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Family Voices at Mealtime: Experiences With Young Children With Visual Impairment

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Abstract

Infants with visual impairment often require additional interaction from adults to reinforce behaviors that lead to competency at mealtimes, but parental and professional confidence in teaching these skills is often limited. In the following collective case study, the authors, a speech/language pathologist (S/LP), occupational therapist (OT), and a teacher of students with visual impairment (TVI) questioned whether the level of a child's visual impairment affected child/adult interactions, and if so, how? The authors followed 30 young children with visual impairment from ages 3 months to 3 years. Cases included two groups of participants identified by degree of vision loss. One case had no vision or light perception only and was identified as the *Tactual Learners*. The other case, identified as the *Visual Learners*, had some degree of usable vision, but still required some type of adaptation to be successful. Using interpretive observation, semi-structured interviews, and artifacts for triangulation, the authors identified results that indicate young children who have less vision and are *Tactual Learners* have specific concerns regarding the development of independent eating skills and that a protocol of family-centered mealtime strategies could benefit their parents. The authors independently reviewed and coded the videotapes, interviews, and artifacts to identify four themes to guide additional strategy implementation for families. The research showed improving caretaker confidence, providing adaptations for an individual child's visual needs, encouraging sensory experiences around food, and teaching developmental expectations can potentially minimize difficulties in establishing good eating habits and promote independence at mealtime.

Keywords

caregiver–child interaction, adaptive, development, visual impairment, disability populations, partnerships with professionals, parents, families, case studies, research methodologies, home visiting, intervention strategies

Jeremy touches some of the peaches on his highchair tray and begins to cry. His young mother, Sara, puts her hand on his face gently and tries to comfort him with her soft voice and words. She scoops up the peaches on the spoon, says, "Bite?" and touches Jeremy's lips with the spoon and waits. He quiets and leans forward, eating the peaches. Sara sighs with relief and repeats the successful strategy. Sara turns to me, Jeremy's teacher of students with visual impairment (TVI), and says, "Jeremy is a good eater, as long as I feed him. He just won't feed himself anymore." Earlier in the session, when Sara was asked her feelings about feeding Jeremy, she replied, "Challenging, time-consuming, and frustrating." The video camera catches the sadness and frustration in Sara's voice, and the session becomes quiet and serious. I wonder why things have changed. Six months ago, Jeremy was happy at mealtime and would pick up cookies, and even pureed foods from his tray on his own. Although Jeremy is blind, he has excellent tactile discrimination hand skills in play and is interested in all types of textures with his mother's gentle guidance. I suggest that Sara try a strategy at the table that has been successful in promoting Jeremy's independence in toy play. With a little

encouragement, Sara moves to Jeremy's left side and again places the peaches on the highchair tray. Jeremy's body language is guarded, but he trustingly puts his hand on top of his mother's hand as she picks up the peach and feeds first herself and then Jeremy. Sara makes "chomping" sounds, and Jeremy smiles. At the end of the session, Jeremy is touching Sara's mouth as she chews, and they are both smiling. As I turn off the video camera, I make a mental note to discuss with the Early Intervention team the possibility of adding services to Jeremy's Individualized Family Service Plan (IFSP) to watch his feeding development more closely.

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Young children who are able to participate independently during mealtimes with their peers demonstrate appropriate social skills and preschool readiness (Rafoth, Buchenauer, Crissman, & Halko, 2004; Raver & Knitzer, 2002). These skills are acquired through visual observation and participation in family routines (Pierce, Munier, & Myers, 2009; Spagnola & Fiese, 2007). Previous research indicates that individuals with visual impairments are at greater risk for acquiring eating disorders in their teen or adult years, developing poor nutritional habits, or demonstrating delayed independent self-help skills while eating (Celeste-Williams, Lieberman, Banerjee, & Boyle, 2010; Szostak, 2007). These preliminary studies support the necessity of addressing positive experiences around mealtimes in this population during early development.

Independent mealtime behaviors require developing a foundation of skill accomplishment during the early years (Morris & Klein, 2000; Satter, 2000; Silberstein et al., 2009). Developmentally appropriate motor skills must be present to sit independently, or reach and grasp for food and utensils (Bushnell & Boudreau, 1993; Frick & Hacker, 2002; Oetter, Richter, & Frick, 1993). Caregivers who engage in affectionate touch and en face gaze demonstrate confidence and positive behaviors during the mealtime experience (Burklow, McGrath, & Kaul, 2002). These social-emotional skills indicate a trusting bond between a caregiver and child, and the ability of the parent to read emotional states and communication is essential when introducing new foods and textures (Burklow et al., 2002; Feldman, Keren, Gross-Rozval, & Tyano, 2004; Satter, 1990; Thoyre, 2000). Cognitively, children must be ready to explore their environment, initiate self-feeding through reach, and make sense of the mealtime routine (Als, Tronick, & Brazelton, 1980; Brambring & Troster, 1994; Keilty & Freund, 2004).

Vision provides motivation in the development of these areas for children with sight, as parents interact and reinforce behaviors that lead to competency at mealtime (Greenspan, 1994; Pierce et al., 2009; Stern, 2000). "Little is known about the impact of maternal gaze during early feeding on long-term feeding outcomes" (Silberstein et al., 2009, p. 504). When a child is not able to engage in these relationship building activities due to vision loss, "excessive concern and altered perception of feeding can lead to the initiation of inappropriate feeding practices, including coaxing, attending to non-eating feeding behavior, and force-feeding" (Burklow et al., 2002, p. 25). Therefore, our research question focused on whether the level of a child's visual impairment affected those early critical parent–child interactions, and if so, how?

