YUMMY STARTS: A CONSTRUCTIONAL APPROACH TO FOOD SELECTIVITY WITH CHILDREN WITH AUTISM

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Food selectivity exhibited by children with autism creates a myriad of barriers for families and children, ranging from social to nutritional. The typical approach to food selectivity is pathological. The pathological approach attempts to eliminate food selectivity through the use of techniques such as escape extinction. While successful in decreasing aspects of food challenges, such as food refusals, the pathological approach does not necessarily establish desired responses to foods or mealtimes (e.g., favorable affect, approach, generalized sampling, etc.). The purpose of the current study was to explore an alternative, constructional approach to food challenges presented by two children diagnosed with autism. This approach focuses on the development of favorable responses to food through the use of shaping. Furthermore, the shaping process involved a conceptual and procedural widening of the stimulus and response classes selected. The results of a non-concurrent multiple baseline experiment, suggest this approach was successful in expanding the number of food the children tasted and ate while maintaining favorable or neutral affect and child assent.
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*It is a time of challenges, of realization that the comfortable world of our childhood was possible only because of the struggles and hard won campaigns of those who preceded us; it is a time for firmly gripping the torch passed on from one generation to another, for maintaining the gains inherited, and for working to ensure the existence of the next generation; it is indeed both the best and worst of times, but it is above all else a time to take the responsibilities for designing the future.*

E. F. Malagodi

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INTRODUCTION

Food selectivity (e.g., food refusal, limited food repertoire, or high-frequency single food intake; Bandini et al., 2010) is common among children diagnosed with autism (Ahearn, Castine, Nault, & Green, 2001; Bandini et al., 2010; Ledford & Gast, 2006; Suarez, Nelson, & Curtis, 2013; Volkert & Vaz, 2010). The difficulties arising from food selectivity are apparent in children’s health and social lives. Health difficulties can include, but are not limited to, fatigue, diarrhea, apathy, irritability, weight difficulties, slow growth, and other long-term problems (Bandini et al., 2010; Gale, Eikeseth, & Rudrud, 2011; Palmer, Thompson, & Linscheid, 1975). A child displaying food selectivity may avoid foods and mealtimes, which can lead to restricted participation in social interactions and cultural events (Lynch & Hanson, 1992; Suarez et al., 2013). For instance, the preparation of a meal, mealtime itself, and cleanup afterward can all set the occasion for social interactions. If these activities are avoided, the child cannot participate in these social interactions and the learning opportunities embedded within them. Also, within many cultures, major events involve food related activities (e.g., Ramadan, Passover, Thanksgiving, etc.). When mealtime stimuli are avoided, children and their family’s cultural experiences may be limited. Ultimately, when left untreated, food selectivity can lead to a decreased quality of life both nutritionally and socially.

To date, behavioral approaches for food selectivity align primarily with a pathological approach (see Delprato, 1981; Goldiamond, 1974). This approach focuses on the elimination of the problem irrespective of how it is established or maintained (Goldiamond, 1974). Specifically, behavioral approaches have emphasized the use of eliminative techniques, such as escape extinction, to decrease the occurrence of food selectivity (see Massa, Cicca, & Vick 2013; Piazza, Patel, Gulotta, Sevin, & Layer, 2003). These techniques typically involve continued
presentation of a non-preferred food until the child accepts a bite. For example, a procedure commonly found within behavior analytic literature on food selectivity is referred to as “non-removal of the spoon” (NRS). Within this procedure, a person, typically referred to as a “feeder,” would place a spoon with a non-preferred food in front of the child’s lips. The spoon would not removed until the child accepted the bite and any expelled bites would be presented again. While procedures such as NRS have been effective in decreasing the occurrence of food refusals, they may not establish favorable responses to a variety of foods or mealtimes (Delprato, 1981; Luiselli, 1990). Moreover, in one of the earliest explorations in treating food selectivity, Riordan, Iwata, Wohl, and Finney (1980) stated:

> These practices are undesirable for at least two reasons. First, although they alleviate temporary risk, forced or passive feeding methods do not correct the feeding problem (i.e., they do not promote increased voluntary consumption). Second, forced feeding may actually lead to further complications, such as the development of aspiration pneumonia. (p. 96)

Therefore, an alternative approach shifting the focus from decreasing food refusals to the establishment of favorable responses to food and mealtimes (e.g., independently approaching mealtimes and food) is desirable.

The alternative to an eliminative pathology emphasizes the construction or transformation of repertoires (Delprato, 1981; Goldiamond, 1974). When applied to the treatment of food selectivity, a constructional approach would focus on the establishment of all mealtime stimuli as favorable and generalized sampling of foods under positive reinforcement contingencies rather than as a side effect of an eliminative procedure. The use of positive reinforcement, with and without the use of eliminative techniques, in treating food selectivity has been documented (see a review in Massa et al., 2013; Matson & Fodstad, 2009; Piazza, Patel, Gulotta, Sevin, & Layer, 2003; Volkert & Vaz, 2010). While the use of eliminative procedures in conjunction with
positive reinforcement contingencies do not make the approach pathological (Delprato, 1981), it
does not necessarily make the approach constructional. Moreover, to align with a constructional
approach one must consider 1) the current relevant repertoire, 2) terminal goal(s), 3) systematic
approaches to the terminal goal(s), and 4) maintenance (Goldiamond, 1974). At present, a
limited number of studies have documented behavioral approaches to treating food selectivity
that have meet these criteria and only a few have been with children with autism.

In one example of a constructional approach to food selectivity, Luiselli, Ricciardi, and
Gilligan (2005) increased the consumption of milk in a young girl with autism. The procedure
involved gradually increasing the amount of milk mixed with a preferred liquid, Pediasure®,
across eight steps. The procedure was shown to be effective and the child was consuming milk in
the absence of Pediasure® within 40 sessions. At no point was the child forced to consume the
liquid at any step and the child did not engage in any challenging behaviors throughout the
duration of the intervention. In a more recent example, Koegel et al. (2012) reduced the severity
of restricted diets for several children diagnosed with autism through the use of positive
reinforcement and a series of seven shaping steps. Progression through the steps was
individualized for each child and none of the children were forced to complete any of the steps.
Foods were targeted individually, and each introduced food started at the first shaping step (i.e.,
touches food and brings towards mouth). The intervention was successful in increasing the
number of new foods consumed by the three participants. Furthermore, all three children were
observed requesting new foods during generalization probes.

