties (Laud et.al, 2009).

According to Cumine, Leach, and Stevenson (2000) the primary reasons for feeding difficulties in children with ASD include concentration to detail, perseveration, impulsivity, avoidance of new situations, sensory defensiveness, social deficits and food intolerance. These types of restricted eating habits can have a strong impact on the feeding experience, even if these types of restricted eating habits do not negatively affect the child's health (Twachtman-Reiley et al., 2008).

Food intake disorders may be complex often presented with a strong negative reaction to newly introduced foods (Clark, Avery-Smith, Wold, Anthony & Holm, 2007). One of the most commonly reported feeding difficulties in children with ASD is food selectivity, or eating a narrow assortment of foods (Laud et al., 2009). These preferences are typically restricted based on texture or flavor (Wheeler, 2004). Furthermore, restricted behaviors can carry over to food refusal and disruptive mealtime behaviors. Food refusal or protesting against the consumption of certain foods, could present in a variety of behaviors from throwing utensils to gagging and vomiting (Laud et al., 2009). Disruptive mealtime behaviors may include strict food presentation, for example eating from a particular plate or only having one type of food on the plate at a time, or self-injurious behaviors and tantrums (Laud et al., 2009). These types of behaviors are typically a result of a child presenting with repetitive and ritualistic behaviors and/or the result of a co-occurring sensory disorder, both which originate from neurological based symptoms of ASD (Twachtman-Reilly et al., 2008).

Associating Feeding with Pleasure

It is important to intervene at the initial development of a feeding disorder due to social and nutritional risks. When assessing and determining treatment options, it is important

that a multidisciplinary approach, including the caregivers is utilized (Ernsperger, Stegan-Hanson & Grandin, 2004). Speech Language Pathologists (SLPs) are trained to implement feeding and swallowing therapy and can help in the treatment of food intake disorders (Laud et al., 2009). It is crucial that aberrant feeding behaviors are identified promptly so that an effective treatment plan can be developed and implemented.

Feeding is a complex process that results in a multitude of impacting factors (i.e., adequate neurological functioning, controlled functioning of the swallow, appropriate muscle tone and coordination) (Kerwin and Eicher, 2004). Furthermore, Kerwin and Eicher (2004) stated that feeding must be associated with pleasure; if food is paired with feelings of comfort and satisfaction it becomes desirable. Mealtimes can be made more pleasurable for a child in many ways. When these modifications are consistently made, mealtimes can become more enjoyable for the child as well as their families (Ernsperger, Stegan-Hanson, Grandin, 2004). Food can be paired with pleasure by making environmental modifications, educating and prompting caregiver involvement, utilizing appropriate reinforcement procedures, and also through peer modeling.

Environmental Modifications

It is common for children with ASD to have sensory processing difficulties. Such difficulties can include atypical

response to taste, intensified sensitivity to tactile input and intensified auditory filtering problems (Rogers, Hepburn & Wehner 2003). These sensory processing deficits typically impact the feeding and consumption process drastically and commonly lay the foundation for an avoidant/restrictive food intake disorder in a child with ASD.

Children with ASD typically present with food selectivity types of behaviors associated with textures, colors or temperatures (Wheeler, 2004). It is important to have this type information to assist in the development of a treatment plan and provide the interventionist with a starting point when making an effort to broaden the child's diet (Wheeler, 2004). Foods can initially be chosen based on the best sensory fit, novel foods then can be introduced using desensitization (Wheeler, 2004). Wheeler, 2004 also reports that when attempting to present novel food items to a child, interventionists and parents should remain calm and in control. These types of interventions along with fun activities such as playing with the food could help in the acceptance of new foods and textures.

Mealtimes should reflect a pleasant, social time where everyone sits at a table and converses about their day. However, mealtimes may be a dreadful time for children with sensory distortions. The child may be uncomfortable in a chair at a table, with bright lights glaring, where the smell of food is

over powering and the increase in noise is undesirable. These types of sensory stressors are common in a mealtime environment, and the impact they have on feeding can be pervasive (Twachtman-Reilly et al., 2008).

Therefore it is important that modifications to the surrounding environment are initially made to aid in successful mealtimes. This revolves around families developing a consistent and supportive setting (Ernsperger et al., 2004). The development of a consistent setting appears simple, but it can be challenging due to most families have complex schedules, especially in families with multiple children. Nonetheless, when working with a child that finds mealtime aversive, it important to initially be consistent so the child knows what to expect.

Developing a consistent and pleasurable setting could involve for example determining set mealtimes, removing any type of distractions, change of environmental lighting and setting realistic mealtime rules and sticking to them (i.e., mealtime last 30 minutes) (Ernsperger et al., 2004). It is also important that outside support observes a mealtime in a natural setting in order to identify any factors that could be an environmental stressor for the child (Kerwin and Eicher, 2004). Once the observations are completed the development of a more pleasurable environment can begin.