An intriguing picture, specifically related to the adaptive skills of eating, emerged after conducting an in-depth exploration into the results of a longitudinal study of developmental patterns of children with visual impairment

known as *Project PRISM* (Ferrell, Shaw, & Deitz, 1998). In the categories of "Additional Disabilities" for the study participants, "Eating Disorders" comprised the third most common category documented, second only to "Neurological Impairments" and "Developmental Delay." Results of the Battelle Developmental Inventory (BDI) in the Adaptive Domain show significant delayed acquisition for the 14 items measuring independent mealtime skills (Bak, 2000) for those children with less vision. Information is available to assist in the development of appropriate routines, interactions, and skills to foster independent eating skills, and can be found in several educational books and other media (e.g., Bruns & Thompson, 2012; Chen et al., 1995; Ferrell, 2011; Morris & Klein, 2000; Petersen & Nielsen, 2005; Webber & Brody, 1994). However, although these informative strategies are based on the clinical experience and broad developmental research of many practitioners, there is little specific empirical research data in the area of visual impairment available to support these strategies. The complexity of the process of learning to eat independently is significant for an infant with visual impairment, and there are no evidence-based interventions that provide a comprehensive approach. In early intervention (EI), feeding challenges are usually addressed through the pediatrician or nutritionist in a medical model or identified by families on the IFSP and assigned to an occupational therapist (OT) or a speech/language pathologist (S/LP). Because visual impairment is considered a low-prevalence exceptionality in the general population, OTs and S/LPs may have little to no previous experience with infants with blindness or may not have had the opportunity to work with a TVI. Parents may not think to include the TVI as part of the team addressing mealtime challenges, and TVIs may not feel competent in helping families with adapting mealtime routines since it is not an area covered in their professional training.

It was important that the researchers identified a broad research question that clarifies the information that clinical opinion and preliminary research results can only begin to suggest. Does a more severe visual impairment (low vision vs. blindness) in the child affect the families' ability to assist in the development of independent skills at mealtime? The opportunity to explore potential themes and variables with families through case study research allowed for further understanding to promote implementation strategies in the field of visual impairment. It was not our intention to choose typical or representative cases, and our purposive sample (Remler & Van Ryzin, 2011) included families that represented a variety of cultural and socioeconomic backgrounds, to "maximize what we can learn" (Stake, 1995, p. 4) about parent interactions at mealtime with their young child with visual impairment.

Method

Context: Researcher Reflexivity

First author. As a TVI for 27 years, I know that individuals with visual impairment who do not learn to eat independently are at a significant disadvantage in social, school, and workplace settings. Observing the lived experiences of families in their homes encouraged me to release my assumptions of how visual impairment might affect early mealtime experiences, and how TVIs can be most effective as a member of the team.

From behind the lens of the video camera, I was able to put aside my teaching persona and make some surprising observations. It allowed me to watch the parent–child interaction more closely and notice details I would have missed in the moment. These observations often became subjects of discussion with the team, and even evolved into themes or strategies.

Second author. My interest with feeding concerns in young children started 35 years ago as an OT in the developmental pediatrics department of a hospital. In trying to find answers for families struggling with feeding concerns, I began my journey of seeking out practical, supportive information. My first daughter's early experiences with mealtimes were positive, but the transition to "real foods" with textures became a struggle for both of us. I was panicked by her weight loss and soon found myself in the role of a short-order cook, chasing her around the house, hoping she would eat anything. She started eating after extensive trials with sensory exploration, coaxing, routine building, and many tears from both of us. I now believe that I have empathy, practical advice, and experience to offer families who are desperate to encourage their child toward independent eating skills.

Third author. The area of feeding/eating has become a primary focus for me in the most recent 11 years of my 35 years of practice as a S/LP. My present caseload of infants and young children with vision loss has shown a particularly high percentage of needs. The factor of reduced opportunities for imitative skills that are inherent for a child with vision loss significantly affects the ability to master mealtime skills. Mealtimes involve not only nutrition but also socialization, bonding, family routines/rituals, and the overall dynamics of families. This study served not only to make me a better observer of young children with vision loss but also to cement my sincere respect for each caregiver's awareness of the child's strengths and needs in the area and willingness to facilitate growth.

Design

Early in 2008, we were supported through a grant in an exploratory collective case study (Stake, 1995) in which we would examine family development of mealtime experiences for infants with visual impairments. Thirty families were identified through purposive sampling (Merriam, 2009) and followed every 6 months. To address the research question of whether children with low vision or blindness had more difficulty acquiring independent eating skills, mealtime information was collected from families with infants diagnosed with a variety of visual impairments. We utilized videotapes of family mealtimes, semi-structured parent interviews, Teller Acuity ratings, and IFSP artifacts (Mayer et al., 1995), and the child's functional vision assessment as data to provide a detailed picture (Creswell, 2007) of each family.

Theoretical framework. An interpretive theoretical perspective was appropriate for this collective case study as we were most concerned with developing an understanding of what was happening naturalistically in the family home at mealtime, rather than an explanation of the effects of visual impairment. To assist families with creating appropriate routines and strategies to teach their infant or toddler with visual impairment to be successful in independent eating skills, we must have "empathy and first-hand knowledge" (Stake, 1995, p. 39) of what the family is experiencing every day. Instead of assuming we knew why young children with visual impairments show difficulties in learning to eat, we had to take the time to interact with families in the natural setting of their home. Crotty (1998) reminds us, "only through dialogue can one become aware of the perceptions, feelings and attitudes of others and interpret their meanings and intent" (p. 75).

