

Volume 9 ♦ Issue 2 ♦ Summer 2019

eHearsay



Ohio Speech-Language-Hearing Association

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Ohio Speech-Language- Hearing Association (OSLHA)

MISSION:

Empowering our members by providing opportunities for professional development, advocacy, and leadership development necessary to foster excellence in the services provided to individuals with communication and related disorders.

HISTORY:

Founded in 1945, the Ohio Speech-Language-Hearing Association (OSLHA) is a professional association representing speech-language pathologists and audiologists throughout Ohio. OSLHA is recognized by the national American Speech-Language-Hearing Association (ASHA) as the official professional organization for Ohio. OSLHA members provide services for the evaluation and rehabilitation of communicative disorders. Members work in a variety of settings including clinics, health care facilities, hospitals, private practice, schools, and universities. Members must abide by the OSLHA Code of Ethics.



eHearsay: Statement of Purpose

eHearsay, the electronic journal of the Ohio Speech- Language- Hearing Association, is designed to address the professional development needs of the state association.

Issues are developed around specific themes and can include invited papers, research articles, review, tutorial, research forum, letter to the editor, clinical focus/forum or viewpoints.

eHearsay is published as a web journal annually. Continuing education credits will be available for each issue.

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In this issue:

Summer 2019

Welcome!

Although most of the issues of *eHearsay* have a theme or a content focus, the Summer 2019 issue of *eHearsay* is diverse and multifaceted in its content. The *eHearsay* editorial team welcomes back a few authors who have been frequent contributors to *eHearsay*, but all appear as co-authors. Each article brings us the distinct pleasure of publishing material by new contributors, many of whom are first-time authors. If this issue can be said to have a theme, it might be that each of the articles in this issue presents new voices to the OSLHA audience.

In this issue, the *Research* forum features four original studies. Among the research papers is Rochel Lieberman, Nancy Creaghead, Lesley Raisor-Becker, & Carolyn Sotto who authored *Preschool Children's Emotion Labels and Social Responses to Positive and Negative Vignettes*, an investigation of typically developing preschool children's emotion labels and their responses to questions about social situations depicted in positive and negative video vignettes. The authors describe how the development of these aspects of social communication is complex and varied. Next, in *The Usefulness of Active Noise Cancelling Headphones when Listening to Music in the Presence of Ambient Noise*, Samantha Butterbaugh and Monica Gordon-Pershey report on listeners' perceptions of the effectiveness of noise-cancelling headphones and comment on the need for consumers to be mindful of noise exposure even while using this technology. In *Caregivers' Strategies Before and During Doctor's Appointments with their Children with Autism Spectrum Disorder*, Bridget Coologhan, Bridget Wright, & Joann P. Benigno report the results of a survey of the communication supports and strategies used by caregivers before and during doctor's office visits and offer recommendations for how speech-language pathologists can assist caregivers in identifying how to help children communicate in these circumstances. The final research paper, *The Communicative and Psychosocial Effects of a Severe to Profound Hearing Loss in a Later Mid-Life Male*, by Monica Gordon-Pershey & Anna Coffman, explores interviewees' perceptions of the case participant's hearing loss and adaptive strategies. This report reinforces that speech-language pathologists and audiologists acknowledge the personal perceptions of individuals who must adapt to the communicative and psychosocial effects of hearing loss and provide supportive counseling for clients and families.

SUMMER
IS TIME FOR WARM NIGHTS
WATERMELON
BARE FEET AND BARBEQUES
SWEET CORN SUNFLOWERS
RIP EPICNICS CAMPFIRES
TOMATOES LEMONADE
LIGHTENING STORMS LOVE

The OSLHA Journal Editor would like to offer a sincere apology to Rochel Lieberman, Nancy Creaghead, Lesley Raisor-Becker & Carolyn Sotto. Their research article included in this issue was accidentally omitted from the prior issue.

The *Clinical Focus* forum offers seven articles that pertain to clinically relevant concerns. First, in *Discussion of Academic and Professional Literacy Training in Speech-Language Pathology*, Kimberly J. Green, Sharon R. Calvino, Lauren E. Bland, and Janice C. Smith, authors from Kentucky, review ASHA guidance statements pertaining to SLPs' competencies in literacy assessment and interventions and describe the need for more and better university preparation and professional development in literacy. In *Literacy Interventions for Individuals with Complex Communication Needs*, April M. Yorke summarizes some research-based approaches to



early literacy interventions for children who use AAC. In two articles, *The Road to Cultural Competence: The Value of Addressing Cultural Awareness among Communication Sciences and Disorders Students and Faculty* and *Exploring the Continued Need to Promote Cultural Competence and Proficiency in Communication Sciences and Disorders*, Kimberly J. Green, a Kentucky author, proposes practical ways for individuals and organizations to improve cultural proficiency and illustrates how to achieve a level of professional development that goes beyond culturally competent practice. Next, Twyla Perryman & Martine Elie, authors from Georgia, explore how graduate faculty and clinical supervisors can provide feedback and remediation when students struggle to apply theory and evidence to clinical practice in *Bridging Academic to Clinical Experiences for "At-Risk" Graduate Clinicians*. Kaili L. Smith and Monica Gordon-Pershey review the current clinical understanding of a unique disorder, *Paradoxical Vocal Fold Motion Disorder in the Elite Athlete*. Last but not least, Felicia Sison Conlan, an author from California, also

contributed an article about the health of athletes. In *Concussion to Classroom: Returning to Self after a Sports-Related Concussion*, she describes recovery and academic reintegration from an interprofessional perspective.

Finally, in *Viewpoint*, the section of *eHearsay* where authors can express their positions on professional topics, Lynn Berk, in *Student Learning Styles and Preferences*, explains how clinical instructors and supervisors can identify individual student learning styles and preferred methods of feedback for clinical growth.

Wishing you an enlightening and enjoyable reading experience!

Monica Gordon-Pershey
Guest Editor

Laurie M. Sheehy
Journal Editor

Preschool Children’s Emotion Labels and Social Responses to Positive and Negative Vignettes

Rochel Lieberman, Nancy Creaghead, Lesley Raisor-Becker, & Carolyn Sotto

Abstract

This study investigated typically developing preschool children’s emotion labels and responses to questions about social situations depicted in positive and negative video vignettes. Ten typically developing preschool children provided positive and negative emotion labels and responses to questions about social situations after watching brief video vignettes that were developed to elicit a positive or negative emotional response. Relationships between labels used to describe emotions and appropriateness of responses to questions about social situations were analyzed. Children used more varied labels for negative emotions than for positive emotions. A chi square test indicated no significant relationship between the distribution of appropriateness ratings for responses to positive versus negative vignettes and no significant relationship between the elaboration of the emotion labels and the appropriateness of the responses to the vignettes.

Rochel Lieberman, M.A., CCC-SLP is a Ph.D. candidate at the University of Cincinnati.

Financial – Working on her Doctorate in Communication Sciences and Disorders at the University of Cincinnati. Is a practicing clinician and an instructor of language development.

Nonfinancial – provides educational and corporate workshops at the national, state, and local levels and works with professionals to communicate with the “sound of success.” Research interest includes social-emotional competence and language development. She brings these concepts to her children’s book, *Pearla and her Unpredictably Perfect Day*.

Nancy Creaghead, Ph.D. is employed at the University of Cincinnati.

Financial –Professor of Communication Sciences and Disorders at the University of Cincinnati.

Nonfinancial – Research, publications and presentations have been primarily in the areas of language and phonological acquisition and disorders and classroom communication. Has presented at numerous workshops and meetings at the local, state, national and international levels. President of the American Speech-Language-Hearing Association in 2002.

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Learning Objectives

- 1) Identify how social-emotional competence relates to success at school.
- 2) Describe two elements of social-emotional competence, emotion labeling and social problem solving, for preschool children.
- 3) Explain the design of a research study examining emotion labeling and social problem solving by preschool children.



Preschool children’s ability to label emotions and provide solutions to social problems is an integral aspect of social-emotional competence (SEC). When children do not demonstrate SEC, they may be perceived poorly by both teachers and peers (Raver, Blackburn, Bancroft, & Torp, 1999) and be at risk for academic and social difficulties (Blair, Granger, & Peters Razza, 2005; Denham, 2006; 2007). During the preschool years, children expand social interactions, requiring them to analyze social situations and set goals

in order to solve social problems (Denham, 2006). It is essential that children become skilled in managing their emotions and using appropriate words and behaviors because energy and attention spent on regulating feelings and controlling emotional expressiveness can reduce resources for cognitive processing, which may inhibit academic success and school adjustment (Denham, 2007). Accordingly, young children’s recognition and interpretation of emotional responses predicts social and academic development (Blair et al.,

2005; Nix, Bierman, Domitrovitch, & Gill, 2013). These skills can be nurtured as children learn to talk about emotions and social problem solving in preschool (Bierman et al., 2008; Denham, 2006; McLachlan et al., 2009). Speech-language pathologists (SLPs) can support the development of SEC when working with children with communication disorders and can collaborate with teachers to support the development of emotion language via classroom interactions and activities, including retelling stories.

Development of Social Emotional Competence (SEC)

SEC, a child's sustained positive engagement marked by regulated emotions (Denham, 2006), develops in a transactional manner as children engage in social exchanges (Curby, Brown, Bassett, & Denham, 2015) and eventually generate thoughts about the execution, design, and results of those exchanges (Bierman et al., 2008). Denham (2006) highlights constructs that are central to SEC: emotional expression, emotion knowledge, emotion regulation, social problem solving, and social and relationship skills. Emotional expressiveness comprises sending affective messages in accordance with the social context (Denham & Burton, 2003). Researchers believe that emotional expressiveness is a prerequisite to emotional regulation, interpersonal skills and social problem solving (Hoffman, 2009; Joseph & Strain, 2003) as children need to be able to label a feeling in order to effectively express their needs for the situation (Joseph & Strain, 2003). Emotion knowledge includes the ability to infer emotions, understand consequences of displaying positive and negative emotions, and evaluate positive and negative emotions in ones' self and others (Denham, 2006; Denham & Burton, 2003). Emotion regulation is the ability to control, retain or enhance emotions using coping strategies (Denham & Burton, 2003). Social problem solving is correlated with an increased ability to regulate emotions (Jordan & Troth, 2004) and includes the ability to identify problems, set social goals, plan behaviors, and generate solutions (Denham, 2006; Marshall & Karow, 2008). Social and relationship skills involve sharing, listening, taking turns, cooperating, completing a task, and using polite words (Denham, 2006). Among the facets of SEC discussed by Denham (2006), the current study examined *emotion labeling* (emotional expressiveness), and *providing social responses*, (social problem solving) (Denham, 2006).

Development of Language to Express Emotions

Upon entry to preschool, children who are typically developing have acquired language skills to support their ability to express social intentions and pragmatic functions (Dore, 1974). During preschool they continue to develop understanding and use of vocabulary, sentences, and narratives to express and understand feelings and to mediate emotions and social skills (McCabe & Rollins, 1994; Owens, 2008). Preschool children can recognize the six basic emotions (Ridgeway, Waters, & Kuczaj, 1985) that are recognized across cultures: *happiness, sadness, fear, surprise, anger, and disgust* (Ekman, Sorenson, & Friesen, 1969; Prinz, 2004). Three-year-olds begin to develop theory of mind and modify their behavior in relationship to others (Westby, 1998). They can distinguish positive emotions from negative emotions, demonstrate awareness of the emotions of others, and talk about what elicits emotions (Linder et al., 2008). Four-year-olds assume more roles in play (Westby, 1998) and attempt to independently solve conflicts. They discuss emotions to feel calm and engage in self-talk in order to control their emotions (Denham, 2007). They can ask questions to understand what another may be feeling or thinking, talk about their own emotions and how to feel better, and comprehend that other people may have different feelings from their own (Linder et al., 2008). By five years play becomes less object centered and more peer centered (George & Krantz, 1981), infusing planning and monitoring the behavior of other children (Westby, 1998).

Communication about Positive and Negative Emotions.

While preschool children follow a general developmental sequence in regard to understanding and using emotional vocabulary (Linder et al., 2008; McCabe & Rollins, 1994; Owens, 2008), differences have been found between children's communication about positive and negative emotions (Laible, 2011). Positive emotions promote social exchanges with other children (Denham, 1998), while negative emotions may generate more expansion of thoughts and feelings and emotion labels (Fivush et al., 2003). Although negative events may be distressing and not remembered as well as positive events, children can retell negative events coherently (Fivush et al., 2003; Miller & Sperry, 1988). McCabe and Rollins (1994) posit that children are more likely to retell their best personal stories about a negative emotion, such as being hurt or scared. Conversations about negative emotions are more

detailed than those about positive emotions because they involve a problem that requires resolution (Lagattuta & Wellman, 2002; McCabe & Rollins, 1994). Children's stories with positive emotions include more general action without dramatic tension and little rising action or climax, while their stories with negative emotions include rising action and climax and may include falling action (Hudson, Gebelt, Haviland, & Bentivegna, 1992). Children use more descriptive detail and talk about more objects and people when they retell positive events (Fivush et al., 2003); they use more internal state words and more information about thoughts and feelings when they retell negative events (Fivush et al., 2003).

There are differences in the expansion of conversations between parents and children when discussing positive and negative emotions. Parents and children speak about positive and negative emotions with the same frequency; however, during conversations about negative emotions they use more varied vocabulary, more open-ended questions, and increased talk about other people, past emotions, and causes of emotions as compared to conversations about positive emotions (Lagattuta & Wellman, 2002; Sales, Fivush, & Peterson, 2003).

Emotion Labeling

Emotional expressiveness of young children is frequently studied by investigating their ability to label emotions (Brackett, Rivers, Reyes, & Salovey, 2012). Preschool children's comprehension and use of emotion labels have been observed when primed (Stifter & Fox, 1986), freely produced (Pavarini & Souza, 2012; Widen & Russell, 2003; 2010), and from parent report (Ridgeway et al., 1985). Stories (Pavarini & Souza, 2012; Widen & Russell, 2010), photographs of facial expressions (Stifter & Fox, 1986; Widen & Russell, 2003; 2010), voice (Stifter & Fox, 1986), and video scenarios (Pavarini & Souza, 2012), have been used to elicit labeling of emotions.

Widen and Russell (2003) examined preschool children's (3;0 – 4;11) free labeling of facial expressions demonstrating basic emotions. First, active priming was used to elicit six emotions (*happy, angry, sad, scared, surprised, and disgusted*) using three steps. (1) The children were told that they would talk about feelings and were asked to name some feelings. When the children could not provide additional feelings, the researchers listed the remaining emotions. (2) If the

children did not name an emotion, the researchers told a story with events intended to elicit the targeted emotion and asked how the character in that story felt. (3) If the children still did not name the target emotion, the researchers asked the children what can make them feel that emotion.

From easiest to most difficult, the order of difficulty in eliciting the labels was:

1. Emotions → sad, happy, angry, scared, disgusted, and surprised.
2. Facial expressions → happiness, sadness, anger, fear, disgust, surprise, and neutral.

After this priming task, the children were asked to label three animal pictures and two sets of photographs of facial expressions (one each for *happiness, sadness, anger, fear, disgust, surprise, and neutral*). The order of frequency of labels was *angry, happy, sad, scared, surprised, and disgusted*. Children continue to use *happy, sad, and angry* as an expression for *fear, surprise, and disgust* even when they have developed those labels.

Widen and Russell (2010) further examined how children categorize emotions by studying their emotion labels in two modes of presentation. Children ages 2;6 - 4;11 viewed photographs of facial expressions and listened to a story depicting *happiness, anger, fear, sadness, and disgust*. In both the photograph and story conditions, younger children categorized emotions into broad positive and negative categories, using one label for each, and differentiated the other basic emotion labels into more narrow categories as age increased. A list of children's freely produced labels for emotions included:

- happy/happiness: *happy, excited, fine, going to play, good, she's thinking about someone she likes, nice, better, yeah*
- fear/scared: *scared, frightened, nervous, shy*
- disgust/ed: *disgusted, yucky, gross*
- anger: *angry, mad, grumpy, grouchy, frustrated, annoyed, cross*
- sad/sadness: *sad, hurt, upset, she got an owie*
- surprised: *surprised, shocked*

Stifter and Fox (1986) asked preschool children to identify emotions after being shown recordings of *happy, sad, and angry* emotions in one of three conditions, face alone, voice alone or face and voice

together. The children labeled the emotions at greater than chance level for all three conditions. While the younger children's (2;9 - 4;5) responses were equally accurate across emotions, the older children (4;6 - 5;8) demonstrated greater difficulty in identifying sadness than happiness and anger.

From among a checklist of 125 mood-descriptive adjectives, Ridgeway et al. (1985) asked parents to report emotion labels that their child understood (no parenthesis) and used (parenthesis). For three years, parents reported *happy* 100% (96.7%), *afraid* 86.7% (83.3%), *angry* 90% (80%), *mad* 90% (80%), *sad* 90% (86.7%), *surprise* 73.3% (60%), and *disgusted* 36.7% (20%); for four years they reported *happy* 100% (100%), *afraid* 100% (93.3%), *angry* 100% (86.7%), *mad* 100% (100%), *sad* 100% (93.3%), *surprise* 93.3% (70%), and *disgusted* 36.7% (16.7%); for five years they reported *happy* 100% (100%), *afraid* 100% (86.7%), *angry* 96.7% (83.3%), *mad* 96.7% (80%), *sad* 100% (90%), *surprise* 83.3% (76.7%), and *disgusted* 46.7% (36.7%).

Development of Social Problem Solving

The development of social problem solving is dependent on the more general cognitive development of problem solving (Dodge, 1980) because social problem solving involves knowledge about oneself and about how to respond (Crooke, Winner, & Olswang, 2016). By three years, typically developing children verbally mediate a problem by talking about how to solve it, visually searching to find a solution, and attempting alternative resolutions when initial solutions do not work. By four years, children ask and answer why and how something works and begin to describe how to do something, thus enabling them to describe how to solve a social problem. By five, they use rules to solve these problems and begin to evaluate outcomes (Linder et al., 2008).

Researchers have investigated skills that are needed for social problem solving, including the ability to identify problems and recognize the feelings of others (Crooke et al., 2016). Social problem solving has been investigated through video scenarios (Pavarini & Souza, 2012), questions (Pavarini & Souza, 2012; Walker, Irving, & Berthelsen, 2002), and hypothetical stories (Walker et al., 2002), all of which have been found to elicit responses about skills and strategies for social problem solving.

Pavarini and Souza (2012) investigated 37 preschool children's preference for emotional or behavioral descriptions of events and examined the correlation between their preferences and their emotional understanding. The children were asked to tell what happened in videos showing a scene where the main character first expressed joy and then sadness. Then the children were asked how they were feeling about the story. Answers were scored for reference to action, reference to emotion, and reference to action and emotion. Children who were 4 years old mostly referenced action and made fewer references to emotion compared to the 5- and 6-year-olds. The 6-year-old group made more reference to both the action and emotion.

Using these results to answer their second question about whether the children's preferences were correlated with emotional understanding, Pavarini and Souza (2012) used two tasks related to theory of mind: (1) A false belief task introduced a puppet. Then, the puppet left and the child was shown a cereal box that actually contained pebbles. The box was closed, and the puppet came back. The researchers asked the children to tell what the puppet believed was in the box and to label the puppet's emotion before and after realizing that the cereal box contained pebbles. The children's answers were scored for identification of the puppet's belief and both emotions. (2) An apparent-real emotion task was used to determine whether the children understood that individuals can feel an emotion that is different from their displayed emotion. The researchers told a story using picture cards of a child who pretended not to be insulted by a joke. The children were asked how the character truly felt inside and why he felt that way, as well as how he appeared to feel outside and why he pretended to feel that way. The children's responses were scored for discrimination of real and apparent emotions. Children's scores on both theory of mind tasks revealed that emotional understanding was correlated with the ability to provide emotional description using both action and emotion. However, descriptions referring to actions alone were not correlated with emotional understanding.

SLPs deliver services in a variety of practice areas, including language use and social aspects of communication (American Speech-Language-Hearing Association (ASHA), 2016), which are critical for

children's social relationships (Raver et al., 1999). While SLPs refer individuals for counseling services, they also counsel clients regarding their communication disorder by discussing emotions and thoughts related to the communication disorder (ASHA, 2016). Thus, research regarding how children use language to talk about emotions is important for SLPs. Despite research addressing the development of emotion labeling by preschool children, there is not evidence regarding preschool children's ability to spontaneously label emotions in relationship to positive and negative scenarios, or the relationship between the elaboration of their spontaneous labels and their responses to questions about positive and negative scenarios. It would be clinically useful for clinicians to have a better understanding of the differences between responses to positive and negative stories when considering stories to support talk about emotions because SLPs play a critical role in enhancing socially acceptable communication for children with language impairment and for children with behavioral and emotional difficulties (ASHA 2010; Giddan, 1991; Giddan, Bade, Rickenberg & Ryley, 1995; Nungesser & Watkins, 2005). Thus, this pilot study examined typically developing children's talk about emotions in order to provide information to inform assessment and intervention for children with atypical language development. The purpose of this pilot study was to investigate how typically developing preschool children label emotions and provide responses to questions about positive and negative vignettes and to examine whether there is a relationship between the elaboration of the labels and the appropriateness of the children's responses to questions about social situations.

The following questions were examined:

- 1) What labels do preschool children use to identify the emotions of the characters in vignettes designed to elicit positive and negative emotions?
- 2) What is the level of appropriateness of children's responses to questions about social situations depicted in vignettes designed to elicit positive and negative emotions?
- 3) What is the relationship between the elaboration of the labels used to describe emotions and the appropriateness of the responses to questions about social situations depicted in vignettes designed to elicit positive and negative emotions?

Method

Subjects

Participants were 10 children, 5 females and 5 males, ages 3;0 – 5;11, who were enrolled in a private preschool in Brooklyn, New York. Participants were recruited via flyers posted at the preschool. Children were offered small prizes, costing less than \$1.00 each, and parents were offered \$10.00 gift cards in return for participation. Inclusionary criteria were: 1) parent and child spoke American English; 2) child was enrolled in preschool; 3) child had typical language and cognitive development as reported by the parent-teacher survey, which was adapted from the Centers for Disease Control Act Early checklist (2013).

Video Vignettes

Ten video vignettes, including two practice (one positive and one negative) and eight testing (four positive and four negative), were developed to elicit emotion labels and responses to the questions: *What should he/she do?* and *What else should he/she do?* Five vignettes depicted a positive scenario (to eliciting a positive emotion label and response), and five vignettes depicted the same scenario, with an added problem (to elicit a negative emotion label and response). The vignettes presented a setting, characters, and an initiating event (Stein & Glenn, 1975). The positive testing vignettes included: (1) a girl who bought an ice cream cone and ate it; (2) a girl who painted a beautiful picture at the art center; (3) a girl who took her favorite doll to school for show and tell; (4) a boy who helped his Mom unload the grocery bags. The negative testing vignettes included the same events with an unhappy ending: (1) the girl's ice cream cone fell on the ground; (2) the girl's friend spilled black paint on her picture; (3) the girl left her backpack with her doll on the bus; (4) the boy dropped the eggs on the ground. The vignettes had no audio component; the Principal Investigator (PI) read a script describing the actions depicted in the video which was simultaneously shown to the children on an iPad.

Procedures

The Primary Investigator (PI) spent 10-15 minutes with each child in the classroom to build rapport. Then the *Preschool Language Scale-5th Edition* (PLS-5) (Zimmerman, Steiner, & Pond, 2011) was administered in a separate quiet room in order to determine that the child had typical language, as defined by standard scores within one standard deviation above or below the mean.

The children viewed the video vignettes that depicted positive and negative events while the PI read the script associated with each vignette. Each child viewed the videos of the two practice vignettes and two positive and two negative vignettes on an iPad while the PI read the script. No child viewed the positive and negative vignettes of the same event. The order of the four vignettes was counterbalanced across participants. After the child viewed and listened to the vignette, the PI asked the child:

- 1) *What happened in the video?* (in order to check for comprehension)
- 2) *What does he/she feel?*
- 3) *Can you think of how else he/she may feel?*
- 4) *What should he/she do?*
- 5) *What else should he/she do?*

If the child did not respond to the first question, the PI prompted the child for a response by asking, “*What happened?*” All of the children answered the first question, but not all of them initially described the entire vignette sequence. If the child did not describe the entire sequence, the PI asked, “*What happened next?*” until the child described the entire sequence or indicated that they had nothing else to say. The children’s responses were audio recorded, and also video recorded if the parent consented to video recording.

Data Analysis

The PI and Research Assistant (RA) separately listened to each recording and timestamped the emotion labels and the responses for each vignette. The PI and the RA then separately transcribed the timestamped emotion labels and responses. The RA listened to the original recordings and compared the PI’s transcriptions and the RA’s transcriptions to identify differences between the recording and the transcription. The same procedure was completed for the time stamped recordings. The RA compared the PI’s and RA’s transcriptions and

highlighted any differences. The PI and the RA discussed the differences until 100% agreement was reached.

The following data were collected from each subject: total number of emotion labels, number of different emotion labels, number of different positive and negative emotion labels, elaboration of emotion labels, and rating of appropriateness of responses for positive and negative vignettes.

Coding

Positive and negative emotion labels were coded as basic or elaborated. Labels were categorized as *basic* based on the labels for the six emotions in the literature (*happiness, sadness, fear, surprise, anger, and disgust*) (Ekman et al., 1969; Prinz, 2004).

Labels were categorized as *elaborated* based on the child’s responses if they:

- a) used a morphology marker to create a word for the emotion from the opposite of the word (*unhappy*);
- b) used the word with a phrase or sentence, (*he feels sad*);
- c) provided a next step, (*fix it*);
- d) contextualized how the child in the vignette felt, (*left out*);
- e) added a morphological marker (*badly*);
- f) used an adverb or qualifier (*very happy*).

If the child said nothing or “*I don’t know*” the response was not included.

Responses to the content of the vignettes were analyzed by using a rubric (see Appendix) to measure the level of appropriateness. *Appropriateness* was defined as including an action and/or social response that was appropriate for the situation.

The PI and the RA separately coded an elaboration level for each emotion label and an appropriateness level for each response based on the code book. The RA compared the PI’s and RA’s transcription and coding and highlighted any differences. The PI and the RA discussed the differences until 100% agreement was reached. There was 100% agreement for all data used in the analyses.

Results

What labels do preschool children use to identify the emotions of the characters in vignettes designed to elicit positive and negative emotions?

Results from a total of 80 responses to the combined questions “*What does he/she feel?*” and “*Can you think of how else he/she may feel?*” are presented in Table 1. Positive emotion labels included *happy, very happy, excited*. Negative emotion labels included *sad, bad, badly, angry, left out, not happy, unhappy*. The emotion label used most frequently for positive was *happy* (19) and for negative was *sad* (16). All labels used by the children were on the Chall & Dale (1995) list of 3,000 familiar and simple words.

From a total of 40 responses to the first question, “*What does he/she feel?*” the positive emotion label the children used was *happy* and the negative emotion labels used were *bad, sad, and unhappy*. The emotion label used most frequently for positive was *happy* (17) and for negative was *sad* (14). From a total of 40 responses to the second question, “*Can you think of how else he/she may feel?*” the positive emotion labels children used included *happy* (in each instance repeated from “*What does he/she feel?*”), *very happy, excited*. Negative emotion labels included *sad* (one of two instances repeated from “*What does he/she feel?*”), *bad, badly, angry, left out, not happy, unhappy*. As in the first question, the emotion label used most frequently for positive was *happy* (2) and for negative was *sad* (2).

Table 1. Labels Preschool Children Used to Identify Positive and Negative Emotions in Response to the Questions, ‘What does he/she feel?’ and ‘Can you think of how else he/she may feel?’

EMOTION LABELS	Positive Question 1	Negative Question 1	Positive Question 2	Negative Question 2	Positive Combined Questions	Negative Combined Questions
Correct	17	18	10	15	27	33
Incorrect	1	0	2	0	3	0
No Response or “I don’t know”	2	2	8	5	10	7
Total Questions	20	20	20	20	40	40
Different Words	1	3	3	7	3	7

Table 2. Level of Appropriateness for Preschool Children’s Responses to Social Situations Eliciting Positive and Negative Emotions, in Response to the Questions, ‘What should he/she do?’ and ‘What else should he/she do?’.

RESPONSE TO SOCIAL SITUATION	Positive Question 1	Negative Question 1	Positive Question2	Negative Question2	Positive Combined Questions	Negative Combined Questions
No Response	2	4	9	6	11	10
Inappropriate Action or Social Response	4	1	2	1	6	2
Appropriate Action or Social Response	10	14	6	10	16	24
Appropriate Action & Social Response	4	1	3	3	7	4

What is the level of appropriateness of children's responses to questions about social situations depicted in vignettes designed to elicit positive and negative emotions?

Results from a total of 40 responses to the first question, "What should he/she do?" and 40 responses to the second question, "What else should he/she do?" are presented in Table 2. From a total of 80 responses to the combined questions, a chi square test of independence revealed that there was not a significant relationship between the distributions of appropriateness scores in response to positive versus negative vignettes ($p = 0.215$).

What is the relationship between the elaboration of the labels used to describe emotions and the appropriateness of the responses to questions about social situations depicted in vignettes designed to elicit positive and negative emotions?

In response to the question "What does he/she feel?" there was a total of 34 basic labels and 2 elaborated labels. For the question "Can you think of how else he/she may feel?" there was a total of 14 basic labels and 13 elaborated labels. A chi square test of independence was conducted to examine the relation between the elaboration of the emotion labels and the appropriateness of the responses based on the correct responses across all questions and vignettes. There was not a significant relationship between elaboration of labels and appropriateness of responses to positive and negative vignettes ($p = 0.524$).

Discussion

This study examined two subcomponents of SEC, emotion labeling (a component of emotional expressiveness) and responses to questions about video vignettes that were designed to elicit positive and negative emotions. The labels that preschool children used to identify the emotions of characters in positive and negative video vignettes were examined. The positive emotion labels that the children used were *happy, very happy, excited*, and the negative emotion labels were *sad, bad, badly, angry, left out, not happy, unhappy*. This finding is consistent with previous research that indicates that preschool children can recognize (Ridgeway et al., 1985) and use appropriate basic labels for both positive and negative emotions (Widen & Russell, 2003; 2010). This research further confirms that labeling of basic emotions can be elicited via video presentation (Pavarini & Souza, 2012).

Although the data could not be examined statistically, it appeared that children used more negative than positive labels. For the 60 correct labels for the combined questions ("What does he/she feel?" and "Can you think of how else he/she may feel?"), the children used seven different labels for negative and three for positive. When the children were prompted for a second label ("Can you think of how else he/she may feel?"), they provided an even greater imbalance for the positive (2 more) and negative (4 more) emotions with a larger variety of negatives. Other researchers have found that conversations about negative emotions are more detailed to support the climax and problems in a negative story (Hudson et al., 1992; Lagattuta & Wellman, 2002; McCabe & Rollins, 1994). Additionally, Lagattuta and Wellman's (2002) found that during conversations about emotions, preschool children and their parents both used more and more specific vocabulary to talk about negative as compared to positive emotions.

The results revealed no significant difference between the appropriateness of children's responses to positive versus negative vignettes. Examination of the data did not show a trend for the distribution of the quality of solutions across positive and negative vignettes. There were slightly more scores of 1 (*nothing correct*) for positive; scores of 2 (*either action or social response correct*) for negative; and scores of 3 (*correct action and social response*) for positive. It was hypothesized that the children might provide higher quality responses to negative events because those vignettes included a problem that required. For example, the positive vignette depicting a girl who bought an ice cream cone and ate it did not include a problem to be solved. In contrast, the negative testing vignette showing a girl whose ice cream cone fell on the ground entailed a problem which the child would want to solve. However, the data did not suggest a difference between the responses to the next steps for positive and negative vignettes.

The results of this study do not suggest a relationship between the elaboration of labels used to describe emotions and the appropriateness of children's responses to the positive and negative vignettes. While there is research showing that preschool children's language is interrelated to and can be supportive of SEC (Beck, Kumschick, Eid, & Klann-Delius, 2012; Bierman et al., 2008; Denham, 2006), there is a growing body of

literature which suggest that the relationship is not straightforward or reciprocal in relationship to subcomponents of emotional competence and language competence (Beck et al., 2012; Joffe, Black, Oetting, & Fujiki, 2012).

Limitations and Future Research

This pilot study included a small number of participants within the age range of 3;0 – 5;11, when broad changes occur across language and emotional development (Denham, 2007; McCabe & Rollins, 1994). A larger sample of children that includes sufficient numbers in more discrete age groupings is needed to further explore children's talk about emotions and age-related differences. Although the study did not find meaningful differences between responses to positive and negative vignettes, further research may be clinically useful in developing strategies for eliciting language samples that demonstrate the child's richest vocabulary and most complete narrative, as well as developing vocabulary and language skills for talking about emotionally charged contexts. Furthermore, this research may support SLP's in enhancing social communication, supporting children in talking through emotions, and facilitating difficult conversations (ASHA 2010; Giddan, 1991; Giddan et al., 1995; Nungesser & Watkins, 2005). The methods used in this pilot study open the research to threats to validity and reliability. For example, the PI read the video scripts, which can cause variations and inconsistencies in tone and stress when reading the video scripts across participants. Future studies, can use audio-visual recordings of the video scripts, which can control for consistencies in tone and stress across participants and reduce threats to testing validity and reliability. ♦

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Appendix

Rubric for Scoring Appropriateness of Responses to Questions about Social Situations Depicted in Vignettes

<u>Category Code</u>	<u>Codes per Category</u>	<u>Rubric Codes</u>
No Response or Nothing Correct	1, 2, 3, 4	1 = "He should do something" 2 = Provides an action that is not appropriate 3 = provides a social response that is not appropriate 4 = provides an action and social response that are not appropriate
Something Correct, Appropriate Action or Social Response	5, 6, 7, 8	5 = provides an action that is appropriate 6 = provides a social response that is appropriate 7 = provides an action that is appropriate and a social response that is not appropriate 8 = provides a social response that is appropriate and an action that is not appropriate
Everything correct, Appropriate Action and Social Response	9	9 = Provides an action and social response that are appropriate

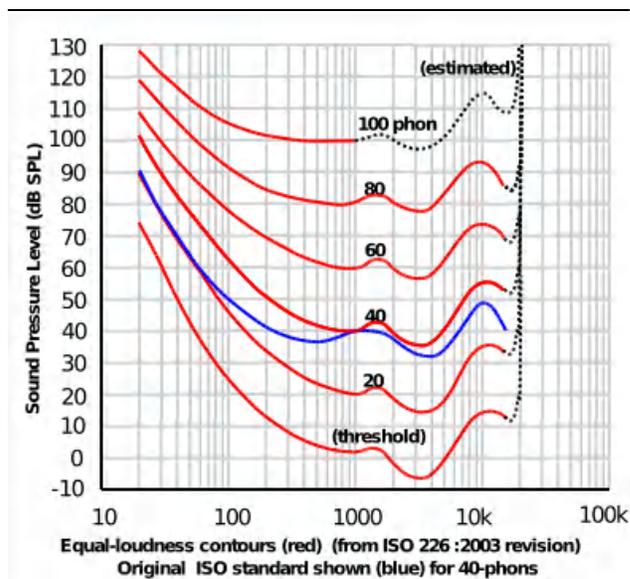


background noise, they are exposed to the ambient noise of the outside world (e.g., vehicle motors, car horns, sirens, landscaping and construction equipment, people talking, background music, etc.). The ear perceives the sounds from the headphones and from the background as combined or cumulative noise exposure.

Computing Cumulative Noise Exposure

The intensity of sound as measured in decibels (dB) is based on a logarithmic scale (The decibel scale, n.d.). Scaled measures are used to calculate cumulative noise exposure. The total amount of sound present in an environment with two sound sources is calculated based on a scaled difference between the decibel levels of the two sound sources. The scaled difference between the decibel levels determines the number of dB that must be added to the loudest sound (Adding acoustic levels of sound sources, n.d.). The online calculator at <http://www.sengpielaudio.com/calculator-spl.htm> computes the total decibel level for two or more sound sources. For example, if a gas leaf blower creates 106 dB of noise and a passing motorcycle creates 91 dB of noise, then the combined noise exposure that the person using a leaf blower is exposed to is 106.135 dB (rather than a simple additive effect of 106 + 91).

However, human hearing is both frequency and intensity dependent. The decibel scale alone does not take this into account. An equivalent dB level at different frequencies may have a **perceived** loudness that is not similar. Measures of dB levels alone are insufficient to represent the perceived loudness of sounds. Loudness, being a subjective perception, is difficult to measure (Lindos Electronics, n.d.). The perception of loudness by the human ear is measured in units known as *phons* or *sones*, with a group of equal-loudness contours representing the perceived loudness of sound at each frequency (How loud is a sound?, 2017). Equal-loudness contours (shown in Figure 1) are measures of sound pressure dBs over the frequency spectrum. Listeners perceive the sound pressure as a constant loudness (Lindos Electronics, n.d.).



(Source: Lindos Electronics, n.d.)

