

Volume 7 ♦ Issue 2 ♦ Fall 2017

eHearsay



OSLHA

Unlocking Communication

Ohio Speech-Language-Hearing Association

TABLE OF CONTENTS

Who we are: OSLHA and eHearsay	2
In this Issue Laurie M. Sheehy	3
Viewpoint:	
Motivation, Learning, and Communication Preferences of Generation Z Students Corey Seemiller	4
Research:	
Autonomy & Informed Consent Belinda Kinney & Elise Hamilton-Foster	10
Preliminary Results of Students Who are Typically Developing Defining Ambiguous Language Leah Beekman & Angela Ciccio	18
Clinical Focus:	
The Normal Swallow: Is It Really What You Think It Is? Caroline Brindo	31
Assessment Protocol for Cognitive and Auditory Processing Skills for Clients Receiving Neurofeedback Treatment for Traumatic Brain Injury & Concussion: Literature Review Elxlea Aurilio, Miranda Hendrus, & Robin Angell	36
School-Based SLPs & the Caseload vs Workload Debate: Identifying Current Barriers to Service Delivery and Considerations for Technology as a Facilitator Leslie Kokotek & Sandra G. Combs	58
CEU Questions (directions & worksheet for earning on-line CEU's)	67
Guidelines for Submission to eHearsay	70
Open Call for Papers	71
In the Next Issue	72

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 may be 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:

Fall 2017

Thank you for being a member of OSLHA and choosing to belong to the organization. The theme of our 2017 convention was “New Horizons” in honor of OSLHA moving our convention venue to downtown Columbus. Therefore, I thought it only appropriate to have a photo of the iconic Ohio Theater on the cover of our journal. This historic movie theater opened in 1928, closed briefly in 1969 and was completely restored. It is still a vital performing art facility in 2017. OSLHA is also a historic organization that has been rebranded and updated to keep pace with our membership.

This issue contains 6 articles on a diverse group of topics. The first article, by Corey Seemiller discussed generational changes and how to motivate students in this generation.

The next two articles are research related. In “Autonomy & Informed Consent”, Belinda Kinney and Elise Hamilton-Foster discuss ethics and video fluoroscopic swallow studies. They advocate the use of a narrative/interactive reasoning approach to patient/family education when discussing the results/recommendations of a swallow study. The third article by Leak Beekman and Angela Ciccia provides preliminary data on how typically developing children define ambiguous language. The information generated by this will be used to study ambiguous language in children with language delays.

The fourth article by Caroline Brindo discussed the differences and variations that can influence a swallow but that might not necessarily require treatment.

This issue also contains an interesting article by Elexea Aurilio, Miranda Hendrus, & Robin Angell from the University of Akron that introduces the readers to neurofeedback, specifically quantitative electroencephalography (qEEG) as a possible treatment tool for persons who have sustained a traumatic brain injury.

The last article by Leslie Kokotek & Sandra G. Combs was written to make SLPs aware that technology can reduce workload demands for data collection and improve parent communication.

I hope you enjoy this issue of eHearsay.

Wishing you love, laughter and many blessings!

Laurie M. Sheehy
eHearsay Journal Editor



Motivation, Learning, and Communication Preferences of Generation Z Students

Corey Seemiller

Abstract

This paper highlights communication, motivation, and learning preferences of Generation Z students, born 1995-2010, as described in the findings of a number of studies. Generation Z students are motivated most by relationships, advocating for something they believe in, and working toward achieving milestones for advancement. And, they prefer to learn independently, yet in social settings, using videos, and with passionate, knowledgeable, and caring instructors. Generation Z students prefer face-to-face communication, texting, and specific social media platforms over other communication methods.

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Learning Objectives

- 1) Define ways in which Generation Z students prefer and do not prefer to communicate.
- 2) State motivation preferences of Generation Z.
- 3) Describe learning preferences of Generation Z.

As human beings, we seem to love research that helps us better understand each other. Whether the research tells us about how people in different geographic regions like to vote or what people in varying occupations eat for breakfast, learning about trends of particular demographic groups fascinates us. One such area of demography is generational research, which is the study of differences in people based on their age group and stage in the lifecycle (Pew Research Center, 2015). Market researchers, social scientists, scholars, employers, and even news writers have taken an interest in generational research as evidenced by the vast information available on generations, especially the Millennial generation. Google “Millennials,” and nearly 45 million results emerge. But, a new post-Millennial generation is growing up, and it seems that very little attention has been paid to them. The name commonly used for this generation is Generation Z, but they have also been referred to as Plurals, the Homeland Generation, Founders, and iGen (Sanburn, 2015). In 2014, the marketing firm, Sparks & Honey, released a report called *Meet Gen Z: Forget Everything You Learned About Millennials*, which popularized the name,

Generation Z. Their report has since become a frequently cited source in many reports and publications on this generation. Throughout our studies and publications, we use what appears to be their most commonly used name, Generation Z.

In addition to the multitude of names given to Generation Z, birth years are also varied. Most reports we consulted for our research indicated 1995 as a starting birth year, whereas others used 1994 or 1996, and very few used 2000. The end year is also somewhat unclear with many studies showing 2010 and others 2012. Some even have no endpoint. Like we did for selecting a name to use in our research and publications, we chose the birth range that appeared most frequently in the other studies we consulted (1995-2010). Doing so helped us maintain consistency in comparing research findings. For studies that had slightly different birth year ranges, we ensured the birth years of the participants in the study fell into the range of 1995 to 2010.