In one of the earliest and most thoroughgoing demonstrations of a constructional
approach to treating food selectivity, Bernal (1972) trained the parents of a typically developing
child, with severe food selectivity, to implement a behavioral approach to food selectivity. This
procedure involved several stages of intervention such as providing access to different foods without requiring consumption, manipulating portions of preferred foods, and reinforcing approximations to sampling new foods while focusing on a class of behaviors (e.g., sampling several foods rather than one target food). Each stage of intervention was determined based on the child’s responding in the previous stage (see Etzel & LeBlanc, 1979; Sugai & Horner, 2006). Prior to any intervention, the child’s current repertoire, with respect to mealtimes, was analyzed, and the consumption of a variety of food groups was determined to be the terminal goal. The first stage of intervention, following establishing self-feeding of preferred foods, involved presentation of foods without requiring consumption. This stage of intervention resulted in the child sampling three foods she had never eaten. The following stage of intervention involved providing a preferred food contingent upon sampling new foods during mealtimes. Mealtimes were not modified in that the full meal available to the rest of the family was also available for the child. The child consumed three more new foods during this stage of intervention. During the subsequent stage of intervention, new foods the child had sampled in prior stages were provided contingent upon sampling other new foods. This general approach continued throughout the remaining stages of intervention. Following a 32-week intervention, the child was consuming 50 foods that she had previously never eaten and the parents reported that the child’s weight and diet were no longer a concern.

The approach Bernal (1972) outlined differs from current behavioral approaches to food selectivity with children with autism in several ways. First, Bernal assessed the child’s current repertoire as a starting point, rather than letting the goal determine the starting point (e.g., selecting foods to target for consumption and requiring the child to consume the foods regardless of the child’s current responses to those foods). Second, Bernal provided access to new foods in
the absence of programmed contingencies. This may have provided a method to change the
aversive properties or contingencies resulting from previous interventions or experiences with
new foods. Third, Bernal used the child’s response to the intervention to determine changes to
the intervention (see Etzel & LeBlanc, 1979; Sugai & Horner, 2006). Fourth, Bernal focused on
classes of behaviors and foods rather than one behavior or food. In doing so Bernal “…increased
the range of member behaviors and strengthened them within the class” (p. 48). Bernal’s (1972)
approach was not only constructional, but, for the most part, involved both stimulus and response
shaping and was similar to those utilized for other sensory difficulties (e.g., Ellis, Alai’i-Rosales,
Glenn, Rosales-Ruiz, & Greenspoon, 2006; Koegel, Openden, & Koegel, 2004; Love, Matson, &
West, 1990; Luscre & Center, 1996).

The purpose of the present paper is to extend the approach Bernal (1972) described to
children diagnosed with autism who displayed food selectivity. Specifically, to examine the
effects of increased access and modeling in the absence of programmed consequences and a
shaping procedure on responses to food with two children diagnosed with autism. The
experiment took place in a community non-profit agency for children with autism. Development
of the procedures were informed by the aforementioned literature as well as two pilot programs
developed within the agency (Ala’i-Rosales, 2013; Mendoza, 2012)
METHOD

Participants

The two children who participated attended a clinic-based program and received a comprehensive treatment program with food expansion being one component. The clinic had a philosophical commitment to utilizing a constructional approach to treatment and explicitly avoided the use of eliminative procedures (e.g., escape extinction). Both children were selected based on documented histories of restricted food preferences and direct observations of restricted food interests during lunch by staff at the clinic.

Ryan, a 6-yr-old boy, had been diagnosed with autism. At the time of the study, he had limited speech and communication skills. He communicated primarily through 1-2 word approximations and gestures. He could follow simple instructions and imitate several motor responses. Ryan enjoyed social interactions from his teachers in the form of physical and verbal praise. It was reported that he engaged in minimal to no challenging behaviors. Ryan had a long history of food selectivity and, at the time of the study, ate only eight different foods. His meals typically consisted of a Pizza Hut Personal Pan Cheese Pizza® or a prosciutto sandwich with Goldfish® with no fruits or vegetables in his regular diet.

Elsa, a 4-yr-old girl, also had been diagnosed with autism. She communicated using full sentences. At the time of the study, Elsa had a robust generalized imitation repertoire. She would often initiate social interactions with her teachers. She enjoyed singing and dancing while watching herself in the mirror. It was reported that she engaged in minimal to no challenging behaviors. Elsa had a long history with food selectivity. At the time of the study, her diet consisted primarily of crunchy bite sized foods such as Chex® cereal, Goldfish®, and Lucky Charms® with no fruits, vegetables, or proteins in her regular diet.
Setting and Materials

All sessions for Ryan occurred in the lunchroom located at the clinic. The room was equipped with a table and chairs, a sink, refrigerator, microwave, eating utensils, and the child’s food. The lunchroom was intended to approximate a dining room or kitchen as closely as possible. Elsa’s sessions were conducted in a playroom across from the lunchroom with a smaller table, chairs, a large mirror, and shelves containing various toys (Elsa was too small to sit comfortably at the table in the staff lunchroom). All other components remained the same. Each session occurred either approximately 30 min prior to a scheduled mealtime or if the child requested to eat before a scheduled session, and each session lasted approximately 10 min. Prior to each session, the interventionist prepared a plate with the child’s food as well as an identical plate for the interventionist to use for modeling. Up to five foods were available on the plate during each session and consisted of foods from the child’s recent consumption history (i.e., foods the children were observed eating or present during a typical lunch or snack) and introduced foods (i.e., any food not present during a typical lunch or snack selected for use during intervention). Of these five foods, an effort was made for four food groups to be represented (proteins, grains, fruits, and vegetables). All sessions were conducted with the child’s assent (Morrow & Richards, 1996). That is, at any point in which the children indicated they would like to stop (e.g., saying “I’m done”), the request was always honored and the session was terminated.