Figure 1. Equal-loudness Contours

Listening to Headphones in a Noisy Environment

A person listening to music through headphones in a noisy environment may increase the volume to unsafe levels so that the music can be heard over environmental noise or so that the music will drown out the noise (Are noise cancelling-headphones better for your ears?, 2017). As a result, people may expose themselves to dangerous decibel levels on a regular basis. The additive effect of the decibel level of the sound sources, along with the duration of listening to the sound sources and the frequency of the exposure to the sounds, determines the overall amount of sound exposure that is permissible on a daily basis (World Health Organization, n.d.). Sounds of up to 75 dB can be heard for an unlimited amount of time each day (World Health Organization, n.d.). Sounds that are at 80 dB can be heard for up to 25 consecutive hours (World Health Organization, n.d.). The loudest safe exposure level is 85 dB for up to eight hours per day (World Health Organization, n.d.). Any noise exposure above 85 dB is considered dangerous and the amount of time that is permitted for exposure to sounds over 85 dB quickly decreases depending upon the intensity of the sound (see Figure 2) (World Health Organization, n.d.). Exposure to 100 dB should be for only 15 minutes; 125 dB exposure should be for only three seconds.



Figure 2: Permissible Daily Noise Exposure

Can Noise Cancelling Headphones Help Reduce Noise Exposure?

Active noise cancelling headphones (ANCH) are designed to cancel out environmental noises so that the headphone audio can be heard in noisy environments (Weil, 2010). ANCH have built-in microphones that detect the sound waves in the environment. The ANCH technology produces destructive interfering sound waves to cancel out the sound waves coming from the environmental sounds (Manaster, 2014; Molina, 2017). Manufacturers and vendors claim that the ANCH cancel about 35-40 dB of sound (Harris, n.d.). In instances where about 75 dB of noise are present in the environment, such as in a public place where people are talking, ANCH should reduce the environmental noise for the listener considerably. Some vendors claim that cancellation of noise by the ANCH can protect users' hearing (Are noise cancelling-headphones better for your ears?, 2017), based on the presumption that lower levels of sound intensity would be safer for the auditory mechanism.

The question remains whether it is possible to measure if ANCH technology actually reduces environmental noise for the listener, that is, whether the amount of sound entering the ear canal can be measured when the ANCH are in use (Butterworth, 2016). Objective

confirmation of increased safety would seemingly require use of a microphone within the ANCH to measure the actual amount of noise exposure that the user of ANCH would experience, as compared to the amount of noise exposure entering the ear canal if the ANCH were not in use.

However, regardless of the objective amount of sound entering the user's ear canal, listening to music is a subjective experience. Users want to adjust the volume of their music depending upon a host of personal factors, such as type of music or purposes for listening (exercising versus falling asleep, for example). ANCH users can modify the volume of their music but may not be able to reduce the amount of noise in their environments. If users of ANCH subjectively experience a reduction in perception of environmental sounds, then the volume that they use to listen to music might be reduced, and thus a safer listening experience may occur.

Purpose of Study

The purpose of this study was to explore whether Sony XB950N1 Wireless Noise Cancelling Headphones subjectively reduced environmental noise for listeners. This model was selected based on their being widely used by consumers and priced at \$249.99, which is a mid-range cost for headphones that would be affordable for many consumers. The main question under investigation was whether the ANCH reduce environmental noise enough to allow listeners to enjoy music at lower decibel levels. Specifically, listeners' subjective behaviors were under study: whether listeners had the desire to turn up their music when listening in a noisy environment while wearing ANCH, or whether they did not have a desire to increase the volume of their music while wearing ANCH. In addition, this study explored whether the active noise cancelling technology interfered with the quality of the listening experience, as determined by the listeners' subjective reports. This study included one objective purpose, that being whether the ANCH had any usefulness for enhancing listeners' speech discrimination in noise, as measured by objective performance on speech discrimination testing. Measuring speech discrimination might describe whether the ANCH allow for good sound discrimination in noise. If this is the case, users could have the experience of sound fidelity and might listen to their music at lower dB levels.

Methods

Participants and Setting

Following approval by the Cleveland State University (CSU) Institutional Board for Human Subjects in Research, the first author (hereafter, “the researcher”) recruited fifteen male and fifteen female participants between the ages of 18 to 35 years from the CSU community by word of mouth and by posting flyers on campus. This age range was selected as a convenience sample, in that this age group is well-represented on campus, and to rule out listeners with age-related hearing loss. All measures were administered within the audiology suite at the CSU Speech and Hearing Clinic. Each participant had an individual session with the researcher (under clinical supervision by the third or fourth authors) involving listening in noise while using the ANCH. Individual participation took about 30 to 40 minutes to complete.

Methods Accuracy and Safety

In preparation for the experimental trials, the researchers addressed several considerations related to measurement accuracy and participant safety.

To ensure accuracy, all of the audiological equipment used for the research study was checked for having been maintained according to the standards of the American Speech-Language-Hearing Association and of the CSU Speech and Hearing Clinic, including the regular calibration of the audiometer. The decibel level for the music and for the speech discrimination word lists to be passed through the ANCH into the participants’ ears was calibrated using an Extech model 407732 digital sound level meter and a 2-cc coupler as fluctuating between 50 to 60 dB but averaging about 57 dB. The decibel level for the background noise condition fluctuated between 60 to 80 dB as measured by the sound level meter, averaging about 75 dB. Regarding safety, the maximum number of decibels that the participants could have been exposed to during listening in noise was 80.043 dB, which is considered to be a safe listening level (World Health Organization, n.d.). Regarding measurement accuracy, at 80 dB the auditory mechanism’s response to the sound frequency spectrum is optimal (Chaffin, 2016; Lindos Electronics, n.d.).

Pre-Screening Procedures

Each participant had to self-report having no known hearing loss, being free of symptoms of colds or other

respiratory ailments on the date of participation, and not being affiliated as students or employees of the Speech and Hearing Program at CSU. Participants completed a 5 to 10-minute pre-survey that consisted of 16 questions (see Appendix A). Next, the researcher performed an otoscopic examination to check for accumulated cerumen, ear drainage, or redness of the tympanic membrane. Next, the researcher obtained tympanograms to ensure normal middle ear and Eustachian tube function. Next, the researcher conducted a hearing screening via air conduction at 25 dB for 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz, in the left and right ear. All participants completed the pre-screening phase successfully and continued on to engage in the study procedures.

Study Procedures

Testing of listeners’ use of ANCH while listening to music in a noisy environment occurred in an audiology suite with separate but adjacent booths for the examiner and examinee. The researcher was seated at the controls of the audiometric equipment and had a one-way mirror view of the participant. The researcher placed TDH-39 headphones (standard headphones used for hearing testing) on the participant, who then completed a speech discrimination test presented through the headphones in quiet at 50 dB using recorded presentation of the first 25 words of the Northwestern University Auditory Test Number Six (Nu-6 3a list) (Wilson, Coley, Haenel, & Browning, 1976). The Nu-6 is a recognition test of consonant-vowel-consonant words spoken by a male speaker of the General American dialect.

Next, the researcher introduced into the examinee’s audiology booth an approximately 75 dB audio recording of restaurant noise (Restaurant Background Noise, 2016) as background noise through a Bluetooth speaker. The choice to use restaurant noise was based on research on listening in noise by Leng Ang, Koh, and Lee (2017). The 75 dB loudness level of the restaurant noise was based on the average decibel levels of commonly known noisy environments (i.e., the subway or a busy street) as described by Liang, Zhao, French, and Zheng (2012). The frequency spectrum of the restaurant noise was not measured.

The participant completed the same speech discrimination test at 50 dB presented through the TDH-39 headphones with background noise. After the

speech discrimination in noise test was completed, the restaurant noise was turned off, and the participant was offered the choice of a short 5-minute break or to continue with the study procedures. All of the participants refused the break and chose to continue.

The researcher removed the TDH-39 headphones from the participant's head, placed the Sony XB950N1 Wireless Noise Cancelling Headphones connected to an iPad on the participant, and remained with the participant in the examinee's booth to operate the iPad. The participant completed the same speech discrimination test presented via the iPad recording and through the ANCH at about 57 dB in quiet. Next, the researcher introduced 75 dB of restaurant noise into the examinee's audiology booth through a Bluetooth speaker. The participant completed the same speech discrimination test at about 57 dB in noise using the ANCH headphones. Then, the noise in the booth was turned off and the participant was told to relax and listen to some music on the iPad using the ANCH. The song *Born in the USA* performed by Bruce Springsteen was played at about 57 dB. The participant listened to the song for one minute. At one minute, the researcher paused the song and then introduced about 75 dB of restaurant noise into the booth through the Bluetooth speaker and then resumed playing the song. The participant listened to the song for another minute. Then the researcher turned off the restaurant noise and the music.

Post-Study Procedures

The participant completed a 5-minute post-survey that consisted of eight questions related to using the ANCH. Finally, the researcher debriefed the participant on his or her results on the otoscopic examination, tympanogram, hearing screening, and the speech discrimination tests. The researcher also explained the purpose of the study and offered to answer any questions for the participant.

Results

The results characterized the participants and documented their performance during the study procedures.

Pre-Survey

The results of the pre-survey that characterized the participants are shown in Appendix A. Survey questions probed participants' listening habits, their typical exposure to noise, and whether they experience any of the typical symptoms associated with exposure to noise for extended periods of time. All 30 participants reported using headphones fairly regularly, with 23 using headphones weekly. The majority have worn headphones for no more than two hours at a time, primarily for exercising, leisure time, traveling, commuting, and studying. All but four have listened to their headphones at a loud volume, but 26 denied that people tell them that music is audible from their headphones. About three-quarters of the group have not experienced ear pain, ringing in the ear, and/or headache after using headphones and seldom have had difficulty hearing in noisy environments.

Twenty-two of the participants had a job, which most often included restaurant work, university assistant, reception desk, and jobs in athletics, with 13 stating that their workplace is moderately loud or loud. Those employed denied ear pain or ringing in the ear after work. Ten have experienced ringing in the ear when there is no sound present in the environment (a condition known as tinnitus).

Speech Discrimination Testing

Descriptive statistics were computed for group responses on the speech discrimination tests in quiet and in noise conditions when using the TDH-39 headphones and when using the ANCH. As shown in Table 1, the mean percent correct score for the speech discrimination test in quiet wearing the TDH-39 headphones was 99.87% and, in noise, the mean was 96.4%. The mean percent score for the speech discrimination test using ANCH in quiet was 100% and, in noise, the mean was 98.4%.

Table 1. Speech Discrimination Testing at 50 dB

	TDH-39 Quiet	TDH-39 Noise	ANCH Quiet	ANCH Noise	p-value
Mean	99.87%	96.4%	100%	98.4%	0.059
Mode	100	100	100	100	
Range	4	20	0	8	

*p<0.05 to be significant

Although the speech discrimination test results under the TDH-39 headphones and the ANCH conditions appear close, in order to determine whether group performance across conditions was significantly different, a paired t-test was used to compare the percent correct in noise scores when wearing the TDH-39 headphones versus the ANCH. A significance level of $p=.059$ ($\alpha=.05$) was reached. This difference in percent correct scores for listening in noise across the two conditions is marginally significant; as such, the ANCH may offer a slight benefit for listening in noise.

Post-Survey

As shown in Appendix B, 19 participants reported that their normal loudness levels for music listening are typically about the same as the loudness of the music presented during the study (about 57 dB) and 10 said that their normal listening levels are usually louder. Nine participants claimed that the ANCH were very helpful in blocking out the restaurant noise, and 13 stated that the ANCH were kind of helpful in blocking out the noise. Eight participants claimed that the ANCH were not really helpful and one claimed that the ANCH did not help at all in blocking out the noise. Regarding listening to the music without background noise, 22 stated that the approximately 57 dB volume was comfortable, but seven would want to increase the volume. Listening to the music with background noise, 11 stated that the approximately 57 dB volume was comfortable, but 19 would want greater volume. Twenty-eight enjoyed their listening experience using the ANCH. In reply to being asked which headphones made the speech discrimination test easier, 13 reported that they heard the speech discrimination stimuli better when using the ANCH, but 17 stated either that the TDH-39 headphones were better or that both pairs of headphones presented the words about the same, and that there was no difference between their ability to hear using either headphone.

Only seven participants claimed that they would purchase the ANCH; 15 said maybe they would buy them, and eight would not purchase them. Lastly, none of the participants would spend more than \$250 on the ANCH, with 20 indicating they wouldn't pay any more than \$100 for the ANCH.

Conclusions

The results provided objective and subjective information about the effectiveness of the ANCH. Objectively, regarding the ability to hear a speech signal when using the ANCH, this sample performed nearly perfectly on speech discrimination testing in all conditions. A paired t-test ascertained a marginally significant difference in favor of the ANCH condition for speech discrimination in noise. The ANCH may help to reduce some environmental noise for listeners and improve how well listeners hear audio presented through the ANCH. The measures of speech discrimination showed that the ANCH allowed for fidelity of sound discrimination in noise.

Subjectively, 13 participants reported that they heard the speech discrimination stimuli better when using ANCH, but all others did not report an increased benefit. It may be that the frequency spectrum of the restaurant noise did not correspond specifically to the frequencies that the ANCH are designed to cancel. Moreover, the lack of difference in benefit may be attributable to the participants all being young, healthy, free of any form of hearing disturbances, and able to hear well in a variety of conditions. The sample studied represents only a portion of the consumer market that might seek to purchase the ANCH. The potential utility of ANCH for listeners with a range of hearing abilities was not observed in this study.

Subjectively, 28 participants enjoyed using the ANCH, which showed that the active noise cancelling technology did not hinder the quality of their listening experience. Only 11 did not claim that they would want to increase the volume of the music in noise, which suggests that 19 people could expose themselves to unsafe listening levels while using the ANCH. Despite having experienced sound fidelity, the listeners might not listen to their music at lower dB levels.

In summary, despite the possibility that the ANCH might provide some benefit in reducing environmental noise, and that most of the participants were satisfied with

their listening experience using the ANCH, many participants wished that they could have increased the volume of the music while there was restaurant noise in the background. This suggests that using ANCH may not actually help listeners enjoy their music at lower and safer decibel levels. However, of note is the fact that the participants listened to only one song, a hard rock classic that is often listened to at very loud levels at a stadium or another large public venue. Participants may have associated this particular song with hearing music at a loud volume. The participants' wish to increase the volume of the music might have been different if the type of music offered was different, or if participants had a choice among different types of musical selections.

Relatedly, ANCH use may not be a mechanism for hearing conservation and safe listening habits. Consumers might have a false sense of security about listening to loud music when wearing ANCH or might wear them instead of earplugs when a reduction in noise is a safer choice, as when working with noisy equipment or riding in airplanes. The purpose of ANCH is not to make it safe to play music loudly or protect listeners from loud sounds while listening to music, but, rather, the purpose is to make it easier to hear an audio source at a quieter volume in a moderately noisy environment. The participants' preferences for louder music may be considered counter to the purpose of the ANCH. It is somewhat flawed to suggest that the ANCH are preferred or not preferred when the participants could have been considering using ANCH in a way that they are not necessarily meant to be used, that is, to block out the restaurant sounds and thereby make it "safer" to increase the intensity of the audio source.

If this sample is any indicator of consumer preferences, the retail price of ANCH may be a little high for consumers in the 18- to 35-year age range, especially for those at the younger end of the range. Two persons in this sample would purchase the Sony XB950N1 Wireless Noise Cancelling Headphones at their retail price of \$249.99. Other headphones are on the market for prices closer to \$50 to \$100, which represents the price that the majority of the participants indicated they would pay. The participants' responses might have been influenced by their own budgets rather than by their satisfaction with the ANCH.

This pilot study yielded the potential for further investigation of the utility of ANCH in various conditions and for a variety of consumers. Future efficacy studies should explore the efficacy of other models of headphones in a variety of price ranges, as well as the behaviors and reactions of participants who have some difficulty hearing in noise and/or who represent consumers of all ages across the lifespan. It would be useful to measure the frequency spectrum of the background noise used for testing and ensure its correspondence to the lower frequencies that the ANCH are designed to suppress. Repeated measures of participants would improve reliability of all measures. In conclusion, ANCH may provide some noise reduction benefit, but users should be conscientious of guidelines for safe listening and of the cumulative noise that is experienced when listening through headphones in noisy environments. ♦

Acknowledgements

The authors would like to thank Myrita Wilhite and Norm Bringman for their assistance during this research.

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Appendix A.

Pre-Survey Results



- | | |
|--|----|
| 1) Have you ever been diagnosed with a hearing loss? | |
| a) Yes | 0 |
| b) No | 30 |
| 2) Have you had a head cold within the past two weeks? | |
| a) Yes | 4 |
| b) No | 26 |
| 3) How often do you use headphones (and/or ear buds)? | |
| a) I never use headphones/ear buds | 0 |
| b) Less than on a weekly basis | 7 |
| c) One to three days per week | 8 |
| d) Four to six days per week | 8 |
| e) Every day | 7 |
| 4) How long do you usually use your headphones (and/or ear buds)? | |
| a) I never use headphones/ear buds | 0 |
| b) For less than 1 hour | 11 |
| c) For 1-2 hours | 14 |
| d) For 3-4 hours | 4 |
| e) For 5-6 hours | 1 |
| f) For 7-8 hours | 0 |
| g) For more than 8 hours | 0 |
| 5) When do you primarily use headphones? (mark all that apply) (response total exceeds n=30) | |
| a) Leisure time | 16 |
| b) Traveling or Commuting | 12 |
| c) Exercising | 23 |
| d) Reading | 1 |
| e) Studying | 16 |
| f) Working | 6 |
| 6) How loudly do you listen to music/audio through your headphones? | |
| a) Quietly | 4 |
| b) Moderately Loud | 17 |
| c) Loud | 6 |
| d) Very Loud | 3 |
| 7) Have people ever told you that they can hear the sound of your music standing beside you? | |
| a) Never | 13 |
| b) Seldom | 13 |
| c) Often | 3 |
| d) Always | 1 |
| 8) Have you ever experienced ear pain after listening to headphones? | |
| a) Never | 25 |
| b) Seldom | 5 |
| c) Often | 0 |
| d) Always | 0 |

- 9) Have you ever experienced ringing in the ear after listening to headphones?
- a) Never 24
 - b) Seldom 5
 - c) Often 1
 - d) Always 0
- 10) Have you ever had a headache after listening to headphones?
- a) Never 25
 - b) Seldom 5
 - c) Often 0
 - d) Always 0
- 11) Do you have difficulty hearing people speak to you in noisy environments?
- a) Never 8
 - b) Seldom 19
 - c) Often 3
 - d) Always 0
- 12) Do you currently have a job? If so, what is your job?
- a) Yes. My current occupation is _____. 22
 - b) No. 8
- 13) How noisy is your work environment?
- a) I do not have a job. 8
 - b) Quiet 9
 - c) Moderately Loud 12
 - d) Loud 1
 - e) Very Loud 0
- 14) Do you even experience ear pain after getting home from work?
- a) I do not have a job 8
 - b) Never 22
 - c) Seldom 0
 - d) Often 0
 - e) Always 0
- 15) Have you ever experienced ringing in the ear after getting home from work?
- a) I do not have a job 8
 - b) Never 21
 - c) Seldom 1
 - d) Often 0
 - e) Always 0
- 16) How often do you experience ringing in the ears even though you have not been exposed to a noisy environment?
- a) Never 20
 - b) Seldom 8
 - c) Often 2
 - d) Almost always 0
 - e) All the time 0

Appendix B

Post-Survey Results

- | | |
|--|----|
| 1) How does the music you listened to today compare to the music you usually listen to? | |
| a) Your normal listening level is typically quieter | 1 |
| b) Your normal listening level is typically about the same | 19 |
| c) Your normal listening level is typically louder | 10 |
| 2) Did these headphones help you to block out the background noise of the noisy restaurant, airport, or busy street? | |
| a) Very much | 9 |
| b) Kind of | 13 |
| c) Not really | 7 |
| d) Not at all | 1 |
| 3) While listening to the music without background noise, did you wish that you could adjust the volume of the music? | |
| a) No, the volume of the music was comfortable | 22 |
| b) Yes, the music was too loud for my comfort | 1 |
| c) Yes, I could hear the music but would prefer to make it louder | 6 |
| d) Yes, I couldn't hear the music very well | 1 |
| 4) While listening to the music with background noise, did you wish that you could adjust the volume of the music? | |
| a) No, the volume of the music was comfortable | 11 |
| b) Yes, the music was too loud for my comfort | 0 |
| c) Yes, I could hear the music but would prefer to make it louder | 17 |
| d) Yes, I couldn't hear the music very well | 2 |
| 5) Did you enjoy using these headphones during the study? | |
| a) Very much | 16 |
| b) Kind of | 12 |
| c) Not really | 2 |
| d) Not at all | 0 |
| 6) Would you buy these headphones (the second pair)? | |
| a) Yes | 7 |
| b) No | 8 |
| c) Maybe | 15 |
| 7) Which pair of headphones helped you the most when listening to and repeating back the words the man said? | |
| a) Second pair | 13 |
| b) First pair | 8 |
| c) Neither pair. Both were about the same. | 9 |
| 8) How much would you pay for them (the second pair)? | |
| a) \$0 - \$25 | 5 |
| b) \$25 - \$50 | 5 |
| c) \$51 - \$75 | 5 |
| d) \$76 - \$100 | 5 |
| e) \$101 - \$150 | 4 |
| f) \$151 - \$200 | 3 |
| g) \$201 - \$250 | 2 |
| h) \$251 - \$300 | 0 |

and without disabilities during healthcare appointments including but not limited to child behavior (e.g., hyperactivity, frustration, fear, and self-stimulation), sensory overload in doctor's offices causing distractions (e.g., new sights, smells, and sounds), disconnect with healthcare providers, and communication breakdowns (i.e., difficulty communicating with the child) (Bultas, McMillin, & Zand, 2016; Duker et al., 2017; Kopecky, Broder-Fingert, Iannuzzi, & Connors, 2013; Liptak et al., 2006; Vohra, Madhavan, Sambamoorthi, & St. Peter, 2014; Wilson & Peterson, 2018). For children with autism spectrum disorder (ASD), caregivers may also encounter barriers including limited interdisciplinary cooperation between healthcare providers, difficulties with access to services, eligibility and availability of services, and delays in appointments (see Strunk, Pickler, McCain, Ameringer, & Myers, 2014; Vohra et al., 2014). According to Wilson and Peterson (2018), "enabling child communication, provider understanding and flexibility, and parental preparedness can help promote positive experiences" (p. 808).

Finding effective strategies to navigate the healthcare landscape poses challenges for families of children with and without disabilities (Duker et al., 2017; Liptak et al., 2006; Vaz, 2010; Vohra et al., 2014). There are several anxiety-provoking factors in healthcare settings, including unpredictable waiting times, sensory overload (e.g., noises and bright lights), and loud, crowded waiting rooms. According to Vaz (2010), waiting in these waiting rooms is a difficult task for children with Autism Spectrum Disorder (ASD) and it is also inevitable at doctor's appointments. For children with ASD, healthcare appointments may be even more challenging, as caregivers may not only need to support their children during appointments, but also take steps to prepare the child before the appointment to help the child feel comfortable and safe in the environment. Parents know their child best and play a key role in supporting their child in healthcare settings (Duker et al., 2017; Liptak et al., 2006; Stokes, 2016; Vaz, 2010; Vohra et al., 2014).

In a study by Strunk and colleagues (2014), parents of children with ASD were interviewed regarding their experiences with their children in healthcare settings. Parents expressed feelings of hopelessness and frustration about how to manage their child's healthcare needs along with a lack of healthcare provider understanding about the disorder and how to

treat children with ASD. Strunk and colleagues (2014) further described that these parents have a little to no resources and limited services for their children with ASD. Similarly, in a recent investigation, Duker et al. (2017) found that caregivers of children with ASD experience barriers related to access to care in not only identifying a proper healthcare professional, but also with rejection and misunderstanding from healthcare professionals as well as the high cost of treatment. Along with these difficulties, however, parent preparation for appointments as well as the use of visual supports in medical settings can be useful in promoting ease of appointments for children with ASD (Wilson & Peterson, 2018).

There are several evidence-based visual supports that can be beneficial to children with ASD with respect to enhancing expressive communication, identifying emotions, and easing transitions (Quill, 1995). These supports (e.g., visual schedules, Social Stories™) are helpful for those who have communication impairments, social interaction deficits, and challenging behaviors (Armstrong, DeLoatche, Preece, & Agazzi, 2015). They are frequently used by speech-language pathologists (SLPs) and are deemed effective, evidence-based tools to support language learning, social understanding, and communicative exchanges (Wong et al., 2015).

Chebuhar and colleagues (2013), for instance, explored the effectiveness of picture schedules in medical settings in promoting communication and decreasing anxiety among patients with ASD. The use of picture schedules during medical appointments reduced anxiety and stress-related behaviors in children with ASD, per caregiver and healthcare provider report. Over three-quarters of the caregivers reported that in general, the picture schedules were beneficial to their children's experience during the healthcare appointment by decreasing the child's anxious behaviors and helping the caregiver to feel less distressed (Chebuhar et al., 2013). Similarly, caregivers felt that having the picture schedules for their child decreased their own feelings of anxiety and stress surrounding the appointment. In a different study, Armstrong and colleagues (2015) found a child with ASD benefitted from the visual supports in home, school, and community settings; the parents in this case study reported that they were able to take their child into

public settings that they had not been able to visit previously.

The Present Study

Previous research suggests that evidence-based visual strategies to support communication (e.g., picture schedules and calendars) may be effective in helping caregivers and their children in the healthcare setting by promoting communication and decreasing anxiety (Chebuhar et al., 2013). Because healthcare appointments are unavoidable, it is imperative to have a better understanding of the types of strategies caregivers can effectively use with their child with ASD to prepare for and facilitate appointments. This will enable SLPs to partner with caregivers and provide guidance on the range of supports that would be beneficial and tailored to the individual communication needs of each child.

The goal of this study was to examine the types of strategies caregivers of children with ASD use to prepare and support their children before and during healthcare appointments. Preparing children before appointments at home occurs in the level of the microsystem and supporting their child at the appointment is in the level of the mesosystem of the systems theory previously discussed. The specific research questions were (a) What strategies and visual supports do caregivers use to prepare their children before the visit, and (b) What strategies and visual supports do caregivers use to support their children during the visit?

Methods

Participants

Surveys of 47 primary caregivers of children with diagnosed ASD were included in this investigation. Participants were recruited via regional autism societies and caregiver groups across Ohio. An initial email was sent to the individual Ohio societies and caregiver groups requesting permission to use their society as a means of recruitment. Following approval, an email including a link to the online survey was sent to each individual society for distribution via e-mail communications or social media sites. Caregivers completed an informed consent form prior to beginning the survey. All research procedures were approved through the Institutional Review Board (IRB) at the authors' university.

Fourteen of 61 respondents were excluded for the following reasons: they were not the primary caregiver ($n = 1$), duplicate survey ($n = 1$), the child was over the age of 22 ($n = 1$), or the survey was incomplete ($n = 11$). Complete surveys were defined as completion of full demographic information as well as full completion of information on healthcare experiences at the doctor's office. Per caregiver report, participants were all primary caregivers of children with ASD. The majority of caregivers were female, Caucasian, English speakers, with a college-level or beyond education. The children reported on ranged from 2-22 years of age, with the majority of sample representing males who were older than 12 and diagnosed prior to age 5. Most children attended public schools and used spoken language as their primary mode of communication. The majority had comorbid conditions including language delays; several caregivers indicated "anxiety" as an additional comorbid diagnosis represented as "other". See Table 1 for additional demographic information on caregiver participants and Table 2 for additional child demographics.

The Survey

To determine the perceptions of caregivers' experiences as they prepare and facilitate a healthcare appointment, a 46-item survey was created using Qualtrics survey software (Qualtrics, 2005). The survey included closed- and open-ended items. Part I focused on parent and child demographics and child diagnosis while Part II focused on the frequency and duration of appointments, child behaviors, strategies caregivers used before and during appointments, and frequency and duration of preparation time. Healthcare appointments were defined in the survey as visits to their child's primary care physician.

Participants were first asked to select all visual supports that they used with their child. Then, they were presented with statements such as "A visual schedule is effective in preparing my child before visits" and then selected the extent to which they agreed with the statements from 1 (*strongly disagree*) and 5 (*strongly agree*) or "not applicable" if they had never used the strategy to support their child. Though optional, there was also a space for caregivers to provide qualitative comments about what could make their experiences better and if applicable, any additional comments they may have. The mean time participants spent to complete the survey was 35.8 minutes.

Coding

The first author and a trained research assistant entered qualitative comments into a spreadsheet and analyzed the content of the comments based on the

Table 1. Demographics of Caregivers of Children with ASD (n = 47)

Characteristics	Caregiver
Age, mean ± SD (range)	43.81 ± 8.73 (27 - 67)
Sex	
Male	2.1%
Female	97.9%
Relation to child (n = 46)	
Mother	87.0%
Father	2.2%
Grandfather	4.3%
Other	6.5%
Race/ethnicity	
African American	4.3%
Hispanic	6.4%
Native American	2.1%
White/Caucasian	87.2%
Education	
High school	4.3%
Some college	25.5%
2-year college degree	21.3%
4-year college degree	25.5%
Master's degree	19.1%
Doctoral degree	4.3%
Geographic location of residence	
Central	21.3%
Northeast	27.7%
Northwest	34.0%
Southeast	12.8%
Southwest	4.3%
Primary language	
English	97.9%
Other	2.1%

Note. Other caregiver relations to the child were indicated as adopted mother, second cousin, and legal guardian. Other primary language spoken in the household was indicated as Japanese.

qualitative procedures outlined by Creswell (2008). Comments conveying similar ideas were categorized into groups and labeled with a descriptive code (i.e., a term which summarized the concept reflective of the comments in that group). The first author and research assistant then discussed each code in order to reduce overlap between similar codes and identify and discrepancies between coders.

Table 2. Demographics, Diagnosis, Education, and Communication Methods of Children with ASD (n = 47)

Characteristics	Child with ASD
Age, mean ± SD (range)	11.83 ± 5.43 (2 - 22)
Sex	
Male	76.4%
Female	23.4%
ASD diagnosis	100%
Diagnosis age	
<2	8.5%
2-5	66.0%
>6	25.5%
Education setting	
Homeschool	14.9%
Private school	8.5%
Public school	70.2%
Does not attend	6.4%
Comorbid diagnoses	
ADD	21.3%
ADHD	31.9%
Emotional/behavioral problems	44.7%
Hearing impairment	2.1%
Language delay	53.2%
Language impairment	25.5%
Neurological problems	17.0%
Other	53.2%
Communication method	
AAC	12.8%
Gestures	29.8%
Sign language	17.0%
Spoken language	87.2%
Symbol systems	6.4%
Other	6.4%

Note. AAC = Augmentative and Alternative Communication; ADD = Attention Deficit Disorder; ADHD = Attention Deficit Hyperactivity Disorder; ASD = Autism Spectrum Disorder. For comorbid diagnoses and communication, participants were able to select all that applied to their child, meaning that percentages will not add up to 100%. Other comorbid diagnoses were primarily indicated as anxiety. Other communication methods were indicated as writing on a notebook.

Results

The majority of caregivers indicated taking their children with ASD to the doctor's office between two to six times per year. Caregivers (74.5%) indicated taking their children to their appointments with no other adult in attendance; only 21.3% of participants reported taking an additional child to the appointment. At the office, 89.4% of participants revealed spending less than

30 minutes in the waiting room with the majority noting their children exhibiting some type of hyperactivity (e.g., running around, crawling, constant motion).

Quantitative Findings

A total of 42.6% of caregivers prepared their child one day in advance of the appointment. Over one-third of caregivers indicated that “less time in the waiting room” and “better communication with others” would help their overall experience at the doctor’s office and approximately 25% noted that “better communication with the doctor” would be valuable to their experiences with their child. The majority of caregivers selected the “verbal support of conversation” as their main preparation strategy before the appointment, which was also rated as the most effective tool by 78.7% of the caregivers in preparing their child for appointments, followed by the use of a calendar (25.5%) and visual schedule (17%). During the appointment, 80.9% of caregivers indicated using conversation, which was also rated as the most effective strategy used during appointments. See Table 3.

Table 3. Visual Supports Used with Child Before or During Doctor’s Appointments (n=47)

	Before appointment	During appointment
Supports		
Visual schedule	17.0%	2.1%
Social story	17.0%	8.5%
5-Point scale	-	-
Conversation	78.7%	80.9%
Calendar	25.5%	-
Other	8.5%	12.8%
None	10.6%	6.4%
Effectiveness of support, mean (SD)		
Visual schedule	3.16 (1.35)	3.13 (1.45)
Social story	3.08 (1.42)	3.36 (1.44)
5-Point scale	2.22 (1.03)	2.53 (1.61)
Conversation	4.34 (1.01)	4.31 (0.83)
Calendar	3.64 (1.48)	-
Other	3.08 (1.56)	3.43 (1.34)

Qualitative Findings

Since participants were not required to provide comments, qualitative findings are based on a subset of the sample: before the appointment (n = 16), during the appointment (n = 20), better experiences (n = 8) and additional comments (n = 18). Overall, caregivers primarily indicated using verbal, visual, and other supports before and during doctor’s appointments.

These supports were used to both prepare and support the children during appointments. Additional qualitative responses are summarized below.

Before the appointment. Seven of the caregivers (44%) discussed the strategy of using conversation as a verbal support to explain the sequence of events that would happen to prepare their child before the coming visit. One caregiver noted, “*We discuss what will happen, and what we will do afterwards.*” In addition, 7 caregivers used explanations, reminders, and warnings to prepare their children before appointments such as “*explaining what will and won’t take place (e.g., shots)*” and “*reminding him how nice the doctor has always been to him.*” One caregiver reported the use of visual supports in the form of taking “*actual pictures of the inside and outside of the building, waiting room, reception area, and exam room.*” He or she continued by stating: “*If available, I will take a picture of the doctor or find the pictures on the internet. I print them and make a social story for my son.*” Caregivers (n=6) also discussed using visual supports in conjunction with verbal supports. To illustrate, one caregiver wrote, “*He sees the visual calendar. I give him lots of warnings when we are ready to leave.*” One caregiver explained using visual distractions such as a focus card: “*We have also started using a focus card that he carries, and it helps him concentrate on something else.*” Awareness, distractions, event sequence, and reminders were all subthemes emerging within using visual supports to prepare children with ASD before their appointment.

During the appointment. Twenty caregivers offered comments about the types of supports and techniques they use during their child’s appointment. Forty percent of caregivers (n = 8) noted the use of verbal supports with their child in the waiting room and the exam room. Verbal supports were in the form of event sequences, explanations, reminders, and repetition. One caregiver said, “*We talk a lot about what’s next at the appointment and after we leave.*” Other caregivers remarked, “*...open, clear communication has been the primary support provided*” and “*I just keep trying to distract her with conversation...*” With respect to visual supports, one caregiver said, “*...we used various strategies to help decrease anxiety and help him understand the procedures he would encounter. These included visual schedules and social stories until he was of middle school age...*” Another caregiver indicated, “*I will bring the social story along and show each picture*

right before it occurs (i.e., in the parking lot I would show the outside picture of the building, as we are walking in I would show my son the reception area, etc.)..." Visual supports were reported to be used in conjunction with verbal supports during appointments by 10% of caregivers.

Additional strategies. Caregivers ($n = 13$) also used technology (e.g., tablets and hand-held gaming systems) and books to provide distractions and entertainment to their child before appointments. The "promise of reward" as well as sensory input helped their experiences at the doctor's office (e.g., music, snacks, books, videogames, puzzles, and toys). For example, one caregiver said, "We always have special, favorite toy/activity for visits. Also, he enjoys having his back scratched so we sometimes do that too."

Additional Comments

Additional comments related to the doctor's office primarily included the need for medical staff training ($n = 16$) in order to improve experiences and quality of care in medical settings. Several caregivers stated how the environment could be altered to improve the experiences of children with ASD. These included making the office "more autism friendly" and having "activities set out for autistic children in their waiting rooms." Another caregiver expressed that when her child was younger:

We often waited a long time in a waiting room with far too many distractions- other children, messy environment, loud interactions, etc. Once inside the "examination room" the environment was cold and sterile with mostly hard/cold surfaces and little comfort. These circumstances added to the anxiety my son experienced as a younger child. My memories of these visits include tears from him and me trying to soothe him as we sat together waiting for the doctor to see him.

Caregivers also felt that doctor knowledge of resources such as family community support networks may greatly improve experiences. For example, one caregiver stated, "Doctors need training on how to support families. They need to know about the struggles we face and community resources available." It is important to note that a subset of caregivers also shared positive experiences at the doctor's office. These caregivers praised their child's physicians for being understanding and "wonderful." One caregiver expressed:

We are very fortunate to have great primary care physicians for our children. They have been helpful and supportive. We do try to see the same physician in the group every time we go. This is extremely helpful for our son who likes consistency. The office is very good about accommodating this.

Another caregiver positively commented on her child's doctor's explanations to her son. She said, "Many doctors will take their time with our son and explain and let our children explore their instruments before using them. This is very beneficial."

A few caregivers expressed that they had a more challenging outlook on experiences when their children were younger. One caregiver noted, "When he was younger, he would have meltdowns... now that he's older he plays on his phone and doesn't mind going." Others expressed using more visual supports in the early years of taking their child to the appointment rather than verbal communication and conversations used currently. For example, one participant stated, "When my child was younger, we used a visual reminder for him. Now that he's older, we tell him the day before and the day of we remind him," and "As a younger child, I used more supports in preparing my son for appointments..."

Discussion

Past studies examining children with disabilities in healthcare settings have researched access to services, understanding and satisfaction of healthcare systems, and quality of care (Duker et al., 2017; Liptak et al., 2006; Strunk et al., 2014; Vohra et al., 2014; Wilson & Peterson, 2018). The current study is novel in that it examined not only the caregivers' perspectives of their experiences with their children in healthcare settings, but also what the caregivers did with their child before

and during the appointment, thus examining the child individually as well as within the context of their caregivers and members of their community (i.e., healthcare providers). When multiple levels of the child's ecosystem were considered, a more complete picture of the child's experiences could be realized.