Educating Caregivers

When observing a mealtime it is not only important to observe the mealtime environment, but it is also important to note caregiver interactions. Researchers have suggested that parent-child interactions play an important role in the development and maintenance of food intake disorders (Riordan, Iwata, Finney, Whol & Stanley 1984). Therefore it is extremely important that caregivers are educated properly in order to prevent reinforcement of unwanted feeding behaviors, and to make certain that there is adequate nutritional intake.

To ensure that a food intake disorder is handled correctly, a parent first needs to recognize what their child's feeding challenges are. The identification process should be followed by distinguishing the underlining nature of those challenges (Rogers, Magill-Evans & Rempel, 2012). A parent must also seek outside support to help alleviate or control such feeding tendencies. Investigators request that caregivers be trained on the signs and symptoms of feeding difficulties in order for them to adequately report and understand their child's challenges. Once trained, it is important for caregivers to document situations in which the feeding difficulties occurred (Rogers et al., 2012).

A child's developmental disability can induce high levels of parental stress, and a stressful environment can further

provoke inappropriate or disruptive mealtime behaviors from a child. Therefore it is important for caregivers and early intervention providers to understand the effects of stress on a child. It is also important to note that early intervention services do not only focus on the child but the family as a whole. If the parents appear to be overwhelmed or confused, it is important to also incorporate them into the treatment process. This may include providing information about support groups and services they can get involved in.

Reducing parental stress and increasing their knowledge will further benefit the child in their progress. Singer, Etheridge and Aldana (2007) conducted a study to determine the efficacy of treatments in reducing psychological symptoms associated with parental stress [when raising a child with a developmental disorder]. The study primarily included mothers, and concluded that a multi-component intervention addressing the parents well-being paired with behavioral parent training, were significantly more effective in reducing parental stress and increasing child performance (Singer et al., 2007).

One way to address parent education is to train the parents to implement pediatric feeding protocols. Mueller, Piazza, Moore, Kelley, Bethke, Pruett & Layer, (2003) evaluated four different multicomponent training packages to increase the treatment integrity of caregivers implementing pediatric feeding protocols.

Each protocol evaluated included four components: written protocols, verbal instructions, therapist training and rehearsal training. The results concluded that parents were able to implement training packages, and that even though all the components are highly effective they may not be necessary. The authors note that providing parents with written protocols and verbal instructions may be efficient due to common time constraints (Bethke et al., 2003).

There are many intervention techniques that can be taught to caregivers during a feeding session. The first step would be to teach the caregivers to be observant about their child surroundings. It is important that caregivers understand that distractions need to be removed when beginning to implement a plan of action. Caregivers can also be educated about antecedent manipulations. This type of procedure can be embedded into a structured feeding session, and can be beneficial for initial implementation of treatment (Kerwin et al., 2004). Kerwin and Eicher (2004) defined antecedent manipulation by the involvement of modifying how food and liquid are presented to the child. Caregivers can be educated on how to modify the presentation of food and liquids for their particular child, to increase the likelihood of food acceptance. Families can further benefit from learning about positive reinforcement procedures, which can help produce durable results (Gentry & Luiselli, 2007). Parents

should be educated about how and when to praise a child, so only positive desired behaviors are reinforced. While educating, it is important for the early interventionist to rehearse with the caregivers before they begin implementing the techniques given. When parents are educated about appropriate interaction strategies, it can help promote a more positive eating experience for the child.

Reinforcement of appropriate behaviors

Reinforcement is a basic principle where there is a stimulus change that directly follows a behavioral response to increase the frequency of the behavior during similar future conditions (Cooper, Heron & Heward, 2007). The following are procedures that can be utilized in conjunction with other principles and programs to increase food consumption and decrease inappropriate behaviors, while making a mealtime enjoyable. Positive reinforcement such as verbal praise, tangible reinforcers and presenting preferred food items can help aid in the acceptance of novel foods. Additionally, differential reinforcement procedures or reinforcing other appropriate responses within a specific criterion or response class can also be paired with intervention techniques to increase appropriate responses (Cooper et.al. 2007). However, it is important to note that reinforcement procedures may not have a strong impact when implemented alone, especially when treating

extreme cases of food refusal (Patel, Piazza, Martinez, Volkert, & Santana, 2002).

Evidence that an effective therapy approach that has been utilized is a combination of positive reinforcement paired with an escape extinction procedure. An escape extinction procedure is the nonremoval of nonpreferred food items during a mealtime. For example, Hoch, Babbitt, Ccoe, Krell and Hackbert (1994) developed a procedure they named *contingency contacting*. In this study, authors continued to present feeding trials until food or drink made contact with the child's mouth. The trials began with a direct instruction (i.e., "take a bite") and were continuously presented until contact was made, when food/drink entered the child's mouth reinforcement was presented within five seconds of initiation (Hoch et al.,1994).