Food Selection

Tables 1 and 2 display the different food sets developed throughout the course of intervention for each child. The children’s parents participated in the selection of the foods to be included in each food set and provided the foods before each session. The foods in each set were
selected based on similarities to consumption history foods (e.g., taste, texture), the family’s current and/or desired diet (e.g., foods the child was more likely to see at home), and interactions with foods in previous sets (e.g., if the child interacted with fruits more than other foods, more fruits would be included in the next food set). The foods within each set were rotated frequently so that each session included foods that were not present during the prior session. Foods that were introduced in previous sets were sometimes included in subsequent food sets based on the child’s responding with those foods.

Measures and Data Collection

Based on Bernal’s (1972) recommendations, food related responses were divided into four general classes. The first class, tolerating, was defined as orienting to the plate, remaining in proximity to an introduced food (e.g., sitting in the presence of, smelling the food on the plate, etc.), or making comments about food while sitting at the table with neutral or favorable affect. The second class, interacting, was defined as any independent manipulation of an introduced food in the absence of unfavorable affect (defined below). The next class, tasting, was defined as any time an introduced food passed the plane of the lips in the absence of unfavorable affect. Eating was defined as any time the child consumed part or all of an introduced food. Tolerating was scored using a 15-sec partial interval recording system (Appendix B). Interacting, tasting, and eating were scored using a frequency recording system via the datasheet located in Appendix B.

In addition to food related responses, data was also collected on indices of comfort and enjoyment by assessing child affect. Affect was divided into three categories and scored on a 15-sec partial interval recording system. Favorable affect, an index of enjoyment, was defined as any time “the child emits a vocalization or assumes a facial expression indicating pleasure, favor,
or amusement” (Anderson, 2010, p. 10). For example, upturning corners of the mouth, open
mouth together with eye brows/furrows high on forehead, laughing, giggling, etc. Neutral affect, an index of comfort, was defined as any time “the child assumes a facial expression or emits vocalizations indicating indifference…[and] does not appear to be decidedly happy or particularly unhappy” (Anderson, 2010, p. 11). For example, saying “carrots” without an upward turn of the corners of the mouth with an impartial tone of voice. Unfavorable affect, an index of distress, was defined as any time “the child engages in vocalizations such as yells, whines with distress (examples include, but not limited to, pain, fear, etc.), or screams which may or may not be accompanied by physically retreating or protesting or assumes a facial expression including a grimace, smirk, or eye roll” (Anderson, 2010, p. 11).

All sessions were videotaped and scored outside of the experimental conditions. The interventionist and a research assistant independently scored the videotaped sessions for inter-observer agreement (IOA) during 37.5% of baseline (described below), 36.7% of the happy opportunities condition (described below), and 34.5% of the shaping condition (described below). IOA for affect was calculated by dividing the number of agreements per 15-sec interval by the total number of agreements plus disagreements and multiplying by 100. Mean percentage of agreement for affect was 97% (range, 93%-100%) during baseline, 96% (range, 85%-100%) during the happy opportunities condition, and 98% (range, 88%-100%) during the shaping condition. IOA for the response classes were calculated by dividing the number of agreements by the total number of agreements plus disagreements and multiplying by 100. Mean percentage of agreement was 98% (range, 90%-100%) during baseline, 94% (range, 67%-100%) during the happy opportunities condition, and 97% (range, 86%-100%) during the shaping condition.
Procedures

Initial Interview

Prior to participation in the experiment, an interview was conducted with each child’s parent(s) (Appendix C). The goal of the interview was to identify general concerns, immediate and long-term goals, and any potential resources and supports. The information collected from the interview was compiled to identify each of the family’s current and desired diet (e.g., diversity within and across food groups, common family meal items, etc.), timing (e.g., when meals occur), form (e.g., where meals occur), and interaction during mealtimes (e.g., who is present, conversations versus requests, etc.).

Baseline

Lunch Probe

Following the initial interview, the interventionist videotaped the child’s typical lunch at the clinic. The staff member assigned to the child at the time was instructed to conduct lunch as usual. The child was free to eat any or none of the foods in his/her lunch and lunch continued until all the foods were consumed or the child signaled she/he was done.

Intervention

Happy Opportunities

The purpose of this condition was to obtain current levels of responding with increased access to a variety of foods while attempting to prevent the possibility of repeated exposure to a stressful situation. Sessions began when the interventionist entered the classroom and provided a general greeting to the child (e.g., “What’s up?”). The interventionist then waited 30 sec to provide the child an opportunity to approach (e.g., walk up and grab the interventionist’s hand). Following an approach, the interventionist immediately walked with the child to the mealtime
room. The purpose of this was to ensure that food expansion sessions with the interventionist had not become an aversive event. If the child did not approach the interventionist within 30 sec, the interventionist said, “Let’s go eat.” If the child did not approach the interventionist within 30 sec of the prompt, the session was postponed until the next day; however, no sessions met the criterion to be postponed and all sessions occurred as planned. Once in the mealtime room, the interventionist sat across from the child and ate the foods on his plate at a pace similar to a typical mealtime. The interventionist also interspersed manipulation of the foods without consumption (e.g., interacted or tasted). Throughout the entire mealtime, the interventionist maintained favorable or neutral affect and engaged in general conversation (e.g., asking about the child’s day, talking about new movies, etc.). During this condition, the children were never prompted to eat any of the foods on their plate and there were no programmed consequences from the interventionist for any responses to the foods.

**Shaping**

This condition was similar to the happy opportunities condition with several distinct differences. In addition to general conversation, the interventionist also made frequent comments about the food (e.g., “Wow, these carrots are delicious!”). The interventionist prepared a small container with small pieces of the child’s preferred food, which was selected based on parent and staff interviews. This food was only available during shaping sessions. The container with the preferred food was kept out of the child’s reach, but in the child’s view. Furthermore, the preferred food was never included on the plate throughout the duration of the intervention.