Caregivers of children with ASD know their child best; they know their child's preferred mode of communication, favored types of reinforcement, and their specific sensitivities (Vaz, 2010). Therefore, they are most knowledgeable people to prepare and facilitate healthcare appointments for their children with ASD. Identifying and using the ideal communication method specific for the individual is crucial when working with this heterogeneous population (Koecky et al., 2013). In the present study, caregivers reported using a combination of both verbal and visual supports with their children. The findings of this investigation imply that as needed, caregivers should be encouraged to utilize these supports with their children before and during appointments.

The majority of caregivers who completed the survey had children who used spoken language as their primary mode of communication. Consequently, it is not surprising that verbal supports were used most frequently before and during appointments. In line with previous studies reporting that brief conversations can make for a successful clinical encounter (Stokes, 2016; Vaz, 2010), caregivers in the present study found conversation to be the most effective strategy they used with their child with ASD before and during healthcare appointments. Duker and colleagues (2017) found that the ability to verbally communicate significantly and positively impacts the comfort level of the child with ASD at his or her appointment. Caregivers used verbal supports to explain what is going on to their children, remind their children of certain aspects of the appointment, and discuss event sequences such as what they will do after the appointment. This was possible with the sample of children from this study because the majority used verbal language as their primary mode of communication. However, Kopecky and colleagues (2013) highlighted the amplified importance of healthcare provider and caregiver collaboration especially if a child was nonverbal because such verbal supports may not be sufficient in preparing and supporting these children.

Similar to past research (Chebuhar et al., 2013; Meaden Ostrosky, Triplett, Michna, & Fettig, 2011; Vaz, 2010), caregivers also reported using visual supports, such as visual schedules and calendars, with their children with ASD. These tools are known to be effective and practical in reducing challenging behaviors (Chebuhar et al., 2013; Knight, Sartini, & Spriggs, 2014; Meadan et al., 2011) and should be encouraged for children with ASD when transitioning to new settings. Social Stories™, another visual support used with children with ASD as reported by caregivers, are also an effective tool to help with social behavior in situations that people with ASD may not fully understand (Meadan et al., 2011).

In the present study, a portion of caregivers conveyed that medical staff training would be beneficial. Caregivers also expressed concerns that their overall quality of care would be significantly increased if medical staff could provide them with additional community resources. This finding aligns with previous work on caregivers' dissatisfaction with their experiences in healthcare settings because medical staff do not have access to information about additional resources specific to ASD to provide caregivers (Liptak et al., 2006; Strunk et al., 2014). SLPs have the knowledge and skill set to assist parents in the creation of visual supports such as Social Stories™.

Limitations

This study was limited to a small sample of caregivers currently living Ohio. Larger sample sizes including caregivers from other states could increase the generalizability of these findings and allow for additional analyses exploring the effects of age and communication modality on the types of supports used by caregivers. Examining age clusters, for example, will enhance our understanding of the nature and needs of children with ASD and how and why their supports change (or do not change) as a function of their developmental level and communication status. Qualitative findings were limited since caregivers did not need to provide additional comments to complete the survey. Response bias was also a concern since those who felt strongly (either positively or negatively) may have been more motivated to complete the survey. Respondents to this survey may not be fully representative of all caregivers who have children with ASD because recruitment was limited to those affiliated with an ASD network.

Future Directions

Future investigations should explore the types of supports used as a function of age and developmental status, severity level of ASD, and communication modality. Technology was indicated to both prepare and facilitate the healthcare appointment and is another promising avenue for future work. Larger sample sizes including caregivers from other states could increase the generalizability of these findings and allow for additional analyses exploring the effects of age and communication modality on the types of strategies used by caregivers. Since the majority of the children in this study used verbal language as their primary mode of communication, there was an underrepresentation of children with ASD who use other communication modalities. Future studies should aim to examine the use of supports used by a population of children with ASD with more diverse communicative abilities. Finally, results of this study suggest the need for medical staff training. Possibilities include developing outreach programs and continuing education efforts to enhance medical professionals' interactions with children with ASD in healthcare settings. SLPs have the knowledge and expertise to facilitate doctors' understanding and implementation of visual supports. They can work with other members of the healthcare team to ensure the best possible outcomes and most effective strategies that will lead to successful medical encounters.

Implications

Results of this study provide some insight into the experiences of caregivers and children with ASD during healthcare appointments. Caregivers indicated using a variety of both verbal and visual supports to better their experiences with their child before and during appointments. Caregivers of children with ASD are encouraged to use supports with their child to help them attend and to support them during healthcare appointments, as it is a break in their daily routine. By using verbal and visual supports for children with ASD, caregivers and healthcare providers can work together to ensure that experiences in healthcare settings are beneficial to all stakeholders involved. These strategies can facilitate transitions across multiple levels of the child's system (e.g., microsystem and mesosystem) to provide an avenue for caregivers and healthcare providers to work together to optimize the healthcare experience for the child. ♦

Acknowledgements

This project was funded in part through a Provost's Undergraduate Research Fund Grant from Ohio University awarded to the first author. We would like to acknowledge all of the Autism Societies and caregiver groups who agreed to distribute the survey link and to the caregivers who participated in this study. Additional acknowledgements go to all of the research assistants in the Transition of Acquisition of Language Knowledge lab and everyone who helped craft, proofread, and provide feedback for the survey. ♦

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It has been long documented that communicative interaction is essential for human well-being and that detrimental psychological or physical effects might ensue when an individual does not experience sufficient and efficacious communicative interactions with other people (Fees, Martin, & Poon, 1999). A person's sense of connectedness and inclusion in the world may be reduced by hearing loss and the individual might experience depression, thoughts of suicide, or physical ailments (Walling & Dickson, 2012). The potential for reduced quality and/or quantity of communicative interactions is an inherent threat for many populations of individuals with communication disorders, but it is a distinct possibility for older adults with hearing loss.

Walling and Dickson (2012) reported that at least 28 million adults experience hearing loss and, notably, hearing loss affects nearly one-third of adults between the ages of 61 to 70. In current American society, the ages of 61 to 70 may represent the transition from later mid-life to older adulthood. Many individuals retire from work at this age and experience changes in their daily routines, places of residence, activity levels, and states of health. For those who do not retire from work and whose careers continue on well into their seventies, individuals with later mid-life hearing loss can find it challenging to maintain the occupational routines they have accomplished all of their working lives. Hearing loss can make it difficult for persons to verbally communicate face-to-face with others at their places of work and to use telephones and audio technologies. Some may experience the perception that because of their hearing loss they are barely keeping up the work pace that is required, and may develop feelings of frustration, avoidance, shame, discouragement, desperation, and loss that trouble them daily.

The Communicative and Psychosocial Effects of Hearing Loss at Midlife

It is arguably difficult enough to transition into older adulthood even when one's hearing is intact. Hearing loss can be foremost among the factors that cause the transition to be especially trying and stressful. Kaland and Salvatore (2002) explained that a later mid-life adult has established a life-long personality that does not include a hearing loss, so when hearing loss does occur, the individual can feel robbed of his or her identity and can become emotionally disoriented. The individual can no longer relate to his or her personality

as fixed, and with this comes grief over the loss of the prior self.

Ekberg, Grenness, and Hickson (2014) studied a sample of 63 conversations that took place between audiologists and older adult patients who were being dispensed hearing aids. The patients typically expressed psychosocial concerns, often in ways that conveyed a negative emotional stance. David, Zoizner, and Werner (2018) reported that adults with acquired hearing loss self-stigmatized. They ascribed characteristics to themselves using strong words, such as being old, stupid, and crippled. If they felt shame or experienced being pitied or ridiculed, they then reacted by distancing themselves from others or by trying to conceal the hearing loss. Preminger (2011) documented the communicative and psychosocial difficulties expressed by adults with acquired hearing loss who attended group aural rehabilitation sessions. These participants had many psychosocial perceptions and reactions in common and mentioned their frustrations, embarrassment, anger, and depressive symptoms. Experiencing being devalued, shamed, disgraced, and stigmatized was remarkably consistent across these participants, and they shared that because of the stigma, they were unwilling to use hearing devices or adopt communication strategies.

Previous reports considered the importance of hearing aid technologies and aural rehabilitation interventions for active individuals with acquired hearing loss who are in the transition from later mid-life to older adulthood (Alicia & Doherty, 2017; Dalton, Cruickshanks, Klein, Klein, Wiley, & Nondahl, 2003; Walling & Dickson, 2012). This prior research explored the personal challenges of persons with an acquired hearing loss and their paths toward personal adjustment and acceptance of the condition. Some later mid-life adults are motivated to seek aural rehabilitation interventions and to use the current assistive technologies available for persons with hearing loss. However, especially in cases where the hearing loss is severe or profound, regardless of a person's level of motivation, the degree of impairment can preclude any appreciable benefits being derived from the technologies, and the detrimental effects on participation at work and in an individual's personal life may be difficult to avoid or to overcome. At this significant level of hearing loss, communication with all interactional partners and in all communicative situations is dramatically compromised. Hearing

generally cannot be restored to resemble normal levels even with the use of hearing aids. Verbal communication needs to be supplemented with visual compensatory means, so the manner of communicating at work and in all settings is changed. There may be emotional correlates and psychosocial effects for all parties involved.

The adjustment to acquired hearing loss and its communicative and psychosocial effects are borne not only by the individual with hearing loss but also by his or her coworkers, family, and friends. It may not be from a lack of empathy that these communication partners do not acknowledge the limitations and frustrations that the person with hearing loss is experiencing. Hearing persons may simply not be able to imagine how the person with severe to profound hearing loss experiences hearing speech input and ambient sounds. Individuals without a hearing loss may not realize that hearing loss is not always perceived as being in ambient quiet. People with hearing loss might hear speech as muffled or garbled, background noises can interfere with hearing speech directed at them, and tinnitus can obscure the sound field. The direction that sounds are coming from can be hard to identify, so driving in traffic or walking in crowded buildings or on busy streets can be disorienting. It is difficult for communication partners to take actions to help if they may be unaware of just what the problem entails physiologically and psychosocially.

For communication partners to be able to help individuals with hearing loss adjust to their impairments and communicate as well as they can by using visual compensations, partners need to genuinely understand that hearing loss is a sometimes confounding physical impairment that potentially brings with it the psychosocial conditions of frustration, concern for personal safety, dependency, social isolation, embarrassment, and inconvenience when trying to use audio technologies that hearing persons take for granted. There is reduced access to relaxing listening-based entertainments such as television, radio, podcasts, video streaming, theater, and live and recorded music. Capable adults might experience being underestimated, insulted, patronized, or rejected by others. Communication partners must realize that the physical circumstances of severe to profound hearing loss are unrelenting and irremediable and that the person who has acquired a severe to profound hearing

loss is psychosocially forever changed from the person he or she was prior to the hearing loss.

It is because of the complexity and intensity of the lived-through communicative and psychosocial experiences of later mid-life persons with severe to profound hearing loss and their coworkers and families that this case study was undertaken. The authors sought to explore the communicative and psychosocial conditions experienced by a later mid-life male with an acquired severe to profound hearing loss and his family and coworker by interviewing these individuals. These data revealed the interviewees' sometimes inconsistent perceptions of the case participant's hearing loss and their compensatory strategies for adapting to the case participant's level of hearing. This report discusses the case participant's management of his audiologic and rehabilitative needs. Importantly, the case participant and his family and coworker might not have availed themselves of many of the audiologic and rehabilitative resources that could improve this individual's communicative functioning, and this could partially be ascribed to the amount of information provided to them by health care professionals.

This case information may allow speech-language pathologists and audiologists to examine the personal perceptions of a group of individuals who experienced adapting to the communicative and psychosocial effects of severe to profound mid-life hearing loss. The data herein reinforce that professionals are likely to encounter many different perspectives held by persons affected by hearing loss and their communication partners. The implication of these findings is that speech-language pathologists and audiologists are obligated to provide comprehensive information and supportive understanding to the clients and families whom they treat, educate, and counsel.

Purpose of the Study

This case study attempted to answer the following research questions:

1. How does a severe to profound mid-life hearing loss affect an individual communicatively and psychosocially?
2. How does an individual with a severe to profound mid-life hearing loss cope with the hearing loss when communicating in interactional situations? What compensatory strategies are used?

3. Are communication partners aware of the communicative and psychosocial condition of the individual with severe to profound mid-life hearing loss?
4. Are communication partners of the individual in this study aware of compensatory strategies to use during their interactions with the case individual? If they are aware, what do they know?
5. Based on the data obtained, what behaviors and technologies can help individuals with severe to profound mid-life hearing loss and their communication partners communicate more effectively?

Method

Following approval by the Cleveland State University (CSU) Institutional Board for Human Subjects in Research, the second author (hereafter, “the researcher”) recruited the case participant and his family and coworker. The researcher discloses that these parties were previously known to her and she encounters them on a frequent basis.

Participants

Each participant was recruited via a verbal recruiting script that described the study, participation expectations, and who else was to be recruited. Written informed consent detailed how the researchers would collect and store the data the precautions they would take to keep the participants’ identities confidential when disseminating the findings.

All names of participants in this case study are pseudonyms. The participants included the case participant (Clifford), his wife (Morgan), three of his adult children (Alex, Katherine, and Michael), his daughter-in-law (Elizabeth), and his longstanding office manager (Pam). Clifford, who was the historian for his own case, is a 62-year-old male who was diagnosed with an acquired severe to profound bilateral sensorineural hearing loss in the late 1990s. Per his report, his initial hearing loss had been influenced by noise exposure and potentially by heritable factors or a family predisposition to hearing loss. Clifford is a part owner and vice president of sales for a manufacturing company and has been in the manufacturing business for approximately 40 years. His occupation has exposed him to industrial noise on a regular basis. Although Clifford had endured his hearing loss for almost 20 years

and had habituated to using various compensations to a certain extent, the researcher observed an increase in functional communication difficulties when she interacted with him.

Clifford lives with his wife, Morgan, in the same city as his son, Michael, and his daughter-in-law, Elizabeth. His son, Alex, and daughter, Katherine, live about two hours’ drive away. As an active late mid-life individual, Clifford is heavily involved in his family’s lives and has his own social circle. Clifford’s family members and his office manager, Pam, interacted with him in person, and by phone, text, and email several times each week. Each of these six communication partners had a unique communicative and interactional relationship with Clifford, and their perspectives provided insight into Clifford’s communicative habits and behaviors.

Procedures

The researcher formulated the questions by consulting questions used on the Hearing Handicap Inventory for the Elderly (Ventry & Weinstein, 1982) and then by revising those questions and adding several original questions that were developed for this study. The researcher arranged the questions thematically under the headings of Hearing, Adapting, Social, and Future.

Data were collected in February and March of 2018. During this time, the researcher conducted individual interviews with Clifford and the six communication partners, and observed him for a half day at his job.

Clifford’s 30-minute interview took place at his home. Then, each family communication partner was interviewed in his or her home for approximately 20 to 30 minutes. During the interviews the researcher typed the verbal responses into a word processing document on the researcher’s password protected personal computer.

Next, the researcher observed Clifford at his place of work on one weekday from 9:00 a.m. to 12:00 p.m. and then individually interviewed Clifford’s office manager, Pam, for approximately 20 to 30 minutes. The researcher typed field notes and Pam’s verbal responses to interview questions into a word processing document on the researcher’s password protected personal computer.

The purpose of the observation was to witness Clifford's work-related communicative interactions via face-to-face interactions, phone calls, and email correspondences.

Instrumentation

Instrumentation included two sets of interview questions: one set for Clifford (Appendix A) and one set for the communication partners (Appendix B). Both sets of questions targeted communicative challenges or difficulties, psychosocial perceptions, feelings and emotions, and compensatory strategies used to help Clifford in communicative situations.

Member Checking

Member checking, also known as participant or respondent validation, is a qualitative research technique that involves obtaining feedback from the participants of a study (Creswell, 1998; Lincoln & Guba, 1985). The trustworthiness and credibility of the results are established by returning the study's findings to the participants to check for their perceptions of accuracy, adequacy, and validity. In the present study, the authors asked the participants to read the manuscript version of this article and to respond with corrections if they chose. None offered responses. Member checking established the participants' confirmation of the accuracy of the study results and validated the authors' interpretations of the information.

Results

The interviews revealed the perspectives of each individual and the observation session allowed the researcher to document Clifford's behaviors during communicative interactions. These data are summarized below. Table 1 provides a composite of their responses, showing the similarities and differences in their responses related to the themes of Hearing, Adapting, Social, and Future.

Clifford's Interview Responses

Clifford provided the researcher with an audiogram prepared by a licensed audiologist on 9/10/2012 (shown in Figure 1). He declined to undergo current hearing testing for purposes of this study. Clifford's hearing loss as of 2012 was characterized by a sloping mild (250 Hz) to moderately-severe (500-2000 Hz) to severe to profound (4000-8000 Hz) sensorineural hearing loss bilaterally. Pure tone averages and the speech reception threshold were 60dB, consistent with

a severe hearing loss. This audiogram indicated that Clifford could just barely understand speech presented at 60 dB HL. Normal conversation generally takes place at an intensity of 45 to 50 dB HL, which means that Clifford had a degree of hearing loss that did not allow him to hear conversation at a normal level. Speech discrimination testing scores were 80% on the right and 72% on the left, indicating the percentage of speech that Clifford understood when the speech was loud enough to hear comfortably. Clifford's Most Comfortable Level (MCL) was 90dB bilaterally. His high percentage correct on speech discrimination testing suggested that he could have had some degree of success using hearing aids (see Schoepflin, 2012, for audiometric interpretation guidelines).

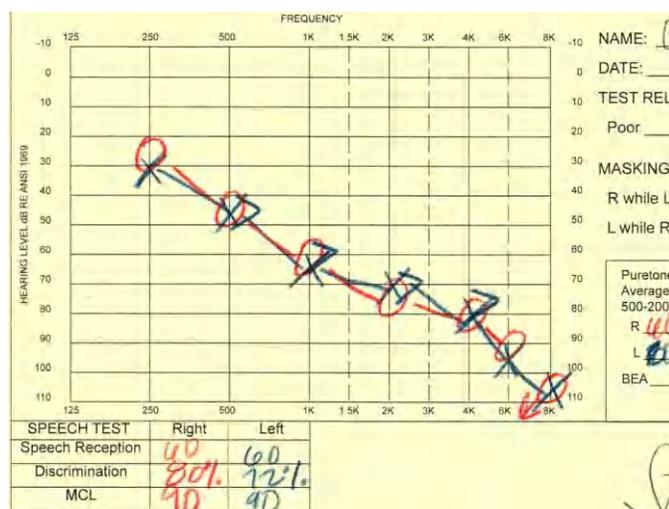


Figure 1. Clifford's Audiogram 9/10/2012

Clifford wears the binaural hearing aids that he was dispensed to correspond to the 2012 audiogram. Clifford's current technology is the Starkey custom-made Completely-In-Canal (CIC) aid, designed for individuals with mild to moderately severe hearing loss. The aids are programmable and have Bluetooth technology.

Hearing. Clifford stated that he felt that he was properly informed by his audiologist about the communicative effects of hearing loss. Based on this information, he became aware that sometimes sound sources coming from certain directions are more audible to him. He did not report any additional

information about hearing derived from discussion with his audiologist.

Adapting. Clifford became aware that sometimes he could position people and sound sources to allow him to obtain better transmission of sound and listening acoustics. Clifford compensates by knowing where sound inputs need to be placed in his environment so that he can perceive them better. Therefore, if he cannot position other speakers and control room or environmental acoustics, this contributes “most,” as he said, to his hearing difficulty.

Clifford taught himself how to speech read (he used the term “lip read”) and repositions himself so that he can best regard a speaker’s face. He commented that most people he communicates with in daily life do not do anything to help him adapt to the sound field. He is aided when people gain his attention before speaking to him, but others do not do so consistently. He benefits from when speakers use clear and crisp “diction” and do not “slur or mumble.” He alluded that his adapting to hearing loss is compromised by his personal barriers to motivation. His motivation is diminished by the high cost of hearing aids and by the general “lack of societal knowledge on how to address the hearing impaired.”

Social. Clifford avoids loud, noisy social environments where there are many people talking against background noise and many people talking at the same time. His hearing aids amplify background sounds along with the voice of the foreground speaker, which is of little help for hearing speech in noise. He prefers to socialize in quieter bars or restaurants and occasionally withdraws from attending events held in locations where he knows he will have trouble hearing. He prefers communicating face-to-face instead of over the telephone. He stated that talking on the phone has gotten increasingly difficult over the years, so he uses texts or emails to reach other people. However, face-to-face social exchanges are difficult when a speaker has to repeat a message several times so that Clifford can understand, and many times Clifford cannot understand the repeated message and the speaker just gives up trying. Both partners feel frustrated, and the resulting lack of information or confusion can be a hindrance to sharing important messages at work. He “makes an educated guess and responds accordingly.” Clifford now texts or emails coworkers, even those who are nearby

on the work premises, to avoid face-to-face or phone conversations.

Clifford reported that his close relationships have not been affected by his hearing loss. He is comfortable talking about his hearing loss only with people with whom he has a close relationship. His self-worth and self-confidence have suffered to an extent. Occasionally he feels inadequate and extremely frustrated when communicating unsuccessfully. Sometimes he feels a general sense of anxiety when he cannot understand unfamiliar communication partners in social environments, but he denies any physical symptoms of anxiety. He feels that society stigmatizes people with hearing loss.

Future. Clifford would like to continue to find ways to facilitate communication with multiple communication partners and keep up good relationships with his family and with others who understand his hearing loss. He wants to use technologies more regularly and more effectively, such as the hearing aid coil in his iPhone and television closed captioning.

Morgan’s Interview Responses (Clifford’s Wife)

Morgan responded to the researcher’s questions by sharing the following perceptions.

Hearing. When Morgan and Clifford met, formed a relationship, and married, Clifford was already experiencing mid-life hearing loss. She had prior knowledge of hearing loss because of her experiences with children with special needs and hearing loss and with a close cousin with profound deafness. She relied on some of her prior knowledge to help her learn how to communicate with Clifford. Morgan stated that Clifford’s audiologist had suggested that she should face Clifford when speaking, articulate clearly, and anticipate settings where Clifford might have trouble hearing. Morgan noted that she would have appreciated the audiologist offering information on the social and emotional consequences of hearing loss personalized for Clifford. After each appointment with his audiologist, Clifford shares with Morgan any new information about his hearing loss.

Adapting. Morgan confirmed that face-to-face conversations with Clifford in a quiet environment are the best way to communicate with him, and text

conversations are second best when they cannot talk in quiet conditions. She positions herself to speak right into his ear in noisier settings in public. Clifford occasionally asks Morgan to repeat or mishears her question and will answer a different question than she has asked. At home, Clifford takes his hearing aids off at night and puts them on just before he leaves for work in the morning. Overnight, Morgan is responsible for hearing any sounds at home. She is very comfortable speaking to Clifford about his hearing loss.

Social. Morgan and Clifford spend most of their time together at home, talking one-to-one. She usually handles their communications with unfamiliar people. Clifford relies on her for everyday phone calls to purchase items, arrange for household repairs, or the like, and in any situation where Clifford anticipates trouble hearing. Clifford can become uncomfortable when unfamiliar communication partners who are not aware of his hearing loss are trying to convey information to him on the phone and he needs messages repeated or he cannot understand what the speaker is saying at all. Morgan reported that Clifford uses the phone infrequently and he texts people if she is not available to make phone calls for him. She has noticed his anxiety or discomfort in noisy restaurants, so she arranges social events with adaptations when possible. For example, she requests a square table instead of a round table for their larger family at a restaurant because this arrangement seems to help facilitate Clifford's ease of communication in background noise. Morgan stated that, in her opinion, Clifford is "so social" that his "innate desire to connect through communication" compensates for some of his hearing difficulties.

Future. Morgan finds it somewhat difficult that Clifford cannot hear at night when his hearing aids are off. She wishes Clifford could have "24/7 hearing capacity."

Alex's Interview Responses (Clifford's Son)

Alex lives about two hours' drive from Clifford. They are together frequently.

Hearing. Alex reported that he never sought out or received any information about Clifford's hearing loss or how to address it.

Adapting. Alex indicated that face-to-face interactions or texting are the best ways to interact with Clifford, and that they text very frequently. If Alex has something important to tell Clifford, Alex texts first to let Clifford know that he wants them to talk over the phone and he announces what the topic of the call will be. Alex said that Clifford expects that text messages are clear, properly punctuated, and devoid of slang.

When they speak in person or on the phone, Clifford asks Alex to repeat himself, then if he does not understand the intended message. If Alex's multiple repetitions fail to help Clifford understand, Clifford moves on to another topic. In face-to-face interactions, Alex makes sure that he has eye contact with Clifford right from the start of the conversation. Alex has observed that Clifford speech reads and makes eye contact with others. On the phone, Clifford frequently cannot understand everything that Alex has said, and there can be gaps in what Clifford gathers from the conversation. Alex is very comfortable talking with Clifford about his hearing loss and he stated that gaining information about the emotional consequences of hearing loss would be beneficial.

Social. Alex has noticed that when Clifford is in a restaurant or bar that he is anxious if he has to engage in a phone conversation in noise. Clifford gives his phone to a family member who can handle the call. He does not feel that Clifford's hearing loss has made social experiences uncomfortable for Clifford.

Future. Alex stated that he does not have any communication goals in mind for Clifford and himself.

Katherine's Interview Responses (Clifford's Daughter)

Katherine lives about two hours' drive from Clifford. They are together frequently.

Hearing. Katherine indicated that she never sought out or received any information about Clifford's hearing loss or how to address it.

Adapting. Katherine observed that face-to-face interactions or texts are the optimal ways to interact with Clifford. Katherine alters her usual ways of interacting when she is communicating with Clifford. She tries to enunciate, make eye contact with Clifford, and choose a quiet environment for communicating.

Katherine picks up on Clifford's nonverbal cues. She said that Clifford leans in when she is talking with him, makes eye contact without responding verbally when he is having trouble understanding, repositions himself to hear her, and waits for her to repeat what she or someone else has said. He asks follow-up questions when he does not understand. Sometimes he ignores messages that he does not understand and changes the subject. She is aware that he avoids loud restaurants and bars. She is very comfortable speaking with him about his hearing loss. She suggested that it would be interesting to know about the emotional effects of hearing loss; however, Katherine has learned to adjust and to communicate with Clifford efficiently.

Social. Katherine has noticed Clifford's frustrations when talking on the phone or in a group of people. Katherine attempts to "translate misunderstood messages" from other communication partners or facilitate conversation when they are in a group with individuals who are unaware of the hearing loss. She has observed that Clifford appears anxious and leaves or takes a break in large social groups, which sometimes causes "stress" for Katherine, but she feels that Clifford and his regular communication partners have learned how to adapt and how to communicate efficiently to accommodate for the hearing loss, and there are not many uncomfortable situations.

Future. Katherine wishes to always make Clifford feel that he is "part of the conversation" and she wants to be as supportive as possible in communicative contexts.

Michael's Interview Responses (Clifford's Son)

Michael lives near his father and communicates with him often.

Hearing. Michael reported that he never sought out or received any information about Clifford's hearing loss or how to address it.

Adapting. Michael conveyed that face-to-face interactions or texting are the best ways to interact with Clifford. They do not use the telephone to talk with one another. He stated that communication with Clifford is rarely frustrating. Michael said that he finds that Clifford's facial expressions indicate when he does not understand, and Michael rephrases or repeats an intended message more loudly. He added that he is

attuned to Clifford's need for people to be positioned where Clifford can hear and see them. Michael and Clifford do not speak about Clifford's hearing loss. He stated that additional information about the emotional consequences of hearing loss would not be helpful for him to communicate better with Clifford.

Social. Michael spends most of his time with Clifford in restaurants or in other social settings. He stated that Clifford does not exhibit anxiety during communicative situations, but frustration is evident. Frustrating situations do not happen often, but at these times Michael assists in facilitating communication. He reported that social situations have not become increasingly more uncomfortable due to Clifford's hearing loss.

Future. Michael wishes that Clifford will be able to continue to communicate despite his hearing deficit.

Elizabeth's Interview Responses (Clifford's Daughter-in-law; Michael's Wife)

Elizabeth and Michael live near Clifford and communicate with him often.

Hearing. Elizabeth reported that she never sought out or received any information about Clifford's hearing loss or how to address it.

Adapting. Elizabeth stated that text messaging is the optimal way to communicate with Clifford and face-to-face conversation in a quiet setting is second best. She feels no frustration when communicating with Clifford in person or on the phone. Elizabeth faces Clifford and talks loudly when speaking to Clifford, especially in a noisy setting. If he doesn't understand, he cups his ear, widens his eyes, or asks her to repeat. She feels very comfortable speaking with Clifford about his hearing loss. She indicated that written information about the emotional consequences of hearing loss would be helpful for her communications with Clifford.

Social. Most communication between Clifford and Elizabeth occurs in small group conversations in Clifford's home or Elizabeth's home. She offered that although Clifford often can't hear spoken messages, he is "a good face-to-face communicator when he is able to understand" the intended messages.

Future. Elizabeth conveyed the wish to maintain her current level of spoken communication with Clifford.

Pam's Interview Responses (Clifford's Office Manager)

Pam has managed the office of the manufacturing company that Clifford co-owns for a considerable number of years. They interact numerous times each workday.

Hearing. Pam reported that she never sought out or received any information about Clifford's hearing loss or how to address it.

Adapting. Pam indicated that face-to-face communication or text messages are the best ways to communicate with Clifford. Pam has observed that Clifford becomes very agitated or frustrated when he cannot understand what a customer is saying on the phone and when the customer does not understand that Clifford does not comprehend the spoken message because he cannot hear it loudly and clearly, not because he doesn't comprehend the information. She stated that it's not always apparent to others that Clifford has difficulty using the phone as a means for communicating, not with the ability to communicate in general.

Pam mentioned several techniques that Clifford uses during face-to-face communications. In person, he asks people to repeat their messages or to face him to speak. She stated that she has noticed that when many people in a room are speaking simultaneously Clifford has trouble understanding the various messages. She receives cell phone calls from Clifford when he is out of the office and he communicates effectively if he is in a quiet location. She has noticed that Clifford has evidenced increased frustration with the office phone system over the past year (perhaps due to its limited range of volume adjustment). Pam encourages customers to call Clifford on his cell phone (as opposed to the office land line, so he can adjust the volume more or text them if needed) or to email him.

Pam stated that she is very comfortable speaking with Clifford about his hearing loss but it took Clifford years to become comfortable speaking about it. She would find it helpful to receive additional information about the emotional effects of hearing loss.

Social. Pam and Clifford engage in various interactional configurations at work. Most of their interactions are one-to-one, but there are many group meetings and conference calls.

The speaker phone used for conference calls appears to be one of the most difficult communicative scenarios for Clifford. He relies on Pam or other coworkers to repeat messages that he cannot understand.

Future. Pam stated that she does not have any communication goals for Clifford and herself.

Comparisons across Participants' Responses

Table 1 provides the similarities and differences across the participants' responses to the interview questions. Responses have been reduced to "yes" to indicate agreement with the conditions written in the far-left column of Table 1 that summarize the main communicative and psychosocial effects of hearing loss for Clifford, or "no" to indicate disagreement with or denial of these conditions.

Hearing. Only Clifford and Morgan had been given information about hearing loss, the communicative effects of hearing loss, and the emotional consequences of hearing loss. The others had not been given information.

Adapting. All interviewees except Michael and Elizabeth stated that Clifford has difficulty with face-to-face communication. All except Elizabeth indicated that Clifford shows frustration or anxiety during face-to-face communication. All agreed that Clifford uses text messaging to supplement face-to-face interaction and that Clifford has difficulty with telephone communication. Katherine and Michael denied that Clifford shows frustration or anxiety during telephone communication, but the others had observed Clifford showing frustration or anxiety during telephone communication. All except Michael speak comfortably with Clifford about his hearing loss. All except Alex and Michael would welcome more information about the emotional consequences of hearing loss.

Social. All except Elizabeth facilitate communication between Clifford and unfamiliar communication partners.

Table 1. Comparison of Responses across Participants

Conditions	Clifford	Morgan	Katherine	Alex	Michael	Elizabeth	Pam
Hearing This person has been given information about hearing loss, the communicative effects of hearing loss, and the emotional consequences of hearing loss	YES	YES	NO	NO	NO	NO	NO
Adapting Clifford has difficulty with face-to-face communication	YES	YES	YES	YES	NO	NO	YES
Adapting Clifford shows frustration or anxiety during face-to-face communication	YES	YES	YES	YES	YES	NO	YES
Adapting Clifford uses text messaging to supplement face-to-face interaction	YES	YES	YES	YES	YES	YES	YES
Adapting Clifford has difficulty with telephone communication	YES	YES	YES	YES	YES	YES	YES
Adapting Clifford shows frustration or anxiety during telephone communication	YES	YES	NO	YES	NO	YES	YES
Adapting This person speaks comfortably with Clifford about his hearing loss	N/A	YES	YES	YES	NO	YES	YES
Adapting This person would welcome more information about the emotional consequences of hearing loss	YES	YES	YES	NO	NO	YES	YES
Social This person facilitates communication between Clifford and unfamiliar communication partners	N/A	YES	YES	YES	YES	NO	YES
Future This person has future wishes regarding Clifford's communicative and psychosocial status	YES	YES	YES	NO	YES	YES	NO

Future. All except Alex and Pam indicated their own future wishes regarding Clifford's communicative and psychosocial circumstances.

Field Observation

The researcher recorded 14 field notes during a half-day observation of Clifford at his work site. Documentation included observations about the acoustics of the work environment, as well as Clifford's communicative interactions with coworkers, employees, and customers via different modes of communication. Table 2 provides a brief summary of each note.

Clifford and Pam confirmed that the observation took place on a typical work day. At work each day, Clifford is in two acoustic environments. In one of these environments, his office space, people speak at quiet conversational levels of volume, there is continuous

Table 2: Observation of Case Participant: Field Notes

Time	Observation
9:41 AM	<ul style="list-style-type: none"> • Background music played continuously at a low to medium volume in the office space. • Office Manager walked up to Clifford before speaking to him. • Coworkers loudly said, "Clifford" before speaking to him. • Clifford used email as primarily form of communication.
9:56 AM	<ul style="list-style-type: none"> • Clifford frequently checked his iPad for stored email information to reference as he wrote emails. • Clifford said he uses his iPad all day long to "keep a continuous loop of email going."
10:22 AM	<ul style="list-style-type: none"> • Clifford went out into the manufacturing shop to "touch base" with coworkers. The shop area is large with high ceilings, steel beaming, and insulation between the beams, including on the ceiling. Clifford told the researcher that the acoustics in the shop help him (compared to the plastered walls in the office and its quieter environment). There is a high level of noise that Clifford indicated that he can hear. Workers routinely shout to communicate in the shop, which Clifford indicated is audible speech for him. • Heavy machinery created a high volume of environmental noise throughout the room. • Coworker (has worked with Clifford since 2002) had his back turned to Clifford while making a comment to Clifford. Clifford tapped him on the back, told him he didn't hear him, and then asked coworker to repeat himself. • Female coworker had low vocal volume and did not amplify when she noticed Clifford could not understand her, however she happily repeated herself upon request. • Other coworkers appeared comfortable with being in very close physical proximity with Clifford when he was speaking with them.
10:37 AM	<ul style="list-style-type: none"> • Clifford's coworker asked him a question but made sure Clifford had eye contact with him first before speaking. Coworker's volume was not overly loud and was rather like typical conversational volume.
11:17 AM	<ul style="list-style-type: none"> • Clifford frequently referred to his iPad in order to communicate via text messaging and email with family members and friends throughout the work day.
11:29 AM	<ul style="list-style-type: none"> • Coworker came directly up to Clifford and spoke in a loud, clear voice, communicating about machine parts. Clifford fully comprehended and was able to complete the exchange with no difficulty.

background music, he engages in conversation face-to-face and in groups in a mid-size conference room, and he uses a work land line and his cell phone. He supplemented his work interactions with emails on the day of observation and texted with family and friends. Coworkers in the office spoke loudly, positioned themselves optimally, and gained Clifford's visual attention before speaking to him, but many of their verbal messages had to be repeated. The other environment is the manufacturing shop, where there are high ceilings, hard surfaces, and machinery that produce very loud noises continuously. Clifford indicated that he prefers the acoustics in the shop because he hears the background noises and people shouting to communicate there. In this noisy environment, everyone must make compensations to hear and be heard, and people remember to do so without being asked. Coworkers in the shop spoke loudly, positioned themselves optimally, tapped Clifford and gained his visual attention before speaking to him, and repeated their verbal messages.

Discussion

Clifford's frequent communication partners, except for his wife, lacked information on hearing and hearing loss. They had not sought nor had they been provided with information to better understand the communicative and psychosocial effects of mid-life severe to profound acquired hearing loss. Morgan's knowledge was based on her understanding of pediatric hearing loss, which is kindred information but not specific to Clifford's type of hearing loss. Clifford's communication partners did not have any experiential or educational background to prepare them for the mental and emotional consequences of severe to profound hearing loss in later mid-life.

Despite this lack of hearing knowledge, Clifford's communication partners adapted to the compensations that Clifford uses, but they were inconsistent in their understanding of Clifford's communication difficulties, frustrations, and anxieties. For example, Katherine and Michael did not endorse that Clifford has difficulty communicating on the phone, but Clifford and the other informants heartily endorsed this as Clifford's main difficulty. Although Katherine and Michael indicated that Clifford texts them routinely, these two informants did not overtly mention texting as being a compensatory behavior for Clifford's hearing difficulties. Michael stated that Clifford did not have

difficulty communicating, but he observed communicative frustration and anxiety, which seems to be a contradiction within this informant's responses.