So, what do we really know about Generation Z? First, we know that they are our entire 7-22 year-old population. And, between technological advances like artificial intelligence and nanotechnology as well as global issues such as terrorism and alternative facts, these kids and young adults are growing up during a very unique time. They do not know a world without personal digital devices like smartphones and tablets. Because of that, most have had access to nearly any information or service around the clock as long as they can remember. The oldest of Generation Z were in Kindergarten during the September 11th attacks and later were only 11 years old when we learned that global warming was an inconvenient truth. And, as they continue to come of age, they will be faced with more political, global, environmental, social, and economic issues than imaginable.

In 2014, I, along with a co-author, Meghan Grace, began a journey to uncover information about this emerging generation. Since then, we have completed two major studies, written several articles, and published a book. Our book, *Generation Z Goes to College*, includes data from several sources including findings from our *Generation Z Goes to College Study*, in which we collected quantitative and qualitative responses from more than 700 students from 15 colleges and universities in the U.S. For more detailed information about the methodology of the study, see the Introduction in *Generation Z Goes to College* (Seemiller & Grace, 2016).

Our most recent study, the *Generation Z Stories Study*, includes narrative responses from more than 2000 Generation Z undergraduate students across 47 colleges and universities in the United States (21 states), Canada (3 provinces), and Mexico (1 state). Demographic information about study participants in the *Generation Z Stories Study* can be found in Table 1.

In this study, students were asked to respond to seven open-ended questions about their perspectives, concerns, motivations, career goals, and hopes for the world. The data includes rich stories that help explain the statistics and numbers that emerged from quantitative data collected from both our earlier study and from other studies we consulted.

Although there is still much to learn about this generation, there are many great findings across our

research and others' studies that can provide insight to those working with and educating Generation Z.

Table 1. Generation Z Story Study Demographics

Gender	Man: 29.34% Woman: 69.43% Transgender: 0.54% Other: 0.69%
Race/Ethnicity	African-American or Black: 6.17% American Indian, Native American, or Alaska Native: 1.73% Asian-American or Asian: 7.33% Hispanic or Latino: 10.96% Middle Eastern: .91% Native Hawaiian or Other Pacific Islander: 1.25% White: 69.93% Other: 1.73%
Annual Family Income	\$0-\$44,999: 22.33% \$45,00-\$99,999: 40.59% \$100,000-\$249,999: 28.41% \$250,000 and higher: 8.68%
Other Variables	40.53% are receiving federal grant money for college 40.43% have taken out one or more student loan for college 35.72% are first generation college students

Who is Generation Z?

Although anyone working with tweens, teens, and young adults today might think otherwise, we found in our *Generation Z Goes to College Study* that Generation Z students see themselves as loyal, responsible, compassionate, determined, thoughtful, and open-minded (Seemiller & Grace, 2016). These characteristics are not solely reflective of their own self-image. The behaviors described in their responses to various other measurements in both of our studies showcase examples of these characteristics in action. Students shared stories of engaging in responsible behavior, being compassionate and kind to others, and being open-minded toward and embracing of difference. They made comments such as, "Deep down, we have compassion and fight for what we believe in" and "[we] are much more accepting and open-minded than the adults who raised [us]" (Seemiller & Grace, 2014). And, our study was one of many that found these characteristics among those in Generation Z. For example, Barkley & Futurecast (2017) describe this generation as one with liberal viewpoints on identity

issues, but having more traditional traits such as honesty, loyalty, achievement, responsibility, determination, dependability, and independence. So, if these are not the qualities most readily apparent in working with this age group, rest assure as these might be latent characteristics that emerge as those in Generation Z enter into young adulthood.

Motivation

Generation Z has been called the most self-motivated generation ever (Bond, 2015) and are more intrinsically than extrinsically motivated (Geraci, Palmerini, Cirillo, & McDougald, 2017). More specifically, though, they are most motivated by relationships, advocating for something they believe in, and working toward achieving milestones for advancement (Seemiller & Grace, 2016).

In our recent *Generation Z Stories Study*, Generation Z students discussed relationships more than any other factor, including learning, future career, and new opportunities, as what “excites them about getting up in the morning” (Seemiller & Grace, 2017). One student in the study commented about the importance of relationships as a motivator in saying, “Life is all about relationships, and it is so important to constantly foster those relationships” (Seemiller & Grace, 2017). It is not surprising then that 75% of students in our *Generation Z Goes to College Study* indicated that they are motivated to do something if they know it will make a difference for someone, and 75% are motivated by not wanting to let others down (Seemiller & Grace, 2016). Commitment plays a significant role for this generation, as they want to ensure they follow through with others and uphold their strong sense of responsibility (Barkley & Futurecast, 2017; Seemiller & Grace, 2016).

In addition, more than three quarters of Generation Z students are motivated by advocating for something they believe in (Seemiller & Grace, 2016). They see the value of aligning their behaviors with their passions. This was evident in responses from our *Generation Z Stories Study* in which students discussed the importance of having a job they felt passionate about even at the expense of a good salary (Seemiller & Grace, 2017). Just as they are motivated by engaging in and advocating for their passions, not being able to do so might also be a de-motivator for this generation.