An interpretive stance allowed us to use our years of combined experience to apply the pragmatic components of family systems theory (Christian, 2006; Turnbull, Turnbull, Erwin, Soodak, & Shogren, 2010). Observing how family members interact at mealtime contributes to building a new understanding of cultural and behavioral activities through which routines can be accepted. Family systems theory has helped create best practices and a theoretical framework for family-centered EI services (Dunst & Trivette, 2009; Hatton, McWilliam, & Winton, 2002). As EI has evolved, research results have guided the field from a child-centered paradigm to a family-centered paradigm. The entire family is affected when a child struggles with mealtime difficulties, and adaptations in routines must include everyone in the home (Bruns & Thompson, 2012). When families have consistent access to highly trained EI personnel and intervention resources that address their everyday concerns, the potential for success is high. However, to develop training and strategies for EI personnel, it is necessary to understand how culture and family relationships affect interactions at mealtime.

Table 1. Characteristics of a Purposive Case Study Sample.

Characteristic	Tactual Learner (n = 16)	Visual Learner (n = 14)
Gender		
Male	11	6
Female	5	8
Ethnicity		
White	7	11
Hispanic	6	2
Asian	1	1
African American	1	0
Native American	1	0
Start age (months)		
≤7	6	3
8 to 12	7	8
≥13	3	3
Visual diagnosis		
Optic nerve hypoplasia	11	3
Albinism	0	2
Leber's congenital amaurosis	1	1
Optic atrophy	1	1
Norrie's disease	1	0
Cataracts	0	1
Coloboma	0	1
Cortical visual impairment	2	1
Nystagmus	0	3
Microphthalmia	0	1

Data Collection

Participants. The study was conducted through a private organization that provides EI and preschool services to families with children with visual impairment in a large urban area. Participants were purposively chosen from infants referred through local pediatric ophthalmologists and EI programs. As the research team, we were able to have contact with each potential family soon after diagnosis. Guidelines for identification and case placement included the type of diagnosis, initial testing with the Teller Acuity Cards (Mayer et al., 1995; Teller, 1997), and a review of the child's functional vision assessment and ophthalmological records. Most families were asked to participate after the eligibility evaluation was concluded.

Ten different visual diagnoses were included across participants, with the largest group (n = 14) identified as having a diagnosis of syndrome of optic nerve hypoplasia (Borchert & Garcia-Filion, 2008). We included participants from various ethnic groups so that we could observe different cultural practices at family mealtimes (see Table 1). Five different ethnic categories were represented in the study: White (n = 18), Hispanic (n = 8), Asian (n = 2),

Native American (n = 1), and Black (n = 1). Language interpreters were used when necessary for full caregiver participation.

All study participants were separated into two "cases" that were determined by Teller Acuity ratings (Teller, 1997) and functional visual behavior. One case was identified as the "Tactual Learners," or participants who were diagnosed to have no vision, light perception, or a visual acuity of 20/200 or less. The other case was identified as "Visual Learners," or participants who used the low vision they had with adaptations. Teller Acuity ratings placed this case in the 20/70 to 20/180 equivalency range. Several individuals were noted to begin the study as "Tactual Learners" and became "Visual Learners" as they became more skilled at using their vision. Data were collected on 16 participants in the "Tactual Learner" case and 14 participants in the "Visual Learner" case.

Once identified as a potential member of the case study, informed consent was obtained for both parents and child, as directed by the organization's Institutional Review Board (IRB) process. The youngest participant in the study was videotaped at 3 months old, but most initial sessions occurred during the introduction of more textured foods, or around 8 months (see Table 1). Families were transitioned out of the study as their child turned 3 years old.

If at any point a child required medical intervention for nutritional purposes, the participant was removed from the study, although ongoing assistance was provided to the family through EI services. Seven subjects were unable to continue due to concerns resulting in the placement of a feeding tube (n = 2), relocation to another state (n = 2), or the identification of cognitive delays (n = 3) that affected the child's ability to participate in the independent learning process. Identifying additional cognitive or physical delays was challenging when the participants were recruited at such a young age. For the purposes of this study, it was important to focus on the criteria of visual impairment, and so children with an identified additional exceptionality were released from the study. These families continued to receive supportive EI services as needed.

Observational data. Best practice in family-centered services strongly supports that EI interventions take place in the home (Raab & Dunst, 2004). Caregivers demonstrate increased comfort and confidence with mealtimes if changes are made with their input, and as part of a routine in their home rather than in a clinical setting (Mueller, Piazza, Patel, Kelley, & Pruett, 2004). Young children are best able to practice the skills of independent eating in a familiar routine where they know what to expect. All case study observations were conducted in the participating families' homes.

Video sessions included all aspects of the mealtime, and the research team identified the areas of adaptation of the mealtime environment, routines, interactions, and types of

food consumed. To increase our noninterventionism (Stake, 1995), visits were scheduled at mealtimes, and families were asked to show us how a typical meal would look and to feed their child as they normally would. After each video session was completed, our team and the family members were available to brainstorm on strategies or interventions that might assist the family. Several families in the case study have as many as six videos, and some as few as two. An average of four sessions were evaluated depending on the age of the child when he or she entered the study.