Michael stated that he facilitates communication between Clifford and unfamiliar communication partners in social settings, but this experience, too, appears incongruous and did not influence Michael to say that Clifford has difficulty communicating. However, the variability or inconsistencies in the informants' responses might simply mean that the informants do not think that Clifford has difficulty communicating because Clifford has reliable compensations in texting or emailing and in being supported or facilitated by others in social contexts. Their responses could be a matter of differences in perception of what "difficulty communicating" means. Also, of note, Elizabeth's responses differed, but her interactions with Clifford as his daughter-in-law have been fewer, occurred only in recent years, and are not as emotionally close as his interactions with the other participants. She appeared not to have had as much experience communicating with Clifford, so she reported a lack of awareness of some of his difficulties.

Although most of the participants reported facilitating social interactions for Clifford, especially when they are in noisy restaurants and bars, these remain the recreational settings where Clifford and his family frequently gather. Holding some of their gatherings in quieter settings might facilitate communicative participation for Clifford and could conserve the hearing of all of the members of this family.

Regarding future communication goals for themselves and Clifford, most of the participants expressed loving and supportive hopefulness that Clifford could continue to function at his current level of success. They did not express any action plans, such as seeking out new hearing technologies, considering additional audiologic or rehabilitative interventions, or obtaining prognostic information about Clifford's type and degree of hearing loss. However, given that as a group they did not possess much information about hearing loss, they might not have any ideas about the range of information that they could seek in future.

The workplace observation, as corroborated by Pam's interview, revealed that Clifford's communicative interactions at his workplace were apparently

successful in both oral and written modes. Notably, Clifford is exposed to considerable noise at work, but he is not averse to it. On the contrary, being in the presence of loud background noise and speakers who shout allow him to hear more than he hears in quiet settings, and this is somewhat of a reassurance to him that he can hear to an extent.

An unanswered question is why Clifford did not consult his audiologist more regularly to keep informed about the status of his hearing. His last audiologic assessment and hearing aid fitting were over five years prior to the initiation of this study. Apparently, Clifford perceives himself to be in compliance with his audiologist's recommendations, and he and his family did not seem to indicate that they have an imminent need for Clifford to seek updated professional advice. Although he mentioned feeling distressed by the societal stigma associated with hearing loss, he appeared to not be responding to his own frustrations, anxiety, inconveniences, and social withdrawal, and he seemed not to be questioning his own lack of knowledge about his impairment. Recall that Preminger (2011) reported a similar conundrum: adults with hearing loss who felt stigmatized were disinclined to use hearing devices and communicative compensations.

Kaland and Salvatore (2002) described how hearing loss may cause a later mid-life adult to feel a sense of loss of identity. Not actively addressing the possibility that his hearing loss is changing over time may be a way for Clifford to preserve his established identity. New information about changes to his level of hearing loss would possibly result in more changes to his identity that he is not inclined to confront. It might be that, for Clifford, who has had a hearing loss for many years, coping with hearing loss involves trying to maintain a status quo; in common terms, to let it be. This might be construed as denial or avoidance of the problem, but it could also be construed as acceptance. Clifford understands that his condition is permanent; it is what it is. It is a part of his current identity. He has grown used to his hearing loss.

Implication for Professional Practice

Clifford's lack of continuing audiologic care seems to negate the behavior that professionals in speech-language pathology and audiology might expect from a person as mature and successful as Clifford. The authors found Clifford's lack of high-quality, comprehensive care

rather puzzling, even in light of their professional understanding of the psychosocial complexity of later mid-life severe to profound hearing loss. The authors certainly do not wish to dispute Clifford's freedom to make his own personal choices. However, he seemed to have the financial means to access care and manage its cost even without insurance coverage for hearing aids, perhaps by establishing payment plans or other financing options. He appeared to possess the technological savvy to know that technologies change quickly and that newer hearing aids might offer more capacity for selectively enhancing speech against background noise. He could pursue acquiring behind-the-ear aids that could be more powerful than his current in-the-ear aids, along with a telecommunication device for the deaf (TDD) that could make it easier to use the office land line, sound field systems for the office (or a simple microphone and speaker system for people to use at meetings), and devices such as visual and tactile alarms that could help protect him at home. He seemed to be a consumer who could prosper from seeing a speech-language pathologist or audiologist for aural rehabilitation "refresher" visits periodically to address enhancing his compensatory strategies, or perhaps he could benefit from formal instruction in speech reading.

Finally, also of concern is that Clifford continued to expose himself to loud noises regularly without hearing protection. If he were to avail himself of regular consultations with an audiologist, he might be able to obtain guidance for preventing further damage to his hearing by using hearing protection equipment. In all, Clifford appeared to be an individual who might benefit from professional counseling to help him establish the motivation to seek regular professional services that would address prevention of future hearing loss, diagnose any changes in his condition, and provide treatment in the form of hearing aids, new technologies, and better compensatory skills.

Conclusions

A family's emotional support of the psychosocial well-being of a later mid-life adult with a moderate to severe hearing loss can be enhanced if the family is knowledgeable about the nature of their loved one's hearing loss and how to participate as communication partners when the person with hearing loss is using compensatory communication strategies. Heacock and Preminger (2017) wrote that family-centered care can

increase the capacity of persons with hearing loss and their families to understand their emotions, adapt to communication difficulties, and foresee potentially troublesome communicative events. Heacock and Preminger (2017) reported that families of persons with hearing loss who attended audiology appointments and aural rehabilitation information sessions, seminars, and classes became more aware of the communicative and psychosocial effects of adult hearing loss. Audiologists can share with families how hearing aid technologies operate, explain the many assistive technologies on the market, and provide advice on how family members can facilitate communication with persons who are hard of hearing. As Spangler, Houston, and Bradham (2015) recommended, the audiologist can move beyond the "technocentric" model of service delivery, where the audiologist's focus is on the assistive equipment dispensed, to encompass the practice of audiologic rehabilitation, with its focus on the patient's functional well-being.

Families who cannot attend professional appointments can familiarize themselves with online information, such as these simple steps for better communication with persons with hearing loss: speak with a slowed rate and increased volume, speak as clearly as possible without exaggerating mouth movements, and pause at meaningful places in sentences and in conversation. The American Academy of Audiology (2004), the Academy of Rehabilitative Audiology (2017), and the American Speech-Language-Hearing Association (n.d.) offer extensive online information on the nature of hearing loss and how family-centered audiologic care and aural rehabilitation foster collaboration and communication between the patient, the clinician, and the family. ♦

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APPENDIX A

Interview questions answered by Clifford

Hearing

- 1) Would you like to share your audiogram with me, or tell me the findings of your hearing testing? What has your hearing acuity been measured to be?
- 2) Do you feel like you were properly informed by your hearing healthcare providers about the communicative effects of hearing loss?
- 3) When you have trouble hearing others, what factors do you think are contributing to the difficulty (volume, distance from speaker, position of speaker, room acoustics, etc.)?

Adapting

- 4) Do you ever take special measures (for example, body placement) during in-person conversations in order to understand more of the conversation? If so, what kind of measures do you take?
- 5) Do people in your everyday life help you to communicate in any way? If so, what do they do?
- 6) How can other people in a communicative situation help you to understand more of what they are saying?
- 7) Are there any factors that affect your motivation to address your hearing loss (cost, convenience, negative stigma, etc.)?

Social

- 8) Do you normally participate in communicative gatherings? If so, what kind of gatherings? Are there gatherings you try to avoid because of communicative problems?
- 9) How do you feel about using a telephone to communicate compared to in-person conversations?
- 10) What are your general feelings when you experience difficulty understanding a spoken conversation in person?
- 11) Do you have different feelings about speaking to someone over the phone? Why or why not?
- 12) How comfortable are you with speaking about your hearing loss to others?
- 13) Does your hearing loss prevent you from participating in activities you would normally participate in? If yes, which ones?
- 14) Do you feel yourself withdrawing from social situations? If so, which ones?
- 15) Do you experience anxiety in communicative situations? If yes, which ones trigger the most anxiety?
- 16) If you experience any anxiety in communicative situations, do you have any physical symptoms of anxiety (shaking, sweating, fidgeting, etc.)? If so, which ones?
- 17) Have your feelings of self-worth or confidence ever been affected by your hearing loss when communicating with others?
- 18) Do you think your relationships have been affected by your hearing loss? Why or why not?
- 19) What is your greatest strength communicatively?
- 20) What is your greatest weakness communicatively?

Future

- 21) Do you have any communication goals for the future?
- 22) Is there anything else you would like to tell me?

APPENDIX B

Interview questions answered by family & office manager

Hearing

- 1) Have you ever been provided information, or sought out information, to better understand Clifford's hearing loss and how to address it properly? If so, what have you learned?
- 2) What does Clifford do when he is having trouble hearing your comments or questions? Does he complain about volume, where the sound is coming from, or any other reasons for trouble hearing?

Adapting

- 3) How do you prefer to communicate with Clifford (what medium is easiest)?
- 4) Do you ever take precautions or make accommodations or adjustments in communicative situations with Clifford in order to communicate better with him?
- 5) If you were provided additional information about the emotional consequences of hearing loss, would it be helpful in communicating with Clifford? If yes, how would you like to be provided with this information?

Social

- 6) In what setting do you spend the most time with Clifford? What kind of expectations does he have communicatively in these settings?
- 7) How comfortable are you with speaking to Clifford about his hearing loss?
- 8) Is it ever frustrating to have a conversation with Clifford in person? If so, in what contexts or situations?
- 9) Do you ever feel any frustrations over the phone with Clifford? If so, in what contexts or situations?
- 10) Have you noticed Clifford experiencing any form of anxiety or discomfort in communicative situations? If so, what was the context and what happened?
- 11) Have you noticed any situations getting increasingly uncomfortable or more noticeable due to Clifford's hearing loss? If so, how has it gotten worse?
- 12) What do you think is Clifford's greatest skill communicatively?
- 13) What do you think is Clifford's weakest skill communicatively?

Future

- 14) Do you have any communication goals for you and Clifford in the future?
- 15) Is there anything else you would like to tell me?

SLPs' responsibilities related to literacy practice as the number of cases continues to increase.

The Role of the SLP in Literacy

In 2001, ASHA published a position statement, technical report, and guidelines providing in-depth guidance regarding literacy within the SLP's scope of practice. ASHA outlined the roles and responsibilities of the SLP in addressing literacy concerns and indicated these requirements are expected to expand as literacy research advances (ASHA, 2001; Apel, 2002). Based on ASHA's statements and guidelines, the literacy roles of the SLP include, but are not limited to:

- (1) preventing written language problems by fostering language acquisition and emergent literacy,
- (2) identifying children at risk for reading and writing problems,
- (3) assessing reading and writing,
- (4) providing intervention and documenting outcomes for reading and writing,
- (5) assuming other roles (such as providing assistance to general education teachers, parents, and students, advocating for effective literacy practices, and advancing the knowledge base (ASHA, 2001, para. 7).

In response to these new guiding principles, graduate programs must seek to provide dedicated and/or infused coursework addressing literacy within the curriculum. Hands-on engagement through externships, service-learning, or other experiences may also strengthen student education (Brownell et al., 2017). Likewise, professionals who lack training in literacy may find it necessary to seek additional educational opportunities to enhance their clinical competency in literacy. Seeking supplementary graduate and professional training that blends coursework with hands-on experience may positively impact a practicing SLP's readiness to effectively serve literacy based cases.

Literacy Training among SLPs

In a national study conducted by Weiss, Newman, and Zipoli (2009), 39% of 335 practicing SLPs reported receiving no form of literacy training during graduate coursework. Similarly, 39% described their level of instruction in graduate literacy coursework as "minor." Considering only 5% of those surveyed in the Weiss et al. study indicated receiving graduate coursework that included a "significant" amount of instruction in

literacy, it is necessary to examine other settings and/or contexts in which SLPs may receive literacy specific education. SLPs may seek to expand their literacy knowledge in a variety of ways. In addition to graduate training, post-graduate courses and continuing education could be completed. Hands-on experiences may also be an effective means to improve competency. Lastly, many SLPs garner training (both formally and informally) through on-the-job literacy-focused experiences.

Impact of Graduate Training in Literacy

Assessing and ensuring the quality of master's level literacy training is vital based on evidence that graduate education has a long-term influence on practicing clinicians (Gillam & Gillam, 2006). Many SLPs (including those with Ph.D.s) tend to use clinical procedures taught during their graduate programs more often than they utilize current evidence to inform their practices for as many as 10 to 15 years post-graduation (Gillam & Gillam, 2006). Though pre-service literacy training one receives at the student level is integral to later successful application, evidence indicates such instruction is lacking (Applegate et al., 2014).

Fallon and Katz (2011) found graduate school training was one of the three most influential predictors of SLPs' ability to provide literacy supports to clients with language disorders. They determined SLPs who received graduate literacy training were *five times* more likely to provide literacy services to 100% of their school-based clients with written language disorders (Fallon & Katz, 2011). Another predictor of clinician confidence in providing literacy intervention was SLPs' positive attitudes toward fulfilling their roles and responsibilities in this area. SLPs who had literacy training in graduate school were more likely to exhibit this positive attitude (Fallon & Katz, 2011). Despite noted benefits of graduate literacy training, Fallon and Katz's (2011) survey identified only 26% of the 645 school-based SLP respondents received literacy training in graduate school. In a similar study, only 46.4% of school-based SLPs indicated formal university coursework as a source of literacy learning (Blood, Mamett, Gordon, & Blood, 2010).

Post-Graduate Training

ASHA (2001) clarified: graduate programs do not solely bear the burden of educating SLPs regarding literacy but that continuing education courses should also be

provided for practicing clinicians to update their knowledge in order to adequately fulfill their responsibilities in reading and writing. Literature also reflects that literacy teachers rely on and benefit from post-graduate continuing literacy education, though to varying degrees (Stark, Snow, Eadie, & Goldfeld, 2016). Notably, a study examining teacher confidence had similar findings to SLP studies. Teachers who felt confident were most likely to attribute their feeling of confidence to continuing education or hands-on experience, 15.4% and 12.8% respectively (Stark, Snow, Eadie, & Goldfeld, 2016).

Nail-Chiweralu and Ratner (2007) discovered continuing education is not the first source professionals seek when confronted with a clinical question. Their study (surveying the sources SLPs utilize when they have a clinical question) found the most common response was to ask a colleague for support. Continuing education was the second most popular information source, and third was use of the internet as a resource (Nail-Chiweralu & Ratner, 2007). Still, in one study continuing education listed among the top four significant predictors of SLPs' confidence in providing literacy intervention at 57.8% (Blood et al., 2010). In fact, Fallon and Katz (2011) found the majority of SLPs they surveyed indicated openness to attending further continuing education courses on literacy in the future. However, of 645 full-time school-based SLPs asked, only 51% reported receiving any post-graduate literacy training such as post-grad university classes, workshops/in-services, conference presentations, or self-teaching activities (Fallon & Katz, 2011).

Research evidence showing the benefit of continuing education courses provide support for further development of graduate and post-graduate literacy training as an evidence-driven means to increase SLP knowledge and confidence. Continuing education may be the most accessible means of literacy training for some clinicians. In brief, continuing education activities play a vital role in producing highly knowledgeable clinicians in the area of literacy by supplementing or providing training for many SLPs who did not receive literacy instruction in graduate school.

Hands-on Clinical Training

Research provides evidence supporting the benefits of hands-on-training in addition to academic coursework. A study analyzing the pedagogical practices of 15

university programs considered most effective for special educators determined a key feature these programs shared was

“carefully crafted field experiences [that] are extensive, integrated well with coursework, developmental in nature, and supervised carefully. Furthermore, the classrooms where students intern are selected on the basis of the skills of the cooperating teachers, who collaborate with university faculty members to help students practice what they learn in coursework” (Brownell, et al., 2017, p. 244).

Moreover, a study comparing effects of continuing education in literacy vs. hands-on literacy training with coaching found although participants felt they had learned new information from a continuing education course on literacy, they did not feel confident to apply those principles to everyday practice (Neuman & Cunningham, 2009). Comparatively, after receiving hands-on practice with individualized coaching and real-time feedback, program participants experienced more immediate transfer of new skills learned in the classroom setting resulting in an improvement of intervention practices. Additionally, a 2010 study (Blood et al.) reported one of the top four predictors of SLPs' confidence in literacy intervention as on-the-job training (63.8%), which shares many characteristics of hands-on, supervised training. This perhaps provides further support for the benefit of hands-on training. Unfortunately, though there is ample support for the effectiveness of hands-on literacy training, only 2.5% of SLPs reported receiving clinical hands-on training for literacy intervention (Blood et al., 2010).

Conclusion

Although literacy-based instruction has increased across the field (within both academic programming and continuing education), SLPs still report limited exposure to opportunities to learn and use strategies to support their literacy practice. SLPs who have not received direct or infused literacy education and only have surface knowledge of literacy practice will likely be unable to provide effective assessment and intervention for literacy-based clients. As graduate programs continue to evolve, consideration should be given to increasing students' academic and clinical exposure to literacy-based cases. In effort to establish best practices in this area, graduate-level programs should create measures to evaluate their content and delivery of

literacy curriculum. Although Gillam and Gillam's (2006) research supports the finding that individuals who receive education at master's level demonstrate implementation and sustainability of these practices well into their professional practice, employers should also be prepared to support additional education for clinicians who have not had adequate training in literacy.

Coupling training with hands-on clinical experiences can help fortify SLPs' skills and increase confidence in identification and management of language-based literacy issues. Modifying and strengthening academic programming for current and incoming students as well as creating increased literacy education opportunities for existing SLPs will likely improve both overall literacy practice and professional confidence. Access to multiple, ongoing forms of literacy education can help clinicians develop and maintain skills needed to assess and treat issues related to literacy. Such skilled practitioners are key to "greater financial, social, and health gains for struggling readers" (Kamhi & Catts, 2012, p.159). ♦

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Alternatively, if persons are literate, using a symbol system of 26 letters plus a few punctuation marks, people can say anything they have the language to produce. LITERACY is POWER to communicate! Literacy is the power for a person to generate any message he/she wishes to communicate. Now consider this. . .An estimated 90% of individuals who rely on AAC are entering adulthood without functional literacy skills (Foley & Wolter, 2010).

What Skills are Important for Learning to Read?

There are many early literacy skills that could be taught to children (National Early Literacy Panel, 2008; National Reading Panel, 2000). However, it is important to focus on the skills most closely linked to reading and writing (Light & McNaughton, 2009). These include:

- 1) Letter-sound correspondence: Knowing what letter corresponds with each sound (e.g., knowing that the letter “c” says /k/, that the letter “m” says /m/).
- 2) Blending: Blending together the sounds in a word (e.g., the sounds /k/ /æ/ /t/ blend together to form the word “cat”).
- 3) Segmenting: Separating out the sounds in a word (e.g., the word “man” has the sounds /m/, /æ/, and /n/).
- 4) Decoding: Reading single words. This requires seeing the written word *cat*, retrieving each of its sounds /k/ /æ/ /t/, holding those sounds in phonological memory long enough to blend those sounds together to form the word “cat,” and retrieving the meaning of the word.
- 5) Encoding: Writing single words. For example: seeing a picture of a cat, retrieving the whole phonological string (“cat”), holding that information in phonological memory long enough to separate it into its individual sounds /k/ /æ/ /t/, then holding that information in phonological memory again long enough to retrieve the written letter form *c a t* for each sound, and locating each individual letter on a keyboard or writing each letter.

6)

Literacy Interventions for Individuals who Require AAC

For many years, it was assumed that individuals who could not speak and did not have access to verbal articulation could not retrieve and manipulate sounds for reading and therefore could not learn to read (Card & Dodd, 2006). The first intervention study to teach individuals who require AAC to read was by Fallon in

2001. Since 2001, a small number of effective interventions have been developed to teach foundational literacy skills to children who require AAC. These include the Nonverbal Reading Approach (NRA; (Coleman-Martin, Heller, Cihak, & Irvine, 2005; Heller, Fredrick, Tumlin, & Brineman, 2002; Swinehart-Jones & Heller, 2009), the Accessible Literacy Learning Curriculum (ALL curriculum; Light & McNaughton, 2009), the Early Reading Skills Builder (ERSB) app (Ahlgrim-Delzell et al., 2016; Ahlgrim-Delzell, Browder, & Wood, 2014), and phoneme-loaded books that provide specific instruction in letter-sound correspondences (Banajee, 2008).

Nonverbal Reading Approach (NRA)

The Nonverbal Reading Approach (Coleman-Martin et al., 2005; Heller et al., 2002; Leytham, 2013; Swinehart-Jones & Heller, 2009) is used with individuals who already know letter-sound correspondences. The child is provided with an index card (or computer screen) with a single word written on it (See Figure 1.) The instructor points to the first sound in the word, produces its sound, and cues the child to “say it in (his/her head).” This is repeated with each sound in the word. Then the instructor blends together each of the sounds to form the word.



Figure 1. Example of Nonverbal Reading Approach (NRA) Index Card

For example, the instructor points to the written word *cat*. The instructor says “/k/ say it in your head” (while pointing to the *c*). The instructor says “/æ/ say it in your head” (while pointing to the *a*). The instructor says “/t/ say it in your head” (while pointing to the *t*). Then the instructor teaches how to blend the sounds together saying it slowly, “/k/”... “/æ/”... “/t/,” then more quickly “/k/”-“/æ/”-“/t/,” and finally at normal rate “/kæt/.”

This intervention has been modified to add the use of motoric indicators (Swinehart-Jones & Heller, 2009) and adapted to be administered by computer (Coleman-Martin et al., 2005). To demonstrate decoding knowledge, a child is shown an index card with a single word written on it. The participant is then asked, "Is this (the target word)?" The child is given a choice of four spoken words in series. The child responds "yes" or "no" to each spoken word via his or her most reliable means of communication. This intervention has been shown to yield very large effect sizes (Tau U) across four single-subject studies (Yorke & Light, 2016).

Accessible Literacy Learning Curriculum (ALL) Curriculum

A well-researched approach is the ALL Curriculum (Light & McNaughton, 2009). This curriculum provides instructions for teaching letter-sound correspondences, blending, segmentation, decoding, decoding in sentences, and sight words. The original ALL Curriculum utilized letter-card Boardmaker3 symbols to allow children to express knowledge of foundational literacy skills. Modifications of the curriculum have utilized stock photos to represent concepts.

To teach letter-sounds, the child is asked to choose the target letter from a field of four or six letters, "Which one says /m/?" The child then selects the target letter (via pointing, eye gaze, or other reliable means of communication; See Figure 2.)

To teach blending, the child is provided with four pictures that are systematically varied from one another. For example, if the target word were "mat," the photos might be of hat (which varies in the first sound from the target), map (which varies in the last sound from the target), and mitt (which varies in its medial sound from the target). The child is asked to select the picture that corresponds with the target, "Show me mmmmmmmaaaaaat." (See Figure 3.)

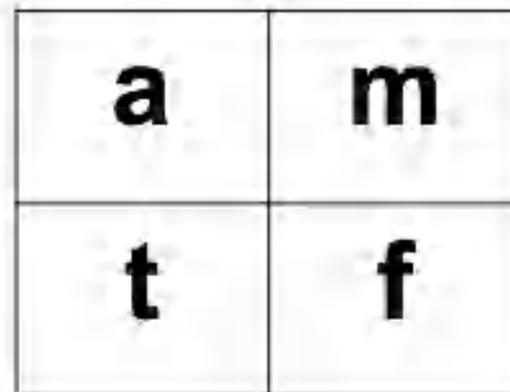


Figure 2. Example of Accessible Literacy Learning (ALL) Curriculum Letter-Sound Correspondences Task



Figure 3. Example of ALL Curriculum Blending Task

To teach decoding, the learner is provided with four pictures, which are systematically varied from one another in a similar way (initial, medial, and final sounds each varied). The child is taught to retrieve the sound for each letter, blend the letters together to form a word, and then select the target photo (See Figure 4.)

Each task is carefully modeled for the learner. Then the instructor guides the learner through the task with support to minimize the likelihood of errors. Finally, the child is given opportunities to practice the task

independently. This approach has been used with individual children (Fallon, 2001; Light, McNaughton, Weyer, & Karg, 2008), has been added upon with interactive extension activities for individual children (Benedek Wood, 2010; Caron, 2016), has been used with small groups of children (Ainsworth, 2014; Yorke, 2017), and has been taught to instructional assistants (Westover, 2010). The intervention consistently yields very large Tau U effect sizes with individual children (Yorke & Light, 2016).



Figure 4. Example of ALL Curriculum Decoding Task

Early Reading Skills Builder (ERSB)

The Early Reading Skills Builder (2014) is an iPad app which is used to teach letter-sounds, blending, segmentation, and decoding (See Figure 5; Ahlgrim-Delzell et al., 2016, 2014; Lucas, 2015). ERSB first started as GoTalk Phonics (Ahlgrim-Delzell, Browder, & Wood (2012) a curriculum used with the GoTalk 32 Express (2012) device in a single subject study Ahlgrim-Delzell, et al. (2014). This intervention yielded moderate to very large effect sizes (Tau U) for letter-sounds and moderate to large effect sizes (Tau U) for blending with words and decoding. ERSB was then modified for the iPad™ to be used with GoTalk Now2. Ahlgrim-Delzell et al. (2016) studied 17 children who averaged 7%, 5%, and 9% improvement in letter-sounds, blending, and decoding, respectively. Lucas (2015) attempted to replicate the effectiveness of ERSB with two children, but the children were not successful.

Phoneme-Loaded Books

One final effective intervention has been demonstrated through the use of phoneme-loaded books. Banajee (2008) compared the effectiveness of two different types of phoneme-loaded books, *Alphabet Stories* vs. *Phonic Faces* storybooks. Each *Alphabet Stories* (Pemberton, 2004) book focused on a different phoneme, presenting a large number of words that started with that sound.

Phonic Faces (Norris, 2001) storybooks also presented a large number of words that started with a specific sound, but also provided specific visual and spoken information about the sound being taught on each page.

Banajee (2008) found that although the reading of phoneme-loaded books (*Alphabet Stories*) yielded moderate effect sizes (Tau U), reading *Phonic Faces* books, which provided specific instruction about the sound being taught, yielded very large effect sizes (Tau U).

One Important Bonus

In addition to findings that showed improved literacy skills and access to a range of fully generative communication options, some researchers have noted an increase in the verbal production of the specific speech sounds targeted in literacy interventions for some participants (Yorke, 2017). As researchers teach letter-sound correspondences, they are modeling verbal production of these sounds, which may possibly encourage development of children's phonological systems. Likewise, teaching blending and decoding skills helps children to learn how sounds can be combined together to form words. Although verbal production is not required in AAC-based literacy interventions, SLPs frequently model those verbal productions and children with little verbal speech sometimes verbally participate (often approximating production of sounds or words.)

Conclusions

It is recommended that SLPs, teachers, and parents learn about these effective methods. Only by learning about and implementing effective methods for teaching literacy to this population can we improve literacy outcomes for this population. ♦

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This process involves recognition of one's biases, prejudices and assumptions about individuals who are different" (p. 182).

In order to assess the dynamics of various cultures, individuals must use cultural awareness to assess their own cultural system. Cultural awareness and self-assessment are essential to a clinician's capacity to recognize bias and the ability to monitor or control for potential barriers to effective communication.

A student or clinician's ability to identify the potential for culturally or linguistically based bias can be facilitated by an increase level of cultural awareness. Lack of cultural awareness can negatively impact communication and interactions between peers, colleagues, clients, families. The consequences of inadequate cultural awareness can have unfavorable patient outcomes and add undue stress (Flowers, 2004) in what are often already challenging situations. A student, who is aware of such threats, may be better able to regulate cultural influences and may modify their attitudes and perceptions within a clinical setting (Hepworth, Rooney, & Larsen, 2002). As a primer to cultural competence, cultural awareness provides a clinician with an operating system by which to begin more effective interactions with professionals and clients from diverse backgrounds.

Cultural Competence

Although this discussion focuses on cultural awareness in CSD, it is important to identify cultural competence as the desired *professional* outcome in the field. Battle (2000) defines cultural competence as "a process through which one develops an understanding of self, while developing the ability to develop responsive, reciprocal, and respectful relationships with others" (p. 20). With cultural awareness clearly embedded within Battle's definition, behaviors associated with cultural competence come from a rooted knowledge and understanding of an individual's culture, and a shared respect and appreciation for the differences they might have in comparison to one's own culture (Wells, 2000).

Ideally, students in CSD programs are being educated in such a way that will clear a path to cultural competence. This is of importance, as national standards in CSD require cultural competence as the professional benchmark for service delivery (ASHA, 2008). Since cultural awareness is a baseline from which

competence is launched, attention should be given to exposing students and faculty to opportunities that encourage behaviors consistent with the development of these skills.

CSD professionals, who are culturally competent can be observed to engage in certain behaviors. Kohnert (2013) highlighted various characteristics of such clinicians. Among these characteristics, Kohnert describes clinicians as having an awareness of cultural patterns and individual variation. While it is certainly important to recognize various groups of diverse populations, acknowledgement of individual differences and subcultures within a group is crucial. A clinician's inability to recognize clients in diverse groups as individuals can lead to stereotyping and over generalization.

Reflection through self-scrutiny is also a featured characteristic of a culturally competent speech-language pathologist (SLP; Kohnert, 2013). This skill set requires a clinician to engage in continuous self-acknowledgment of behaviors and self-reflection. By engaging in these behaviors, clinicians are better prepared to control for the biases generated by their belief and value systems. The process of self-scrutiny also provides a clinician with the opportunity to correct these behaviors through increased awareness; thus, demonstrating the ongoing learning process. This process is essential in the maintenance of cultural competence (Kohnert, 2013). Not only can these skills support one's cultural awareness, but they can also aid in a better understanding of working with individuals who are from the clinician's *own* cultural background (Abernethy, 2005). Once clinicians can identify their own behaviors, they may be able to better identify similar behaviors in colleagues and to relate to clients of diverse and similar heritage. This skill in the cultural competence continuum may reduce negative outcomes in the clinical setting, such as over identification of clients from culturally and linguistically diverse backgrounds (Abernethy, 2005).

The Role of Cultural Awareness in Cultural Competence

It is important to note that cultural competence is not a static point of achievement; rather, it is a process by which one experiences continuous growth (Kohnert, 2013). Cultural awareness can be viewed as a stage embedded within the process of cultural competence

(Campinha-Bacote, 2007), as it has been identified as an early step on the path toward cultural competence (Rew, Becker, Cookston, Khosropour, & Martinez, 2003). When describing cultural competence, Kohli, Huber, and Faul (2010) stated that in order to achieve a level of competence, individuals must identify and demonstrate awareness of their cultural beliefs and influences. This assertion further presents cultural awareness as a likely contributor to a student's progress toward entering the realm of cultural competence. Kohli and colleagues (2010) further discussed awareness and cultural competence in the following statement:

"Cultural competence begins with an awareness of one's own cultural beliefs and practices, and the recognition that others believe in different truths/realities than one's own". (p. 257)

Incorporating Cultural Awareness into CSD Curriculum

In the field of CSD, specifically SLPs, understanding the cultural awareness and perceptions of students is essential to the development of coursework targeting multicultural issues. Assessment and intervention in SLP are processes that require extensive training and application of critical thinking skills. Providing effective services to clients who represent diverse groups can be daunting if the therapist has not received training in proper identification and treatment. Clinical assessment and treatment can be compounded when issues related to culture and biases are introduced on the part of the student clinician or professional practitioner. Even clinicians who share the same culture or language with a client may not necessarily be able to effectively render services to those who represent diverse backgrounds; however, training in cultural issues can enhance rapport building and efficient service delivery (Stockman, Boulton & Robinson, 2008).

Purposeful curricular design is one way to support the development of students' cultural awareness on the road to cultural competence. A strong cultural awareness can be developed and obtained during student's undergraduate and graduate educational experiences if given the appropriate opportunities. As argued by Roseberry, McKibbin, and Eicholtz (1994), one means of facilitating student growth toward cultural competence may be through instruction of multicultural issues in pre-professional programs. Battle (2000) states that students need to have a shared respect for all forms of diversity and culture, and

understand that the workforce is multicultural. Each individual's cultural differences can affect the way they communicate and interact with those around them. Students who graduate with a lack of cultural awareness tend to be more insecure in their abilities and tend to make more unintended errors (Cornish & White, 2016), in comparison to those who have had opportunities to develop this skill set.

In considering the varying scope of student and faculty experiences, the challenge then becomes identifying practical and organic ways in which to implement strategies that facilitate growth toward competence in academic and clinical settings. Griffer and Perlis (2007) suggest that students need to be challenged to examine their own culture and identity, while also having open dialogue about differences among each other's culture and about those cultures in which they might serve. Students need to be comfortable sharing personal experiences regarding their own culture, as well as engage in experiences working with cultures different from their own. It can also be useful for students to be given opportunities to practice using their developing cultural awareness skills through hands on activities. Completion of case studies with culturally diverse clients or simulating activities that broaden cultural awareness are just two examples of this type of activity (Griffer & Perlis, 2007).

Cornish and White (2016) also suggest that having a mentoring relationship with practicing clinicians can have positive outcomes when trying to increase a student's cultural awareness. It is through mentoring relationships that young clinicians can observe cultural competence when implemented and practiced in a real-life setting. These relationships can be formal, such as that between a clinician and their supervisors, or informal, as with a relationship between a student and family friend whom is a practicing in CSD (Cornish & White, 2006).

Faculty Training

The American Speech-Language-Hearing Association (ASHA; 2008) offers position statements and guidelines on training students to best serve clients who represent culturally and linguistically diverse (CLD) populations. ASHA has asserted that multicultural instruction should be integrated into the academic curriculum across coursework (ASHA, 2008). As these standards were not established until 1994, some instructors and supervisors

in CSD programs may not have received formal instruction within their own coursework and, therefore, may lack proficiency to teach such skills. While direct instruction in topics of cultural and linguistic diversity is certainly ideal, faculty who have limited experience in this area may find it challenging to fully teach and assist students on these matters. This is of concern given the fact an instructor or supervisor is expected to support students' cultural awareness development in effort to promote progress toward reaching competence. Faculty and clinical staff must also be aware of the need for cultural training to enhance their own awareness in order to best serve both students and clients. Strategies similar to those suggested by Cornish and White (2006) can be modified to meet the professional needs of faculty or practicing clinicians seeking to advance their own cultural awareness and progress toward cultural competence.

Conclusion

Cultural awareness not only involves cognizance of other cultures, but also encompasses the awareness of one's own culture (Lum, 2007). Review of the literature underscores the need for strong pedagogical methods in preparing students to understand their own cultural influences and to work with diverse caseloads. These methods might include hands-on, experienced based approaches such as service-learning. Students who gain strengthened skills and heightened awareness of cultural issues through experiences and within academic settings may be more readily prepared to recognize bias and potential barriers to treatment (Kohnert, 2013).

In addition, intentional academic and clinical instruction may assist in the development of students' abilities in the assessment and treatment of clients who represent CLD populations. Lum (2007) asserted that both of these skills should be included in the development of training programs in cultural competence. In order to move students along the cultural competence continuum, instructors must first have an understanding of their current status in cultural knowledge and cultural awareness (Campinha-Bacote, 2007). In turn, faculty should also be provided with opportunities to enhance their own growth and mobility within the area cultural competence. As with students, experience can be the central theme from which faculty may develop cultural awareness and beyond. Faculty readiness to provide instruction within

the context of cultural competence should be monitored and supported as needed. Departmental activities, community engagement, and continuing education are ways in which programs can incorporate cultural competence into their organizational value system.

Cultural awareness serves as an anchor for which both students and faculty can further develop skills along the continuum of cultural competence. Skills within the continuum are not only shaped by instruction, but largely through experience. Cross-cultural instruction should be embedded throughout the curriculum and threaded between courses, as well as through overall departmental structure. Experience can serve as a vehicle by which both students and faculty can establish cultural awareness and further develop cultural competence in CSD. ♦

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management, organization, and integrating constructive feedback (Brasseur, McCrea, & Mendel, 2005). Additionally, the ability to apply theory to practice requires a certain level of self-regulation and/or self-awareness of oneself and others. Self-regulation is defined as the act or condition or an instance of regulating oneself; control or supervision from within instead of by an external authority (Merriam Webster, 2019). As practicing clinicians, we self-regulate the quality of our assessment and treatment services, including clinician-client interactions. We must continuously and inherently modify services based on client observations and feedback. While this skill can be scaffolded by asking a graduate clinician what they could have done differently; it is imperative for these clinicians to be able to self-regulate as they move to independent practice.

Identifying and Defining At-Risk Graduate Clinicians

Admission into graduate programs in the field of CSD does not guarantee attainment of crucial soft skills (e.g., interpersonal communication, professionalism, time-management, organization, integrating constructive feedback, and self-regulation). There are no direct assessments or measures of these soft skills at the undergraduate level. Admissions into professional training programs are based on quantitative and qualitative information such as GRE scores, GPAs, personal statements, and letters of recommendations. Many of these factors, while strong indicators of classroom performance, are not necessarily indicators of clinical skills. However, research has found a positive correlation between GRE-total and GRE-quantitative scores and better clinical performance (Baggs, Barnett, & McCullough, 2015). Although grades in speech science courses, physical science, and the GRE Total predicted receiving a passing score on the Praxis and CF performance; grades in undergraduate courses (other than Speech Science) were not a predictor of clinical performance in graduate school (Baggs et al., 2015). Based on these findings, we can assume: a) overall general reasoning, problem solving, and analytical skills help students in clinical settings; b) the skills used to achieve good grades in courses may not readily translate into good clinical performance; and c) students who do well on the on the GRE tend to be higher performing students in many areas. The fact that some students perform at an acceptable level in courses, but initially struggle in university and extern clinical settings is not a rare occurrence. Despite

rigorous graduate admission procedures, it is likely that programs may have some students with relatively weak clinical skills. Thus, clinical educators could benefit from strategies to implement with students who are struggling clinically. In this article, we refer to these students as “at-risk” students or graduate clinicians.