To begin a session, once the interventionist was sitting across from the child, he observed the child for any food related responses within and across the general classes (e.g., looking at the food, touching the food, etc.). If the child engaged in any food related response, the
interventionist immediately provided social praise (e.g., verbal praise and physical praise) followed by access to a small piece of the preferred food. Responses could occur with any of the foods and all responses leading toward eating were followed by social praise and access to the preferred food. The interventionist determined the responses that were candidates for reinforcement in-vivo throughout the session based on the child’s responding during the session and across sessions. For example, if the child touched a food and the interventionist provided social praise and access to the preferred food, the interventionist may have then targeted picking up the food or touching a different food on the plate. However, other responses within and across the general classes were still candidates for reinforcement and were not ignored. If the child went more than 15 sec without engaging in the food related response the interventionist was currently targeting, the interventionist selected a different food related response to target. If the child engaged in unfavorable affect at any time while the interventionist was targeting a specific food related response, the interventionist immediately decreased the response requirement. In an effort to ensure movement within and across the response classes, the interventionist provided differential access to praise and/or a preferred food based on the child’s responding. For example, if the child continued to interact with the same food in the same way, the interventionist may have provided only verbal praise without physical praise and access to the preferred food. If the child then interacted with the same food in a different way or interacted with a different food, the interventionist would then provide verbal and social praise followed by access to the preferred food.

During the first seven sessions with Ryan, the interventionist also provided verbal prompts for Ryan to imitate the interventionist’s model (e.g., saying “Do this” following the interventionist picking up a food). Prompts were discontinued following the seventh session and
never occurred for Elsa. For the first seven sessions with Elsa, only three foods were available on
the plate. These foods included two consumption history foods and one introduced food that was
similar in both taste and texture to those foods. The number of introduced foods available was
increased and the similarities to preferred foods were faded based on Elsa’s responding.

Experimental Design

A non-concurrent multiple baseline design across children was utilized to examine the
relationship between the intervention and the children’s responses to introduced foods. The data
was summarized across children and conditions.
RESULTS

Figure 1 displays the frequency of food related responses across each condition for each of the children. Data on tolerating was not included for either of the children due to high rates of tolerance of introduced foods for both children. Also, Ryan only ate two of the foods introduced during intervention so data on eating was not included for Ryan. The bottom panel of Figure 1 displays the frequency of interacting and tasting for Ryan. Following the commencement of the happy opportunities condition with the foods in Set 1, there was an immediate increase in the frequency of interacting and tasting. Following this initial increase, there was a gradual decrease in the frequency of interacting and tasting across the remaining sessions within this condition. When the shaping condition began for the same food set, there was an increase in the frequency of interacting and tasting for the first 15 sessions. Starting at Session 45, there was a decrease in the frequency of interacting and tasting with the foods in Set 1. Following the introduction of the foods in Set 2, there was an increase in the frequency of interacting and tasting. This increase was maintained following the introduction of the foods in Set 3.

The top panel of Figure 1 displays the frequency of interacting, tasting, and eating for Elsa. There was an initial increase in the frequency of interacting with the foods in Set 1 during the first session of the happy opportunities condition. These interactions resembled play and occurred with only one of the foods (e.g., she arranged the pieces of a carrot to make a snow man and then threw it away). Following the introduction of the foods in Set 2 during the shaping condition, there was an increase in the frequency of interacting, tasting, and eating beginning around Session 16. This pattern of responding was not disrupted with the introduction of subsequent foods in the next three sets and the frequency of interacting, tasting, and eating continued to increase.
Figure 2 displays the cumulative number of foods introduced and tasted across each condition for both children. No new foods were introduced during the lunchtime probes and both children consumed a small variety of foods that were typically available in their lunches (i.e., cheese pizza and Goldfish® for Ryan; Goldfish® and crackers for Elsa). The bottom panel displays the results for Ryan. Following the introduction of the first food set during the happy opportunities condition, Ryan tasted introduced foods for the first eight sessions. Ryan did not taste any other foods within Set 1 during subsequent sessions within this condition. Given the early success with the foods in Set 1, the same set was used during the shaping condition for Ryan. Ryan tasted 10 of the 12 foods in Set 1, 7 of the 11 foods in Set 2, and 9 of the 13 foods in Set 3 during the shaping condition. With the introduction of each new food set, the number of sessions to tasting decreased as Ryan tasted new foods soon after they were introduced.

The top panel of Figure 2 displays the results for Elsa. Elsa did not taste any of the new foods introduced during the happy opportunities condition. She was observed swiping the foods off the plate onto the floor, throwing the foods away, and displaying unfavorable affect. Given the distress displayed by Elsa, this condition was terminated and the shaping condition commenced with a new food set. For the first seven sessions of the shaping condition, only one introduced food was available on the plate. The number of introduced foods was then increased based on her responding across the rest of the shaping condition. During the shaping condition, Elsa tasted 6 of the 7 foods in Set 2, 13 of the 14 foods in Set 3, all of the foods in Set 4, and 14 of the 15 foods in Set 5. Throughout the course of the intervention, Elsa consumed 24 of the 40 foods introduced. With the introduction of each new food set, the number of sessions to tasting decreased as Elsa tasted new foods soon after they were introduced.

Figure 3 displays affect measures for both children across each condition. Affect was
viewed as an indicator of the likability of the intervention for each child. The top panel displays the results for Elsa and the bottom panel displays the results for Ryan. Both children displayed unfavorable affect following the introduction of the first food set during the happy opportunities condition. While the unfavorable affect displayed by Ryan decreased across this condition, it increased for Elsa. It may be the case that, if this condition were continued for Elsa, a similar pattern would have been observed. However, extending a condition in which the child was exhibiting distress was undesirable so the next condition was started. During the shaping condition, both children displayed little to no unfavorable affect across the introduced foods of each new food set. Ryan consistently displayed neutral affect throughout the shaping condition while there was an increase in favorable affect for Elsa.
DISCUSSION

This study investigated the use of a constructional approach to treating food selectivity displayed by two children diagnosed with autism. The intervention consisted of two conditions with various levels of stimulus and response shaping. The happy opportunities condition involved increased access, modeling, and stimulus shaping in the absence of programmed consequences. The shaping condition involved increased access to a variety of foods, modeling, stimulus shaping, and response shaping. Both stimulus and response shaping involved the use of large classes of stimuli (e.g., food) and responses (e.g., interacting) respectively. The happy opportunities condition produced varied effects on food related responses across the two participants, while the shaping condition was effective in increasing food related responses across both participants.