Finally, we found that nearly 75% of Generation Z students are motivated by receiving credit towards a larger goal or having an opportunity for advancement. Both of these findings indicate that Generation Z students strive for achievement, which is why it is no surprise that 78% of them think their drive to achieve is higher than that of their peers (Eagan, 2014).

There are many ways to motivate Generation Z students, but some methods that may seem to be useful for others are not preferred by this generation. For example, only 28% like competition with others, whereas more than 37% do not like it at all. And, only 26% prefer public recognition with more than 27% not preferring it (Seemiller & Grace, 2014). Just as it is important to utilize specific strategies for motivation, it can be just as essential to avoid those that may end up de-motivating them.

Learning

In 1993, Alison King coined the phrase, “sage on the stage” to describe a common pedagogy at the time that involved the teacher as the expert and the student as the consumer of information. She called for moving from this model toward one of active and collaborative learning where teachers instead serve as a “guide on the side.” Although she was referring to the college classroom, K-12 schools also embraced this shift (Morrison, 2014). This means that for many in Generation Z, they grew up during a time in which teachers moved toward being facilitators of co-constructed learning environments. As students were empowered to engage in self-directed and peer learning, they also developed a preference for it. In the National Study of High School Student Engagement, more teens ranked individual projects (43%), individual readings (41%), and individual writing projects (37%) as very or extremely interesting compared to teacher lectures (27%) (Geraci, Palmerini, Cirillo, & McDougald, 2017).

Now as they come to college, many are used to learning on their own. And, with the vast amount of information available online, Generation Z students do not need to rely on the expert instructor, advisor, or presenter to learn new information. A student in our *Generation Z Goes to College Study* referred to the ideal learning environment as “myself and the Internet” (Seemiller & Grace, 2014). Their Do-It-Yourself mentality leads them to believe they can find exactly what they think they

need to know online (Stillman & Stillman, 2017). With the continued increase in content creation, however, it is becoming more challenging to find information that is both useful and legitimate. Those in older generations might readily see this difficulty and spend time seeking credible sources. But for Generation Z, the Internet can appear to be a playground of endless quality and accurate information.

In regard to how they prefer to learn, Generation Z students like to see another person perform an action, behavior, or assignment before doing it on their own (Seemiller & Grace, 2016). For example, being able to visually see a concept being applied in a video rather than reading about it on a static web page allows them to understand the expectations needed to successfully complete the task at hand. It's no surprise then that 90% of Generation Z students surveyed in the *Generation Z Goes to College Study* indicated their primary online platform for seeking new information is YouTube (Seemiller & Grace, 2016). And, it is not just college students who find value in learning through online videos. Barnes & Noble College (2015) found that 80 percent of middle and high school students believe that online videos are helpful teaching tools. One Generation Z student exemplified this is saying, "I use YouTube mostly because there is no limit to what you can find up there like questions you may have about your computer or how to do something" (Seemiller & Grace, 2014).

Generation Z students are also intrapersonal learners, preferring independent, self-paced learning (Seemiller & Grace, 2016; Barnes & Noble College, 2015). They like to be exposed to concepts well before being asked to work with a group or raise their hand in class (Seemiller & Grace, 2016), meaning that pre-work and flipped learning would work well with them (Geraci, Palmerini, Cirillo, & McDougald, 2017). But as much as they are intrapersonal learners, liking to work independently, they are social learners (Seemiller & Grace, 2016). A student from the *Generation Z Goes to College Study* reflects this sentiment in saying, "I prefer learning in a social setting, listening and communicating with others. However, I prefer to work independently without distractions" (Seemiller & Grace, 2014).

Finally, although it may be easy in the minds of those in Generation Z to access learning on their own, they still highly value the role of the instructor. Geraci, Palmerini,

Cirillo, and McDougald (2017) found that for Generation Z middle and high schoolers, teachers played a critical role in their engagement and connectedness. This seems to hold true at the college level as well in that Generation Z students like having a caring, passionate, engaging, and knowledgeable instructor (Seemiller & Grace, 2014). One student in our *Generation Z Goes to College Study* noted the ideal learning environment as a place "where the instructor truly cares about what they are teaching and shows great passion in their lessons" (Seemiller & Grace, 2014). And, for many, their preference for one-on-one learning experiences over group learning highlights the importance of the role of the instructor, as one student noted the ideal learning environment as "me being the only one in class" (Seemiller & Grace, 2014).

Communication

Although it may seem that those in Generation Z have their heads buried in their phones texting their friends, we found that in-person communication is actually the number one communication preference for Generation Z, with 83% reporting that they like it and less than 2% reporting not liking it (Seemiller & Grace, 2014). They note that being able to interact face-to-face with others provides a way to engage in both verbal and nonverbal interactions that they claim cannot be re-created through other communication channels. In fact, in-person communication was not just the most preferred method of communication, it was overwhelmingly liked, more so than the 35% who indicated liking phone calls and 29% liking emailing (Seemiller & Grace, 2014). Although they may prefer face-to-face communication, only 35% socialize in-person with others outside of school on a daily basis (Lenhart, 2012), meaning that their actual engagement in face-to-face socialization may not match their desire for it.

Not surprisingly, Generation Z students like to text (Lenhart, 2012; Seemiller & Grace, 2016), but fewer like it compared to face-to-face communication (Seemiller & Grace, 2016). The 60% who indicated liking texting say it is because it is "quick," "convenient," and "easier" to use than other communication methods (Seemiller & Grace, 2014).