As students enter their clinical externship experiences, clinical educators often expect students to have the basic ability necessary to provide services based upon drawing on theoretical/foundational content and applying this knowledge with clients. The application of practice to theory can prove to be challenging to some students; thus, leading to them to being considered “at-risk” for poor performance in clinical settings. Clinicians can be classified as “at-risk” students based on various characteristics or performance indices. Schober-Peterson and O’Rourke (2016) described common challenges experienced by “at-risk” students as difficulty with: a) learning clinical procedures, b) demonstrating appropriate interpersonal skills with classmates or clients, c) meeting expectations related to attendance or quality work, and d) organizational skills for managing a variety of responsibilities. Additionally, “at-risk” students may exhibit difficulty with other clinical skills required to practice. These students may lack the interviewing skills required to gather case history information beyond what is asked for on written forms and/or have difficulty with following assessment procedures. They may also have difficulty with the critical thinking involved in synthesizing information (theoretical, clinical application, and patient preferences) to make adequate judgements for appropriate goals and activities. Furthermore, “at-risk” students may have difficulty maintaining control of the session, providing informative feedback to clients/families, keeping appropriate data, writing clinical reports, establishing the client-clinician relationship, and using appropriate clinical judgement. Other areas of difficulty can include the inability to work independently. This can result in heavy reliance on the supervisor, difficulty with clinical reasoning and procedures, and gaps in conceptual understanding. These students may also lack follow-through with implementing changes. A review of three cohorts of a communication sciences graduate program, revealed that some of the “at-risk” students who had difficulty with graduate coursework and clinical services had undiagnosed attentional and learning difficulties, mental health issues, and/or life crises (Schober-

Peterson & O'Rourke, 2016). While these characteristics may apply to many students who exhibit difficulty in clinical settings; there may be some students whose clinical difficulties arise from other factors.

Clinical educators may want to rule out other factors that can lead to clinical difficulties to assist them in their assessment and mentoring of the students. For instance, some student clinicians may be miscategorized as at-risk due to cultural and linguistic differences, which may masquerade themselves as poor performance. Students from diverse cultural and linguistic backgrounds may show differences in clinical decisions and/or writing. It is important for clinical educators to be aware of such differences and examine their own biases (Baggs, Barnett, & McCullough, 2015). In all instances, supervisors should try to understand, the underlying factors related to the issues in performance.

Best Practices for "At-Risk" Graduate Clinicians

One of the keys to supervising "at-risk" students is early identification of difficulties during the clinical supervision and observation process. When students are identified too late, it doesn't provide them with ample time for developing a remediation plan nor does it allow the student time to satisfactorily respond to feedback and demonstrate success. "At-risk" students can be identified early in the process through careful observation while they are initially assessing clients and/or developing goals and intervention plans (Brasseur et al., 2005). "At-risk" students will need written remediation plans that specify (a) the areas for improvement, (b) supervisor expectations, (c) expected actions towards improvement, and (d) consequences should improvement not be achieved (Harris et al., 1992). It is also essential that the supervisor keeps records of specific, observable, and objective behaviors to include on remediation plans.

The methods of formative assessment can be used to improve student learning (Council on Academic Accreditation, (n.d). Formative assessment refers to a method of in-process and ongoing evaluation; the clinical educator monitors the graduate clinician's understanding and performance *while it is happening*. This is in contrast to summative assessments that evaluate the clinician's development and achievement at the end of a specific instructional period (Rassi, 1998). Formative assessments can be used to survey

critical thinking, decision-making, and problem-solving skills; including oral and written communication. The information gathered from formative assessments can help the clinical educator make instructional adjustments. One model of formative assessment includes (a) gathering information about the students prior knowledge and experiences relative to the target disorder and/or clinical skill set; (b) developing target outcomes focused on the identified areas of need with input from the student clinician and tracking progress; (c) demonstrating the specific clinical skills needed using a variety of modalities (i.e., role-play, scaffolding, observation, etc.); (d) encouraging students to search for evidence based practice or similar cases; (e) incorporating daily or weekly self-assessment; and (f) providing continuous and effective feedback throughout the process (Varnedoe, Murphree-Holden, & Dixon, 2008).

Consistent and ongoing assessment coupled with effective feedback is a recommended practice across the literature. Schober-Peterson and O'Rourke (2016) recommend adding several graded measures for performance before midterm grades. They also suggest providing weekly feedback on clinical, communication, and professional abilities/skills. Implementation of additional assessment and feedback requires some forethought and planning on the part of the clinical educator. One way of providing ongoing evaluation would be to implement a procedure of rating diagnostic evaluations or treatment sessions via the use of a rubric. It is also good to have graduate clinicians self-critique their sessions using the same rubric to (a) see how they rate themselves and (b) evaluate their self-regulation skills. Many of these students are unaware of their deficits due to an inability to effectively evaluate their own performance and they have an inflated perception of their abilities (Dowling, 2001). Having graduate clinicians provide their rationale for clinical activities and giving feedback throughout this process aids in the development of clinical reasoning. Furthermore, engaging students in self-assessment and self-reflection empowers graduate clinicians to self-identify areas of strength and areas in need of improvement.

While providing constructive feedback may be uncomfortable for some clinical educators, it is a foundational and necessary component of clinical training. Clinical educators may worry about hurting the

graduate clinician's feelings and have a desire to maintain a comfortable relationship with the supervisee. For the latter reasons, the clinical educator may be apprehensive about providing constructive feedback. When faced with what can be perceived as a difficult conversation, relating to providing objective and specific feedback, clinical educators should provide supplemental information about the targeted specific skill. This can be done via recorded and detailed information collected during observations of graduate clinicians' sessions. Subjective impressions and general feedback are difficult for the supervisee to address. For example, the statement *"You are not doing a good job at keeping your clients engaged"* is a very general statement. However, the following statement is more specific, describes the impact, and is directed at the behaviors. *"When you take several minutes to transition and set-up for the next activity, your client becomes distracted. It is hard to get him re-engaged in the session. I believe that improved preparation and coming to the clinic 15 minutes earlier will help you achieve easier and faster transitions."* For the latter example, the supervisor may list the behavior/weakness as *time management* and describe the impact of the behavior as *inability to maintain control of the session*. The supervisor could then list an example of the expected steps toward improvement such as *arrive fifteen minutes earlier and pre-plan for session* along with some other strategies for achieving the goal such as *check out materials and practice with them before using in session*.

Gillam, Roussos, and Anderson (1990) found that providing feedback leads to positive changes in supervisees' clinical behaviors. They reported that when issues or "problematic" behaviors (i.e., areas of needed growth while providing interventions to clients) were identified, shared with the supervisee, and tracked by both parties, it resulted in mutual data gathering that successfully changed the identified behavior. Having both parties keep data on these behaviors and discussing them in their weekly meetings; not only provided ownership to both parties but also helped to develop self-regulation in the clinician. Another mode of remediation aimed at identifying and improving "problematic" behaviors would be to have graduate clinicians review the video and/or audio tapes of their clinical sessions, identify areas of needed growth, and develop alternative behaviors or strategies that could replace the identified areas of weakness. This may be

especially helpful for "at-risk" students who become defensive if only their struggles are highlighted by the supervisor without a shared upon agreement about needed improvements. To gauge growth in self-reflection, during observation of sessions, supervisors can note parts of the session where improvement is needed to determine if the student clinician is able to independently identify these areas upon review. In these instances, the learning experience is enhanced because the supervisor becomes a part of a process that leads the student clinician to self-discovery and growth. Moreover, this strategy gradually takes the responsibility off of the supervisor and places it in the hands of the student clinician, which is directly aligned with the Anderson's (1990) continuum of supervision (see Figure 1; McCrea & Brasseur, 2003). This model illustrates an approach that moves student clinicians from evaluation-feedback to self-supervision. The continuum of supervision model provides a guide for supervisors for reaching the overall goal of increasing overall independence of in clinical training. At the end of the process, the supervisor serves as the consultant to the student.

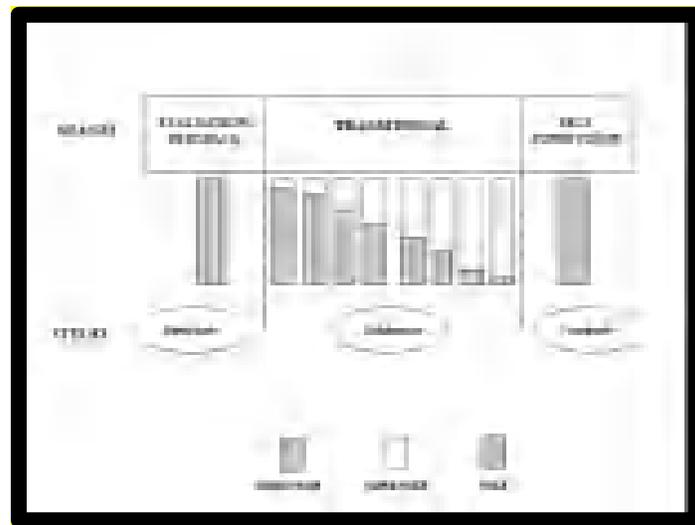


Figure 1. Continuum of supervision.
(McCrea & Brasseur, 2003, p.25)

Conclusions

In summary, the chance having an "at-risk" graduate clinician as a supervisee is not a rare occurrence. However, the experience does not have to be stressful and discouraging for either the clinical educator or graduate clinician. Understanding the indicators and red

flags that place a student “at-risk” is key to early identification and remediation. Using a variety of strategies, such as a timely written remediation plan and specific weekly feedback can provide “at-risk” students with time to address concerns. Additionally, having graduate clinicians complete self-assessments can help them develop their self-regulation skills. Rubrics developed and utilized by clinical educators, for the assessment of skill development, can be given to graduate clinicians as a reflection tool to self-monitor their progress after their intervention sessions. Furthermore, mutually identified target skills based upon video examples of their direct services and documented behaviors can improve the overall outcomes for the “at-risk” graduate clinician. In fact, all graduate clinicians would benefit from being a part of the process of identifying areas for growth and tracking their progress on these goals. Thus, graduate clinicians should be thinking about two sets of goals: (a) their clients’ goals and progress and (b) their own personal goals for clinical development and success. ♦

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As cultural proficiency is the pinnacle of clinical skills in working with diverse populations, it is reasonable to offer a definition and discussion regarding the continuum (Cross, Bazron, Dennis, & Isaacs, 1989). A description of cultural proficiency may be best encompassed by the model developed by Cross, et al., (1989). Of course, ASHA provides direction on cultural competence in the professional and clinical environment, but one might look to the Cross et al. continuum to best understand what behaviors *transcend* cultural competence. Cross et al. offer a general framework of cultural proficiency that can be applied to any number of professions, including those within the area of CSD. They describe a collection of behaviors that can be readily observed in individuals who engage in culturally competent and proficient practices. The cultural proficiency continuum model was designed to provide a vehicle by which individuals and organizations may reflect on behaviors, values, attitudes, and institutional practices. Described as a spectrum of behaviors, this model lists the following hierarchical stages: cultural destructiveness; cultural incapacity; cultural blindness; cultural pre-competence; cultural competence; and finally, cultural proficiency.

The first three levels of the continuum do not readily contribute positive movement toward cultural proficiency but are important to note as barriers or potential stalling points to growth. The second half of the model highlights behaviors, attitudes, and values that lay a foundation with which to establish cultural proficiency. These behaviors have also been described as elements contributing to cultural competence as described by ASHA (2017). Positive movement along the continuum begins with cultural pre-competence, which is the stage at which individuals are able to recognize the value systems of others, *as well as* their own (Kohnert, 2013). Cultural awareness is a critical construct housed within the cultural pre-competence point on the path to cultural proficiency.

Cultural competence is the next level of the continuum and is set as a professional benchmark in CSD. It is the level at which professionals in the field are expected to function within academic and clinical practice (ASHA, 2017). At this level, positive and productive interactions can be fostered between cultures. Cultural differences are acknowledged and appreciated, which lends itself to more effective interactions.

Table 1. Constructs of the Cultural Proficiency Continuum.

Hierarchical Term	Associated Behaviors	Potential Impact
Cultural destructiveness	Intentional behaviors that deliberately seek to negatively impact those who demonstrate value and belief systems other than ones' own, including (but not limited to) gender, sexual orientation, race, ethnicity, nationality, language, dialect, etc.	Lowest level of the continuum at which behaviors are dangerous and can be destructive to relationships between individuals or an organization.
Cultural incapacity	Individuals may subscribe to stereotypes and overgeneralizations about others. Perceptions of superiority are (intentionally or unintentionally) demonstrated.	Individuals or organizations may be limited in their ability to reflect on behaviors and attitudes related to others. Top-down management or instructional styles may be adopted as a result of perceptions of superiority of other individuals or groups.
Cultural blindness	Cultural differences or experiences are minimized or dismissed. All individuals or groups may be considered to be the same. The position may be taken that one should not see even obvious differences such as race.	Individual differences or variations among groups may not be observed or valued. Experiences unique to individuals or groups may not be appreciated and or addressed when needed.
Cultural pre-competence	Recognition of one's own cultural, as well that of others (Kohnert, 2013).	Level at which cultural awareness is achieved. Potential for positive movement toward proficiency.
Cultural competence	Similarities and differences are acknowledged and respected.	Increased effectiveness within client/clinician interactions. Increased accuracy of assessment and treatment.
Cultural proficiency	Teaching and sharing of information to others and supports others in a manner that facilitates cross-cultural interactions.	Facilitator may be able to support others' development of skills along the continuum of cultural competence.

Note. Definitions listed in the table above derived from Cross et al. (1989) and Kohnert (2013).

Cultural competence is the next level of the continuum and is set as a professional benchmark in CSD. It is the level at which professionals in the field are expected to function within academic and clinical practice (ASHA, 2017). At this level, positive and productive interactions can be fostered between cultures. Cultural differences are acknowledged and appreciated, which lends itself to more effective interactions.

In the Cross et al. (1989) model, cultural proficiency is described as the highest level of cultural interactions and experiences. While not required by national licensing board standards, cultural proficiency is the ideal level of clinical operation for any professional within the communication sciences and disorders discipline. Cross et al. (1989) described cultural proficiency as a level of cultural competence that allows professionals to *teach* cross-cultural skills to others. It is a process by which the culturally competent professional is able to demonstrate continual growth and serve as a facilitator of cross-cultural interactions. Even beyond the individual, an organization as a whole can engage in culturally competent, and or culturally proficient behaviors.

The Need for Cultural Competence and Proficiency in Communication Sciences and Disorders: Demographic Implications for Communication Sciences and Disorders

United States Demographics

The question bears asking---if cultural competence is the professional requirement in CSD, why would one need to pursue cultural proficiency? One reason may lie in the fast-changing demographics throughout the United States. The United States Census Bureau is a source that can be used to determine projections among culturally and linguistically diverse (CLD) populations. According to Census Bureau reports, The United States (U.S.) has become increasingly diversified over the past ten years (U.S. Census Bureau, 2010). Demographic information on race and ethnicity can provide data on CLD groups at the national and state levels, which can be used to help clinicians to be proactive in preparing to work with various populations not only in the context of clinician/client relations, but also within instructor/CSD student interactions, and professional relationships. The United States Census Bureau reported that those who self-identified as a racial/ethnic minority rose from 30% to 36% between the 2000 and 2010 census. By 2050, it is estimated that

approximately 50% of the American population will identify as belonging to a racial/ethnic minority group. As a result, the current US minority population is projected to equal or outnumber the current “non-Hispanic, White” racial majority within the next 25 years (U.S. Census Bureau, 2010). Of course, racial or ethnic identification are not at all the lone markers for diversity; however, these figures offer tangible insight into changing demographics, which help in proactively identifying changing needs of populations and communities.

The U.S. Census Bureau releases data from the American Community Survey (ACS) each year, and according to the 2016 data, approximately 21.6% of Americans (66.5 million people) speak a language other than English at home (U.S. Census Bureau, 2017). This is an increase of more than 802,000 people from the previous year. Of those speaking a language other than English at home, 62% spoke Spanish and 38% spoke a language other than Spanish (U.S. Census Bureau, 2017). Recently released ACS data indicated that foreign born US residents made up about 13.7% of the 2017 U.S. population (U.S. Census Bureau, 2018). This trend of increasing multilingualism coupled with the statistic that nearly 40% of those with English as a second language believe they do not speak English “very well” has ramifications for many public service sites including hospitals where people may seek and require assistance from health and human services professionals, including those in CSD.

In hospital settings, improper assessment, diagnosis and treatment can be dire when patient symptoms or healthcare instructions are misunderstood resulting in delayed or improper treatment leading to disability or death (Green & Nze, 2017). Patients with self-reported limited English proficiency (LEP) constitute approximately 26.2 million individuals (U.S. Census Bureau 2017). These patients are among the most vulnerable populations in the health care setting, experiencing high rates of medical errors and worse clinical outcomes as well as receiving lower quality of care (Green & Nze, 2017). Cultural competence is imperative in these cases, as is the ability to teach students, trainees, and others how to navigate these scenarios through cultural proficiency.

Use of cultural competence and proficiency is equally important in other clinical settings such as schools. In a

wider scope, consider the US Department of Education's research finding that in 2014-2015 school year, the percentage of public school students who were English language learners (ELL) ranged from 1.0 percent in West Virginia to 22.4 percent in California (9.4% of all students on average) totaling 4.6 million students (McFarland et al., 2017). The majority of those students utilized Spanish as a home language (77.1% or 3.7 million students), while the next 10 languages (Arabic, Chinese, Vietnamese, English, Hmong, Somali, Russian, Haitian, Tagalog and Korean) make up 12.1% of the most commonly reported home languages (McFarland, et al., 2017). While individuals from diverse backgrounds do not necessarily receive communication services, clinicians must be able to readily support those who do, as well as pre-professional students who may require supervision.

In recent years, children from CLD backgrounds represented a larger number of clients who received speech and language services within the school setting (Langdon, 2008). Langdon (2008) reported that, in 2005, among those US students identified as having a specific language impairment, Native American and Alaskan Native children accounted for the largest representation, at 56.3%. Children who were identified as Asian and Pacific Islander contributed to 25.2% of the specific language impairment population, followed by White at 20.8%, Hispanic at 17.3%, and African-American at 15.1% (Langdon, 2008). These data provide a small glimpse of racial and ethnic representation within disorder areas of speech and language.

This growth in diversity has been met with challenges, such as limited training and resources for effective assessment and treatment. While neither cultural competence nor cultural proficiency requires one to know all things about every culture, individuals (or organizations) at these levels are more readily able to use transferrable skills to work effectively across a variety of people and cultures. An understanding of demographic patterns across the U.S. may provide clinicians with a cross-sectional view of potential client populations. Given these demographic data, educators and clinicians may use the information to be proactive in their preparation to assess and treat clients from diverse backgrounds.

Professional and Student Demographics

ASHA (2018) issued a report on membership demographics which revealed 8.0% of ASHA professionals identify as being a racial minority. This demographic includes ASHA certificate holders, as well as international affiliates and members (ASHA, 2018). It should be noted that combined international affiliates and associates totaled at approximately 781 at the end of 2017 (ASHA, 2018). According to the same demographic source, approximately 11,702 ASHA members and affiliates identified as a race other than white (including multiracial), compared to 135,772 who identified as white only. These racially skewed professional demographics in the field are inconsistent with client representation and overall US Census demographics. This largely homogenous demographic report should draw emphasis to the need to ensure professionals and pre-professionals are best prepared to work with a diverse population.

Of the 161,391 respondents in the 2017 calendar year, 92% of ASHA members, nonmember certificate holders, international affiliates, and associates identified as white, which represents a slight decrease over the years (ASHA, 2018). For example, demographic information from 2002 revealed that 94.2% of American Speech-Language-Hearing Association (ASHA) membership identified as White (ASHA, 2014). In the 2017 ASHA demographic report, 3.5% were black, 1.3% identified as multiracial, 2.7% Asian, .3% American Indian, and .2% identified as native Hawaiian or other Pacific Islander. Of the total membership reported during that year, 5.2% identified as Hispanic (compared to 2.3% in 2002). Most recent demographic information shows that overall representation of males in CSD remained steady at 4.7% in 2016 and 2017; however, trends show a slow decrease since 2012 (ASHA, 2018). ASHA has described these demographics such as these as "problematic" and recognized the need to increase diversity among the profession (ASHA, 2014). Increased diversity of thought, heightened awareness and sensitivity, and improved service delivery to diverse populations were among those things ASHA cited as benefits of a diverse professional population. In response to the growing need to better serve an increasingly diverse population exhibiting communication disorders, ASHA has implemented strategies to heighten awareness of multicultural issues and increase minority recruitment and retention among CSD students, clinicians, and faculty. Several factors were identified as being related

to successful recruitment and retention of diverse students and faculty within CSD programs. Among those factors were institutional and departmental behaviors such as commitment and responsiveness (ASHA, 2014). Enriching academic and clinical offerings with diverse opportunities was also cited as a method to increase awareness about multicultural issues as well as contribute to the recruitment and retention of CLD faculty and students. Creating more clinical opportunities for CSD students to work with diverse populations was also highly recommended. These strategies can not only promote recruitment and retention of diverse students and faculty but it can also foster progression for all involved toward cultural competence and proficiency.

Within academic CSD programs, an overall increase in racial and ethnic minorities has been observed over the last few years; however, despite ASHA's recruitment and retention efforts, minority representation among students who study CSD remains lower than the overall U.S. minority population. A 2016-2017 survey conducted by the Council of Academic Programs in Communication Sciences and Disorders (CAPCSD) revealed that undergraduate students from "racial/ethnic minority" populations in CSD programs made 22.74% of the student population, while there was 17.63% representation at the graduate level (CAPCSD & ASHA, 2018). Undergraduate minority representation between 2011 and 2017 academic years remains higher than minority student enrollment in graduate programs between the same years. Minority student enrollment in both undergraduate and graduate programs have seen a slow, but steady increase since the 2010-2011 academic year. Enrollment in International students (who were not included in the racial/ethnic minority data) accounted for 1.16% of undergraduate CSD students, and similarly 1.69% at the graduate student level. In the 2016-2017 CAPCSD study, 95.08% of graduate students enrolled in CSD programs in the US identified as female, which is almost identical to that of CSD students at the undergraduate level with 95.4% female representation (CAPCSD & ASHA, 2018). Gender and international student representation has held relatively consistent since the CAPCSD report of the 2001-2002 (CAPCSD & ASHA, 2002). Given that the current and pending demographic of the field has still not yet met matched the profile of the population served, the need for cultural competence among service providers and

cultural proficiency in CSD educators is that much more imperative.

National Standards for Culturally and Linguistically Appropriate Services

Given the vastly changing demographic "topography" of the U.S., the national government took action by establishing The National Standards for Culturally and Linguistically Appropriate Services (CLAS; (U.S. Department of Health and Human Services, 2001) to specifically address health care delivery to CLD populations. In 1997, the U.S. government began research on health care access, service delivery, and outcomes among diverse populations. The two-stage process occurred during 1997-1999 and 1999-2001. In 2001, a final report was published, along with 14 standards that provided guidelines for best practices in working with culturally and linguistically diverse populations. The CLAS report of 2001 reflected a need for culturally appropriate health care practices across disciplines. A National Project Advisory Committee comprised of 27 members, such as health care professionals and organizations, lawmakers, and health consumers, contributed to the development of the Standards. Public contributions were solicited during the CLAS development process through a series of regional meetings at which the standards and their purpose were introduced to the public, who were then invited to contribute suggestions and feedback. In addition to input from the expert panel, CLAS standards were developed in part through the systematic review of federal and state laws in place at that time. The final form of the document also contained background information regarding cultural competence, national needs, state and regional examples, 14 CLAS Standards, and recommendations for implementation of the standards. The 14 original standards were presented with one guiding principle and further divided into three themes: Culturally Competent Care, Language Access Services, and Organizational Supports for Cultural Competence (U.S. Department of Health and Human Services, 2001).

In response to the growing need for continued provider education in the health and human services professions, the National CLAS Standards were enhanced to reflect advancements in cultural competency research and evidence-based practices (U.S. Department of Health and Human Services, 2013). Enhancement of the standards was intended to continue to increase

appropriate services to those from diverse populations. The enhanced CLAS guidelines were updated to include 15 standards, all of which were intended to be used in conjunction with one another, as opposed to selective, individual use (U.S. Department of Health and Human Services, 2013).

It is important to note that the CLAS Standards are federal mandates that require all individuals or agencies who are recipients of federal funds to adhere to each of the standards (U.S. Department of Health and Human Services, 2001). The National CLAS Standards are of value to students and professionals in the field of CSD, as they can provide a compass by which curriculum may be developed in order to foster cultural competence. As written within the Preamble of the Standards, educators are among the intended groups who should use CLAS. The 2001 Standards specifically state that institutions and educators have a responsibility to use CLAS. The Preamble addresses educators and institutions in the following statement:

Educators, to incorporate cultural and linguistic competence into their curricula and to raise awareness about the impact of culture and language on health care delivery. This audience would include educators from health care professions and training institutions as well as educators from legal and social services professions. (U.S. Department of Health and Human Services, 2001, p. 2)

This statement is of particular importance in terms of curricular development, given the fact that many CSD programs also are housed within schools of medicine at a number of institutions or colleges of health and human services.

CSD students at the graduate level are required to obtain pre-professional clinical experience in a variety of settings. These include, but are not limited to, hospital and school settings that may receive federal funds for services. As a result, CSD student-clinicians working in agencies that receive federal funding also must be prepared to adhere to these standards.

Educators in CSD may be able to structure courses and to guide clinical experiences using the standards as a target for best practices. The CLAS final report of 2001 also called for organizations and individuals to engage in self-assessment processes to measure cultural

competency. This self-scrutiny (as also described by Kohnert, 2013) can further support CSD programs in their efforts to promote cultural competence within curriculum. Establishing a baseline for cultural awareness through self-scrutiny is essential to progression toward cultural competence. Engaging in program reviews may also provide CSD academic and clinical programs insight as to their institutional behaviors, attitudes, and instructional practices regarding CLD populations. CSD programs may then be better equipped to assist students in identifying their own behavioral patterns through self-scrutiny.

Professional and Academic Standards in CSD

As the governing body that oversees certification, standards, and scope of practice in CSD, ASHA maintains ethical principles by which all practicing clinicians in the field are expected to abide (ASHA, 2016). As it specifically relates to work with diverse populations, ASHA has a clear stance on the expectation of clinicians who practice in the field. The Certificate of Clinical Competence (CCC) is the national certification standard granted by ASHA to qualified professionals in the CSD field. Professionals holding ASHA certification are expected to demonstrate cultural competence in working with diverse clientele. Principle of Ethics I, Rule C, states: "Individuals shall not discriminate in the delivery of professional services or in the conduct of research and scholarly activities on the basis of race, ethnicity, sex, gender identity/gender expression, sexual orientation, age, religion, national origin, disability, culture, language, or dialect." (ASHA, 2016).

ASHA upholds Standards (instituted in 2014 and revised in 2016) to address the scope of practice of SLPs and to provide basic requirements for those seeking national certification in the field. Standards VI-B and VI-C address requirements for applicants to demonstrate skills related to cultural and linguistic bases (Council for Clinical Certification, 2013). More comprehensively, Standard V-D requires that in each of the speech-language, and swallowing areas mentioned in Standard VI-C, "the applicant must have demonstrated current knowledge of the principles and methods of prevention, assessment, and intervention for people with communication and swallowing disorders, including consideration of anatomical/physiological, psychological, developmental, and linguistic and cultural correlates." (Council for Clinical Certification, 2013). In addition, Standard V-B of the CCC in Speech-

Language Pathology requires applicants seeking certification to “Communicate effectively, recognizing the needs, values, preferred mode of communication, and cultural/linguistic background of the client/patient, family, caregivers, and relevant others” (Council for Clinical Certification, 2013).

According to Standard V-B, 3-a, CCC applicants and holders are also required to respect clients’, caregivers’, and families’ cultural needs or perspectives by responding to clients’ values and beliefs as well as provide services using clients’ chosen means of communication (Council for Clinical Certification, 2013). Any of these skills are likely to be difficult to demonstrate without a functional level of cultural competence. According to the Council for Clinical Certification (2013), it is expected that courses addressing development of these skills should be implemented at the graduate level. In essence, the cultural competence required to effectively practice within CSD must be introduced and taught within academic and clinical contexts before applying for professional certification. Considering that skills involving cultural competence are required to not only obtain but *maintain* the CCC, it is imperative that clinicians are provided opportunities to develop these competencies during academic and clinical coursework by instructors and supervisors who demonstrate culturally proficient skills themselves.

Cultural Proficiency among Instructors and Supervisors

It is reasonable to believe that instructors and supervisors, as well as CSD professionals who teach professional continuing education classes *should* be at an operational level of cultural proficiency; however, measuring this construct to ensure capacity in this area can be difficult. An instructor or supervisor who is not able to demonstrate cultural proficiency could pose challenges not only for the client, but also to the (student) learner. For example, a challenge for the graduate student, newly graduated clinician, or even professional could sometimes be matching their cultural competence level to that of an academic instructor, clinical supervisor, or continuing education instructor. A less clinically experienced student or recent graduate may be paired with a clinician who is perhaps outdated in cross-cultural approaches or has a lower level of cultural competence than the student. It is possible that this could result in interactions that are not conducive to the student continuing to progress on the cultural

competence continuum or counterproductive practices that pose a barrier to implementation of effective services to clients from diverse backgrounds.

Transitioning from Culturally Competent to Culturally Proficient

On the path to cultural competence, an individual can move from novice levels of understanding and use to (hopefully) consistent demonstration of competence and ultimately proficient use with others. An individual can remain on any given level of competence or can continue to progress through the continuum. Similar to learning a new language, for various reasons, an individual can “plateau” or encounter fossilization in the ability to process, engage, and apply skills. This can limit opportunities to incorporate these skills when needed. Stunted growth toward proficiency can also limit the effectiveness of cross-cultural exchanges. As clinicians, we strive for cultural competence in the professional environment, but when working in a context that requires one to teach others (i.e., students in CSD), we must attempt to transcend competence and employ behaviors that are demonstrative of cultural proficiency. Regardless of area of expertise, instructors, supervisors, and other teaching professionals in the field must engage in culturally proficient behaviors in order to guide others on the path to cultural competence.

The case can easily be made for the need to infuse culturally competent instruction within curriculum; however, the challenge comes when the assumption is made that faculty themselves possess the knowledge and skills to teach aspects of cross-cultural skills. Textbook chapters alone cannot be relied upon as the lone mode of instruction for growth on the continuum. Educators (be them instructors or supervisors) must look to develop a tool box of clinical and professional skills to enhance their own journey toward cultural competence and proficiency. Acquisition of skills along the continuum requires cultural exposure, cultural experience, reflection, and application. Some ways in which this growth can be achieved within CSD is through seeking sustainable cultural experiences, professional collaboration, community collaboration and engagement, and reflection.

Seek sustainable cultural experiences.

Involvement in singular cultural events can be a strong launching pad for individuals to observe other practices.

“Popcorn” experiences that provide bursts of exposure to diverse situations can have immediate impact but may require heavy support for ongoing cross-cultural learning. While enlightening, these brief experiences may not readily lend to sustainable cultural experiences, particularly if there is little follow-up. Engaging in more sustainable, on-going cross-cultural experiences can help to move one from the role of an observer, to participant-observer, and even perhaps participant in aspects of other cultures. Sustainable cultural experiences should be purposeful and involve follow-up, reflection, and intentional opportunities to continue to engage.

Exposure versus experience.

Cross-cultural exposure presents cultural opportunities in a way that is not necessarily conducive to interaction, but rather is a display for an observer. This can be used in a way that supports cultural knowledge and awareness. For example, watching a video on a cultural practice within a group is a way to heighten awareness, but does not lend itself to an exchange or critical thinking in a cross-cultural context. Experience, on the other hand, takes the individual toward engagement as a participant of some form. Participation does not necessarily mean the individual adopts the cultural practice of the other individual or group, but rather engages in a way that demonstrates an openness to learn and/or share. Participation may also help those engaged to reconcile value system and cultural differences that may have previously been viewed as barriers to effective interactions. These sustainable experiences offer opportunities for rapport, respect, and reciprocity and thus the potential to advance skills to a proficiency level.

Professional collaboration and engagement.

Cultural competence often is listed as a critical standard among professionals within health services and related fields. For example, the American Nurses Association (ANA, 2009) endorsed a position on the development of masters and doctoral programs that prepare nurses to engage in culturally competent behaviors in the workforce. In addition, the American Nurses Association maintains a position statement that not only holds the individual nurse responsible for demonstrating professional competence, but also requires that the employer provide a work environment conducive to supporting competent behaviors (ANA, 2014). Adopted in 2013, the American Physical Therapy Association

folds cultural competence into a number of their guiding practices as well as the vision and mission statements for the profession. In addition, cultural competence is identified as a base standard for entry level graduates into the physical therapy profession (APTA, 2013). Given that cultural competence is valued in a number of related professions, interprofessional collaborations may lend themselves to further development beyond competence to a level of proficiency. Professional peer interactions and collaborative activities (i.e., team-based approaches) may provide a gateway to cultural proficiency. Collaborations can take shape in the form of partnered approaches in patient or client care teams, teaching teams, continuing education or professional development teams.

Community collaboration and engagement.

Community based collaboration can give rise to organic situations that foster growth toward cultural competence among participants. Exposing students to community based collaborative efforts also allows the instructor or supervisor to develop or enhance their own cultural proficiency by capitalizing on teachable moments before, during, and after the activity. For example, service-learning is a hands-on form of community collaboration in which student participants have the opportunity to render educational supports and clinical services within the context of a community group. Kent-Walsh (2012) described diversity (of students, settings, and populations) as a key element among the factors that best support effective service-learning. Since best practices in service-learning require the service providers to begin learning about the community they intend to serve before the activity even begins, instructors and supervisors must have a level of cultural proficiency in order to facilitate maximal learning experiences for students. Engaging in community partnerships can establish cultural brokers who can assist both clinicians and students in navigating aspects of a given cultural group.

Use of Reflection.

Reflection can serve as a useful tool for ongoing assessment and heightened awareness of established behaviors, emerging skills, and areas for improvement. Reflection is both externally and internally pragmatic in that it can be used to stimulate growth at both group and individual levels. In group settings, reflection often takes the form of debriefing and collective discussion

(Boud, Keogh, & Walker, 2013), allowing an exchange of ideas and perspectives. Group reflection can be facilitated through the use of structured activities or by way of open dialogue. This reflection may lead to expansion of one's world view and the increased ability to see multiple perspectives as opposed to only a one-dimensional view (Tseng, 2002).

Olson, Bidewell, Dune, and Lessey (2016) argued that self-reflection is essential to advancing cross-cultural skills, given the need to operate within an increasingly multicultural world. Immersion in cross-cultural experiences (i.e., through structured and unstructured activities, clinical experiences, conversations, etc.) can help to promote critical thinking and self-reflection. Self-reflection can take place in forms such as guided discussion, open writing, digital journaling, and group or partnered activities.

Reflection can be used as a means of self-monitoring. Reflection can be a powerful instrument to facilitate progression toward cultural proficiency. It can be used to self-monitor and synthesize information through ongoing evaluation and response to cross-cultural experiences. Documentation of collective and individual actions and responses can aid in better understanding one's own contribution to cultural climate and interactions.

In some cases, use of pre-experience discussions may also provide opportunities for participants to use reflection to compare what they anticipated, or their perceptions, versus what occurred during the actual experience. Activities such as pre-experience discussions can be used as a part of a triangulated reflection process. For example, Boud and colleagues (2013) referred to three phases of reflection that can be incorporated in any planned encounter. In the first phase, learners consider the impending (field) experiences, the demands or expectations, and the known resources available to them. The second phase of the reflection is the experience itself, and the third stage of reflection is after the (field) experience is completed. Although it may not be possible to incorporate this approach to reflection in each scenario related to developing cultural proficiency, it may prove to be a useful strategy in some situations.

Use of reflection can support the individual or organization in thinking both within and outside the

profession (as opposed to compartmentalizing behaviors into work versus personal behaviors). Reflection activities should be viewed as a part of the ongoing learning process, as opposed to an end cap. In effort to broaden one's view beyond cultural competence, it may be helpful to reflect on cultural proficiency as a part of a user's overall set of behaviors that reaches beyond professional contexts. Reflection can be embedded into any of the aforementioned activities, from cross-cultural experiences and collaboration, to community engagement.

Conclusion

Whether in a rural area or a large city, populations in need of CSD services continue to diversify. As demographics continue to shift around this largely homogenous profession, it is imperative that CSD professionals continue to seek opportunities to further develop cultural competence within practice. Since cultural competence is a dynamic set of skills, it is a process that is always in motion, even once it has been achieved. Clinicians, instructors, and students can look to ASHA Standards, as well as federal mandates such as CLAS for guidance on expected skills within the area of cultural competence. Understanding the demographic make-up of the communities served may also contribute to cultural knowledge and awareness.