Document data. The purpose of collecting written artifacts (Merriam, 2009) in qualitative case study research is to provide an audit trail for future replication and evidence for trustworthiness. For each family, the team collected written artifacts every 6 months including Teller Acuity forms, functional vision assessments, and IFSPs. This allowed us to confirm levels of behavioral visual function and appropriate adaptations for mealtimes as the child matured. Parental goals for mealtime skills in the IFSP were noted and followed over time to identify family-centered wishes in formal EI services. It is important to note that these documents are part of typical services provided for families that attend the organization where the study was conducted. IFSPs are part of a mandated process through Part C of EI (Individuals With Disabilities Education Act [IDEA], 2004).

Interviews. We conducted semi-structured parent interviews at every video session (see the appendix for interview questions). Each interview lasted approximately 20 to 30 min and was collected as handwritten notes by my colleagues as I set up the video camera and the family prepared the food for the meal. Caregivers were allowed to take as long as necessary to answer each question and all members of the family were encouraged to contribute and be reflective. The perspective of mothers, fathers, grandparents, and child care providers was included whenever possible.

Data Analysis

Initially, the researchers met as a team after the first five sessions to watch and discuss videos to determine what we felt was important in mealtime routines related to our respective EI specialties. These group discussions resulted in a video coding data collection sheet. For the remainder of the case study, video recordings were analyzed using inter-rater observation. Each researcher watched the videos independently and assigned a score to the video codes. If at least two of the researchers agreed on the score with a level of 67% inter-rater reliability, the code was included in the results.

Comparative content analysis (Priest, Roberts, & Woods, 2002) and naturalistic generalization (Stake, 1995) were used to develop a thematic conceptual structure for data interpretation. Initial organization began with repeated viewings of the videotapes and readings of the handwritten parent interview transcripts. The categories that were chosen in the beginning included the specific criteria under (a) adaptations used during the mealtime, (b) child strategies, (c) food acceptance, (d) textures consumed, (e) utensil use, and (f) parent strategies. Patterns were organized from categories relevant to the Visual Learners and the Tactual Learners for comparison. As saturation (Creswell, 2007) was reached, patterns between the two different cases emerged that we considered important to note to analyze and interpret the video recordings. These patterns included the following:

- Mealtime routines that evolved as families absorbed information about successful visual or tactual adaptations and strategies for their child.
- Utensil use patterns, including the use of alternative utensils (e.g., forks, straws) and tactual exploration strategies.
- Parental confidence and expectations for independent eating skills differed with the level of visual impairment present in their child.
- Parents who expressed an understanding of sensory presentations appeared to have more success with food acceptance by their child.

The patterns that indicated critical differences between the Visual Learners and the Tactual Learners emerged from the data as final themes (Ryan & Bernard, 2003) and are suggested as possible variables and guidelines for future research.

Trustworthiness

It may be argued trustworthiness is a strength of case study research due to the holistic nature of case design. "Reliability or trustworthiness refers to dependability over time and across researchers and methods," according to Callahan, Maldonado, and Efinger (2003, p. 39). The accumulation of data from watching the children grow from young infants to transitioning preschoolers through repeated interactions with families in either case allowed the study to maintain credibility through positive relationships. Triangulation (Merriam, 2009) was used through comparisons of handwritten notes from parent interviews, video recordings, functional vision assessments, Teller Acuity ratings, and the IFSP outcomes that address mealtime routines. In reviewing all the data, the researchers were able to identify increased family concerns around mealtimes for children in the Tactual Learners case.

Together, the members of the research team have over 60 years of experience working with infants and toddlers

with visual impairments and have a high level of interest in how families develop mealtime routines. Through professional development, each of us has pursued an extensive level of feeding and eating expertise. We are committed to family-centered practices that work with families to choose strategies and routines that respect diversity and the reality of their lives.

Findings

Overall results from this case study confirmed experiential knowledge and the literature suggesting a significant visual impairment in young children affects the development of the feeding process, including the ability to eat independently. All the families in the Tactual Learners case demonstrated behaviors of at least three of the four themes described, while the families of the Visual Learners were more likely to show only one thematic behavior. The research team found the investigation of these two case studies both reassuring and surprising. There were moments of confirmation as we observed families adapting mealtime routines and demonstrating increased confidence as they implemented successful strategies with their children. There were also surprises as we discerned patterns of concern we had never recognized before that may be critical in the development of independent eating skills for young children with blindness. Comparing two cases of children with different levels of visual impairment in a systematic method resulted in the determination of the following themes: parent confidence, mealtime routines, food acceptance, and utensil use.

Parents of Tactual Learners Display Less Confidence

Parental expectations and confidence in introducing developmentally appropriate skills and foods appeared to be affected by the level of vision impairment.

> It never occurred to me to give him a spoon. I think he would throw it on the floor, or poke himself in the face. He likes eating when we feed him; it's just easier that way. (Jenny, mother of a one-year-old Tactual Learner)

Between the ages of 6 months and 1 year, sighted infants are able to remove food from a spoon, handle solid foods, self-feed with fingers or spoon, and maintain focus on feeding until the meal is completed (Pridham, Steward, Thoyre, Brown, & Brown, 2007; U.S. Department of Agriculture, Feeding and Nutrition Service [USDA], 2002). Previous research is consistent (Bak, 2000; Ferrell et al., 1998) with the findings in this study that participants in the Tactual Learner case were more likely to be delayed in these skills, and that caregivers need direct encouragement to introduce

them. Silberstein et al. (2009) maintain that, "these skills facilitate the transition from a predominantly caregiver-regulated feeding to a more independent, self-regulated pattern that is typically established toward the end of the first year" (p. 505). It was surprising to us that in many situations, the children were eager to try new skills at an age-appropriate level, and their parents displayed a lack of knowledge and significant anxiety regarding their children becoming more independent.