Ryan tasted several new foods in the absence of programmed contingencies during the happy opportunities condition. It is assumed that he had no strong aversions to food or mealtime conditions. Additionally, the number of 15-sec intervals in which Ryan engaged in unfavorable affect decreased across this condition. Ryan’s increase in tasting and decrease in unfavorable affect may have been primarily the result of the interventionist modeling (i.e., interacting, tasting, and eating foods with neutral or favorable affect). This increase in favorable responses to foods was only temporary. This condition was extended for Ryan, however, based on anecdotal reports by his mother of an increase in his general interest in foods in addition to requests and the consumption of several new foods in her presence. These changes were not observed during sessions at the clinic and the next condition was started.

Elsa responded quite differently to the happy opportunities condition. She was observed swiping the foods off the plate onto the floor and the table and at one point threw the foods into
the trashcan located near the table. Furthermore, Elsa engaged in unfavorable affect more frequently during this condition than any other point throughout the study. This may suggest that, for Elsa, this condition was not “happy” after all. It can be assumed that she had strong aversion to novel food presentations and the mealtime conditions. Given the high rates of distress displayed by Elsa during this condition, the shaping condition was started and the number of introduced foods on the plate were decreased to one and increased systematically across the duration of the intervention.

Large increases in favorable responses to food (e.g., tasting, consumption, and favorable or neutral affect) were observed for both children during the shaping condition. Furthermore, the number of sessions required before the child tasted a newly introduced food decreased across the duration of the intervention and food sets. The results for Elsa demonstrate this effect the most clearly. Following the introduction of the final two food sets, she tasted introduced foods the first time they were available. This decrease in the number of sessions to tasting speaks to the effectiveness and generative nature of the intervention.

Previous literature treating food selectivity displayed by children with autism may be categorized as constructional (e.g., Koegel et al., 2012; Luiselli et al., 2005). However, the current approach extends these studies in two ways. First, previous behavioral literature utilizing a constructional approach to food selectivity focused on one food at a time. For example, Luiselli and colleagues (2005) targeted the consumption of one liquid (i.e., milk) and Koegel et al. (2012) targeted the consumption of an individual food until mastery before targeting the next food (e.g., grilled cheese only after ham was consumed). The present study demonstrated increased tasting and, in the case of Elsa, consumption utilizing a wider class of stimuli. Moreover, several introduced foods were available on the plate during each session, which created the conditions
under which the child could respond to a variety of foods at any given time.

Secondly, constructional approaches to food selectivity with children with autism have focused on narrow bands of responding. Moreover, these approaches have targeted one response topography to one food at a time. For instance, Koegel et al. (2012) used a set of shaping steps (i.e., touches food and moves toward mouth, puts food to lips, bites food, bites and puts in mouth, chews food, swallows food, accepts food without displeasure, p. 1576) that were developed *a priori*. Only one step was targeted at a time and the next step was not targeted until the previous step had met mastery criteria. Targeting the consumption of one target food through a series of steps may constrain the interventionist, the child, and be time consuming (Bernal, 1972). The present study utilized the approach Bernal (1972) outlined by placing contingencies on general classes of responses. In doing so, each class was strengthened and both the child and the interventionist had more freedom to select during the shaping process. Placing contingencies on classes of behaviors increased the range of members within the class (e.g., touching, picking up, etc.) and, in all likelihood, strengthened the members of the class. This is evident from the increasing trend with both participants during the shaping condition even when new food sets were introduced.

Establishing a treatment that involves a systematic approach that is enjoyable, parsimonious, and tiered is more likely to be efficient, utilized and socially valid (Etzel & LeBlanc, 1979; Sugai & Horner, 2006; van Dyck & Spinhoven, 1997; Wolf, 1978). The present study demonstrated an enjoyable treatment in at least two ways. First, child affect measures showed a decrease in unfavorable affect and an increase in favorable affect for both children throughout the duration of the intervention. Second, sessions only occurred if the child independently approached the interventionist before the session. All sessions occurred as planned
with the same interventionist. That is, both children continued to approach the interventionist throughout both conditions of the intervention. Taken together, child affect and assent suggest the treatment was enjoyable for both participants.

A treatment that is parsimonious and tiered is one that assesses the child’s performance during teaching and makes gradual increases in supports based on the child’s responding at the current level of teaching (Etzel & LeBlanc, 1979). The present study provides a demonstration of a parsimonious, tiered treatment. The first tier of intervention consisted of increased access, modeling, and stimulus shaping in the absence of programmed consequences. The foods selected for introduction were selected based on family preference and similarities to the children’s current preferred foods. Both children responded differently to this tier and, as a result, remained in this tier of intervention for different periods of time. When assessment of child performance within this tier indicated more supports were required for progress, the next tier of intervention commenced. This next tier involved the same components of the first tier with the addition of response shaping and, thus, programmed consequences. However, this tier varied subtly for both children. For example, foods were introduced more gradually for Elsa and more rapidly for Ryan.

While socially important progress was observed for both children, future research may address several limitations. The baseline probes with both participants were rather short. These probes occurred during typical lunch times with both children and did not include the availability of foods that were introduced during the course of intervention. However, the severity of the food selectivity exhibited by the children who participated made extended baselines undesirable. It is probable that extended baselines within an aversive situation (i.e., the presentation and instruction to consume non-preferred foods) would have led to unwanted distress. This was a
similar issue noted by other studies that involved noxious or undesirable stimuli. (e.g., Ellis et al., 2006). The happy opportunities condition may have served the function of a baseline condition with the presentation of non-preferred foods in an environment that minimized distress in a presumably aversive situation. A future area of research might examine methods to collect baselines that are not distressful for the child.

Another possible area of future research is to examine whether the results could be replicated with a larger number of participants with varying levels of food selectivity. While both participants had a limited food repertoire, they did not display other difficulties (e.g., failure to thrive or high-frequency single food intake). This is an important consideration as many of the previous investigations have included children with such complications. Therefore, it is unknown if similar results would be obtained with children with autism presenting a variety of mealtime barriers.

Food related difficulties present an urgent set of conditions for parents and interventionists. Given this urgency, children with autism who have received behavioral interventions to treat food selectivity have likely encountered eliminative procedures by parents or professionals. These procedures may decrease food refusals and increase acceptance of bites of food; however, they do not establish the desired contingency with respect to foods and mealtimes. That is, the desired contingency with respect to foods and mealtimes is that of approach not avoidance. While children may accept bites, it does not mean they will independently approach novel foods and mealtimes. Conversely, utilizing a constructional approach to food selectivity establishes the desired contingency, one of approach. Through the use of positive reinforcement contingencies in the context of stimulus and response shaping with wider response bands, both children in the current study approached the mealtime and novel
foods.