In addition, clinicians who teach or expect to instruct others in the field should look beyond competence to develop cultural proficiency as the professional operational level for all areas within the CSD scope of practice. As academic and clinical educators, must also be prepared to use skills in cultural proficiency to act as cross-cultural coaches. Educators can also use aspects of cultural competence to impact curricular development within academic and continuing education programs. While competence can be introduced in the classroom setting, it requires practical opportunities to use base skills for continued growth (much like learning any clinical skill). Teaching professionals within CSD should use their skills in cultural proficiency to continually seek ways to provide experiences to students as well as widen their own base for cross-cultural learning. Exploring sustainable cultural experiences, professional and community collaborations, and engaging in reflection can support clinicians in expanding beyond cultural competence into the realm of cultural proficiency. ♦

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Methodology for a Systematic Review of the Literature on PVFMD

To evaluate the literature on PVFMD, it was important to specify the criteria by which each article was chosen (e.g., inclusionary and exclusionary criteria regarding the history and nature of the disorder, evaluation methods, and treatment approaches).

Search Procedures

Database searches included ProQuest Multiple Databases, PubMed, Ebscohost, and Google Scholar with the search terms “paradoxical vocal fold motion,” “paradoxical vocal cord motion,” “vocal cord dysfunction,” “paradoxical vocal fold movement,” “paradoxical vocal cord movement,” “paradoxical vocal fold dysfunction,” and “respiratory retraining therapy.”

Inclusionary Criteria

A number of criteria were specified in order to for a report to be included in this review. Studies (a) were published between December of 2002 to April 2016 in a peer reviewed journal, dissertation, or thesis; (b) were published in or translated into English; (c) provided history or treatment of athletes with PVFMD; (d) utilized a recognized research design or were descriptive case studies; and (e) involved individuals who were previously misdiagnosed with asthma or another upper airway disorder (e.g., exercise-induced asthma). Inclusionary criteria were not restricted based upon participant age, gender, or pre-existing condition.

Exclusionary Criteria

Unpublished studies were excluded from this review. Studies were excluded if they involved (a) individuals with acquired PVFMD as a result of neurological trauma; (b) a condition was not exercise-induced (e.g., intubation, epilepsy); (c) non-human subjects; (d) combat deployment, or (e) were not translated into English. This literature review was narrowed down to studies of individuals with undiagnosed or misdiagnosed PVFMD in the elite athlete population and focused on evaluation methods and treatment approaches.

Included Articles

The total number of articles found matching the search criteria was 109. Of those, 82 did not meet inclusionary criteria. A total of 27 studies were included in this review. Of the 27 articles included, all provided a description of PVFMD; however, only eight articles

thoroughly outlined and explained treatment approaches, emphasizing the importance of speech therapy.

Results

The included articles, when taken together, yielded the following information.

History of PVFMD

PVFMD is an unusual disorder that was first documented 1842 by Dunglison as a “dysfunction of the laryngeal muscles” found in cases of hysterical women (Dunn et al., 2015). It was later termed *hysteric croup* by MacKenzie, who was able to visualize the abnormal adduction of the vocal folds using laryngoscopy in 1869. A few decades later, in 1902, Sir William Osler described PVFMD as a disorder affecting both inspiratory and expiratory phases of the respiratory cycle, (Al-Alwan & Kaminsky, 2012; Dunn et al., 2015). Since then, more than 70 terms have been used to describe this abnormal movement of the vocal folds, including hysteric croup, Munchausen’s stridor, pseudo-asthma, factitious asthma, upper airway dysfunction, functional (or nonorganic) upper airway obstruction, irritable larynx syndrome, emotional laryngeal wheeze, and laryngeal hyper-responsiveness (Hoyte, 2013). Today, this disorder is most commonly known as PVFMD or vocal cord dysfunction (VCD) (Dunn et al., 2015; Forrest, Husein, & Husein, 2012). However, most recently there has been a shift away from the term VCD due to confusion with pathologic abnormalities causing dysphonia rather than dyspnea. Pathologic conditions cause paresis or paralysis, whereas PVFMD does not cause any permanent deficits in vocal cord mobility; therefore, VCD is an inaccurate label for the disorder (Krey & Best, 2014).

What is PVFMD?

PVFMD is a disorder of the larynx that is often a manifestation of or an essential pathophysiology of a hyperfunctional laryngeal reflex in order to protect the airway (Balkissoon & Kenn, 2012). The three basic functions of the larynx include protection, respiration, and phonation, with the most important function being pulmonary protection. This protective response, also known as the glottic closure reflex or cough reflex, is an involuntary response regulated by the brainstem (Hoyte, 2013). Adequate voice production requires synchronicity of a complex respiratory and phonatory system. Any abnormal movement may lead to a

disruption of the airway, causing further breathing difficulties or stridor. PVFMD is a complex disorder that has recently been increased in its identification within the pediatric population, particularly in youngsters involved in athletic activities, due to the increased prevalence of upper airway respiratory disorders (Franca, 2014).

Origins of PVFMD

Initially, PVFMD was thought to only exist in individuals with psychological disorders or hysteria, as suggested by the unpredictable and sporadic nature of the disorder. PVFMD had a higher prevalence in individuals experiencing stress (Dunn et al., 2015). Some literature described that PVFMD often occurs with coexisting psychogenic factors (e.g., emotional stress), previous psychiatric diagnosis, outside physical stressors (e.g., exercising or elite competition during athletic activities) or as a result of underlying emotional responses to anxiety or social strain (Dunn et al., 2015; Forrest et al., 2012; Franca, 2014).

A multitude of psychological conditions are associated with PVFMD, including conversion disorders, anxiety disorders, histrionic and other personality disorders, depression, psychosomatic disorders, factitious disorders, and somatization disorders (Al-Alwan & Kaminsky, 2012; Forrest et al., 2012). Throughout the literature, PVFMD appears as a multifactorial disorder having a strong psychological basis, indicating a classic conversion disorder. By definition, a conversion disorder is a specific somatoform disorder consisting of physical difficulties that present without a physical cause (Forrest et al., 2012). The physical difficulties are typically rooted in a psychological conflict, where symptoms are not intentionally produced and cannot be fully explained by a general medical condition (Forrest et al., 2012). Although anxiety, panic, and depression can occur in PVFMD, they are more likely the consequences rather than the cause of the disorder (Al-Alwan & Kaminsky, 2012; Franca, 2014). PVFMD almost always coexists with physiological conditions or triggers. Thus, a diagnosis based on only psychogenic factors may be inaccurate.

Physiological Factors Contributing to PVFMD

The pathophysiology of PVFMD has often gone misunderstood due to the complex symptoms and its similar presentation to other upper airway disorders. Gastroesophageal reflux disorder (GERD) and laryngopharyngeal reflux (LPR) are increasingly

identified as the primary contributing factor of PVFMD, thus revealing a broader patient base (Dunn et al., 2015; Krey & Best, 2014). PVFMD occurs with asthma, chronic rhino-sinusitis, underlying lung or nasal diseases, allergic laryngitis, postnasal drainage, viral infections, untreated sleep apnea, seasonal allergies, upper airway sensitivities such as sinusitis, inhalation of irritants or airborne pollutants including, but not limited to, dust, smoke, strong odors (e.g., tobacco), extreme cold air, excessive talking, laughing, deep breathing, and exercise. Anything that irritates the vocal folds can result in paradoxical movement (Boulet, 2012; Dunn et al., 2015; Franca, 2014).

Individuals with chronic conditions including LPR and GERD may be at a higher risk for PVFMD due to their increased laryngeal hypersensitivity from the acid backflow that causes sensory neuropathy or increased nerve growth factor. This damage to the laryngeal mucosa lining was shown to cause an accentuation of the glottic closure reflex. However, further research is still required to determine how strong the connection is (Kenn & Balkissoon, 2011). In 95% of cases studied, there was a direct relationship between PVFMD and GERD, in addition to psychological stressors (Boulet, 2012). Laryngeal hyperactivity is generally caused by irritation of the laryngeal mucosa or alteration of sensation (Kenn & Balkissoon, 2011). Laryngeal constriction is a normal physiologic response to outside stimulation and irritation of the airway; however, overstimulation of the airway can cause a hypersensitive response, resulting in a closed constricted airway position. This is known as irritable larynx syndrome, episodic laryngospasm, dysphonia, or simply a cough (Forrest et al., 2012; Kenn & Balkissoon, 2011).

Presentation and Prevalence

PVFMD can present in either gender at any age. However, females are two to three times more likely to have a confirmed diagnosis (Dunn et al., 2015). One study found that PVFMD was prevalent in 12% of 120 cases of individuals previously diagnosed with exertional dyspnea (Fowler et al., 2015). PVFMD was once thought to be a rare condition, only present in hysterical women; however, today PVFMD is increasingly recognized by medical professionals due to improved research and diagnostic methods. Through advances in research and technology, medical professionals determined therapeutic approaches that

are successful in relieving the symptoms of PVFMD (Dunn et al., 2015).

Clinical Definition of PVFMD

Clinically, PVFMD is the inappropriate closure of the vocal folds during inhalation and/or exhalation, resulting in a restricted airway and acute respiratory distress (Fowler et al., 2015).

Symptoms of PVFMD include episodes of intermittent shortness of breath, respiratory distress (often provoked by exertion or chemical triggers), wheezing, stridor, audible respiration, upper chest/throat tightness, choking, changes in vocal quality, trouble achieving adequate breath support, air hunger, difficulty swallowing, globus sensation, intermittent aphonia or dysphonia, neck or chest retractions, fatigue, throat clearing, episodic restricted airflow, unwanted respiratory sounds, coughing, and feelings of anxiety (Forrest et al., 2012; Franca, 2014). PVFMD is widely variable, ranging from an absence of symptoms, to mild dyspnea, to an acute onset of respiratory distress so severe as to appear to be an asthma attack (Dunn et al., 2015). Failing to identify PVFMD can have consequences ranging from recurrent mild and inconvenient symptoms to life-threatening situations that require a visit to the emergency department or hospitalization, sometimes resulting in a tracheostomy (Franca, 2014). Most symptoms are periodic, lasting for short bursts of time (five minutes or less); however, symptoms cannot be controlled or lessened with prescribed medications for breathing symptoms. Consequently, prescriptions used to treat the underlying condition (e.g., GERD) can be helpful. If symptoms of PVFMD are severe enough, they can trigger increased feelings of fear and anxiety, exacerbating the problem. Successful treatment of PVFMD should be based on understanding and properly treating the underlying causes and coexistent conditions, tailoring treatment to that individual and his or her needs (Fowler et al., 2015; Franca, 2014).

Differential Diagnosis

PVFMD is an upper-airway respiratory disorder that often mimics other respiratory disturbances, including asthma, exercise-induced asthma (EIA), exercise-induced bronchospasms (EIB), dysfunctional breathing (DB), recurrent cough or post-exercise cough, spasmodic dysphonia, muscle tension dysphonia, panic attacks, and Munchausen's syndrome (Al-Alwan &

Kaminsky, 2012; Balkissoon & Kenn, 2012; Franca, 2014; Kenn & Balkissoon, 2011). PVFMD can be confused with laryngospasms, the life-threatening, sustained, intense, and complete closure of the vocal folds that often occurs following direct irritation. Laryngospasms are often the most severe pathophysiological consequence of the glottis closure reflex. Therefore, prior to treatment, all other more serious conditions must be ruled out in order to properly treat PVFMD.

PVFMD and asthma. In the general population, there is a strong association between asthma and PVFMD, with as many as 75% of individuals with PVFMD testing positive for both disorders (Forrest et al., 2012). Persons with asthma could be at a heightened risk for developing PVFMD later in life due to a preexisting altered autonomic response and excessive exposure to inhaled sulphur dioxide (Forrest et al., 2012). Long-term use of unnecessary bronchodilators and steroid inhalers can produce laryngeal irritation or edema, causing increased hypersensitivity. Inhalers irritate the larynx and escalate the symptoms of PVFMD (Forrest et al., 2012). In addition to the physical consequences of a misdiagnosis of PVFMD with refractory asthma, there is the patient's unnecessary healthcare costs (Dunn et al., 2015). In a study of 95 patients who were later diagnosed with PVFMD, it was found that all patients were treated with medications for severe asthma for an average of 4.8 years prior to receiving a proper diagnosis (Dunn et al., 2015). This information conveys how difficult distinguishing PVFMD from asthma can be without access to the proper instruments and medical history. One common symptom that differentiates PVFMD from asthma is the complaint of localized symptoms in the throat area (Kenn & Balkissoon, 2011). A patient who has diagnosis of asthma but who continues to complain of exacerbating throat symptoms, is able to localize pain, and exhibits breathing difficulties is most likely experiencing symptoms of PVFMD.

PVFMD, DB, exercise-induced asthma, and exercise-induced bronchospasms. DB is one condition often mistaken as PVFMD due to the symptom overlap. DB can present similarly to PVFMD or even mimic a hyperventilation syndrome due to rapid breathing, feelings of anxiety, and exacerbating symptoms similar to exercise-induced bronchospasms or exercise-induced asthma (Balkissoon & Kenn, 2012). EIB symptoms

include cough, expiratory wheezing, shortness of breath (SOB), fatigue, and chest tightness, which are brought on by exercise; however, most patients with exercise-induced bronchospasms report no symptoms outside of exercise. This condition is not to be confused with EIA, which is characterized as transitory airway resistance that occurs following vigorous exercise, often in patients with chronic asthma. About 80%-90% of patients with chronic exercise-induced asthma ...will have exercise-induced bronchospasms (Krey & Best, 2014). PVFMD mimics exercise-induced asthma, occurring in 5-27% of patients with dyspnea and occurring at any level of exertion (Al-Alwan & Kaminsky, 2012; Krey & Best, 2014).

Depending on the severity of respiratory distress and frequency of symptoms, it is not uncommon for a young athlete with PVFMD to be misdiagnosed with exercise-induced bronchospasms or exercise-induced asthma (Al-Alwan & Kaminsky, 2012). PVFMD is often triggered by exertional activities including high performance sports (e.g., soccer, hockey, and swimming) due to the increased respiratory demand and physical stress placed on the individual. This intensified physical strain creates precipitating respiratory distress that includes noisy breathing, dyspnea, wheezing, and sensation of an obstruction in the neck and upper chest region lasting less than five minutes. Due to limited diagnostic measures and instruments available, these symptoms are often written off as exercise-induced bronchospasms or exercise-induced asthma. PVFMD can co-occur with both conditions, making it increasingly difficult to formulate a differential diagnosis without proper equipment and the ability to visualize the structures affected (Boulet, 2012).

PVFMD and recurrent cough or post-exercise cough. In athletes, the most common symptom observed is recurrent cough (Boulet, 2012). This can be associated with many upper airway pathologies, including rhinitis, asthma, and/or dysfunctional breathing (Boulet, 2012). Coughing is the body's natural way of protecting the airway from foreign bodies and/or bronchial secretions. Coughing can be an indicator of an underlying disease or is simply a response to environmental irritants. Some causes for post-exercise cough in athletes include asthma, upper airway cough syndrome related to rhinitis, sinusitis, laryngitis, GERD, chronic eosinophilia bronchitis, or environmental exposures, such as to allergens (Kenn & Balkissoon, 2011). To treat the cough

it is pertinent to treat the underlying condition (Boulet, 2012).

Summary of PVFMD and breathing disorders. Due to the nonspecific and intermittent characteristics of PVFMD, it is often difficult to identify and differentiate the condition from other respiratory breathing disorders. This failure to properly identify and treat PVFMD can result in unnecessary exposure to medication and possibly recurrent emergency department visits or hospitalizations. Symptoms of PVFMD closely resemble asthma; however, they often do not respond to the medication prescribed (Fowler et al., 2015). Someone experiencing an acute PVFMD attack who attempts to treat the episode with short-acting beta antagonists will not find relief. Instead, they often unintentionally exacerbate the problem, which increases feelings of anxiety and fear (Forrest et al., 2012). On average, a person with misdiagnosed PVFMD waits five years before an accurate diagnosis (Fowler et al., 2015). When PVFMD goes misdiagnosed as asthma or other upper-airway respiratory disorders and fails to respond to traditional medications, results often include prolonged periods of unnecessary treatment of inhaled and oral steroids (that are increased over time without benefit), placing the patient at significant risk for adverse effects (Fowler et al., 2015).

PVFMD and Athletes

It is estimated that 2%-5% of athletes in the general population are affected by PVFMD. Up to 27% of patients who are already diagnosed with exercise-induced bronchospasms are effected by PVFMD (Krey & Best, 2014). PVFMD is most commonly found in female athletes between the ages of 20-40 years old (Boulet, 2012; Fowler et al., 2015). Many patients with diagnosed PVFMD report that exercise is a major trigger of acute attacks (Kenn & Balkissoon, 2011). During testing, individuals often show inspiratory stridor during strenuous activities or when the exercises take place in cold, dry ambient conditions. These individuals were previously described as having a reactive airway dysfunction syndrome or irritant occupational exposures (Kenn & Balkissoon, 2011). Overall, this condition is estimated to occur in 5.1% of elite athletes, increasing in prevalence to 8.3% in those who perform outdoors. PVFMD is more prevalent in athletes whose sports require short, high bursts of ventilation (e.g., sprinting, cycling, and ice hockey) because increased ventilation bursts require the athlete to breathe in

through the mouth, rather than the nose, causing cooler air to enter the lungs and penetrate the laryngeal vestibule. The exposure to cooler air can result in irritation and thus dry out the vocal cords. One study found “exercise-associated PVFMD accounts for approximately 14% of PVFMD cases. Of the cases noted, 98% were elite athletes...70% were female and 46% were noted to have noisy breathing during exercise” (Krey & Best, 2014).

Recognition by athletic trainers.

Often the first person to identify symptoms of any respiratory distress or dyspnea in athletes is their athletic trainer. The identification by and referral from the athletic trainer is crucial in order to facilitate proper diagnosis and treatment. This referral is often made to an SLP who is able to recommend diagnostic tests to rule out PVFMD and aid athletes in developing a long-term management plan for their breathing difficulties (Rich, Mackey, Kanzenbach, Newsham, & Pettitt, 2010).

Evaluation Questionnaires

Pinto and colleagues (2016) developed a checklist for physicians that can be used to aid in the diagnosis of PVFMD versus asthma, based on patient clinical history, physical examination, and spirometry results, and is successful in yielding a differential diagnosis.

The questions include the following:

1. Is there a history of frequent attacks at home, without a consistent clinical profile during medical visits?
2. Does the patient use continuous systemic corticosteroid or inhaled corticosteroid at high doses (or a combination of the two) without therapeutic response?
3. Does pulmonary auscultation reveal wheezing, predominantly in the cervical region, and/or stridor?
4. Is pulmonary function testing (FEV1), or peak expiratory flow, inconsistent with the clinical profile?
5. Does pulmonary function testing reveal flattening of the inspiratory loop of the flow-volume curve, which is suggestive of extrathoracic obstruction?
6. Are oxygen saturation measurements inconsistent with the intensity of asthma attacks?

Pinto and colleagues (2016) were able to identify more than 90% of patients with PVFMD using question three alone. It was noted in the study that if a patient had four or more affirmative answers there was a positive correlation with PVFMD. Prior to the Pinto study, most patients observed were described as having difficult-to-control asthma. Overall, this checklist is an affordable and practical means of identifying PVFMD in patients with severe and/or difficult asthma (Pinto et al., 2016).

A similar assessment that can be used in the evaluation process is the Pittsburgh Vocal Cord Dysfunction Index (Traister, Fajt, Landsittel, & Petrov, 2014) which provides questions that can aid the professional in discriminating asthma from PVFMD.

Due to the contributing psychological factors associated with PVFMD, questionnaires including the *Minnesota Multiphasic Personality Inventory-2* (MMPI-2; Butcher, Dahlstrom, Graham, Tellegen & Kaemmer, 1989) and the *Life Experiences Survey* (LES; Sarason, Johnson, & Siegel, 1978), identify any additional medical conditions that can co-occur with PVFMD. It is important that a broad base of evaluative tools be considered to rule out medical conditions that could mimic PVFMD or lead to a misdiagnosis. Some of these factors include non-compliance/non-adherence to medical recommendations, ongoing allergen exposure, chronic rhinosinusitis, GERD, or other medical conditions (Kenn & Balkissoon, 2011).

Beyond using screening questionnaires, it is important to obtain a thorough medical history. The case history should focus on the patients' symptoms, age of onset, exacerbating circumstances, exposure to environmental hazards, intensity of exercise, and prior treatment. All these questions could be addressed using the mnemonic 'OLD CARTS' (Table 1; Seidel, Ball, Dains, & Benedict, 2006). The use of this approach provides the professional with a vivid picture of what the patient is experiencing during an attack (Rhodes, 2008).

Testing

One way to diagnose PVFMD is through a physical examination. Most patients who present for a clinical evaluation will not present with overt signs and symptoms of PVFMD, which can make progress toward a differential diagnosis difficult. During the initial

Table 1. Use of mnemonic to characterize symptoms.

- O** = When was the **onset** of symptoms?
L = Where was the **location** of discomfort? Did the patient feel short of breath? In the chest/throat?
D = What was the **duration** of the symptoms?
C = Describe the **characteristics** of symptoms. Did the patient have difficulty taking a deep breath or blowing out air?
A = What were the **aggravating** factors? Was the patient emotionally stressed or physically stressed? What environmental hazards may have been present?
R = What were the **relieving** factors?
T = What were the **temporal** factors? How long did the episode last? What time of day?
S = What was the **severity** of the episode? Did each episode progress in severity?

Seidel, Ball, Dains, & Benedict, 2006

evaluation, it is important to identify physical limitations or abnormalities that may indicate additional respiratory diseases or problems. For example, recognition of clubbing of the nails could indicate cystic fibrosis (Rhodes, 2008). It is also important to note any pharyngeal erythema, which could be a sign of an infection or other respiratory disorders including exercise-induced asthma. A person with asthma will have wheezing in the lungs primarily on expiration, whereas individuals with PVFMD will have a high-pitched stridor on inspiration (Rhodes, 2008).

The difficulty lies in the physical evaluation because most patients are asymptomatic at rest and produce unremarkable test results. Spirometry testing often reveals a normal inspiratory cycle, but shows a decrease in flow-volume loop during an attack, thus predicting obstruction in the upper airway (Dunn et al., 2015; Kenn & Balkissoon, 2011). During a PVFMD attack, the individual often presents with stridor, tachypnea, hoarseness, dysphonia, cough, tugging of the neck and upper chest muscles, and a look of panic, anxiety, or stress (Dunn et al., 2015). Symptoms of PVFMD can be provoked with effortful behavior including fast breathing, alternating vowel emission, sniffing, coughing, throat clearing, and loud phonation; however, the best way to elicit symptoms is through physical exertion using a treadmill or stationary bike. Three clinical ways to elicit a response or provoke an episode include the use of a methacholine challenge, exercise with cold air, or the use of strong irritants such as perfume (Kenn & Balkissoon, 2011). A thorough physical evaluation should include recording the results

of the individual's maximum phonation time, maximum phonation range, elevated perturbation measures (e.g., jitter/shimmer), and deterioration in vocal quality, which can determine any abnormalities of the airway. An interdisciplinary approach to evaluation is recommended to avoid a misdiagnosis and any unnecessary medical treatments that might follow (Franca, 2014).

Pulmonary function testing and methacholine challenge test. Pulmonary function tests are commonly used when diagnosing PVFMD and can be extremely important to rule out coexisting pulmonary diseases. PVFMD appears inconsistently on diagnostic tests due to the sporadic nature of the disorder. For example, a patient may be asymptomatic at rest (demonstrated by a normal inspiratory loop) but, when exposed to an environmental trigger or exertional activity, will experience an acute episode. This attack is characterized by a flattened inspiratory loop accompanied by paradoxical movements of the vocal folds during inspiration, on expiration, or both. One commonly recognized test used to produce a controlled attack is the methacholine challenge test. This test is commonly known and used for diagnosing various respiratory disorders, specifically asthma (Rhodes, 2008). During the test, the patient will inhale increasing amounts of methacholine before and after taking a spirometry test. This test is accurate for diagnosing asthma if the patient's lung function drops 20%; however, it is not always accurate for differentiating PVFMD from asthma. Therefore, any results obtained from this test should be regarded lightly and additional tests are needed for an accurate diagnosis (Rhodes, 2008).

Laryngoscopy: The gold standard. Although pulmonary function tests are useful in provoking an attack, the best method to diagnose PVFMD is laryngoscopy. Laryngoscopy is used to visualize the airway and is beneficial in identifying the classic presentation of a posterior diamond-shaped chink and determining irregular movement of the vocal folds during breathing and/or provocative behaviors the patient may exhibit (Krey & Best, 2014). When testing, the examiner should be aware of and rule out coexisting pathologies that could cause upper airway obstruction, including vocal fold polyps, granulomas, tumors, and/or lymphomas (Rhodes, 2008). These conditions can cause an internal narrowing of the trachea and increase air resistance

during respiration (Kenn & Balkissoon, 2011). For these reasons, direct visualization of the airway is the gold standard for diagnosing PVFMD and is the first step in making an accurate diagnosis. This includes ruling out asthma, bronchial obstruction, croup, exercise-induced asthma, foreign body aspiration, infection, laryngeal collapse, spasmodic dysphonia, tracheal obstruction, tracheal stenosis, and tumors (Rhodes, 2008).

Acute Management of PVFMD

Treatment of PVFMD varies depending on the individual and the severity of symptoms. There are two treatment approaches commonly recognized: acute treatment and chronic management. Acute treatment of PVFMD requires an approach directed at the underlying cause, whether it is a co-existing disorder such as GERD or an airway obstruction (Boulet, 2012). For those experiencing difficulty breathing due to increased anxiety, there are medications that can be helpful. Heliox (a mixture of helium and oxygen) can be used to dramatically relieve symptoms of PVFMD (Boulet, 2012). Adding helium to oxygen allows the gas to flow more easily, producing a less turbulent flow, which allows the vocal folds to relax and helps the individual to breathe easier.

A more invasive approach used for treating PVFMD is the use of botulinum toxin type A (Boulet, 2012). This treatment involves intralaryngeal injection of botulinum, which prevents the release of acetylcholine at the nerve endings, resulting in paralyzing of the vocal folds in an open position. This procedure is only considered for individuals with severe cases of PVFMD or for individuals who are unresponsive to all other therapies (Boulet, 2012).

Chronic Management of PVFMD: Respiratory Control/Retraining Therapy in Speech Therapy

The goal for chronic management of PVFMD targets prevention of symptoms and respiratory distress. Chronic management includes biofeedback, speech therapy, hypnosis, psychological therapy, and can also include botulinum toxin injections. However, speech therapy is the most effective form of treatment for long-term management of symptoms and prevention of further attacks.

Speech therapy: Respiratory retraining therapy. The primary focus of speech therapy is relaxation of the structures used for respiration to improve overall

respiratory control. There are many techniques and strategies that can be taught to improve overall respiratory function and breathing patterns. One therapeutic technique is Respiratory Retraining Therapy (RRT; Hoyte, 2013). The goal of RRT is to reduce tension in the extrinsic laryngeal muscles by increasing self-awareness of the individual's dysfunctional breathing behaviors. Therapy focuses on diaphragmatic breathing exercises to draw tension away from the larynx and direct it to the anterior portion of the mouth to reduce paradoxical movement of the vocal folds (Hoyte, 2013). By teaching the individual how to relax the larynx, neck, and chest muscles, hypertonicity and paradoxical movements of the vocal folds decrease.

Speech therapy: Laryngeal control therapy. Laryngeal control therapy, otherwise known as behavioral therapy, is performed with a trained SLP and is 95% effective (Marcinow et al., 2014). Treatment begins with an SLP introducing the athlete to various rescue-breathing techniques. The majority of the remaining treatment is focused on carryover and practice in the home environment when the patient is asymptomatic to help establish muscle memory. Laryngeal control therapy targets breathing strategies to elicit a relaxed-throat breathing pattern, which was effective for diminishing symptoms during an acute attack (Kenn & Balkissoon, 2011). In PVFMD oxygen levels are typically within normal limits; however, persons often describe feelings of a choking sensation, claiming they cannot get enough air into the lungs. To combat these symptoms SLPs teach panting, nasal inhalation with quick nasal sniffs, and pursed lip breathing on exhalation (Boulet, 2012). All these maneuvers work to force the vocal folds open, to expand the airway and release any tension causing the attack. Practicing these techniques repeatedly help assist with laryngeal relaxation and retraining to prevent attacks and increase control during an attack (Hoyte, 2013).

Marcinow and colleagues (2014) analyzed the prevalence of PVFMD in elite athletes at a large Division I (DI) university. Thirty of 46 (65%) athletes with PVFMD were DI collegiate athletes and 16 of 46 (35%) were triathletes and/or marathon runners. Flexible fiberoptic laryngoscopy of athletes post exercise provided indicators of PVFMD. LCT was recommended for 45 patients. Of the 45 patients, 36 attended at least one therapy session and 69% of patients reported improvement of their symptoms. Some patients needed

additional treatment including biofeedback and thyroarytenoid muscle botulinum injection to relieve symptoms (Marcinow et al., 2014). Overall, the study demonstrated that Laryngeal control therapy was successful in treating and managing symptoms of PVFMD in athletes.

Inspiratory muscle strength training. Inspiratory muscle strength training reduces the symptoms of PVFMD (Ruddy et al., 2004). Since PVFMD has a direct correlation with laryngeal muscle tone, the use of inspiratory muscle strength training strengthens the laryngeal muscles to increase control of the motor unit that fires to the diaphragm, causing an increase in activation and strength of the surrounding muscles (Ruddy et al., 2004). Ruddy and colleagues (2004) found that using inspiratory muscle strength training was successful in decreasing the dyspnea rating in athletes during high exertion exercises. Results following the intervention revealed that maximum inspiratory pressure increased to 93% and the athletes' overall dyspnea ratings decreased after five weeks. It was theorized that having greater inspiratory muscle strength reduces the force needed to generate each breath. Patients learned to control inhalation, exhalation, and laryngeal relaxation strategies (Ruddy et al., 2004).

Additional Treatment

In addition to acute and chronic treatment of PVFMD, it is important to manage co-existing conditions that may be contributing to the cause or severity of the disorder. For example, GERD and LPR cause or even exacerbate symptoms of PVFMD due to acidic backflow irritating the larynx and laryngeal vestibule. Treatment and resolution of GERD with proton pump inhibitors resolved all symptoms of PVFMD (Forrest et al., 2012). Some studies suggested a neurologic component. Damage to the vagus nerve may be the cause of PVFMD and can lead to the lowering of the afferent receptor threshold for stimuli that produce an efferent motor response on the vocal cords contraction when stimulated. Other studies suggested that PVFMD is a multifactorial condition that is not strictly psychological, physical, or neurological, but is a combination (Forrest et al., 2012).

Psychotherapy. Many cases of PVFMD stem from the stress to perform in athletics. Athletes with PVFMD may have an intense personality and a desire to compete

and perform perfectly. This 'type A' personality can often lead to anxiety, depression, or other psychiatric disorders; therefore, in addition to speech therapy, psychological counseling may help with symptoms and even minimize the episodes and severity.

Speech therapy

Overview of treatment.

The first step in speech therapy is to explain to the individual that the stridor can be brought under voluntary control. This task can be accomplished by describing the anatomy of the larynx and the typical movement of the vocal folds observed during inspiration and expiration. By providing the individual with information on the normal anatomy of the larynx and the physiology as it relates to breathing, vocalizing, swallowing, coughing, throat clearing, and breath holding, in addition to teaching the "normal" movement of the vocal folds, the individual is able to visualize the paradoxical or inappropriate movements he/she experiences to better control the episode (Hoyte, 2013). After being properly educated, each patient is then provided specific exercises called rescue-breathing strategies or "quick-release techniques" to practice at rest. These techniques are taught to rapidly release the vocal folds from any paradoxical movements responsible for causing airway obstruction during an attack and to desensitize the individual to specific irritants and triggers known to exacerbate symptoms of PVFMD. By using these strategies, the vocal folds are provided immediate relief, releasing any tension in the laryngeal area and providing the individual an escape from the fear of an attack (Hoyte, 2013). These therapeutic breathing strategies are often targeted first in therapy to provide the individual with an immediate sense of relief and control. It is especially important for those individuals who hyperventilate due to significant anxiety or panic. To maximize the benefits of these techniques, patients recognize any and all potential triggers and initiate rescue strategies on command and when necessary (Hoyte, 2013).

At the completion of therapy, patients will have been taught how to interrupt their dysfunctional breathing to use this new "relaxed breathing" technique instead. These exercises not only heighten the individual's awareness of an acute attack, but also help to manage and recover from an attack. Patients who undergo speech therapy feel successful in preventing and

controlling an attack as early as after completion of their first speech therapy session (Hoyte, 2013).

Overall, all treatment of PVFMD is highly dependent upon patient education. It is important for the professional to be careful and compassionate when describing the condition, stressing that although it can be traumatizing, it is not life threatening.

PVFMD treatment for athletes.

For athletes, the main goal of therapy is to teach patients how to control their breathing patterns in an effective manner to better participate in high-demand environments. There are four specific goals of management. These include: (a) resume athletic or social participation (b) manage any future exacerbations due to illness or stress, (c) discontinue use of any unnecessary asthma medications, and (d) avoid emergency department visits or missing work or school (Matrka, 2014).

The most common treatments for athletes with PVFMD seen across studies include: (a) concentration on active exhalation, (b) relaxation of oropharyngeal muscles, (c) patient education and reassurance that the condition can be brought under voluntary control, (d) diaphragmatic breathing, (e) “wide open” throat breathing, (f) coordinated thoracic-abdominal breathing, (g) visual biofeedback, (h) psychoeducational counseling, (i) vocal hygiene, and (j) inspiratory muscle training (Patel et al., 2015). With practice, the athlete can become more aware of the paradoxical movements and learn to intervene using strategies to gain control of the attack. Although these techniques require commitment from the athlete, with practice, this new breathing pattern will become second nature to the athlete.

Outcomes of Therapy

If addressed properly, those with PVFMD can be treated to either fully resolve symptoms or manage with fewer attacks. Therapy restores restful and quiet breathing, natural body movements associated with non-effortful breathing, and breathing recovery techniques after a deep nasal sniff (Matrka, 2014). Exercise should be practiced in order to develop “muscle memory” (Matrka, 2014).

Results of therapy include alleviation of all symptoms surrounding PVFMD as well as symptoms of GERD,

associated allergies’ symptoms, decreased stress-related feelings around exertion and improved breathing control (Franca, 2014). It is important to recognize that no two individuals with PVFMD will present the same. Therefore, it is important to tailor education and therapy to the individual, specifically targeting his or her needs.

Conclusion

PVFMD is an upper-airway respiratory disorder found in elite athletes. Because of the similarities between PVFMD and other airway disorders, PVFMD may not be accurately diagnosed. It is important for an individual suffering from symptoms of PVFMD to be proactive in the differential diagnosis process. This involves working with a multidisciplinary team. PVFMD is a treatable, non-life-threatening condition that with proper evaluation, diagnosis, and treatment, can be resolved or lessened. ♦

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students, is currently unavailable. Students ages 15-19 are at the highest risk for sustaining traumatic brain injuries (Hux et al., 2010) and men more than women in this age group are at the highest risk for concussion (CDC, 2010; Brain Injury Association of America, 2015). The risk of traumatic brain injury is highest for men age 14-24 (Valente & Fisher, 2011). As many as 50% of concussions go unreported, undiagnosed, and undocumented (Daneshvar, Nowinski, McKee, & Cantu, 2011; Harmon et al., 2013). Notably, most concussions occur in the months of September and October (Gelburd, 2016). This happens to be when the high contact, high speed collision sports are played such as football, soccer, and hockey, which have a greater concussion risk (Giza et al., 2013). Helping student-athletes understand the effects of a concussion and how to manage their symptoms has been an evolving process and needs continued reinforcement.

Concussion legislation varies from state to state but many focus on youth sports with regard to prevention, safety, and returning to play. They emphasize the following:

- 1) Athletes must get medical clearance from a healthcare professional before returning to play including games, practices, and training
- 2) Guidelines and educational training by school districts and interscholastic associations on concussions and youth safety for coaches, athletes, and parents/guardians
- 3) Removal from play with no same-day return to play eligibility (Bompadre et al., 2014; Albano et al., 2016)

Few states have addressed guidelines for returning to learn. Nationwide, educational training for coaches, teachers, and parents has focused on preventing and recognizing the signs and symptoms of concussions but not so much on strategies to help these students with traumatic brain injuries (TBI) when they return to the classroom. In other words, there has been more attention on the student-athletes' ability to Return to Play (RTP) rather than Return to Learn (RTL). Classroom strategies exist but there is a breakdown in transitioning students from injury to rehabilitation.

Sports-related concussions

Years ago, a sports-related concussion was commonly associated with "having one's bell rung", being "knocked out", or experiencing a loss of consciousness (Theye & Mueller, 2004). However, according to the American Academy of Neurology and the international Consensus Statement on Concussion in Sport, a concussion may or may not involve unconsciousness (Giza et al., 2013; McCrory et al., 2017)). In fact, most sports-related concussions are categorized as mild traumatic brain injuries and less than 10% involve a loss of consciousness (Kutcher & Giza, 2014).

For centuries, athletes would be encouraged to "shake it off" and get back to the competition since concussions were not considered serious injuries (Cover, Roiger, & Zwart, 2018). Besides this, athletes were willing to play through pain, "tough it out" for fear of losing playing time or disappointing their coach or teammates, and would likely not report their injury (Madrigal, Robbins, Gill, & Wurst, 2015). With these public perceptions, many with head injuries, including children, were put at risk by being allowed to play through their injuries (Faure, 2010).