Despite their preference for in-person communication and texting, those in Generation Z also like using social media. However, there are two important factors related to their social media use that can be

informative. First, they are extremely private in posting, liking, and commenting, as they share on social media far less than they follow others (Seemiller & Grace, 2016). There seems to be two reasons for this. One is that they see their privacy as a security issue (Refuel Agency, 2015). They do not want to put too much information out there for everyone to see and are hesitant to engage in perma-sharing, or posting on a site in which the content never expires (Vision Critical, 2016). They also value privacy in the sense that they want space away from adults (Seemiller & Grace, 2016). One student shared this sentiment in saying, "Facebook has lost so many teen users because it went to the adults."

Second, Generation Z students use different social media platforms for specific purposes. For example, when they do share, they prefer to do so through posting images on photo-sharing sites like Instagram and Snapchat (Sparks & Honey, 2014). However, when those in Generation Z follow others, Facebook is still the platform of choice slightly over Instagram and Twitter (Seemiller & Grace, 2016). Given its versatile appeal for sharing and following, it is no surprise that 52 percent of Generation Z survey respondents indicated that Instagram was the ideal social media platform for those under 20 (Center for Generational Kinetics, 2016). But, with so many to choose from, it is not surprising to find these students with ten different accounts so they can easily shift from posting on Snapchat to reading news on Twitter to watching videos on YouTube.

Conclusion

As happens every 20 or so years, we are at a generational crossroads, one in which we transition from one generation to the next into young adulthood. Although the shift can be subtle, it is important to note that the students today are different in their characteristics, perspectives, beliefs, and styles than those in previous generations. It is important as educators and practitioners that we tap into and leverage what Generation Z has to offer in order to maximize their learning and development and help them reach their potential. ♦

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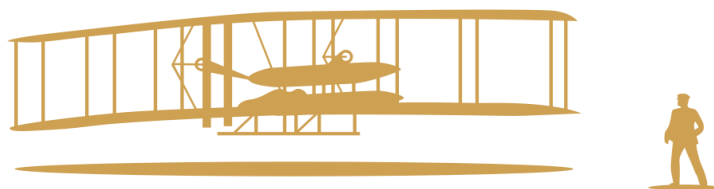
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WRIGHT STATE UNIVERSITY

Autonomy & Informed Consent

Belinda Kinney & Elise Hamilton-Foster

Abstract

The bioethical principle of autonomy incorporates respect for patients' healthcare choices. Client focused assessment and intervention planning is integral to effective Speech Language Pathology (SLP) practice. We describe findings from an exploratory study that focused on informed consent interactions for videofluoroscopic swallowing studies. Five SLPS identified perceived barriers to their patient's autonomy and strategies they used to facilitate informed consent interactions. Findings suggest that SLPs may support client autonomy by clearly defining roles for obtaining consent during interdisciplinary assessment procedures and implementing work based policies that support accessible information transfer between health care providers and patients

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Learning Objectives

- 1) Interpret the bioethical principle of autonomy in relation to health care decision making
- 2) Identify barriers to informed consent during clinical interactions
- 3) Describe 5 steps for enhancing autonomy during informed consent interactions

Bioethical Principles in Speech Language Pathology Practice

Health professions, including SLP, drive ethical practice by clearly stating expectations and responsibilities for members' ethical conduct in professional Codes of Ethics (American Speech- Language-Hearing Association 2003; Speech Pathology Australia, 2010). Codes of Ethics draw upon a bioethical approach to ethical reasoning consistent with four guiding principles of beneficence, non-maleficence, justice and autonomy (Beauchamp & Childress, 2009). Beneficence/non-maleficence addresses SLPs' obligations to do good, facilitate health, and prevent harm to clients. Upholding a principle of justice facilitates fair access to health services and distribution of health care resources. Autonomy incorporates respect for clients' healthcare choices. Hence, the ethical principles of beneficence and non-maleficence, justice and autonomy may be perceived as cornerstones of quality practice. The introduction of professional sanctions, for members who breach their Code of Ethics, underpins the importance of SLPs knowing and adhering to ethical

principles during their professional interactions with colleagues, clients and the community (American Speech- Language-Hearing Association, 2003).

Previous investigations of ethical dilemmas experienced by speech-language pathologists (SLPs) show they perceive the bioethical principle of autonomy as integral to effective professional practice (Kenny, Lincoln & Balandin, 2010). Nonetheless, this principle may be tested in current healthcare environments when SLPs must meet challenges of complex caseloads with somewhat limited resources (Kenny, Lincoln, Blythe & Balandin, 2009).

Dysphagia management is an ethically challenging area of speech pathology practice where conflict may occur between beneficence, non-maleficence and autonomy. SLPs may experience conflict between upholding clients' rights to informed healthcare choices and professional duties to provide safe, quality care. Clinical decision making may therefore pivot upon informed consent; a complex process that accompanies autonomous

decision making in healthcare settings (Sharp & Brady Wagner, 2007; Sharp & Bryant, 2003). Ethical issues have been explored through SLPs experiences of engaging patients in informed consent for videofluoroscopic swallowing study (VFSS) (Hamilton-Foster & Kenny, 2012). Clearly, informed consent is a legal concern for health professionals and their patients. However, this study focused upon ethical issues involving SLPs' perceived barriers to patient autonomy and strategies they used to facilitate informed consent interactions. The findings have implications beyond dysphagia management and challenge SLPs to consider factors that may impact upon the effectiveness of informed consent processes in diverse areas of service delivery.