Taken together, the current results support the use of a constructional approach for food selectivity for children diagnosed with autism who do not have other organic complications. This approach identifies the child’s current repertoire with respect to a generative terminal goal, outlines measurable and obtainable steps to achieving the goal, and achieves these steps through the use of positive reinforcement contingencies. In developing a solution of any problem, the types of stimulus control and the consequences matter. This study provides clinicians with a guide and supporting empirical data in utilizing a constructional approach to address food selectivity and generates continued research to strengthen a constructional alternative to a “standard” of restrictive, eliminative procedures when treating food selectivity.
Table 1

*Food Sets for Ryan*

<table>
<thead>
<tr>
<th></th>
<th>Set 1</th>
<th>Set 2</th>
<th>Set 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pizza Hut Personal Pan</td>
<td>Frosted Flakes®</td>
<td>Pepperoni</td>
<td></td>
</tr>
<tr>
<td>Sausage Pizza®</td>
<td>Goldfish Pretzels®</td>
<td>Ham sandwich</td>
<td></td>
</tr>
<tr>
<td>Chicken sandwich</td>
<td>Apple chips</td>
<td>Multigrain Cheerios®</td>
<td></td>
</tr>
<tr>
<td>Veggie sticks</td>
<td>Pepperoni Bagel Bites®</td>
<td>Pepperoni Pizza Rolls®</td>
<td></td>
</tr>
<tr>
<td>Cheez-its®</td>
<td>Peach (canned)</td>
<td>Raspberry</td>
<td></td>
</tr>
<tr>
<td>Banana (fresh, sliced)</td>
<td>Orange</td>
<td>Mango (canned)</td>
<td></td>
</tr>
<tr>
<td>Grape</td>
<td>Pineapple</td>
<td>Watermelon</td>
<td></td>
</tr>
<tr>
<td>Grape tomato</td>
<td>Pear (canned)</td>
<td>Corn</td>
<td></td>
</tr>
<tr>
<td>Baby carrot (cut into bite sized pieces)</td>
<td>Yellow bell peppers (cooked)</td>
<td>Peas</td>
<td></td>
</tr>
<tr>
<td>Blueberry</td>
<td>Dried green beans</td>
<td>Potatoes (cooked)</td>
<td></td>
</tr>
<tr>
<td>Kalamata olive</td>
<td></td>
<td>Chicken nuggets</td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broccoli</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Food Sets for Elsa

<table>
<thead>
<tr>
<th></th>
<th>Set 1</th>
<th>Set 2</th>
<th>Set 3</th>
<th>Set 4</th>
<th>Set 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goldfish®</td>
<td>Goldfish®</td>
<td>Goldfish®</td>
<td>Goldfish®</td>
<td>Veggie sticks</td>
<td></td>
</tr>
<tr>
<td>Lucky</td>
<td>Multigrain</td>
<td>Popcorn</td>
<td>Popcorn</td>
<td>Fruit leather</td>
<td></td>
</tr>
<tr>
<td>Charms®</td>
<td>Cheerios®</td>
<td>Cheez-its®</td>
<td>Cheez-its®</td>
<td>Popcorn</td>
<td></td>
</tr>
<tr>
<td>Pretzel thins</td>
<td>Veggie sticks</td>
<td>Multigrain</td>
<td>Cheese rice</td>
<td>Crakers</td>
<td></td>
</tr>
<tr>
<td>Veggie sticks</td>
<td>Crackers</td>
<td>Cheerios®</td>
<td>cakes</td>
<td>Sweet potato</td>
<td></td>
</tr>
<tr>
<td>Raisins</td>
<td>Raisins</td>
<td>Veggie sticks</td>
<td>Apple chips</td>
<td>chips</td>
<td></td>
</tr>
<tr>
<td>Cheese stick</td>
<td>Pretzel thins</td>
<td>Pita chips</td>
<td>Banana chips</td>
<td>Pear chips</td>
<td></td>
</tr>
<tr>
<td>Dried green</td>
<td>Carrots</td>
<td>Raisins</td>
<td>Strawberry</td>
<td>Dried</td>
<td></td>
</tr>
<tr>
<td>beans</td>
<td>Pumpkin seeds</td>
<td>Pretzel</td>
<td>chips</td>
<td>cranberries</td>
<td></td>
</tr>
<tr>
<td>Pretzel</td>
<td>Dried</td>
<td>Goldfish®</td>
<td>Pear chips</td>
<td>Strawberry</td>
<td></td>
</tr>
<tr>
<td>Goldfish®</td>
<td>cranberries</td>
<td>Chicken</td>
<td>Pretzel goldfish</td>
<td>chips</td>
<td></td>
</tr>
<tr>
<td>Cheez-its®</td>
<td>Popcorn</td>
<td>Nuggets</td>
<td>Cheese stick</td>
<td>Strawberry</td>
<td></td>
</tr>
<tr>
<td>Strawberry</td>
<td>Pretzel</td>
<td>Banana chips</td>
<td>Apple</td>
<td>Apple</td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td>Goldfish®</td>
<td>Dry roasted</td>
<td>Fruit leather</td>
<td>cinnamon rice</td>
<td></td>
</tr>
<tr>
<td>Corn</td>
<td>Cheez-its®</td>
<td>edamame</td>
<td>Dried apricots</td>
<td>cakes</td>
<td></td>
</tr>
<tr>
<td>Black bean</td>
<td>Pita chips</td>
<td>Dried</td>
<td>Cucumber</td>
<td>Snapea crisps®</td>
<td></td>
</tr>
<tr>
<td>Kidney bean</td>
<td>strawberries</td>
<td>Sweet potato</td>
<td>Sunflower</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apple chips</td>
<td>chips</td>
<td>seeds</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hotdog</td>
<td>Carrot</td>
<td>Fish stick</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Celery</td>
<td>Beef jerky</td>
<td>Red grapes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 1. The top panel displays the frequency of interacting, tasting, and eating introduced foods for Elsa. The bottom panel displays the frequency of interacting and tasting introduced foods for Ryan.
Figure 2. Cumulative number of foods introduced and tasted for Elsa and Ryan.
Figure 3. Affect for Elsa and Ryan across each condition.
APPENDIX A

INFORMED CONSENT FORM
THE OFFICE OF RESEARCH INTEGRITY AND COMPLIANCE

May 15, 2014

Shahla Alai-Rosales  
Department of Behavior Analysis  
University of North Texas

Re: Human Subjects Application No. 14208

Dear Dr. Alai-Rosales:

As permitted by federal law and regulations governing the use of human subjects in research projects (45 CFR 46), the UNT Institutional Review Board has reviewed your proposed project titled "Service-learning in Action: A Description of Community Based Interventions for Children with Autism." The risks inherent in this research are minimal, and the potential benefits to the subject outweigh those risks. The submitted protocol is hereby approved for the use of human subjects in this study. Federal Policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only, May 15, 2014 to May 14, 2015.