If an athlete suffers another blow to the head before symptoms of the first concussion have healed, they run the risk of Second Impact Syndrome (SIS), which may lead to death or permanent disability (McCrory & Berkovic, 1998; McLendon, Kralik, Grayson, & Golomb, 2016). A less serious condition, post-concussion syndrome, occurs when concussion symptoms last more than six weeks (Theye & Mueller, 2004). In adult athletes, concussion consequences may include potential long-term behavioral changes, post-concussion syndrome, and chronic traumatic encephalopathy (CTE) (Robbins et al., 2014). Made publically known by the 2015 movie, *Concussion*, CTE is a progressive disease of the brain found in athletes with a history of repetitive brain trauma, which can only be diagnosed after death (Centers for Disease Control and Prevention, 2019). Some studies have linked concussions with an increased risk in developing neurodegenerative diseases such as Alzheimer, CTE, and Parkinson's disease (Porter, Constantinidou, & Marron, 2014). Several collegiate and professional athletes have retired early from their respective sports due to the mounting evidence of long-term effects of recurrent concussions (Guskiewicz et al., 2003). A number of high profile football players who experienced

the tragic effects of CTE have donated their brains to advance medical research.

To better understand concussions, a definition and information about the signs and symptoms are presented next.

What is a concussion?

The Centers for Disease Control and Prevention (CDC) (2010) defines a concussion as a type of traumatic brain injury (TBI) that may come from a jolt, bump, or blow to the head, or hit to the body that causes rapid back and forth movement to the head and brain. The brain is a soft jelly-like organ protected by the bones of the skull and a cerebral fluid that surrounds it to act as a cushion or shock absorber to reduce potential damage (Huff, Tadi, & Varacallo, 2019). During the trauma, it could twist or bounce in the skull due to sudden movement, which may stretch or damage brain cells, create chemical changes in the brain, and induce an alteration of mental status (Brain Injury Association of America, 2015). The chemical changes can lead to symptoms that affect a student’s cognitive, physical, emotional, and sleep functions and the brain becomes more sensitive to increased stress or injury until it fully recovers (Centers for Disease Control and Prevention, 2010). The traumatic brain injury may disrupt normal brain function including the brain’s ability to think. Upon returning to school, students may experience difficulties concentrating, processing information quickly, comprehending, following or completing tasks, and working independently.

To provide a visual understanding of how the brain may be impacted during a concussion, picture billiard balls racked on a pool table. Once the cue ball is hit, at the point of impact, the balls scatter into different places and a cascade of events occur. Some balls are pocketed, others hit other balls, and some may remain in the same place untouched. Balls hit more than once produce another effect. The brain compensates for the misfiring of neurons and tries to find other pathways to return to its normal function after being displaced. That is why it may take some time to recover. The impact of a concussion on the brain creates a chain-reaction of molecular chemical responses. Recovery from concussion relies on the brain’s neuroplasticity, or ability to change, adapt, or reorganize neural pathways (Y. Sison, personal communication, January 6, 2019).

Any part of the brain may be affected after a concussion, including multiple regions (Toledo et al., 2012).

Concussion Signs and Symptoms

Concussion symptoms may vary from person to person and even in the same student who experiences more than one concussion (Halstead et al., 2013). Student-athletes who experience concussions may present with specific symptoms, which impact their ability to perform academically at pre-concussion levels (Duff, 2009).

The Brain Injury Association of America (BIAA; 2015) listed the following common issues experienced after a concussion into four categories – cognitive, physical, emotional (behavioral), and sleep patterns (Table 1).

Table 1. Common Issues Experienced After Concussions

Cognitive	Physical	Emotional	Sleep
In a “fog”; can’t think clearly	Headache	Sad	Sleeping more
Can’t follow conversations	Post-traumatic amnesia (can’t remember injury)	Easily irritated	Trouble falling asleep
Trouble with attention/concentration	Nausea	Anxious	Not sleeping soundly
Difficulty learning new information	Dizziness	More emotional than usual	Sleep cycle disturbed
Word finding problems	Sensitivity to light/sound	Changes in personality	Not feeling rested after sleep
Slowed reaction times	Fatigue	More impulsive	N/A

(Brain Injury Association of America; 2015)

Some physical signs include headache, light or sound sensitivity, dizziness, nausea, ringing in the ears, slurred speech, and fatigue. Cognitively, students may experience difficulty with memory, attention, concentration, thought organization, or slowed processing, and may feel like they are in a “fog” and have difficulty thinking clearly. Emotionally, changes in personality, including irritability, impulsivity, anxiousness, frustration, and sadness about their injury are reported. Changes in the sleep cycle such as

sleeping more than usual or having difficulty sleeping well can be expected.

Some experts contend that concussions can last less than 72 hours and although most spontaneously resolve within seven to ten days, recovery can take longer for those with prior concussions (Scorza, Raleigh, & O'Connor, 2012). Concussion symptoms can linger anywhere from hours to several months after injury regardless of severity (Faure, 2010). These may include long-lasting headaches and behavior changes such as irritability and anxiety (Guskiewicz et al., 2003; Jacobson, 1995). Psychosocial problems including mood disorders such as depression may linger for years in cases of post-concussion syndrome (Valente & Fisher, 2011). Pre-injury psychological issues have also been associated with persistent symptoms (Ponsford et al., 2019). Sleep disturbances may develop following injury or emerge after recovery and can impair the brain recovery process (Wickwire et al., 2016).

An Invisible Injury

A concussion is frequently referred to as an “invisible injury” because a person appears physically normal. The injury is not as readily evident as a cast, crutches, stitches, or swelling because damage occurs internally (Bloom, Horton, McCrory, & Johnston, 2004). The lack of external proof of injury may affect a student’s sense of inadequacy “with concerns of being viewed as weak or faking the injury” (Chinn & Porter, 2013, p. 410). Since some students may appear physically well after a concussion, peers and school officials may not realize or fully understand the extent of deficits experienced by these athletes.

Detecting and diagnosing concussions can be challenging (Centers for Disease Control and Prevention, 2015). When an athlete displays obvious signs of a potential concussion including loss of consciousness, balance or motor incoordination, confusion or disorientation, memory loss, blank vacant look, and visible facial injury, they should stop playing and not be allowed to return on the same day (Strauss, 2013). The student should be assessed by a physician or licensed healthcare provider (McCrory et al., 2017).

A concussion is a mild traumatic brain injury induced by direct or indirect biomechanical forces to the brain that result in a neuronal dysfunction that typically resolves without structural injuries (Gold et al., 2018). Standard

clinical neuroimaging such as CT scans and MRI show structural abnormalities and therefore contribute little to an assessment of a sports-related concussion (Chamard & Lichtenstein, 2018). However, advanced MRI techniques such as diffusion tensor imaging (DTI) and susceptibility weighted imaging have been used to study the white matter damage and diffuse axonal injury associated with concussion injury (Bahrami et al., 2016; Churchill et al., 2017).

Since the disability may not be visibly apparent to others, students are faced with inaccurate expectations of their capabilities (Hux et al., 2010). The diffuse injury to the brain may impair communication abilities and impact remembering and learning new information (Kennedy, 2017). Students need to consider the differences between their self-perception, learning abilities, and learning styles pre and post-concussion (Hux et al., 2010). Pre-injury learning disorders, mood disorders, attention deficit disorders, and migraine headaches can complicate diagnosis (Harmon et al., 2013). In addition, any prolonged school absence can be detrimental and may result in social isolation, depression, anxiety, and loss of academic standing (DeMatteo et al., 2015). Although each concussion injury is unique, lingering symptoms, may affect learning and the ability to keep up with the demands of the classroom.

When to return to school?

The first ten days after a concussion is the period of greatest risk for another concussion (Giza et al., 2013). Placing demands on a concussed brain through increased cognitive and physical activity before complete recovery and before restoring brain cellular function could impede learning and school-based functioning (Meckler, 2014).

Although physical rest has historically been the treatment for mild TBI, mental or cognitive rest is also essential for a student to function at school (Sady, Vaughan, & Gioia, 2011). Researchers found that gradually returning to cognitive activity is recommended to decrease recovery time from a concussion (Carson et al., 2014; McLeod & Gioia, 2010). This is especially true in the days just after the concussion, since activities that require concentration and attention may worsen symptoms and lengthen recovery (McCrory et al., 2013).

Returning to sport or to the classroom prematurely may worsen symptoms or even prolong recovery and both short term and long-term learning may be affected (Halstead et al., 2015; McCrory et al., 2013; Meckler, 2014). A well-supported student can focus on resting and recovering without having to spend excess energy on trying to keep up with their academic workload, fighting for accommodations, or becoming anxious about whether their grades would suffer” (Sady et al., 2011, p.13). The Centers for Disease Control and Prevention (2015) recommended gradual return to daily activities such as school and work upon approval by a health care professional and only when symptoms reduce significantly.

Is complete rest always best?

Contrary to the widely prescribed recommendation for athletes to rest until they are symptom-free, is a growing body of research that suggests aerobic exercise as an intervention for those who have sustained sports-related concussions. Low-intensity, non-contact graduated exercise could be an adjunct treatment with potential benefits such as reducing persistent symptoms of depression, anxiety, stress and insomnia (Sullivan, Hills, & Iverson, 2018). The American Academy of Pediatrics (2016) found that those who exercised within a week of injury rather than following complete rest, regardless of symptoms, experienced nearly half the rate of concussion symptoms that lingered more than a month. Some researchers contended that complete physical and cognitive rest is counter-productive, can adversely affect patient outcomes, and is difficult to enforce or maintain over long periods (Sullivan, Hills, & Iverson, 2018). Additionally, removing athletes from regular physical activity can be detrimental to their mental health (Leddy, Haider, Ellis, & Willer, 2018).

Exercise rather than rest is also recommended in the whiplash management model. Since a concussion may result from a rapid acceleration/deceleration force to the head or neck in a whiplash movement (Kutcher & Giza, 2014), this model may be appropriate. Direct and indirect research showed that returning to activities before symptoms subsided resulted in positive attitudes and beliefs, which helped patients regain activity levels, reduced development of chronic pain, and improved rather than prolonged recovery (Craton & Leslie, 2014). Active recovery included early return to pre-injury activities and exercise. Emerging data suggests

favorable benefits of exercise on brain neuroplasticity (Leddy et al., 2018). A systemic review of rest and active treatment concluded that a 24-48 hour period of cognitive and physical rest followed by a gradual increase in activity was appropriate for most patients but the exact duration and amount of rest need further investigation (Schneider et al., 2017).

Concussion Management

Athletes usually recover from a concussion within the first three weeks of injury (Collins, Lovell, Iverson, Ide, & Maroon, 2006). For those who experience symptoms longer than three weeks, concussion management and accommodations in school may be necessary (Halstead et al., 2013). Studies have shown that concussion management guidelines for student-athletes often fail to incorporate guidelines for return to play, return to school, and home functioning (Williams, Welch, Parsons, & McLeod, 2015). Students with concussions would benefit from a multidisciplinary team approach to help with recovery and the anticipated difficulties of returning to the school setting (Halstead et al., 2013). The concussion management guidelines proposed by the Reduce-Educate Accommodate-Pace (REAP) model used in Colorado by the Rocky Mountain Youth Sports Medicine Institute Center for Concussion incorporates a multi-disciplinary team approach consisting of the family team, school physical team, school academic team, and medical team who each play a role during the entire concussion recovery process. When returning to full physical activity including sports or extracurricular activities, students should be performing at their academic baseline (Halstead et al., 2013; McAvoy, 2011). If a concussion case is managed well, research has indicated that more than 80% resolve very successfully (Collins et al., 2006; McAvoy, 2011). Developing a support system for academic reintegration can be challenging because recovery to pre-injury functioning varies with each individual and students may experience uneven cognitive performance (Deidrick & Farmer, 2005).

Unlike the K-12 setting, college students do not have the benefit of a coordinated Individualized Education Program under the Individuals with Disabilities Education Act, which includes a separate category for traumatic brain injury (Mohr & Bullock, 2005). The more college and university educators know about brain injury and the difficulties students face, the better schools can assist students who struggle with accessing

the curriculum. Gauging a student's state of well-being and performance is essential to recovery but may not be an easy task if educators are not aware of the signs and symptoms to look for in students with concussive injuries. Raising awareness of the struggles student-athletes with TBI face when returning to a full academic load, would assist the academic community, including professors and coaches, to understand and better serve the students as they recover from the traumatic brain injury.

Despite increased concussion research and reporting, few studies are qualitative in nature with case studies highlighting the experiences of athletes. There is a gap in research pertaining to club sports, which is detailed in the next section.

Club Sports Athletes

One group of collegiate athletes inadvertently left out of the study of concussions is the club sports athlete. Few have studied the over two million athletes in higher education who participate in club sports, a growing phenomenon across the United States that has gained massive popularity at several major universities (Lifschutz, 2012; Pennington, 2008). The club teams vary in their skill level from recreational or instructional to advanced play and meet regularly for practices and in competitions with other colleges. Among the many sports represented are baseball, boxing, ice hockey, lacrosse, rugby, soccer, cheer, and wrestling; these high impact and contact sports have the potential to lead to concussion injuries (Lincoln et al., 2011). Club sports attract students who want to continue to compete athletically while balancing academics and social life during college (Pennington, 2008). An additional consideration in club sports is the potential concussion risks of rookie athletes who may be relatively new to the sport, and who lack proper preparation, strength, skills, or techniques for the demands of the sport (B. Birmingham, personal communication, December 2, 2015).

Figure 1 clearly depicts the disparity in the number of student-athletes engaged in club sports compared to the elite National Collegiate Athletic Association (NCAA) and National Association of Intercollegiate Athletes (NAIA) programs.

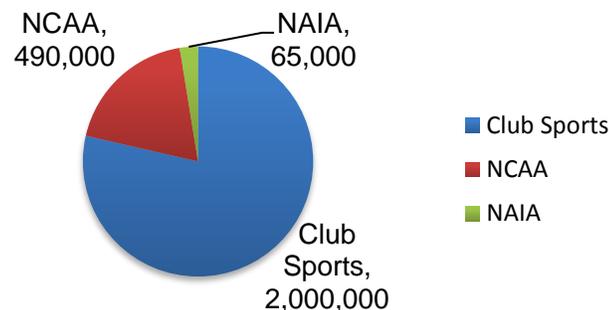


Figure 1. Student-Athlete Population by Program Affiliation

By comparison, the NCAA (2018), one of the largest and most well-known sports associations, represents around 490,000 student-athletes from about 1,117 colleges and universities. The NAIA represents 65,000 athletes at 250 member colleges (NAIA, 2019). Although the population figures come from different years based on available data, they show the difference between the three college athletic groups in terms of the sheer number of students involved in each program.

Club Sports receive some financial support from the university through the campus student associations, but rely on their own fundraising efforts, community sponsorship, and club dues. Students organize everything from uniforms to travel arrangements and hiring officials (College Board, 2016). Club sports vary on college campuses and are not bound by a single national governing board (Mermelstein, Liebau, & McKee, 2012; Pennington, 2008). Some teams affiliate with a national organization specific to their sport such as the National Intramural-Recreational Sports Association known as NIRSA, which represents specific recreational and club sports teams such as soccer, basketball, and flag football (NIRSA, 2019). College club sports programs often rely on student leadership and management to shape the team. Since academic performance and achievement may be impacted by the availability of resources or hampered by lack of information sharing and training, this study examined the needs of the athletes, what sources of support existed for the students, and determined what programs and or strategies provided at the university contributed to their ability to transition and Return to Self. It is important to acknowledge that these students received no monetary compensation to participate in the study. Each agreed to openly share their concussion experiences in order to contribute to research and help other students with concussions.

Transition process and resiliency

Two theoretical frameworks related to transitions and resiliency were combined in the study design and data analysis. Borrowed from the field of counseling and psychology, Schlossberg's Transition Theory (Schlossberg, 1981, 1984, 2011) was used as a lens to investigate how club sports athletes handled changes when they transitioned from concussion injury to the classroom and whether or not campus resources assisted in the recovery process. A transition was defined as "any event or non-event that results in changed relationships, routines, assumptions, and roles" (Schlossberg, Waters, & Goodman, 1995, p. 27). During unexpected transitions, people must integrate and deal with changes into their daily life (Schlossberg et al., 1995). The research study investigated how the athletes dealt with change through the four aspects of a transition as outlined in Schlossberg's 4S System (Schlossberg et al., 1995). The 4S's include the factors of self, situation, support, and strategies.

The first component of self, looked at the student-athletes' personal attributes and outlook and included personal characteristics, mindset, and self-image. Second, the situation factor examined the characteristics of the transition and how the person viewed its significance in terms of role changes, previous experiences, physical situation, and cognitive abilities. Thirdly, support referred to the resources available to the club sports athletes including social or academic support from family, friends, teammates, or the school, and whether or not support-seeking behavior took place. Finally, strategies were examined as actions that individuals chose in response to transitions for the purposes of coping, adapting, relearning, seeking information, and any inhibition of actions. Collectively, these areas helped explain the phenomenon about the transitions the student-athletes faced after their concussions.

The study also looked at whether resiliency played a role in the transitional period from concussion to classroom. Since athletes are known to often demonstrate resiliency in competition, the transition theory was coupled with a theory of resilience as it related to the period of transition from trauma. For the purposes of this post-concussion research study, resiliency focused on the external and internal resources used to cope and bounce back when faced with tough times (Nourse, 2015).

Overview of Methodology

A phenomenological case study approach was used in the qualitative study conducted at Century, a regional public comprehensive university in the western United States. Ten club athletes who experienced concussions within one month to five years of the study participated in one-to-one interviews and were selected through a purposeful selection method. Pseudonyms were used throughout to protect the identity of all research participants and the school. Referrals were facilitated through the Athletic Trainers (AT) and the club sports office who have the most interactions with club athletes and the club sports leadership council. To provide additional perspectives to the study, individual interviews were also conducted on campus with the athletic trainer, student clinic physician, the Disability Resource Center (DRC) director, and the club sports manager who were identified by the program as the key players in concussion management at the university. The candid interviews were professionally transcribed and reviewed for accuracy.

Century University Club Sports Case Study

The well-organized club sports program at Century University has over 1000 athletes participating in 30 club teams. A manager and coordinator oversee the overall program but all the clubs are student-run. Athletes have access to a weight room, student health clinic, and two athletic trainers (AT) who have been assigned specifically to club sports. The ATs provide pre-season education on concussions, training, and support to players, and are present mainly at high contact sports practices and games. Building managers, who are student employees trained in CPR and first aid, assist ATs by being the eyes and ears in all other sports that are not considered high impact. The club sports manager reported a dramatic increase in concussion detection and reporting since the ATs became involved in 2012. Return to Play procedures exist but a Return to Learn protocol was not fully developed. The two recovery times are viewed differently and the main focus has been on the student's return to sport.

Unique to the program is a mandated policy that club players must report team members suspected of having a concussion so they can be monitored. This policy accompanied with concussion education has resulted in a sports culture that recognizes the significance of accountability in concussion management. In order for a sports team to have shared values about concussion

safety practices and procedures, it is important to clarify and shape team norms through discussion and concussion education (Kroshus, Garnett, Baugh, & Calzo, 2015). Researchers who studied underreporting of concussion symptoms found the likelihood of athletes reporting symptoms increased when they had received concussion training on the risks associated with concussions (Bramley, et al., 2012). With concussion education, athletes were more likely to report symptoms to their coach, which reduced the risk of potential further injury.

In this case study, Schlossberg's Transition Theory was used as a lens to describe how the respondents spoke to the four components of transition - self, situation, support, and strategies.

1st S: Self – Participant Profile

Participants in this research study came from the high contact club sports of soccer, rugby, wrestling, and ice hockey. During extensive hour-long interviews, ten students, seven women and three men, ages 18-25 years old, candidly shared information about their concussion experiences, and the services and resources they used or did not use. They described themselves as honest, friendly, persistent, motivated, kind, determined, skilled, always looking to improve, hard-working, disciplined, dedicated, and life-long learners. Academically, they represented various majors including kinesiology, finance, biology, engineering, communication disorders and sciences, and TV production and had average to above average grades. Most of their concussions occurred during practices and play within the last five years.

Of the ten participants, half of them reported blacking out, and six had experienced multiple concussions. Nine out of the ten had several years of experience playing their club sport; one had only a few months training before experiencing a debilitating concussion. Two were diagnosed with post-concussion syndrome (PCS), a complex disorder in which symptoms such as headaches may last for weeks or longer after the initial injury. Lastly, seven out of the ten students had part time jobs and reported difficulties in job performance especially staying focused. All the students returned to work and school immediately after the concussion. As one student explained, "I was not told not to go." Most of the study participants estimated that they returned to play within two weeks to two months.

Fundamental to the findings of this research study are the differences in these student-athletes' mindsets when faced with physical versus cognitive demands. As Barry, a club sports rugby player summarized, "Being an athlete is physically demanding. You have to be aggressive...A student going to classes has mental demands and it requires self-discipline." John, a systems and operations major said that he "gives it [his] all" for his schoolwork or his sport, ice hockey. Vivian, who played 18 years of soccer, described her differing mindsets in this manner, "The drive is different. I guess it's the adrenaline rush I get on the field is a lot different than just sitting in a classroom and learning." Marci, who played soccer as a youngster, explained how the sport allows her to forget everything else and focus on the game. As an athlete, she has to read the play and show determination at the moment of play. As a student, she feels that she has to focus on "so many different things going on at once." Although their mindsets during athletic competition differed from the mindsets they exercised in the classroom, their motivation and drive to put forth their best efforts in both arenas were evident.

As a whole, most of the students considered themselves as resilient and it appeared that this resilient quality helped the students through this period of transition with the situations they faced. These athletes demonstrated an intrinsic motivation to respond to adversity in a positive way and show a resilient reintegration to adapt to situations at hand (Brown, Lafferty, & Triggs, 2015).

2nd S: Situation

During recovery and rehabilitation, participants endured some predictable challenges academically in the days and weeks post-concussion. Many students returned to school the next day after the concussion despite lingering headaches, mental fogginess, and difficulty concentrating. Study participants provided insights on how they felt going back to school after their head injury.

Esther, a wrestler who had four concussions, had trouble remembering things and needed to write things down the moment she thought about them. She used humor to help her cope. Marci, an electrical engineering major became injured around final exams and didn't realize she had a concussion until days after when she felt "off." She explained that her struggles caught her

off guard. "I couldn't retain the information... because [I couldn't] process it... I knew this information. It's basic math." Her soccer teammate, Vivian, who had two concussions, was knocked unconscious as the result of her first one. She had a hard time paying attention in classes. She didn't feel unable to do schoolwork but definitely felt like school was harder. "I would sleep 10 hours, go to class, then come home and take a nap for another 3 hours."

Rugby player, Shannon, who broke her nose during the accident, felt more irritable than usual and found it difficult to learn and be herself. She admitted that she played in a tournament despite having concussion symptoms including a migraine. A kinesiology major with aspirations to be a physical therapist, she recalled getting frustrated at herself and then frustrated at other people for the smallest things. She remembered blanking out on a test because her brain was "all jumbled up." She excelled in math but just sat and stared at her trigonometry exam one day and didn't know where to start. "It could have been in Chinese," she explained, because there was nothing she understood. Luckily, she had emailed her professor about her concussion and was able to take the exam at a later date. For the scholar athletes, experiencing academic difficulty took them by surprise when previously easy tasks were suddenly hard to accomplish.

Lola, a freshman biology major, found it harder to learn and retain information. She needed to wear sunglasses in class because of her sensitivity to light. She had to retake her math class and worried about it affecting her financial aid. Her parents did not understand what was wrong with her because she looked fine. The concussion and prolonged recovery impacted her performance at school and work. A novice club rugby player, Lola got kicked in the head during a "scrum," which happened when the opposing teams interlocked to try to gain control of the ball. She found herself under a pile of teammates and opponents and remembered too late to give the "Mayday" call, which is a warning that the scrum is in danger of collapsing. She thinks she blacked out but remembered getting up, running, and getting back in the game. She used to run cross-country for six or seven miles, but has found it tiring to even try to run. "I can't do my things that I used to be able to." For a number of athletes, losing physical shape because they couldn't work out was an adjustment. All in all, they

appreciated the support of their teammates, friends, or family members who helped them cope.

3rd S: Support – Formal and Informal Resources

Some student-athletes healed from their concussion within weeks to months while others continued to have extended difficulties. Surprisingly, many of the students downplayed their head injury as "no big deal" and did not feel the need to seek campus resources. A number indicated that their busy school or work schedules gave them little time to seek further support. Others admitted that they usually do not ask for help and like to figure things out on their own. Culturally and socially, some were raised to be independent and not ask for help. One cannot underestimate an individual's race or ethnic background and the effects on cultural norms and values in navigating transitions (Schlossberg et al., 1995).

During recovery and rehabilitation, the majority of the student-athletes in the study considered the ATs the most significant formal resource for support and recovery. The ATs often established a trusting relationship with the students and provided information on injury prevention, nutrition, and training in an open and safe environment so students could improve. As one player explained, "They set good limits so I came back just fine." The ATs work under the direction and supervision of a campus physician and work closely with the club sports program management to create and implement policies. As Mr. Bryant, the head AT put it, "We educate and facilitate but put the responsibility on [the athletes] to manage their own care." Unfortunately, the decision-making burden to seek or not seek additional resources occurs while the students are still physically and mentally impaired due to their concussive injury.

Athletes who were less compliant struggled with their recovery process and return to sport. As Dr. Omar, the campus physician observed, "I've had some students that, despite me warning them about taking it easy (resting, sleeping, not drinking alcohol), some still go out and do those things. Some will go out to a party and stay up all night, that kind of thing." Since the AT and physician closely monitored the study participants' concussion symptoms, most were compliant and motivated to recover. They were monitored mainly for physical rest than cognitive rest through the RTP protocol.

Although available to the student-athletes, underutilized campus resources included professors, tutoring, psychological counseling, and the neurology clinic. As indicated earlier, many of the athletes considered themselves self-reliant and were not used to asking for help. They took pride in figuring things out on their own and being resilient in the face of adversity. Some students chose not to inform their instructors of their injury or saw no reason to divulge their concussion.

Many students decided not to use the Disability Resource Center (DRC) support services because they did not think they needed it. The DRC director, Ms. Jackie, estimated that only one fourth of the students with concussions ever utilized the services despite targeted outreach and advertising. She commented that “there is still a lot of stigma around” concussions being considered a disability even if it may be temporary. She added that by law, it is up to the students to decide if they want to seek services or not.

Most of the student-athletes sought formal academic support when it potentially impacted their grades. A couple of athletes turned to the DRC for extended time during final exams, which helped reduce their anxiety to take the tests. Some students turned to the Learning Center or department tutoring services for assistance or participated informally in study groups. A few students, who qualified for DRC services prior to injury due to learning disabilities, chose not to use the center while recovering from their concussions. Interestingly, research evidence has indicated that pre-existing learning disability or Attention-Deficit/Hyperactivity Disorder, and anxiety or depression are predictors of prolonged concussion recovery (Sady et al., 2011).

One student found that a sports psychologist and counseling support groups were extremely helpful resources in helping to handle personality changes and emotional struggles experienced post-concussion. None of the student-athletes used the neurology clinic in the Speech and Language Center on campus for cognitive communication dysfunction. Prior to this research study, the campus physicians, club sports manager, and AT were not aware of the services or the potential connection. Consequently, the physician referred one student suffering post-concussion memory issues to the neurology clinic but she feared using any campus services, including the DRC, because she did not want to

be labeled with a disability on her student record. She felt given the current political climate, accepting any support would impact her future. She stated, “I don’t want my name to be tarnished in a way where I can get in trouble later in life or I can’t get a job.”

Most students relied on the informal support of family, friends, and teammates during the recovery period. They developed compensatory strategies in order to cope with their difficulties and the adverse effects of their concussion.

4th S: Strategies

For the most part, students maintained an athlete mindset to “tough it out” or “play through it” even in the classroom. Overall, the “no big deal” attitude about their concussion was prevalent. All the students used self-help strategies to assist with their deficits and to cope with daily living and school demands.

Tanya, a veteran soccer player, had three concussions including one from a car accident where she blacked out. A finance major, she described herself as an excellent student and found that breaking up studying into several days, rereading textbooks, taking notes on material and reviewing the professor’s video recorded lectures were extremely helpful. At school, Shannon a kinesiology major, would take copious notes and re-write them to help her recall the information. As she put it, “There’s no way I am going to give this all up for this one injury. I have to succeed. I have to continue going... I can’t stop here.”

Dexter, an ice hockey player, experienced two concussions a little more than a year apart. He went back to school almost immediately after the injuries and went to work the next day. He recalled being “a little off” and feeling in a “complete haze... like in a fog” and being “super emotional.” Daily headaches, feeling fatigued, and constantly tired, he remembered going to class and then wanting to go to bed again. The bright projection screen and florescent lights in the classroom gave him the worst headaches and he had difficulty seeing and focusing. School-wise, he admitted, “I can’t tell if I’ve acclimated back to where I was intellectually before my concussions, or I’ve just gotten used to where I am now intellectually.” Remembering where he parked his car at school was a challenge. He would put his car keys in his shoes so he wouldn’t forget where he placed them. His teammate John shared a

video clip that replayed his own concussion crash. He said he did not remember much from the day except from the video and verbal recollections of his friends and family. They both looked into DRC support but chose not to use the services for functional limitations during recovery. In the end, the students demonstrated a resiliency through a conscious effort to move forward in a positive way as part of reintegration of self and to cope with adversity (Southwick et al., 2014).

Recommendations for Practice

This study showed that there is a need to monitor various elements of the concussion injury besides the physical aspect. Although less discussed, cognitive, emotional, and sleep patterns are also impacted. Despite the current differentiation between RTL and RTP pathways, athletes need both the physical ability on the playing field and the cognitive ability to function in anticipating movements and remember plays and signs. The current practice of separating the pathways of recovery as RTL and RTP rather than integrating the two components has resulted in a heavier focus on the physical side of the recovery and less on the other components. Perhaps uniting the two concepts can be thought of as treating the whole client during the post-concussion rehabilitation process rather than separating the mind as RTL, from the body as RTP. After all, playing sports requires both physical and mental demands. Learning takes place on the field as well as in the classroom. As baseball hall of famer, Yogi Berra quipped, "Baseball is 90 percent mental, the other half is physical" (Scott, 2015). Perhaps examining the process in the context of the transition through the components of self, situation, support, and strategies (Schlossberg et al., 1995) would allow service providers to evaluate and monitor the assets-liabilities balance of individuals as situations change during the transition from concussion to return to sport and school. Interpretation of this information however, requires professional training or better yet an interdisciplinary approach to concussion management.

Conlan 8™: Return to Self Transition Approach (2018)

Extrapolating from Schlossberg's 4S concept, the Conlan 8™: Return to Self Transition Approach (2018) (Figure 2) was developed as a model for identifying areas that should be considered when assisting student-athletes transition from injury through recovery and rehabilitation. During this time of adaptation to change, the needs of the students need to be continually reassessed.

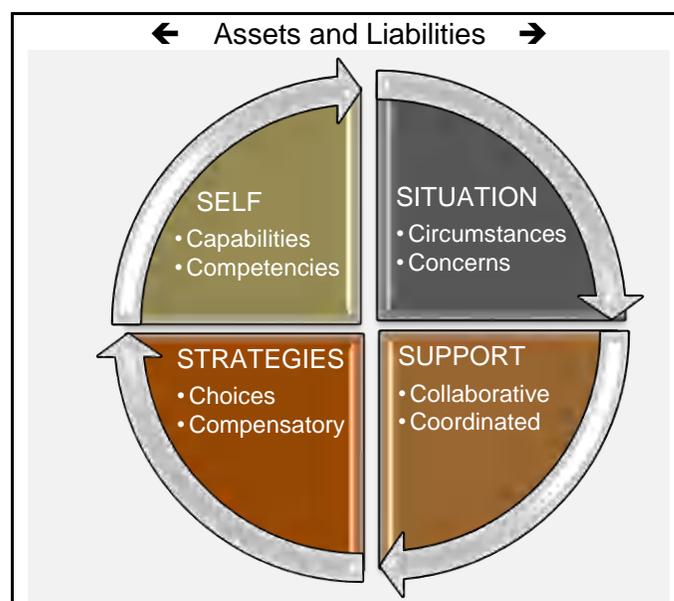


Figure 2. Conlan 8™: Return to Self Transition Approach. Adapted from Schlossberg, N.K., Waters, E.B., & Goodman, N.J. (1995). *Counseling adults in transition: Linking practice with theory* (2nd ed.). New York, NY: Springer Publishing Company.

Self - Capabilities and Competencies: Beginning with the "self" quadrant, it is crucial to gather data on the student's background, attributes, outlook, and personal characteristics such as gender, age, ethnicity, mindset, and self-image. During interviews students described themselves differently as athletes vs. students and indicated that their mindset in the classroom differed from their mindset on the playing field. What kind of student was the athlete prior to injury? Level of competencies prior to injury may be considered during evaluations. Additionally, pre-injury testing results or baselines and a complete health history are used in post-injury evaluations (Broglio et al., 2014).

Situation - Circumstances and Concomitant Concerns:

Review the student's "situation" in terms of the circumstances post injury and any concomitant concerns that fall under the categories of physical, cognitive, emotional, and sleep. More specifically, each concussion differs from person to person and may influence how the player views or reacts to the unanticipated transition. Examples include timing of the incident (beginning of the sports season; close to final exams; during a championship tournament); duration (a temporary disability that may last longer than expected or become permanent); previous concussion experiences; and concurrent stresses at the time of the concussion that are particularly emotional. How does the athlete view their current situation, related previous experiences, physical situation, cognitive abilities, and subsequent role changes? Scholar-athletes may feel less functional and frustrated because the concussion injury may have resulted in impairments in processing speed, reaction time, and memory, plus changes in their self-perception of their capabilities, and overall well-being.

Support - Collaborative and Coordinated Care: Thirdly, "supports" may involve external or internal resources. It refers to a range of resources available to the individual, which may be key to handling stress. It "needs to be defined operationally because it comes in many sizes and shapes, and can be for better or worse" (Schlossberg et al., 1995, p. 67). Examples include a social support system (family, friends, or teammates); support from organizations or institutions; and whether or not individuals seek the support that they need for the transition. Social support centered around an individual provides a combination of honest, positive or negative feedback, affirmation, and aid (Kahn & Antonucci, 1980). Athletes may also rely on their spirituality, defined as a belief in or relationship with a higher power than oneself, as a resource or coping mechanism to persevere through adversity (Ridnour & Hammermeister, 2008). This study mainly focused on formal resources available on campus but recognized the existence of informal support systems used to cope during the transition. Supports could be adjusted with coordinated channels of collaborative care to select or provide appropriate "strategies" - the fourth component.

Strategies - Challenges and Compensatory strategies:

Lastly, strategies are based on the challenges at hand. This would include any compensatory strategies used by the individual in order to cope. Strategies are developed actions that individuals choose in response to transitions for the purposes of coping, adapting, relearning, seeking information, and any inhibition of actions. Coping can occur before, during, and after situations that are challenging or stressful (George & Siegler, 1981). Coping strategies are known to enhance recovery and may be especially significant for concussed athletes who may experience isolation, anxiety, and pain due to an injury, which has disrupted daily life (Bloom et al., 2004). All in all, these four areas and related eight characteristics help explain the transitions the student-athletes face post-concussion. They integrate the pathways of RTP and RTL, and allow service providers to create a more individualized approach to recovery and rehabilitation in attempts to Return to Self.

The information gathered for each of the four quadrants could be considered in the context of return to school or sport and eventual return to daily living. Collectively, these elements can be seen as assets and liabilities that may change and shift during the transition. For instance, supports might be most needed at the beginning of the injury, but less necessary as the student-athlete's situation improves. Or, learning strategies could be advised based on the challenges or current circumstances/competencies of the student. It would assist the case manager in gaining a broader picture of the student's overall status.

This includes any changes in academic and athletic competence during the transition period as the student-athlete attempts to Return to Self. Although physical injury typically occurs in most sports, dealing with the transitions due to injury, the uncertainty of the length of recovery, and the shift from being a participant to not playing can be difficult (Pearson & Petitpas, 1990). A multidisciplinary collaborative team-based approach to service delivery may be "constantly monitored, evaluated, and revised as necessary" (Blosser, 1998, p. 1064).

Learning Strategies

One final piece missing in the process of academic reintegration was providing the college students with learning strategies. Cognitive impairments in attention, have been outlined based upon the findings of this study and suggestions from the athletes themselves. The findings of this study informed the creation of Table 3: Learning Strategies for College Students with Concussions. The first column has a brief description of the four areas: attention, information processing, organization, and, memory described as working memory, short term memory, and long term memory. The second column lists suggested learning strategies specifically related to those deficit areas. All the students complained about the inability to focus and retain information as well as slowed information processing. These suggestions may also help students better understand their impairments while they recover from injury. Providing individuals education about how to cope with symptoms reduced patient anxiety and other emotional complications while outcomes for patients who received no explanation worsened. (Mittenberg, Zielinski, & Fichera, (1993).

A number of study participants indicated that because their memory was affected, organizing day-to-day functions became a necessary adjustment. Some examples of strategies to help with attention include minimizing distractions, breaking up tasks into smaller ones, and knowing what time of day one's brain functions best. Jotting information like appointments down right away, making checklists, designating a specific place to store items like keys and glasses, and resisting the temptation to multi-task would assist with memory and organization. A student shared that just taking a few minutes simply to look up at the sky helped provide a mental break from studying. Using graphic organizers to outline ideas or using visual imagery to make associations with coursework concepts, and using a digital recorder to review information would assist with information processing as well as recalling information.