RESEARCH APPROACH

A descriptive qualitative approach was used to explore the experiences of speech pathologists obtaining informed consent for VFSS (Sandelowski, 2000).

Participants

Participants were practicing SLPs with professional experience ranging from ten months to nine years who were employed within publicly funded hospital workplaces, in New South Wales, Australia. Table 1 presents participants' professional roles and caseload experience.

Procedure

Participants attended an individual semi-structured interview at their workplace where they were guided to address roles and responsibilities for obtaining informed consent for VFSS procedures, using deidentified case examples. Interview transcripts were then analyzed by Braun and Clarke's (2006) six phase protocol for thematic analysis.

FINDINGS

Themes addressed the process of informed consent, barriers to informed consent, strategies to facilitate informed consent and criteria for determining when consent occurred.

The process of informed consent

Key themes underpinning the process of informed consent included 'supporting client autonomy', 'determining professional responsibilities' and 'deciding information content' (Figure 1).

Supporting client autonomy. All participants supported clients' rights to participate or to refuse a VFSS procedure; *if they don't want to do it, they don't want to do it* (P2). P3 described making a *conscious effort* to include clients in decision-making. However, in practice, two participants indicated that clients were afforded limited choices. *We don't ask for their permission to do the procedure... if the medical staff agree to it they just get taken down to x-ray* (P4). Participants reflected that decisions about VFSS were made '*for*' rather than '*with*' clients. *I didn't say, "Are you happy for this procedure?" because it was kind of already decided on* (P1). Participants attributed inconsistencies in upholding patient autonomy to internal (patient- related) and external (service- related) factors. These factors will be addressed further as 'barriers to informed consent.'

Determining professional responsibilities. Professional Association guidelines state that speech pathologists or medical officers must obtain consent from the client, guardian or person holding power of attorney prior to conducting a VFSS (Speech Pathology Australia, 2005). However, all participants raised the importance of determining professional responsibilities for informed consent during interdisciplinary assessments; i.e., which team member was responsible for providing information. Two participants indicated that it was a *professional standard* (P3) and SLPs' responsibility *100% of the time* (P2) to obtain informed consent for clients referred for VFSS. However, three participants expressed uncertainty regarding explanations of medical and radiological aspects of the procedure.

I'm not fully aware of whose responsibility it is to inform of things like reactions to the barium, exposure to radiation, what happens if they choke.... (P1).

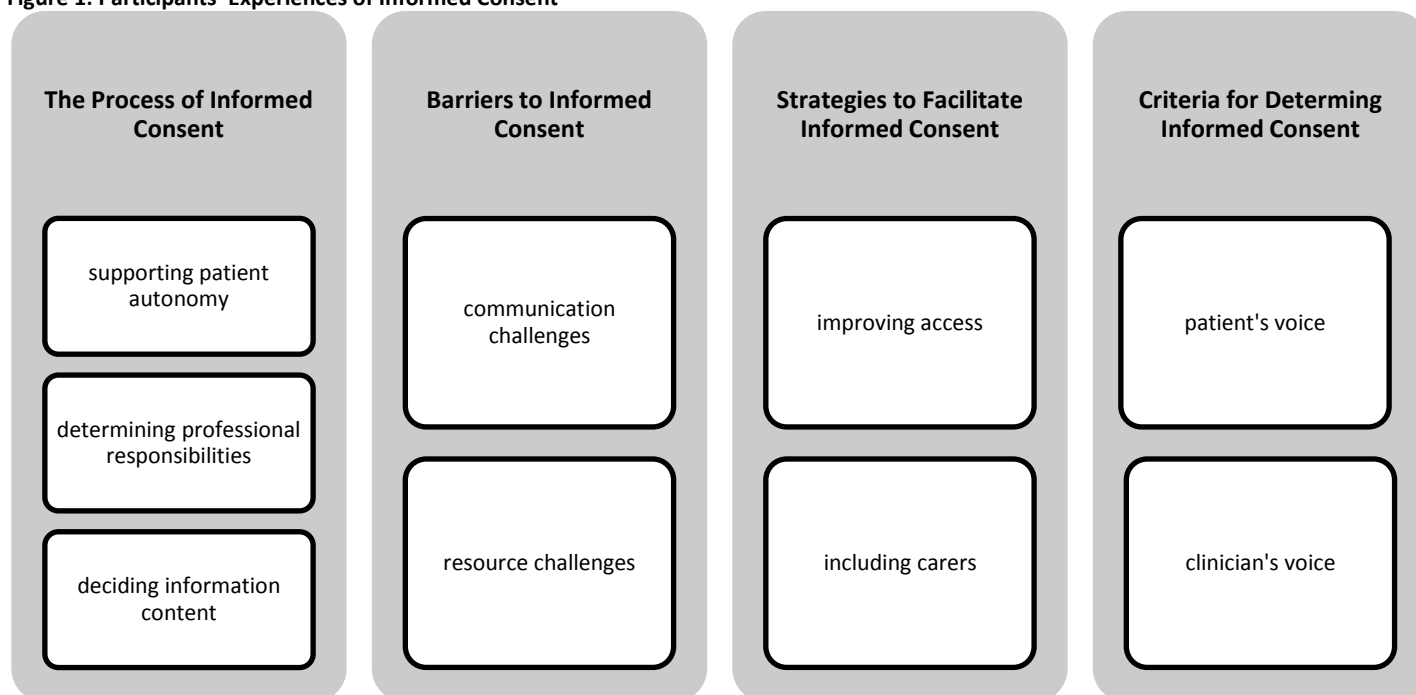
Participants' uncertainty regarding roles indicated that interdisciplinary assessments may introduce complexity into informed consent processes. Without clear guidelines, there were risks that neither medical officer nor SLP addressed key information required for informed consent.