Enclosed is the consent document with stamped IRB approval. Please copy and use this form only for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. The IRB must also review this project prior to any modifications. If continuing review is not granted before May 14, 2015, IRB approval of this research expires on that date.

Please contact Shelia Boums, Research Compliance Analyst, at extension 2018 if you wish to make changes or need additional information.

Sincerely,

Patricia L. Kaminski, Ph.D.  
Associate Professor  
Department of Psychology  
Chair, Institutional Review Board

PK/sb
Before agreeing to participate in this research study, it is important that you read and understand
the following explanation of the purpose, benefits and risks of the study and how it will be
conducted.

Title of Study: Service-learning in action: A description of community based interventions for
children with autism

Investigator: Dr. Shahla Alai-Rosales, University of North Texas (UNT) Department of Behavior
Analysis

Co-Investigator: Dr. Jesus Rosales-Ruiz, UNT Department of Behavior Analysis

Purpose of the Study: The purpose of this research study is to present information about
the Easter Seals North Texas - Autism Treatment Program (ESNT-ATP). The program is unique
in that the agency has a commitment to non-punitive procedures. Treatment progress and parent
satisfaction will be researched and discussed. Parents are asked to give permission for information
from their child's participation in the Easter Seals North Texas - Autism Treatment Program
(ESNT-ATP). Parents will also be asked to give about the program. The information will be
confidentially reported for educational purposes. Specifically, we will describe how the
interventions were developed, what happened during intervention, how staff was trained, and
how satisfied parents were with the results.

Study Procedures: We would like to review and analyze the data that were already collected as
part of your child's involvement in the ESNT-ATP program. Your only time commitment for this
project is the time it will take to go through the consent process that we are doing right now and to
fill out a confidential satisfaction survey. Most parents have taken between 10 to 20 minutes to
complete the survey.

Foreseeable Risks: There are no foreseeable risks involved with participation in this study. No
identifiable descriptions (i.e. names, client account numbers or addresses) will be given in
manuscripts or presentations. In the event that vignettes are included, they will involve
pseudonyms and composite characteristics and behaviors of several staff/child/parents so that
they illustrate a concept rather than describe an individual. In the event actual outcomes are
reported, pseudonyms will be used to refer to the person.

Benefits to the Subjects or Others: There are no immediate benefits to you as the
participants. Although it is possible that reporting the favorable outcomes of this program could
increase the likelihood of sustained funding of the program and increased overall support of
programs for traditionally underserved populations. Furthermore, the reporting of this
information could provide other programs and universities resources for initiating similar
programs designed to train students and contribute to the overall well-being of home communities.

Compensation for Participants: None
Procedures for Maintaining Confidentiality of Research Records: No identifiable data will leave the ESNT-ATP site. ESNT-ATP staff will maintain the confidentiality of the clients and staff will mask all ESNT-ATP records. The investigators will only enter study data by groups and pseudonyms rather than by identifiable individual information (i.e. first and or last name, client account numbers, or addresses). The confidentiality of your participant information will be maintained in any publications or presentations regarding this study.

Questions about the Study: If you have any questions about the study, you may contact Shahla Alai-Rosales at 940-565-2274.

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants’ Rights: Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Shahla Alai-Rosales, or a designee, has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- Your decision whether to participate or to withdraw from the study will have no effect on your enrollment at Easter Seals North Texas - Autism Treatment Program.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form.

________________________
Printed Name of Participant

________________________
Signature of Participant Date

For the Investigator or Designee:
I certify that I have reviewed the contents of this form with the participant signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

________________________
Signature of Investigator or Designee Date
OVERARCHING GOAL

- Full participation in food routines and family rituals/traditions through generalized sampling, comfort, and enjoyment during mealtimes

INSTRUCTIONS

- List the foods presented on the plate layout and where indicated on the table
- Indicate if food is part of the child’s consumption history (Ch), an introduced food (I), a high preference food (H), a neutral food (Nu), a similar food (S), or a non-similar food (N)
- Tally all responses that occur in each response class for each food, OR mark the highest response within the response band reached for each food
- Use the “Response Criteria” and child responding to determine the next target response
- Refer to protocol for detailed information regarding the tier of intervention and how to conduct a Yummy Starts session

PLATE LAYOUT

RESPONSE CRITERIA

<table>
<thead>
<tr>
<th>Food Type</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preference</td>
<td>H</td>
<td>Nu</td>
<td>S</td>
<td>N</td>
<td>H</td>
<td>Nu</td>
</tr>
</tbody>
</table>

- Independently consumes food without prompting
- Independently licks or puts food in mouth
- Independently interacts with food without distress (e.g., touches, smell, rolls, etc.)
- Remains in presence of food without distress

Additional Information:

End Preference

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Nu</td>
<td>S</td>
<td>N</td>
<td>H</td>
<td>Nu</td>
</tr>
</tbody>
</table>

33
child and teacher within each 15-second interval.