All in all, it was evident that academics carried a considerable priority for many of the student-athletes in the study who experienced difficulties in at least one or more of these areas. Perhaps this table of suggested learning strategies could be provided to the club athletes post-concussion during their monitored check-ins with the AT as part of concussion education.

Concussion Education and Awareness

Concussion education and safety campaigns, including the Centers for Disease Control and Prevention's HEADS UP initiative, have been developed to educate the public including parents, coaches, teachers, and athletes about sports-related head injuries in youth sports (Centers for Disease Control and Prevention, 2015). Those who would benefit from knowing more about implementing accommodations and learning strategies for students with TBI would include the injured athletes, caregivers, educators, academic advisors, educational administrators and staff working in offices for students with disabilities, and researchers in related fields (Hux et al., 2010).

Inadequate knowledge about concussions can become a barrier in making appropriate return to school decisions post-concussion (Meckler, 2014). Some research participants disclosed that after learning about the signs and symptoms of concussions, they might have previously experienced more incidents that were unrecognized and unreported. For instance, Cindy, who played multiple sports, recollected as a young teen getting a hard roundhouse kick to the head from a martial arts instructor, which, even with protective gear on, probably gave her a concussion. The more students understood about concussions and were educated on the associated risks, the more likely they were to report details of their injury and provide clinicians with vital information to properly identify and manage the concussion (Bramley et al., 2012; Littleton & Guskiewicz, 2013).

Implementation of concussion education is left up to each college institution and many have required concussion education at all sports levels (Kroshus & Baugh, 2016).

Overall, a need exists for widespread concussion management, education, public awareness, attention to formal policies and procedures, and supporting the student-athlete's role as a student during recovery (McGrath, 2010; Sady et al., 2011). For successful return to the academic environment, attention needs to be placed on engaging campus resources for cases that cannot be managed through academic accommodations or schedule modifications (Buckley, Baugh, Meehan, & DiFabio, 2017).

Table 3. Learning Strategies for College Students with Concussions

<u>Cognitive Impairment</u>	<u>Learning Strategies</u>
<p>Attention Focusing on a specific activity, task or behavior. Attention may be focused, sustained, alternating or divided (Kennedy, 2017)</p>	<ul style="list-style-type: none"> • Know what time of day your brain functions best such as after a nap or early in the morning • Minimize distractions, change bright lighting if needed • Break up tasks into smaller ones • Write down step-by-step calculations • Visualize images associated with text • Take a physical break from task • Set a timer to take frequent breaks if necessary • Do breathing exercises to refocus and re-energize • Look up somewhere like the sky or take a mental break
<p>Information Processing The brain's ability to efficiently and effectively handle information automatically or deliberately as it enters the system (Malia, Raymond, Bewick, & Bennett, 1998)</p>	<ul style="list-style-type: none"> • Use graphic organizers such outlines or tree maps to make associations with material or flow charts to sequence data • Use digital recorders to review information • Allow self, extra time to process information • Spread information over time to increase retention • Review, repeat, re-read, or rehearse new information
<p>Memory <i>Working memory</i></p> <ul style="list-style-type: none"> • holding information in mind to use as a mental workspace to manipulate data (e.g., Web address, PIN, telephone number, directions) <p><i>Short-term memory</i></p> <ul style="list-style-type: none"> • holds data for 15-30 seconds (Atkinson and Shiffrin, 1971) • amount of information that can be stored varies (e.g., List of items, main ideas of a concept, steps to calculate a formula; game signs or plays) • dismiss or store in long term memory <p><i>Long-term memory</i></p> <ul style="list-style-type: none"> • stores, manages, retrieves information for an extended period of time (e.g., organizing information into categories or associations; names, dates, birthdays, game plays, signs, strategies) • Report difficulties to physician • Consult Speech-Language Pathologist for support in cognitive rehabilitation 	<ul style="list-style-type: none"> • Jot information right away on paper, phone, tablet or computer • Avoid distractions or interruptions, create a study space • Minimize memory load by chunking information • Break down tasks and instructions into simple steps • Ask yourself questions about material • Review lecture notes within an hour after class • Make checklists, flash cards, post-it notes • Use calendars and planners or smart phone to jot important dates, times & deadlines • Designate a space for items like keys, books, glasses • Audio record information to review • Use visual images, acronyms, or mnemonic devices to assist with recall and make associations • Highlight, underline, and jot down key ideas in the margins • Frequently review and repeat information out loud • Put information into a song to stimulate auditory recall • Make visual aids charts, graphs, pictures to recall information • Prime memory by pre-reading or reviewing vocabulary or concepts before class, then re-read and review information • Rehearse information before giving an oral presentation • Take practice test to help with long term memory • Employ kinesthetic movement and tactile cues to store information • Connect information to real world experiences, scenario
<p>Organization Ability to store information to use later, to logically complete tasks in order of steps.</p>	<ul style="list-style-type: none"> • Highlight important information worth remembering • Create a symbol while note-taking for items on a future test • Create a visual schedule of activities/appointments, special occasions, important events, and class projects • Create checklist for completing tasks or assignments • Use daily planner/calendar to jot down assignments and review time period needed to complete tasks • Consider group study with peers • Follow a routine and divide tasks into smaller ones • Draw or sketch information for visual cues • Create a memory notebook, set priorities • Resist the temptation to multi-task which taxes the brain • Create a study environment that is distraction free • Consider doing tasks when you have most energy • Cross off, check off, or celebrate completed tasks • Highlight or color-code information

Research participants acknowledged that concussion education through the club sports program, their own research, and personal experiences helped reduced their risk-related behaviors. However, a few ignored concussion symptoms and a few did not follow up on medical advice during recovery or rehabilitation. Assuaging students' fear of using services like the neurology clinic or the DRC due to perceived disability-related stigma, may require continuous education and outreach efforts. A research study revealed that collegians demonstrated help-seeking behaviors mainly related to academic achievement and only sought minimum assistance sufficient enough to gain independence (Karabenick Knapp, & Levin, 1991). Some students felt that their injury was not significant enough to seek help, hoped symptoms would resolve quickly, and that accepting services meant reporting lingering symptoms. This would delay their return to sports and could possibly impact their future participation. Determining the endpoint of recovery is multifaceted and highly variable since some report symptom resolution but continue to experience cognitive impairments and have not returned to pre-injury levels (Sady et al., 2011).

SLP and Interprofessional Collaboration

Speech-language pathologists (SLPs) are trained to work with clients with traumatic brain injuries and provide therapy to help with issues related to memory, word-finding difficulty, attention, thought organization, and executive function. For example, cognitive rehabilitation may involve exercises in sequencing, recall, word association, inferencing, and story prediction. Salvatore and Fjordbak (2011) who studied the evolving evaluation and treatment of sports-related concussions from traditional paper and pencil tasks to computer based and sideline assessments, concluded that SLPs can provide an important role in concussion prevention and management.

At the Miami University Concussion Management Program, the speech-language pathologists (SLP) coordinate the interdisciplinary team and work closely with the athletic trainers (AT) who assess the immediate medical needs of the student-athletes using a sideline screening. Athletes who show signs or symptoms of a concussion are taken away from play and referred to the team physician on the field or within 24-48 hours after the injury (Porter et al., 2014). SLPs

are uniquely qualified be a part of an interdisciplinary team because of their expertise in cognitive-linguistic disorders associated with traumatic brain injury and can assess, diagnose, and treat such persons (Duff, 2009; Salvatore & Fjordbak, 2011). Moreover, successful concussion management requires that the team understands the neurocognitive and neurobehavioral symptoms related to sports concussions so that the athletes can succeed in returning to athletic, academic, and social activities (Porter et al., 2014). As such, integrating a Return to Learn (RTL) protocol with the existing Return to Play (RTP) protocol or using the proposed Return to Self Transition Approach might increase the professional monitoring of the cognitive and socio-emotional deficits along with the physical impairments that impact student learning.

Conclusion

Although this study attempted to address the subject of academic re-entry by college student-athletes after a concussive injury from the accounts provided by the research participants, the research may have been limited by each athlete's ability to recall details of his or her post-concussion experiences or to evaluate perceived difficulties. Additionally, the conversations with the AT, physician, and DRC director, as service providers for student-athletes on campus, were representative samples of their overall involvement and supports. Due to their numerous interactions with concussed athletes, they were able to share patterns of behavior or experiences that offered a broader understanding of the transitions from concussive injury to recovery. Most importantly, this was a unique opportunity to conduct in-depth interviews with students and to gain their perspectives and feelings toward their own concussion experiences. Since this study was conducted at a university that has several resources not normally found on high school, middle or elementary school campuses, these findings may or may not apply to those locations.

In the end, perhaps the most surprising of all, was the students' indifference and minimization of their brain injury as "no big deal" yet they worried that another concussion could affect their future. Many thought that their concussion did not warrant seeking academic resources or support. Since self-reporting symptoms have been the cornerstone of concussion management for determining appropriate care and support toward

gradual RTP (Merritt, Meyer, & Arnett, 2015) the same considerations may be placed on their transition to RTL and eventual Return to Self. Collegians need to acknowledge support services can be valuable resources in the recovery process. They need to be willing to recognize the seriousness of brain injury and that ignoring symptoms or not following up can have life-altering consequences. Collegiate club sports programs have the potential to help shape concussion awareness, policies and protocols for a large population of students. Although ATs and physicians hold the main responsibility, SLPs may also play a significant role in concussion rehabilitation and education. ♦

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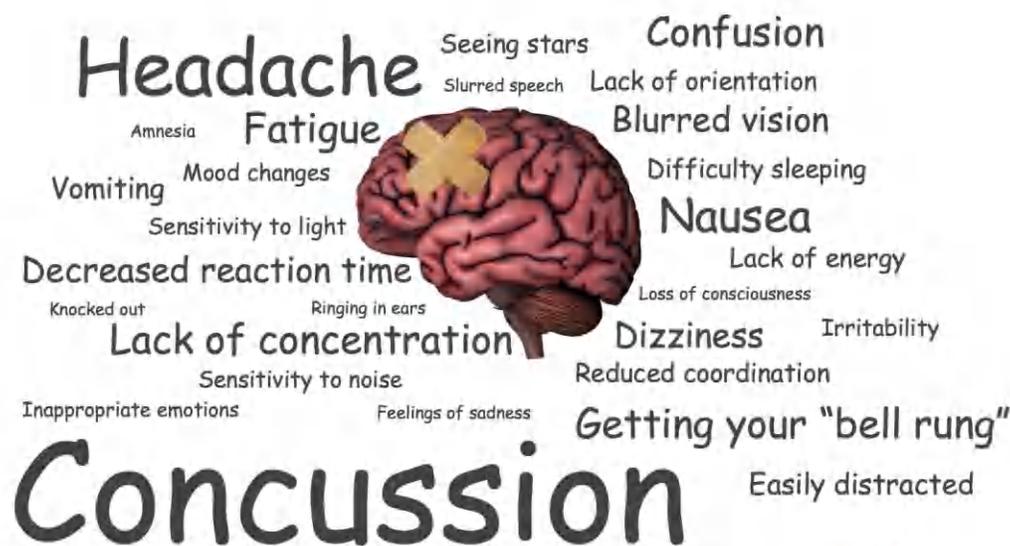
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instructor. As the student moves into the transitional stage instructor feedback is moving from direct instruction to indirect feedback where the clinical instructor and the student clinician are making joint clinical decisions regarding intervention.

In the self-supervision stage, supervisory feedback becomes completely indirect and the student clinician becomes the primary evaluator. The self-supervision stage is generally for students who are completing their clinical fellowship year. Although some more experienced clinicians may do some self-supervision across a given practicum experience, the clinical instructor has final approval for goals and methods as outlined in the student clinicians lesson plan, given the clinical instructor is responsible for all student clinician decisions at this level of their clinical education.

These are the basic stages for clinical instruction. The goal is to move student clinicians as quickly as possible from the evaluation stage and into the transitional stage where a collaborative style of supervision begins.

This instructional process is the same across all settings providing speech-language pathology services, with the student clinician beginning in the evaluative stage and moving to the transitional stage based on the following factors:

1. student experience
2. the type of client being served
3. supervisor's judgement

Beginning students expect that clinical instructors will provide direct instruction for delivery of services. Students who are unfamiliar with a particular type of client regarding their speech diagnosis may also expect the clinical instructor or site supervisor to provide direct instruction for delivery of services.

While this is a logical expectation for a first semester clinician, a student in a second semester or later rotation should expect to receive less direct feedback and more indirect feedback in the form of guidance across the practicum experience. This shift from direct feedback to indirect feedback is important for the growth of the student.

It is important for the clinical instructor to differentiate between direct feedback and indirect feedback in clinical practicum rotations.

Smith and Anderson (1982) identified the following characteristics as direct forms of feedback provided by clinical instructors.

1. Suggestions for ways to improve therapy
2. Selection of materials and how to use them
3. Determining appropriate methods for teaching
4. Identifying students' strengths and weaknesses
5. Application of students' strengths to growth of the students' weaker areas

They further identified the following characteristics as indirect forms of feedback provided by clinical instructors.

1. Using the student clinician's ideas in the discussion of therapy objectives
2. Utilizing a supportive style of supervision rather than directive
3. Encouraging the clinician to set realistic goals for the client
4. Encouraging the clinician to verbalize their needs to their clinical instructor
5. Incorporating reflective learning from the clinical experience

Brasseur (1989) stated that a student's functional level is dependent on the following factors.

1. The student's expectations and perceptions
2. The student's experience level
3. The student's competency level
4. The student's needs and desires
5. The student's commitment to the client and the learning process

Based on the above observations from Brasseur (1989) and Smith & Anderson (1982), a clinical instructor must identify the learning style of each student clinician and their perceived needs for supervision.

In the clinical process, we need to look carefully at how our students process information and apply it in the clinical setting by determining each students' style of learning. Students may refer to themselves as auditory learners or visual learners however, both components are necessary in the clinical practicum process.

Students who prefer a direct style of instruction are often surface learners. These students want to know what the supervisor wants in order for them to obtain their desired grade.

Students who prefer an indirect style of instruction are more often deep learners. Their focus is on the growth of their independence in the clinical decision-making process, and generally, they will alert the clinical instructor to their style of learning by demonstrating clinical independence much earlier in the clinical practicum rotation.

While all students desire clear and consistent feedback, some students prefer to continue to receive direct feedback after they are well into their practicum experience and should be receiving indirect feedback for their clinical growth. These students may continue to ask for specific teaching methods and materials to use within therapy sessions. These students may feel that by getting direct instructions from the clinical instructor they will achieve clinical competency, while in fact their total dependence on the clinical instructor to make all clinical decisions for them reflects just the opposite.

The continued need for directive feedback for a student in more advanced practicum rotations actually reflects to the clinical instructor that the student is lacking the competency to choose appropriate materials and determine effective methods for teaching. Often these students fail to accurately analyze information necessary for clinical decision making to prove competency. If allowed to continue this way these students may not complete their clinical practicum rotations successfully.

Our goal as clinical instructors is to guide surface learners in such a way so that they develop the skills they need to become deep learners, and we must communicate this early to the student in the clinical education process.

We can do this by providing feedback that leads them to search out information independently. We must be cautious not to provide all the answers to their immediate questions, but instead move them toward independence in the decision-making process. This may be accomplished by posing questions to students, which they can answer, if provided to them in the right

context along a learning curve given their level of practicum experience.

Feedback is a method by which clinical instructors can modify students' thinking. We can do this by answering their questions with open-ended questions of our own, structured along a teaching hierarchy that leads them to discover the correct answer for themselves.

This gradual move from direct to indirect feedback is necessary to increase students' confidence and decrease any anxiety they may have regarding clinical practicum. Moving from direct to indirect feedback also motivates students to improve their skills and delivery of services for their clients.

Our goal as clinical instructors is to move students from surface learning to deep learning so that they can analyze and synthesize information to draw appropriate conclusions. For this to happen the student must be inquisitive, show initiative, and self-motivation to move beyond surface learning.

Beginning students benefit more from written feedback because the clinical process is new to them. They may benefit from reading written notes more than once, allowing follow through on instructor recommendations and suggestions. Written feedback is important because it serves as a record of student performance and provides valuable information during periodic reviews of student clinician performance.

Peaper and Mercaitis (1987) advised clinical instructors to remember that written feedback is a one-way evaluative, while conferencing is a two-way interaction. For this reason, both written feedback and verbal feedback are necessary for students to become independent, critical, clinical thinkers.

Copeland and Atkinson (1978) observed that while students value clear, specific feedback, they do expect the degree of structure and directness in supervision to decrease over time.

As students become more comfortable working with their clients, they want to know that their input in the clinical decision-making process is encouraged and valued. Deep learners generally prefer to receive less direct instructor input as their skill set grows. This requires the supervisor to talk less, so students' ideas

can be heard. All students value their instructor's expertise, but they also value support of their own ideas. Clinical instructors need to identify students' preferences and perceptions and use these to supervise from a "student centered" perspective rather than to act on their own perceptions and preferences.

Clinical instructors must monitor their feedback to ensure that they are moving from providing direct feedback to indirect feedback; rather than shifting from direct feedback to neutral feedback, or that of simply moving from negative or corrective comments to positive comments.

Students need and expect guidance to continue across all levels of practicum. It is our job as clinical instructors to determine when direct intervention and feedback are necessary, and when indirect feedback may be a more effective approach for the clinical growth of the student. ♦

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Continuing Education Questions

Directions: Choose the best answer for each question as you read each article. Then return to the [Member Continuing Education Page](#) for a link to answer the online assessment questions. A certificate of completion or ASHA continuing education units (CEUs) are available for a limited time.

Preschool Children's Emotion Labels and Social Responses

12. Social-emotional competence is important for school success because:
 - a. Children need to regulate their sensory stimulation and focus on tasks.
 - b. Children need to use language to communicate their emotions to get along with peers and focus on tasks.
 - c. Children need to solve social problems at school to get along with peers and focus on tasks.
 - d. Both B & C.

13. The five areas of social-emotional competence discussed by Denham (2006) are:
 - a. Theory of mind, emotion input, emotion regulation, social problem solving, and peer behaviors.
 - b. Language expression, social regulation, theory of mind, social problem solving, and verbal behavior skills.
 - c. Emotional expressiveness, emotion knowledge, emotion regulation, social problem solving, and social and relationship skills.
 - d. Language expression, conflict resolution, self-regulation, behavior regulation, and classroom behavior skills.

14. The six basic emotions accepted across cultures represented by Ekman et al. (1969) are:
 - a. Happiness, excitement, joy, surprise, anger, and fear.
 - b. Happiness, sadness, fear, disgust, excitement, and surprise.
 - c. Happiness, sadness, anger, surprise, fear, and interest.
 - d. Happiness, sadness, fear, surprise, anger, and disgust.

15. A difference that has been found between children's communication about positive and negative emotions is that:
 - a. Children do not retell negative events coherently.
 - b. Children are more likely to retell their best personal stories about a positive emotion.
 - c. Conversations about negative emotions are more detailed than those about positive emotions because they involve a problem that requires resolution.
 - d. Children use more internal state words and more information about thoughts and feelings when they retell positive events.

Usefulness of Active Noise Cancelling Headphones when Listening to Music in Ambient Noise

16. The total amount of sound present in an environment with two sound sources is calculated based on _____.
 - a. A scaled difference between the decibel levels of the two sound sources.
 - b. Adding the two decibel levels together.
 - c. Multiplying the number of dBs in the loudest sound by 2.
 - d. The perception of the combined noise exposure that a person is subjectively perceiving.

17. Which statement is accurate?
- It is safe for sounds of up to 75 dB to be heard for only 15 minutes.
 - It is safe for sounds of up to 75 dB to be heard for an unlimited amount of time each day.
 - Sounds that are at 80 dB can be heard for up to 3 consecutive hours.
 - The loudest safe exposure level is 100 dB for up to eight hours per day.
18. A paired t-test that compared the percent correct scores for speech discrimination in noise when users wore the TDH-39 headphones versus the ANCH revealed _____.
- A significant difference across conditions at $p \leq .05$ in favor of the ANCH.
 - A significant difference across conditions at $p \leq .05$ in favor of the TDH-39.
 - A marginal difference across conditions at $p = .059$ in favor of the ANCH.
 - A marginal difference across conditions at $p = .059$ in favor of the TDH-39.
19. Which finding was reported?
- Thirteen participants reported that they heard the speech discrimination stimuli better when using ANCH, but all others did not report an increased benefit.
 - Twenty-nine participants reported wanting greater volume for music listening.
 - Eleven participants claimed that they would purchase the ANCH.
 - Half of the participants would spend more than \$250 on the ANCH.

Caregivers' Strategies Before and During Doctor's Appointments with their Children with Autism Spectrum Disorders

20. Which of the following strategies did caregivers in the current study use most frequently to prepare their children before doctor's appointments?
- 5-point scale.
 - Visual schedule.
 - Calendar.
 - Conversation.
21. During the appointment, caregivers reported using all of the following strategies EXCEPT _____?
- 5-point scale.
 - Calendar.
 - Social Story.
 - Visual Schedules.
22. Potential roles of SLPs in supporting caregivers of children with autism could include which of the following?
- Providing templates of materials (e.g., visual schedules) to caregivers.
 - Working with caregivers to individualize supports needed.
 - Reviewing drafts of caregivers' materials.
 - All of the above.
23. Based on the findings of this investigation, which of the following is true?
- Visual supports are not effective strategies to use during healthcare appointments.
 - Caregivers should use verbal and visual supports before and during healthcare appointments.
 - Caregivers should only use verbal strategies such as conversations before healthcare appointments.
 - SLPs are the only professionals who should work with caregivers to ensure that healthcare appointments go as smoothly as possible.

Communicative and Psychosocial Effects of a Severe to Profound Hearing Loss in Later Mid-Life Man

24. The communicative and psychosocial effects of hearing loss, as described in the article, can include ____.
- Using lip reading.
 - Speaking in shorter sentences.
 - Panic attacks.
 - Frustration.
25. The authors of this article advise SLPs and audiologists to ____.
- Provide clients and families with information about hearing loss.
 - Teach clients to speak loudly.
 - Visit their clients' workplaces.
 - Meet with clients separately from their families.
26. In this study of how a family reacts to a family member's hearing loss, an important concern is that all family members did not speak comfortably with the case participant about his hearing loss. Which informant did not speak comfortably with the case participant about his hearing loss?
- Katherine.
 - Morgan.
 - Michael.
 - Alex.
27. An important aspect of the case participant's audiological care relates to the frequency with which he has his hearing checked. Clifford may not be aware of the current status of his hearing loss. His infrequent audiology visits could be an aspect of his denial of his condition and his reluctance to seek out aural rehabilitation strategies. Clifford had his last hearing test in ____.
- 2002.
 - 2012.
 - 2016.
 - 2017.

Discussion of Academic & Professional Literacy Training in SLP

28. Approximately how many years do SLPs tend to use clinical procedures that were taught during their graduate training?
- 1 to 5 years post-graduation.
 - 5 to 10 years post-graduation.
 - 10 to 15 years post-graduation.
 - 15 to 20 years post-graduation.
29. According to Fallon & Katz (2011), what is one of three most influential predictors of SLPs ability to provide literacy supports to clients with language disorders?
- Graduate training.
 - Professional in-service workshops.
 - On-line resources.
 - Interprofessional collaborations.

30. The literacy scope of practice for SLPs includes:
- Advocating for children who are English language learners to have automatic referrals for literacy assessment.
 - Identifying children at risk for reading and writing problems.
 - Performing duties of a reading specialist in the school setting.
 - Conducting literacy assessments and intervention for all children who present as dialectal speakers.
31. ASHA (2001) states that graduate programs do not solely bear the burden of educating SLPs regarding literacy but that continuing education courses should also be provided for practicing clinicians to:
- Update their knowledge to the level of literacy specialists and instructors in the field.
 - Assess practicing SLPs ability to implement literacy techniques.
 - Determine deficits in the knowledge base of practicing SLPs with respect to literacy assessment and intervention.
 - Update their knowledge in order to adequately fulfill their responsibilities in reading and writing.

Literacy interventions for individuals with complex communication needs

32. Which of the following is true about literacy for individuals who require augmentative and alternative communication?
- Literacy allows for *increased generativity* of language (the ability to create novel messages), *decreases* the likelihood of having one's message misinterpreted, *decreases the challenge* of finding vocabulary, and can be *faster*.
 - Literacy allows for *increased generativity* of language, but *increases* the likelihood of having one's message misinterpreted, *increases the challenge* of finding vocabulary, and is usually a *slower* method of communication.
 - Literacy allows for *increased generativity* of language and *decreases* the likelihood of having one's message misinterpreted, but *increases the challenge* of finding vocabulary, and is usually a *slower* method of communication.
 - Literacy *decreases* an individual's language generativity (the ability to create novel messages), but *decreases* the likelihood of having one's message misinterpreted, and *decreases the challenge* of finding vocabulary.
33. Per Foley and Wolter (2010), it is estimated that what percentage of individuals who require AAC are entering adulthood without functional literacy skills?
- 60%.
 - 30%.
 - 90%.
 - 80%.
34. Performing the skill of segmentation means:
- Blending together the sounds in a word.
 - Knowing what sound(s) goes with each letter.
 - Reading single words.
 - Separating out the sounds in a word.
35. The Nonverbal Reading Approach (NRA) requires that a learner:
- Separate sounds apart in his/her head.
 - Know letter-sounds before starting the intervention.
 - Identify the target word from several photo choices.
 - Use a computer.

The Road to Cultural Competence: The Value of Addressing Cultural Awareness among Communication Sciences & Disorders Students & Faculty

36. Movement toward cultural competence can best be described as _____.
- Static steps in a linear process.
 - Determined by the individual's academic exposure.
 - A process of continuous growth as opposed to a static point of achievement.
 - A process that can be achieved by a series of well-designed workshops and instruction.
37. Cultural awareness is defined as a person's ability to_____.
- Teach others about the similarities and differences among and between cultural groups.
 - Be aware, observant, and conscious of similarities and differences among and between cultural groups.
 - Be aware of and respond to similarities and differences among and between cultural groups.
 - Be aware of and respond to similarities and differences among and between cultural groups.
38. Which of the following is included in Campinha-Bacote's (2007) model of cultural competence?
- Cultural skills, cultural expressions, cultural understanding, and cultural desire.
 - Cultural encounters, cultural reciprocity, cultural knowledge, and cultural brokering.
 - Cultural encounters, cultural brokering, cultural empathy, and cultural desire.
 - Cultural encounters, cultural skills, cultural knowledge, and cultural desire.
39. According to ASHA, students with diverse life experiences have been found to_____.
- Have and maintain more cross-racial interactions five years after leaving college.
 - Have an overall higher gpa and praxis pass rate.
 - Be more successful in assessment and treatment of diverse clients.
 - Be more likely to be bilingual speakers.

Bridging Academic to Clinical Experiences for "At-Risk" Graduate Clinicians

40. The ability to apply internal control versus direction from an external authority refers to:
- Self-advocacy.
 - Self-regulation.
 - Self-awareness.
 - Self-efficacy.
41. Which of the following admission requirements has been positively correlated with better clinical skills:
- Undergraduate grades or GPA.
 - Personal statements.
 - Letters of recommendations.
 - GRE-quantitative scores.
42. Which of the following is NOT a named issue faced by "at-risk" students?
- Underestimating their abilities and clinical skills performance.
 - Difficulty establishing a good client-clinician relationship.
 - Gaps in conceptual understanding.
 - Inability to move towards independence.

43. In order to move “at-risk” students to greater levels of independence, clinical educators should:
- Point out areas of difficulties and directly tell graduate clinicians how they should fix them.
 - Meet with students monthly about their performance and progress in clinic.
 - Develop a co-constructed plan for shared data-gathering and remediation of identified areas of needed improvement.
 - Have clients and families fill out a form rating the graduate clinician’s abilities.

Exploring the Continued Need to Promote Cultural Competence and Proficiency

44. What four strategies might an individual in the CSD field use to advance skills from cultural competence to cultural proficiency?
- Enroll in a graduate course, complete a training session, invite guest speakers to present, view webinars on the subject.
 - Adopt cultural practices of clients being served, learn a new language, use reflection activities, and enroll in courses that involve cultural competence.
 - Engage in sustainable cultural experiences, professional collaboration and engagement, community collaboration and engagement, and reflection.
 - Read scholarly material related to culturally and linguistically diverse populations, attend a conference on language differences in diverse populations, adopt new cultural practices in your life, talk to others that work with diverse populations.
45. Which construct is housed at the level of cultural pre-competence?
- Cultural awareness.
 - Cultural blindness.
 - Cultural destructiveness.
 - Cultural desire.
46. According to the U.S. Census Bureau, what percentage of the population will reportedly identify as belonging to a racial or ethnic minority by the year 2050?
- 50%.
 - 25%.
 - 60%.
 - 75%.
47. Which federally mandated standards required health care educators and training institutions to incorporate cultural and linguistic competence into curricula?
- ASHA Standards for Clinical Competence Certification.
 - National Standards for Culturally and Linguistically Appropriate Services (CLAS).
 - Council of Academic Programs in Communication Sciences and Disorders Standards for Cultural Competence.
 - National Standards for Culturally Competent Care.

Paradoxical Vocal Fold Motion Disorder in the Elite Athlete

48. Paradoxical Vocal Fold Motion Disorder (PVFMD) is often misdiagnosed in young athletes as _____.
- A heart attack.
 - Asthma.
 - Malingering.
 - Hysteria.

49. Speech-language pathologists (SLPs) play an important role in treating PVFMD by _____.
a. Demonstrating and practicing throat relaxation, cough/throat clearing suppression, vocal hygiene, and respiratory retraining.
b. Referring clients to athletic trainers.
c. Administering heliox.
d. Referring clients to hospital emergency departments.
50. Some literature describes that PVFMD often occurs with coexisting _____.
a. Metabolic disorders.
b. Heart conditions.
c. Psychogenic factors (e.g., emotional stress).
d. Developmental disabilities.
51. Clinically, PVFMD is defined as _____.
a. A side effect of GERD.
b. Opening of the vocal folds during inhalation.
c. A restricted airway and fainting spells.
d. The abnormal or intermittent adduction of the vocal folds during breathing, which can occur on inspiration or expiration, and which causes episodes of extra-thoracic airway obstruction and breathlessness leading to dyspnea of varying intensity.

Concussion to Classroom: Returning to Self after a Sports-Related Concussion

52. Concussion legislation exists in all 50 United States. Although policies differ by state, most emphasize:
a. Return to Play and Return to Learn guidelines.
b. Athletes must get medical clearance from a healthcare professional before returning to play including games, practices, and training.
c. Optional educational training for coaches, teachers and parents.
d. Concussion guidelines for prevention and Return to Learn.
53. Student-athletes suffering cognitive impairments due to a concussion may benefit from applying learning strategies such as:
a. Taking a physical break from tasks.
b. Prolonged study sessions with peers.
c. Relying on working memory to recall information.
d. Maximizing memory load by staying up late to cram information.
54. A concussion is considered an “invisible injury” because:
a. Over 50% go unreported, undiagnosed, and undocumented.
b. Unless a person blacks out or becomes unconscious it’s hard to tell if a concussion occurred.
c. A brain injury is not outwardly visible like crutches or a cast and those with concussions may appear physically normal.
d. Functional impairments are not visible in standard CT scans or MRI.

55. The club sports student-athletes in the study experienced varying degrees of physical, social-emotional, and cognitive challenges along with their concussion symptoms.
- These domains should be considered during the period of transition toward recovery.
 - These domains in addition to sleep difficulties should be considered during the period of transition toward recovery.
 - Only prevention and the athlete's immediate return to play are significant issues.
 - Research has proven that complete rest is always the best way to manage concussions.

Student Learning Styles and Preferences

56. Surface learners are:
- Students who prefer a direct style of instruction.
 - Students with limited clinical experience.
 - Students who will alert the instructor to their style of learning.
 - Students who display independence early in the clinical process.
57. Deep learners usually:
- Expect the instructor to provide direct delivery of services.
 - Want to know what the supervisor wants for them to get their desired grade.
 - Prefer a direct style of instruction.
 - Prefer an indirect style of instruction.
58. A shift in clinical instruction should move from:
- Direct to neutral feedback.
 - Indirect to direct feedback.
 - Direct to indirect feedback.
 - Negative to positive feedback.
59. Indirect forms of feedback include:
- Using a supportive style of instruction incorporating reflective learning.
 - Suggestions for ways to improve therapy.
 - Determining appropriate methods for teaching.
 - Selection of materials and how to use them.



Guidelines for Submission to eHearsay

eHearsay, the electronic journal of the Ohio Speech- Language- Hearing Association, is designed to address the professional development needs of the members of the state association.

OSLHA publishes manuscripts relevant to the fields of speech-language pathology and audiology and adheres to American Speech-Language-Hearing Association (ASHA) Guidelines for the Responsible Conduct of Research: Ethics and the Publication Process <http://www.asha.org/docs/html/GL2009-00308.html>

Types of Manuscripts

Contributed manuscripts may take any of the following forms:

- **Research Article:** Full-length articles presenting important new research results. Research articles include an abstract, introduction, methods and results sections, discussion, and relevant citations. These are typically limited to 40 manuscript pages including citations, tables, and figures. Large data sets and other supplementary materials are welcome for inclusion in the online publication.
- **Review:** A comprehensive overview of an area of speech, language, or hearing sciences and/or disorders (i.e., systematic review or meta-analysis). Reviews should be accessible to knowledgeable readers not expert in the subject area. They should be prepared with the same rigor as a research article reporting specific results. These are typically limited to 40 manuscript pages including citations, tables, and figures.
- **Tutorial:** Educational expositions covering recent literature on topics of interest to clinicians and other scholars. These are typically limited to 40 manuscript pages including citations, tables, and figures.
- **Research Forum:** The purpose of a research forum (RF) is to provide a concentrated focus on a special topic deemed to be of high interest to the readership. An RF contains a series of empirical studies centering on a key aspect of speech, language, hearing, or swallowing science and/or disorders. RFs may also comprise a set of scholarly papers presented at a scientific conference.
 - A proposal for an RF must be approved for consideration by the journal editor prior to forum development. Pre-approval by an editor does not guarantee that any or all manuscripts submitted will be accepted for publication. The proposal should (1) provide a forum summary, (2) outline the probable manuscript titles and author lists, (3) state whether a prologue and/or epilogue is planned, and (4) designate one person, a forum coordinator, as the point of contact and coordinator of communications with forum authors.
- **Letter to the Editor:** Opinions about material previously published in the journal or views on topics of current relevance. A letter relating to work published in the journal will ordinarily be referred to the author(s) of the original item for a response, which may be published along with the letter. Letters are typically limited to 15 manuscript pages, including citations, tables, and figures.
- **Clinical Focus:** Articles that may be of primary clinical interest but may not have a traditional research format. Case studies, descriptions of clinical programs, and innovative clinical services and activities are among the possibilities.
- **Viewpoint:** Scholarly based opinion(s) on an issue of clinical relevance that currently may be neglected, controversial, related to future legislation, or could serve to update the readership on current thinking in an area.

Manuscript Style and Requirements

Style Manual

Authors are expected to follow the style specified in the *Publication Manual of the American Psychological Association* (6th edition).

Language Policies

OSLHA policy requires the use of nonsexist and person-first language in preparing manuscripts.

Page Limit

A guideline of 40 pages (including title page, abstract, text, acknowledgments, references, appendices, tables, and figures) is suggested as an upper limit for manuscript length. Longer manuscripts, particularly for critical reviews and extended data-based reports, will not be excluded from review, but the author(s) should be prepared to justify the length of the manuscript if requested to do so.

Peer Review

All manuscripts are peer reviewed, typically by at least two reviewers with relevant expertise, an issue editor (if applicable), and the journal editor. Correspondence between authors and editors is expected to be professional in tone. If correspondence is not conducted in a professional manner, an editor has the option to bring the matter before the OSLHA Directory of Technology and Publications and/or OSLHA's Executive Council. After consultation with the Directory of Technology and Publications, the editor may terminate the peer review process for that submission. The author has the right to appeal to the OSLHA Directory of Technology and Publications and/or OSLHA's Executive Council.

Authorship & Author Disclosures

During manuscript submission, answers to a number of disclosures will be required. The corresponding author:

- Affirms that all of the authors listed in the byline have made contributions appropriate for assumption of authorship, have consented to the byline order, and have agreed to submission of the manuscript in its current form
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In the Next issue of *eHearsay*

Dear OSLHA Members,

I hope you enjoyed the articles that were in this issue of eHearsay.

The next issue will focus on **Dysphagia**. There will be seven articles covering topics such as oropharyngeal strengthening, perspectives on consistency modification, cleft lip/palate, anterior cervical disc fusion, diabetes, Lance-Adams Syndrome and multi-system impact of aging. It looks to be very interesting.

Continuing education is required to help professionals to stay current with the latest developments, skills, and new technologies required for their fields. I am always looking for ideas for topics and authors? What do you want to know more about? If you have any suggestions, please feel free to contact me via email at Laurie.Sheehy@utoledo.edu.

Continuing education is required to help professionals to stay current with the latest developments, skills, and new technologies required for their fields. I just read a Facebook post suggesting if we spent 1 hour a week reviewing the latest journal articles or taking a webinar, it will help us stay current and relevant.

Never stop learning because life never stops teaching. Be passionately curious. Make a difference in your world.

Laurie M. Sheehy
eHearsay Journal Editor

“EDUCATION IS FOR IMPROVING THE
LIVES OF OTHERS AND FOR LEAVING
YOUR COMMUNITY AND WORLD
BETTER THAN YOU FOUND IT”

~ MARIAN WRIGHT EDELMAN