Participants reported that organizational policies facilitated consistent approaches towards seeking informed consent; including a departmental policy for obtaining and documenting consent. In the absence of clear policy guidelines, three participants addressed issues of informed consent based upon *what my peers have done in similar situations* (P3).

Table 1: Participant Professional Experience

Participant	P1	P2	P3	P4	P5
SLP Role	Generalist Clinician	Generalist Clinician	Clinical Educator	Specialist Clinician	Senior Speech Pathologist
Hospital Setting	Inpatients	Inpatients Outpatients	Outpatients	Inpatients Outpatients	Inpatients Outpatients
Caseload	Acute Geriatric Medical	Medical Surgical Oncology	Rehabilitation	Acute Medical Surgical	Medical Rehabilitation Neurological
No of VFSS Conducted during 6 months' timeframe	25	6-12	4	24	6-12

Figure 1: Participants' Experiences of Informed Consent



Concerns were raised regarding how such policies were monitored in the workplace.

Even if informed consent has been gained, or received, it's not really documented in reports, which I think reflects the fact that informed consent may not necessarily be always happening (P3).

Deciding information content. All participants emphasized the importance of providing logistical information about the nature, timing and location of the VFSS procedure.

Things like what they'll be given, what preparation or anything they might need to do (P3).

Furthermore, participants recommended clients should receive a general rationale for the procedure. For example, *I just want to do it as a process of elimination (P5).*

All participants stated that clients should understand the risks of VFSS. Yet, not all perceived they were equipped to explain risk factors. *I tend to gloss over*

that. I don't feel I'm well informed enough (P2). While participants reported consistent attention towards procedural information, they indicated less focus upon specific rationales and outcomes from the procedure i.e., potentially significant dietary implications. Participants' perceptions of barriers to informed consent with VFSS provide insight into broader issues of informed decision making with SLP clients.

Barriers to informed consent

Participants cited patient and work place factors as barriers to effective informed consent interactions. Figure 1 presents these issues under themes of 'communication challenges' and 'resource challenges'.

Communication challenges. All participants reported that informed consent was impacted by the number of clients who presented with mild cognitive impairment in aged care settings.

They can present quite well and ask me relevant questions, but they completely forget what I've told them (P1).

Clients with aphasia were also perceived as vulnerable during decision making interactions.

With patients, particularly with aphasia or if I think they have got some degree of communication (impairment), we do go through the explanation with them. But I'm not sure how well a lot of them understand it (P4).

Participants also raised cultural and linguistic diversity as factors impacting information exchanges.

Resource challenges. Time constraints and availability of appropriate resources influenced information sharing between SLPs and their clients. Resource challenges included limited access to interpreter services, aphasia-friendly and translated written resources. Three participants reported that opportunities to share health care information with clients were delayed by inability to access professional interpreters; *an interpreter* (was not) *available for over a week* (P2). Patients from culturally and linguistically diverse backgrounds also reportedly received less written health care information compared with English speaking patients. *The fact that getting stuff translated is so expensive is a real problem* (P3).

Staffing shortages and expanding SLP caseloads impacted upon informed consent discussions, particularly with clients who required support to exercise autonomy.

Just having the time to spend explaining to someone who has trouble processing information, when you may have five more patients you need to urgently review (P4).

Strategies for facilitating informed consent

Two key strategies for facilitating informed consent were improving access to information and including carers in decision-making (Figure 1).

Improving access. All participants identified the importance of written information to help clients understand and recall key facts.

It objectifies things and helps it be a bit more permanent for people (P3).

Participants also targeted information toward clients' cognitive and communication needs. *Explaining it to them in a modified, simplified version* (P3). Participants presented information through visual modalities to *show them what sort of picture we are going to see* (P4) and real-life examples: *I'll have to bring them in and show them* (P5).

Including carers. All participants acknowledged carers' roles as advocates and the importance of including carers when clients experienced difficulties understanding the nature of clinical assessments; *I'd be really majoring on the carer* (P3). However, one participant expressed concerns that health professionals too quickly exclude clients with cognitive, linguistic or sociocultural issues from informed consent interactions. This participant found clients demonstrated *more anxiety* when they perceived their autonomy was *violated* (P5) by health professionals who relegated decision making to carers.

Criteria for determining informed consent

Participants relied upon active and implied affirmation to determine patient consent.

Client's Voice. Three participants reported directly seeking patients' permission, by checking *is that okay?* (P5) before organizing VFSS. Patients' gestures, verbal and non-verbal cues, and *not actually saying 'no'* (P2) were interpreted as implied affirmation.

Participants also determined clients' levels of active engagement as evidence of informed consent.

He asked me some sort of question along the lines of, "Oh, is it that milky stuff or chalky stuff?" So I kind of thought, "Yeah, he kind of knows what's going on". He gave me a bit of an indication (P5).