In another demonstration of limited parental confidence, we observed Rose sitting in her high chair, picking up small pieces of avocado and eating them. She picks up her fork and places a small piece onto the tines of the fork with her hand. She smiles and brings the loaded fork to her mouth for a successful bite. Her mother perceives Rose to be struggling, and reaches over and tries to help Rose with the fork. Rose closes her mouth firmly when it is brought up to her mouth. She refuses any further bites, turns away, and tries to get out of her high chair.

> Rose isn't gaining weight, and I'm worried about how little she is eating! It's hard to know when she needs help and when to let her practice with utensils on her own. How do I know when she is eating enough? (Kathleen, mother of a fifteen-month-old Visual Learner)

Parents often expressed inconsistent confidence as their children moved from ages 6 months throughout the second year. When asked to share three words about mealtimes in the parent interview, they often used words such as "stressful," "difficult," or "hard," indicating anxiety or a lack of confidence in the process. These negative words were often present for parents of the Tactual Learners even when the child appeared to be progressing well in the video. Through the implementation of intervention strategies that provide success at mealtime, parents began to use more positive words such as "exciting" and "fun" as the children showed more independence.

Establish Adapted Mealtime Routines for Success

Consistent, appropriately adapted mealtime routines are crucial to the success of the development of independent skills and food acceptance. As parents become more knowledgeable about how their child's visual impairment affects their learning, they are more likely to create a mealtime environment and routine that provides a safe place for eating. Recognizing the importance of initiation in the child's participation at the family table, the researchers referred to functional vision assessments and changes in Teller Acuity ratings to develop routine-based adaptations with the families. Integrating high contrast utensils or boundaries at the table with a textured placemat allows a child to understand

their place at the table and is easily transferred to other environments. Capitalizing on an infant's visual strengths such as positioning them to make use of their best visual field or turning their chair with the back to the window to reduce glare may make all the difference to promote independent experimentation at the table.

> We have started a new mealtime routine where we encourage Jolene to go to a kitchen drawer containing different cups and dishes. By choosing her own high contrast plates, bowls, and cups, she has become much more independent. (Natalie, mother of a two-year-old Visual Learner)

Throughout the study, families were given adaptation suggestions at the end of each video session. Over time, it became obvious that if the suggestion did not match with the current needs of the family, it was not implemented, even if it was in the best interests of the child. In their research with families, Dunst and Trivette (2009) agree that if caregivers and practitioners are partners in determining the intervention routine, consistency is more likely to occur. IFSPs that were developed with families during the study began to reflect the routines developed at mealtimes as parents identified new challenges and successes.

Visual Impairment and Texture Experiences

Texture acceptance and variety of diet appears to be affected by level of visual impairment. We were surprised at the case study data that connected the appearance of parent concerns about eating and the age (7 to 9 months) when children traditionally begin to accept more variety in foods. Video sessions in the home before or around the age of 6 months demonstrated successful mealtime experiences as the infants were fed liquid and pureed foods. Caregiver interviews reflected optimism and comfort as they transitioned their children from breast or bottle to adult initiated spoon feeding. When we returned 6 months later, the Tactual Learners were often still eating purees, and there was inconsistent success with self-feeding development. Families indicated frustration with their child's reluctance to accept new textures immediately and often gave up on new food textures altogether.

> We learned about sensory presentations when Clara was six weeks old. At that point, Clara was introduced to many different textures at her feet. We let her explore dry, sticky, wet, squishy, fuzzy, and cold textures for her sensory playtime and Clara loved it. Little did I know how this sensory diet would prepare Clara for new sensory experiences, including eating. (Annie, mother of a two-and-a-half-year-old Tactual Learner)

Parent interviews and video observations confirmed that children in the Tactual Learner case had less variety in their diet and accepted foods with texture later than their peers with better vision. Tactual Learners and their families were more likely to continue to struggle with the introduction of new foods and textures until age three. Those families that understood the benefits of ongoing texture introductions in all daily routines, including play experiences, bath time, and dressing, demonstrated decreased levels of success at mealtime. Further research is necessary to discover the intricacies of this theme.

Delay of Independent Utensil Use

The functional use of utensils is delayed for young children with visual impairment.

> Adrianna sits in her highchair, playing with a spoon, turning it over and over and holding it very close to her face. Her mother approaches and takes the spoon out of her hand with a worried look on her face. "She will do that all day if I let her. How do I teach her to use it the correct way?" (Heather, mother of a seven-month old Tactual Learner)

Caregivers may struggle with knowing how and when to introduce utensils to their child with visual impairment, as well as understanding critical steps in functional hand use (Ross, 1995), and may require additional experiences and guidance. One noticeable relationship that was observed between the two cases was that of the development of "hand enclosure" (Lederman & Klatsky, 2009). Hand enclosure is a haptic exploratory procedure in the development of touch in which an infant holds or grasps an object with one or two hands to determine shape, size, or volume of the object. Combining cognition and perception, the children who exhibited this ability to enclose their palms around the object began to use this tactual information to determine the function of the object. While children with vision move quickly through this stage of exploration, infants with visual impairment need to engage in this task many, many times due to the nature of tactual learning. We observed that families and EI professionals often see this behavior as non-functional, and may discourage the infant from spending time at mealtime exploring utensils.