<table>
<thead>
<tr>
<th>Min.</th>
<th>Child</th>
<th>Teacher</th>
<th>Child</th>
<th>Teacher</th>
<th>Child</th>
<th>Teacher</th>
<th>Child</th>
<th>Teacher</th>
<th>Child</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FUN</td>
<td>O</td>
<td>FUN</td>
<td>O</td>
<td>FUN</td>
<td>O</td>
<td>FUN</td>
<td>O</td>
<td>FUN</td>
<td>O</td>
</tr>
</tbody>
</table>
Overarching Goal(s)
1. What is your overall goal for your child’s nutritional health? (e.g., “With respect to mealtime behaviors such as grazing or sitting entire duration of meal, etc.”; “Foods you would like your child to eat more or less of”):

Nutritional Health History
1. Does your child currently have any Special diets and/or allergies? (e.g., GFCF, tree nuts, etc.):

2. Is your child currently experiencing any health issues related to food refusal/selectivity? (e.g., inadequate nutrition, weight difficulties, slow growth, etc.):
   a. If “Yes” then: Has your child ever seen or been referred to see a doctor for his/her food refusal/selectivity? If so what were the results/recommendations? (e.g., special vitamins or dietary restrictions, swallow study, etc.):

Mealtime Behavior
1. What are the typical eating habits for your family and your child now (e.g., Do you all sit down and eat together?, Where do you typically eat?, etc.)? What would you like them to be?:

2. What is your child’s attitude towards eating/mealtimes now? What would you like it to be?:
3. What are your typical response(s) when your child refuses food? (e.g., “Do you allow him/her to leave the table, provide alternative item, etc.”):

4. What are your typical response(s) when your child attempts to eat a novel/less preferred food item?:

**Food Intake:**

1. What types of food does your child currently eat? Are those your child’s most preferred foods? If not, what are?

2. What foods would you like your child to eat?

3. What are your child’s least preferred foods? How do you know?

4. What foods/food types did your child eaten in the past but does not eat now?

5. Are there any foods that are a staple of your meals as a family? (e.g., Does your family regularly consume pasta? If so, how is it typically prepared?) Are there any foods you would like to be a staple?:

6. How independent is your child’s eating across type, size, and texture?

**Food Groups**

Please circle the number describing how often the behavior occurs and list examples of foods in lines provided below each category:
My child eats:

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Sometimes</th>
<th>Always</th>
<th>Problem for you</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Vegetables</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Grains</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Proteins</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Milk (Dairy)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Liquid</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
## Food Selectivity

My child is selective: | Never | Sometimes | Always | Problem for you? |
---|---|---|---|---|
• By food texture | 1 | 2 | 3 | 4 | 5 | Yes | No |
• By food temperature | 1 | 2 | 3 | 4 | 5 | Yes | No |
• By food color | 1 | 2 | 3 | 4 | 5 | Yes | No |
• By food size | 1 | 2 | 3 | 4 | 5 | Yes | No |
• By food smell | 1 | 2 | 3 | 4 | 5 | Yes | No |
• By food taste | 1 | 2 | 3 | 4 | 5 | Yes | No |
• By setting | 1 | 2 | 3 | 4 | 5 | Yes | No |
• By who is present | 1 | 2 | 3 | 4 | 5 | Yes | No |

## Food Consistency

My child eats foods: | Never | Sometimes | Always | Problem for you? |
---|---|---|---|---|
• Bite sized | 1 | 2 | 3 | 4 | 5 | Yes | No |
• Chopped | 1 | 2 | 3 | 4 | 5 | Yes | No |
• Ground | 1 | 2 | 3 | 4 | 5 | Yes | No |
• Wet ground | 1 | 2 | 3 | 4 | 5 | Yes | No |
• Pureed | 1 | 2 | 3 | 4 | 5 | Yes | No |
• Liquid | 1 | 2 | 3 | 4 | 5 | Yes | No |
• Crunchy | 1 | 2 | 3 | 4 | 5 | Yes | No |
• Soft | 1 | 2 | 3 | 4 | 5 | Yes | No |
## Feeding Rating Scale*

Rate each item below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independently eats meals</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Exhibits problem behavior</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Pushes food away</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Steals food</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eats too quickly</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eats available food</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eats small amounts</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eats non-food</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Chews properly</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Insufficient chewing</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Chokes on food</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Spits out food</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Vomits</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Rumination</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*Revised from Matson & Kuhn (2001)
# Feeding Scale*

As a parent/caregiver:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am frustrated/anxious when feeding my child</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I feel confident in my ability to manage my child’s behavior at mealtime</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I coax my child to get him/her to take a bite</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I use threats to get my child to eat</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I feel confident my child gets enough to eat</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I get so angry at mealtimes that it takes me a while to calm down after the meal</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I disagree with other adults (e.g., spouse, grandparents, etc.) about how to feed my child</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>If my child does not like what is being served, I make something else</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>When my child refuses to eat, I put the food in his/her mouth by force if necessary</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>My child’s eating affects my daily routine</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>My child's eating affects our ability to eat together as a family</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>My child's eating affects our ability to go out and eat</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I feel confident in my ability to present a new food to my child</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I feel confident in my ability to get my child to taste new foods</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>I feel confident in my ability to choose new foods my child will enjoy</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*Revised from Behavior Pediatrics Feeding Assessment Scale (BPFAS) and Children’s Eating Behavior Questionnaire
My child:

<table>
<thead>
<tr>
<th>Item</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>All the time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enjoys eating</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Is interested in food</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Always asks for food</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Always asks for drinks</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Will try new foods</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Prefers the same foods at every meal</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Prefers to have foods served/prepared a certain way</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Refuses new foods at first</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Decides that s/he doesn’t like the food before tasting it</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Takes more than 20 minutes to finish a meal</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Comes readily to mealtimes</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Is flexible about mealt ime routines</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Eats junky foods but will not want at meals</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Gets up from the table during meals</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Lets food sit in mouth and doesn’t swallow</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Whines or cries at mealtimes</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tantrums at mealtimes</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Is aggressive during mealtimes</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Closes mouth tightly when food is presented</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Delays eating by talking</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Would rather drink than eat</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tries to negotiate what s/he will eat</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Play and Preferences:

*Please list your child’s preferences for the following:*

**Toys, Games, Books:**

______________________________________________________________________________
______________________________________________________________________________

**Songs:**

______________________________________________________________________________
______________________________________________________________________________

**Television/Videos:**

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

**Praise (such as hugs, tickling, etc):**

______________________________________________________________________________
______________________________________________________________________________

**Activities (such as peek-a-boo, soccer, coloring, etc):**

______________________________________________________________________________
REFERENCES