Clinician's Voice. All participants focused upon their role as information- givers when considering the effectiveness of informed consent interactions. *My feeling as if I've presented them with the information that I needed to (P2).* However, all participants reported troubling examples of informed consent processes. Four participants described clients who presented without clearly understanding the nature and purpose of VFSS.

They've kind of seemed a little bit confused by it. So at that point... I don't actually think they understand what's happening (P1).

Some clients were unprepared for negative effects of the procedure.

When they get there and taste the barium they are like, "Eew that's disgusting!" I've had one man who we got half way through and he said, "Nope, I've had enough of that." (P5).

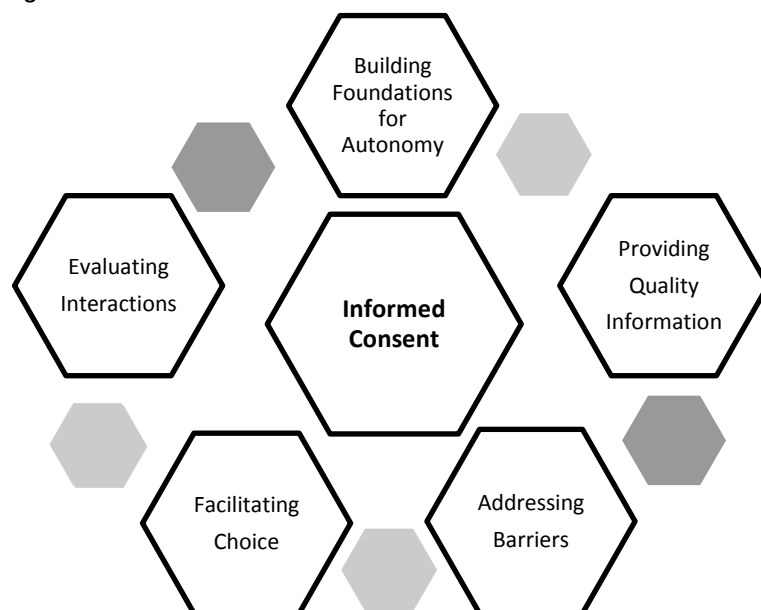
In such circumstances participants needed to *try to push on (P1)* or abandon the assessment.

DISCUSSION

Findings support previous studies that health care consumers may receive inadequate health care information for informed choice (Brett & Rosenberg, 2001). Concerns center upon the nature and the manner of information exchange required to meet professional practice standards (Gillett, 1989). While the study specifically examined issues around informed consent for VFSS, and findings may not reflect the way SLPs obtain informed consent for other referrals, assessment and intervention procedures, the participants' concerns are relevant to broad areas of SLP practice. Findings may stimulate debate regarding SLPs' ethical responsibilities and reasonable standards for informed consent interactions and upholding patient autonomy.

Patients with complex needs are vulnerable during informed consent interactions. Clients with cognitive disorders, aphasia and/ or from diverse cultural and linguistic backgrounds may experience difficulties comprehending and recalling information that is lengthy or complex, and verbally expressing questions (Ferguson, Duffield & Worrall, 2010; Ho, 2006). Yet these clients may retain capacity to participate in decision making (Kagan & Kimelman, 1995; Sudore, Landefeld, Pérez-Stable EJ *et al.* 2009). A challenge for SLPs is to proactively address key factors affecting informed consent interactions (Figure 2).

Figure 2: Facilitating the Process of Informed Consent



Building foundations for autonomy

Building a foundation for informed choice begins with clear policy guidelines. Participants, who accessed workplace policies on informed consent, reported more confidence engaging in informed consent interactions compared with participants with less defined roles. Rehabilitation settings have inherent ethical challenges related to diverse goals, roles and expectations between clinicians, clients and families (Hunt & Ells, 2011). There may be reduced clarity around 'who' is responsible for providing 'what' information regarding interdisciplinary procedures, including risks and consequences. Standardized and consistently updated policies may support health professionals to confidently undertake informed consent discussions and may specifically address processes for eliciting consent from clients or carers who have communication impairments (Krumholz, 2010).

Providing quality information

SLPs must carefully review the quality of information required for informed choice to achieve balance between avoiding technical jargon and vague descriptions (O'Neill, 2003). While logistical information about clinical assessments is important, clients may benefit from more emphasis upon rationales and outcomes of intervention, including short and long-term impacts upon safety and quality of life. For example, clinicians' disclosure that VFSS findings may support recommendations for non-oral feeding, may elicit strong patient care preferences that can be then incorporated into assessment and intervention management (Sharp & Brady Wagner, 2003). Decision aids that utilize client centered language may facilitate clients' understanding of the significance of assessments in developing health care goals and intervention planning (Holmes-Rovner & Wills, 2002). A comprehensive and specific description of benefits and risks of SLP assessment and intervention is another area that warrants attention.

Addressing barriers

Effective informed consent discussions require SLPs to ameliorate factors that impede information sharing between their clients and health care teams. Accessible health care environments are based upon quality patient resources, healthcare professionals with appropriate skills and attitudes and organizations that actively support inclusive decision making (O'Halloran,

Worrall & Hickson, 2012). SLPs may readily identify barriers to client autonomy in the workplace. Communicatively accessible health care environments may be established when SLPs advocate for adequate resources and training and develop organizational policies consistent with patient autonomy.