In our study, participants who were observed to display enclosure skills had acquired spoon use by the age of three, while those who did not engage in this exploration did not. It is essential to support young children with visual impairment with opportunities to safely use their hands on their own within an everyday routine, such as eating, to become more familiar with the objects used in the routine. For young infants, participation in the exploratory process may need to be encouraged, with the adult employing physical, auditory, tactile, or visual prompts, to enable the child to participate in a given activity (McLinden, 2012).

Discussion

Independence at mealtime is important for all infants and a skill that parents expect to guide without assistance. Parents of children with visual impairment may find their role challenging as the process of reading their child's efforts to communicate and encouraging self-initiation may require more intentional guidance. Similar to the responses of caregivers of low-birth-weight children and those with other developmental delays (Burklow et al., 2002; Dovey & Martin, 2012; Williams, Hendy, & Knecht, 2008), parental confidence with infants with blindness appeared to be diminished without clear, consistent intervention. As visual interaction is not an option, enhanced trust and language interactions between caregiver and child are required to promote skill development and new learning.

Infants and toddlers with visual impairment benefit from daily routines that incorporate adapted settings, clear beginnings and endings, and food presentations they are able to predict (Lueck, Chen, Kekelis, & Hartmann, 2010; Satter, 2000; Spagnola & Fiese, 2007). Families and EI providers working together to understand how an individual's visual diagnosis affects how they interpret their environment can result in successful child initiation. As every family's home and mealtime traditions are unique, observations in the natural environment is crucial. Many factors can affect food acceptance, including sensory development (Bruns & Thompson, 2012) and parent comfort in presentation. Conclusions from feeding challenges implementation research indicate that including increased experiences with a variety of food textures in a safe environment paired with positive language about food (Dovey & Martin, 2012; Klein, 2009; Mueller et al., 2004; Williams et al., 2008) can potentially address challenges in diet variation through intervention.

Our research shows that improving caretaker confidence, providing adaptations for an individual child's visual needs, encouraging sensory experiences around food, and teaching developmental expectations can potentially minimize difficulties in establishing good eating habits. Collaboration between EI team members such as families, OTs, S/LPs, and TVIs can be beneficial to all by providing strategies for enjoyable mealtime experiences.

Limitations

This study included a purposive sample of families in a limited geographical area. Although every attempt was made to include families with a variety of cultural backgrounds, the majority of the participants were White and from middle-class neighborhoods. Due to the sample size and the demographic composition of the participants, these results should not be considered generalizable to the population of young children with visual impairments.

Despite our desire to sample a wide variety of visual diagnoses in the cases, most of the children were diagnosed with syndrome of optic nerve hypoplasia, which can display a varied collection of concerns, including endocrine and neurological midline issues (Borchert & Garcia-Filion, 2008). This diagnosis can have medical implications that affect eating abilities and needs to be researched in future studies.

Further Research

Through interpretive observation and interviewing techniques, it became obvious in comparing the two cases that young children who have less vision and are Tactual Learners have specific concerns regarding the development of independent eating skills. Having identified four areas where parent education shows potential for benefit, it is important to determine implementation protocols that promote family-centered practices. Developing strategies for building parent understanding of developmentally appropriate mealtime skills and routines, introducing a variety of textured foods, and encouraging utensil use will allow future research to guide interactions between EI providers and families.

> Jeremy sits at the table and uses two hands to find the cracker in the divided plate and feeds himself. Sara sits close behind him, ready to assist with his open cup. This time, the video camera shows a young mother beaming with pride. It is a year and a half later, and Jeremy has made significant progress toward independent eating. He confidently chooses from three different textures on his plate: one crunchy, one chewy, and one mushy. Jeremy picks up the textured spoon at the side of the plate and tries to scoop the same peaches that caused him so much distress when he was younger. Sara asks Jeremy if he would like a drink, and his hands move to a small open cup. He lifts it with two hands and takes a drink without spilling. He is able to place it back on the tray without assistance. Sara watches carefully and her hand hovers closely in case Jeremy misses the table. She smiles at the camera as Jeremy goes back to his crackers. "Sometimes he misses the tray, but he is much more careful now." Jeremy's EI team has been working closely with Jeremy and his mother. Consultation between the S/LP, the OT, and myself has resulted in a plan to make the most of Jeremy's tactual skills and his mother's expectations that he will eat independently. Presenting new and frightening textures slowly to Jeremy, first to his feet in a sensory play situation, then on his tray, and finally on a plate, was only possible with Sara close by. As Sara learned the importance of "messy play" for Jeremy and the benefit of a mealtime routine, Jeremy became more curious about different foods. Now Jeremy knows that Sara and his large extended family will be present to support him as he feeds himself. Sara uses the words "Fun, satisfying, and exciting!" to describe mealtimes at this session. She recognizes that her expectations set the social/emotional tone of the meal and that she is confident in her ability to interpret Jeremy's wants and needs, although his speech is

delayed. Jeremy is an active participant in the family's social interactions at the table, squealing with delight with attention from his Grandfather and making chomping noises with his mother when trying something unfamiliar. In six months, he will be ready to transfer his independent feeding skills to the preschool setting, where he will be expected to eat snacks with his peers.