When determining a reinforcement procedure it is once again important to be consistent and to ensure that the reinforcers chosen are actually reinforcing to the child. Additionally, the therapist and caregiver should identify a clear objective to when reinforcement will be presented. It is also crucial that therapist ensure that unwanted behaviors are not unintentionally being reinforced within the home. Once again observations of mealtimes in the child's natural setting are important when attempting to identify such situations.

Peer modeling

This approach can be implemented by caregivers in a naturalistic setting. They believe that peer modeling can be successful through observational learning, and can be used within a family dynamic (i.e., sibling involvement). Additionally, Sira and Fryling (2012), paired peer-modeling with differential reinforcement of an alternative behavior (DRA). DRA can be defined as a procedure that decreases problem behavior in which reinforcement is delivered for a behavior that serves as a desirable alternative for the target behavior (Cooper et al., 2007).

An example of peer modeling would be using identical utensils for both the target client and peer. The peer would be given the target demand, and then would model an appropriate response for the client. Once the target behavior was completed appropriately, the peer would be reinforced in the presence of the client. After training the caregivers, these types of sessions can take place within the child's home during typical mealtimes. When attempting to implement a technique such as peer-modeling, it is important to note that this type of technique should only be implemented if the child commonly attends to others and possess age-appropriate joint-attention abilities.

The results from Greenhalgh, Dowey, Horne, Fergus, Griffiths, Whitaker's (2009) study indicated that positive peer influences can increase the likelihood that a child will consume a novel food. However, the authors also made note that this type of procedure may require multiple trials before becoming effective. The authors evaluated children ages three to seven, they observed both negative peer modeling and positive peer modeling on the consumption of novel foods. Results concluded that positive peer modeling which paired the target child with an admired peer, showed favorable results in the increase of novel food consumption.

Furthermore, a similar study was conducted, by Greer et al., (1991), where an admired peer was utilized. The peer was reinforced for appropriate mealtime behaviors, and used identical utensils as the target child. The authors included two participants under the age of three, each participant was reinforced through praise and tangible reinforces to promote higher levels of food consumption. Greer et.al, 1991 and Greenhalgh et al., 2009 concluded similar results when implementing peer modeling to increase food consumption, both studies concluded that the target child's food consumption levels increased after participating in mealtimes where peer modeling was implemented. Overall, including a familiar peer into a feeding program could increase the likelihood that food

be accepted and could also pair the mealtime with a pleasurable experience.

Discussion

Feeding issues are common among infants and toddlers, especially those diagnosed with ASD. As more diagnosed cases of ASD become prominent, in-home feeding therapy will become more common. Feeding should be paired with pleasure so that feeding and feeding therapy do not become extremely aversive. However, most research completed focuses on one component of feeding therapy instead of looking at a more holistic approach. Further research should be facilitated on the overall ideas of pairing feeding with pleasure.

In a successful feeding program, caregivers have to further demonstrate the consistency during mealtimes. There is limited research conducted by SLPs involving parent training, family involvement and in-home feeding programs. Therefore, further research should be conducted to determine an appropriate plan of action for parent training.

Moreover, once additional research is completed on parent training and education, more valuable information could be gathered through caregiver rating scales and interviews. It would be interesting to acquire more information about caregivers' perspectives on training procedures. This

information could help increase future caregiver involvement and follow-through with the implementation of treatment plans.

Furthermore, it is important that SLPs have the foundational knowledge about the evidence behind specialized diets and other alleged alternative techniques. This should be done in order to provide well-rounded literature sources for families interested in alternative management. The accumulation of resources from a variety of aspects such as nutritionist, health care providers, behavioral assessments and observations could help assist with parental decisions on such options.

Further research could also look at the effectiveness of the therapy combinations. It is common for SLPs to combine various therapy techniques, based on the individual needs of the client. Therapist should also consider a multi-disciplinary approach when developing a treatment plan. This could include occupational therapists, behavior analysts and nursing staff.

It has long been determined that children with ASD exhibit a variety of aberrant mealtime behaviors. It is important for therapy providers to recognize the distinct and specialized nature of ASD, to coordinate their intervention plans accordingly (Twachtman-Reiley et al., 2008). Observation is a critical component when developing an appropriate plan of action. Additionally, individually modifying an intervention plan and educating families about the needs of their child can maximize

the probability for positive change. It is evident that food intake disorders can impact the physical, social and psychological development of children with ASD and their families. However, manipulating the environment and plan of action to fit the child's needs is essential when creating a pleasurable mealtime.

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Feeding Disorders and Children with Autism: Pairing Feeding
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