Appendix

Parent Interview Questions

Name: D.O.B.   Chronological Age:
Date of Assessment: Visual Diagnosis:
Teller Equivalency:
Evaluators:
Medications/Medical Conditions/Allergies:
Can you give us three words that describe your feelings about feeding your child?
Do you have any concerns regarding feeding?
Who is the primary person that interacts with your child at mealtime?
Is there more than one?
Do you eat together as a family?
Where does your child eat? (Describe environment?)
When does your child eat? How many times a day?
What does your child eat?
Nipple type?   Breast   Bottle   Cup   Straw
Purees:
Finger foods:
Stages/Textures:
Table Foods:
Utensil Use:

References

Als, H., Tronick, E., & Brazelton, T. B. (1980). Affective reciprocity and the development of autonomy: The study of a blind infant. *Journal of the American Academy of Child Psychiatry*, *19*, 1922–1940.

Bak, S. (2000). *Reliability and validity of the Battelle Developmental Inventory when used with young children who are visually impaired* (Doctoral dissertation, University of Northern Colorado, Greeley). Retrieved from http://0-search.proquest.com.source.unco.edu/docview/304632707?accountid=12832

Borchert, M., & Garcia-Filion, P. (2008). The syndrome of optic nerve hypoplasia. *Current Neurology & Neuroscience Reports*, *8*, 395–403.

Brambring, M., & Troster, H. (1994). The assessment of cognitive development in blind infants and preschoolers. *Journal of Visual Impairment & Blindness*, *88*, 9–18.

Bruns, D. A., & Thompson, S. D. (2012). *Feeding challenges in young children: Strategies and specialized interventions for success*. Baltimore, MD: Paul H. Brookes.

Burklow, K., McGrath, A., & Kaul, A. (2002). Management and prevention of feeding problems in young children with prematurity and very low birth weight. *Infants & Young Children*, *14*(4), 19–30.

Bushnell, E., & Boudreau, J. (1993). Motor development and the mind: The potential role of motor abilities as a determinant of aspects of perceptual development. *Child Development*, *64*, 1005–1021.

Callahan, K., Maldonado, N., & Efinger, J. (2003). Bridge over troubled waters: End-of-life (EOL) decisions, a qualitative study. *The Qualitative Report*, *8*(1), 32–56.

Celeste-Williams, L., Lieberman, L., Banerjee, P., & Boyle, J. (2010). The effects of a nutritional intervention on the nutritional knowledge of children and adolescents with visual impairments. *Journal of Visual Impairment & Blindness*, *104*, 677–687.

Chen, D., Hammett, L., Johnson, D., McMillen, P., McNamara, R., & McNeal, P. (1995). *VIISA: Resources for family centered intervention for infants, toddlers and preschoolers who are visually impaired* (2nd ed.). Logan: Department of Communication Disorders, SKI*HI Institute, Utah State University.

Christian, L. G. (2006). Understanding families: Applying family systems theory to early childhood practice. *Young Children*, *61*(1), 12–20.

Creswell, J. (2007). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: SAGE.

Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process*. Thousand Oaks, CA: SAGE.

Dovey, T. M., & Martin, C. I. (2012). A quantitative psychometric evaluation of an intervention for poor dietary variety in children with a feeding problem of clinical significance. *Infant Mental Health Journal, 33*, 148–162. doi:110.1002/imhj.21315

Dunst, C., & Trivette, C. (2009). Capacity-building family systems interventions practices. *Journal of Family Social Work, 12*, 119–143. doi:10.1080/10522150802713322

Feldman, R., Keren, M., Gross-Rozval, O., & Tyano, S. (2004). Mother and child's touch patterns in infant feeding disorders: Relation to maternal, child and environmental factors. *Journal of the American Academy of Child & Adolescent Psychiatry, 43*, 1089–1097. doi:10.1097/01.chi.0000132810.98922.83

Ferrell, K. A. (2011). *Reach out and teach: Helping your child who is visually impaired learn and grow* (2nd ed.). New York, NY: AFB Press.

Ferrell, K. A., Shaw, A. R., & Deitz, S. J. (1998). *Project PRISM: A longitudinal study of developmental patterns of children who are visually impaired* (Unpublished manuscript). Retrieved from http://www.unco.edu/ncssd/research/PRISM/default.html

Frick, S. M., & Hacker, C. (2002). *Listening with the whole body*. Madison, WI: Vital Links.

Greenspan, S. (1994). Paying attention to your baby's appetite to avoid overfeeding or underfeeding. Part II: Mealtime communication. *Pediatric Basics*, *69*(3), 11–13.

Hatton, D. D., McWilliam, R. A., & Winton, P. J. (2002). Infants and toddlers with visual impairments: Suggestions for early interventionists. ERIC Clearinghouse on Disabilities and Gifted Education. Retrieved from http://files.eric.ed.gov/fulltext/ED473829.pdf

Individuals With Disabilities Education Act of 2004, Pub.L. No. 108–446, §, 118 Stat. 2647 (2004).

Keilty, B., & Freund, M. (2004). Mastery motivation: A framework for considering the "how" of infant and toddler learning. *Young Exceptional Children*, *8*(2), 2–10.

Klein, M. D. (2009). *Get permission approach to sensory mealtime challenges*. Tucson, AZ: Mealtime Notions, LLC.

Lederman, S., & Klatsky, R. (2009). Haptic perception: A tutorial. *Attention, Perception, & Psychophysics*, *71*, 1439–1459.

Lueck, A. H., Chen, D., Kekelis, L. S., & Hartmann, E. (2010). *Developmental guidelines for infants with visual impairments: A guidebook for early intervention* (2nd ed.). Louisville, KY: American Printing House for the Blind.

Mayer, D., Beiser, A., Warner, A., Pratt, E., Raye, K., & Lang, J. (1995). Monocular acuity norms for the Teller Acuity Cards between the ages one month and four years. *Investigative Ophthalmology & Visual Science*, *36*, 671–785.

McLinden, M. (2012). Mediating haptic exploratory strategies in children who have visual impairment and intellectual disabilities. *Journal of Intellectual Disability Research, 56*, 129–139. doi:10.1111/j.1365-2788.2011.01430.x

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.

Morris, S. E., & Klein, M. D. (2000). *Pre-feeding skills: A comprehensive resource for mealtime development* (2nd ed.). Tucson, AZ: Therapy Skill Builders.

Mueller, M., Piazza, C., Patel, M., Kelley, M., & Pruett, A. (2004). Increasing variety of foods consumed by blending nonpreferred foods into preferred foods. *Journal of Applied Behavior Analysis*, *37*, 157–170.

Oetter, P., Richter, E. W., & Frick, S. M. (1993). *M.O.R.E.: Integrating the mouth with sensory and postural functions*. Hugo, MN: PDP Press.

Petersen, B., & Nielsen, J. (2005). *ViSioN program: Vision skills in the natural environment: An intervention guide for use with children birth to three with blindness or vision impairment*. Logan: Department of Communication Disorders, SKI*HI Institute, Utah State University.

Pierce, D., Munier, V., & Myers, C. T. (2009). Informing early intervention through an occupational science description of infant-toddler interactions with home space. *The American Journal of Occupational Therapy*, *63*, 273–287.

Pridham, K. F., Steward, D., Thoyre, S., Brown, R., & Brown, L. (2007). Feeding skill performance in premature infants during the first year. *Early Human Development*, *83*, 293–305.

Priest, N., Roberts, P., & Woods, L. (2002). An overview of three different approaches to the interpretation of qualitative data. Part 1: Theoretical issues. *Nurse Researcher*, *10*(1), 30–42.

Raab, M., & Dunst, C. J. (2004). Early intervention practitioner approaches to natural environment interventions. *Journal of Early Intervention*, *27*, 15–26.

Rafoth, M., Buchenauer, E., Crissman, K., & Halko, J. (2004). *School readiness—Preparing children for kindergarten and beyond: Information for parents*. Retrieved from http://www.nasponline.org/resources/handouts/schoolreadiness.pdf

Raver, C. C., & Knitzer, J. (2002). *Ready to enter: What research tells policymakers about strategies to promote social and emotional school readiness among three-and four-year-old children*. New York, NY: National Center for Children in Poverty, Columbia University. Retrieved from http://nccp.org/publications/pub_485.html

Remler, D. K., & Van Ryzin, G. G. (2011). *Research methods in practice: Strategies for description and causation*. Los Angeles, CA: SAGE.

Ross, S. (1995, January). *Spoon use by blind, partially sighted and sighted two year olds*. Paper presented at the British Psychological Society. Abstract retrieved from http://www.esrc.ac.uk/my-esrc/grants/R000233685/outputs/Read/80b21168-bfa1-4823-b1b2-e85e09bfb903

Ryan, G. W., & Bernard, H. R. (2003). Techniques to identify themes. *Field Methods, 15*, 85–109. doi:10:1177/1525822X02239569

Satter, E. (1990). The feeding relationship: Problems and interventions. *Pediatrics*, *117*, 181–189.

Satter, E. (2000). *Child of mine: Feeding with love and good sense*. Boulder, CO: Bull Publishing.

Silberstein, D., Feldman, R., Gardner, J. M., Karmel, B. Z., Kuint, J., & Geva, R. (2009). The mother-infant feeding relationship across the first year and the development of feeding difficulties in low-risk premature infants. *Infancy, 14*, 501–525. doi:10.1080/15250000903144173

Spagnola, M., & Fiese, B. (2007). Family routines and rituals: A context for development in the lives of young children. *Infants & Young Children, 20*, 284–299. doi:10.1097/01.IYC.0000290352.32170.5a

Stake, R. (1995). *The art of case study research*. London, England: SAGE.

Stern, D. N. (2000). *Interpersonal world of the infant: A view from psychoanalysis and development psychology*. New York, NY: Basic Books.

Szostak, C. M. (2007). *Eating disturbance and visual impairment: A matter of social identity* (Doctoral dissertation). Available from ProQuest Dissertations Database. (UMI No. 3283386)

Teller, D. Y. (1997). First glances: The vision of infants. The Friedenwald lecture. *Investigative Ophthalmology & Visual Science*, *38*, 2183–2203.

Thoyre, S. M. (2000). Mothers' ideas about their role in feeding their high-risk infants. *Journal of Obstetrics, Gynecological, & Neonatal Nursing*, *29*, 613–624.

Turnbull, A., Turnbull, R., Erwin, E., Soodak, L., & Shogren, K. (2010). *Families, professionals, and exceptionality: Positive outcomes through partnerships and trust* (6th ed.). Upper Saddle River, NJ: Pearson.

U.S. Department of Agriculture, Feeding and Nutrition Service. (2002). *Feeding infants: A guide for use in the child nutrition programs*. Retrieved from http://teamnutrition.usda.gov/Resources/feeding_infants.html

Webber, L., & Brody, J. (1994). *Let's eat: Feeding a child with a visual impairment* [Brochure]. Los Angeles, CA: Blind Childrens Center.

Williams, K. E., Hendy, H., & Knecht, S. (2008). Parent feeding practices and child variables associated with childhood feeding problems. *Journal of Developmental and Physical Disabilities, 20*, 231–242.