Facilitating choice

As communication specialists, SLPs have a pivotal role in facilitating patient choice and upholding patient autonomy. Previous studies have demonstrated that simplified written information increased clients' understanding of medical procedures. Bullet points, imagery, bold facing and underlining may improve the readability and processability of health care information (Rose, Worrall, Hickson & Hoffman, 2012). Individual SLPs may have insight into the importance of such strategies but there remain inconsistencies across workplaces in the quality of client centered health care information. Moreover, written materials must supplement rather than replace verbal informed consent interactions so that individual client's stories are considered during every stage of service delivery.

Studies of informed consent for research projects have identified standard processes and time as key factors in determining effective informed consent interactions (Flory & Emanuel, 2004; Sudore, Landefeld, Pérez-Stable, Bibins-Domingo, Williams & Schillinger, 2009; Tait, Voepel-Lewis, Malviya & Philipson, 2005). Allocating sufficient time for interdisciplinary discussions and establishing clearly defined responsibilities and adequate processes to ensure key information is covered can support informed decision making. Teach-back strategies with a series of open ended questions (i.e., where clients share their understanding of health care information) have also been shown to enhanced informed consent interactions (Kripalani, Bengtzen, Henderson & Jacobson, 2008).

Clients have an important role in indicating preferences for the nature and format of information provided (Kenny, 2015). SLPs may make an important contribution to this process by advising formats for presentation to improve access without oversimplifying and restricting patient choice. We must explore approaches that facilitate decisions 'with' rather than 'for' patients; approaches that support patients' expression of choice even when carers adopt central

roles in decision making (Mirzael, Milanifar & Asghari, 2011).

Evaluating informed consent interactions

SLPs, in the VFSS study, evaluated informed consent interactions based upon whether they covered key aspects of the assessment with their clients. They were sometimes surprised and disappointed to discover clients' limited understanding of the assessment process. Such reports may guide critical evaluation of informed consent policies and procedures. Identifying issues that impeded communication and discussing strategies for improving patient engagement in health care decisions may facilitate work place training for consistent, interdisciplinary approaches to informed consent interactions and documentation. Clearly, clients and their caregivers may also provide feedback regarding the nature and format of information that facilitates informed decision making. Attention to psychosocial aspects of health care choices and provision of opportunities to rescind consent before or during assessment procedures may further enhance information exchanges and avoid unwanted outcomes (O'Neill, 2003).

Conclusion

Our findings show that allied health professionals, including speech pathologists, may support patient autonomy by reviewing their roles in interdisciplinary assessment procedures and implementing work based policies that support effective two-way information flow between health care providers and patients.

SLPs must reflect upon the impact of personal values and assumptions when supporting clients to make informed decisions, particularly when such decisions may involve risks or negative consequences. Perceptions of the importance of maintaining health and safety and features of a quality life and good death may reflect individual, family, cultural and life experiences (Smith & Kenny, 2015). Such perceptions may influence the nature of information exchanges between SLPs and their clients (Kenny, 2015). Narrative reasoning may also facilitate SLPs to identify conflict between their professional and personal values and the attitudes and beliefs of their clients.

Narrative ethics may provide a helpful approach for SLPs who are seeking to enhance their ethical practice by focusing upon the bioethical principle of autonomy.

This approach places a client's personal story as central to health care decision making; choices, benefits and potential harms are interpreted within the context of a client's life story (Hunter Montgomery, 1996; Nelson, 2002). Moreover, effective narrative reasoning involves retelling a client's story in a meaningful way so that informed choice is translated into client centered care (Hudson Jones, 2002). SLPs may adopt proactive approaches to ethical practice by interpreting client autonomy within their professional practice setting, critically evaluating current practices and processes for informed consent and developing workplace policies that provide opportunities for clients with communication and swallowing impairments to actively participate in health care decisions. ♦

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Preliminary Results of Students Who Are Typically Developing Defining Ambiguous Language

Leah Beekman & Angela Ciccia

Abstract

The purpose of this study is to pilot stimuli material of higher-level language skills to be used in a future intervention research project. A total of 127 stimuli (multiple-meaning words, oxymorons, metaphors and paradoxes) were piloted using an Internet-based survey. Participants were students who are typically developing and between the ages of 12-14. The survey was administered in three different sections. Each survey section had no more than 43 stimuli. An item analysis with boundaries of 0.26-0.75 for difficulty index and 0.3-1.0 for the discrimination index was run in order to determine retention of items. The completed measure will be used as a pre- and post-test for a future intervention study for students with language impairment.

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Learning Objectives

- 1) List the most widely understood multiple-meaning words, metaphors, oxymorons and paradoxes, in adolescent, students who are typically developing.
- 2) State the difference between difficulty index and discrimination index.
- 3) Discuss the impacts of ambiguous language in social and academic settings.

Ambiguous language, defined as linguistic phenomena that express complex and multidimensional meanings (Nippold, 2007), is essential to the foundation of language learning in children and adolescents (Marton, Abramoff & Rosenzweig, 2005). Ambiguous language ranges from a simple multiple-meaning word (i.e. bat), which one will encounter numerous times throughout the day to a complex paradox (i.e. I can resist anything but temptation). Ambiguous language also consists of metaphors, oxymorons, homonyms, idioms, jokes, proverbs etc. It doesn't have a singular meaning but

represents two or more possible meanings. This can lead to confusion as the listener may misinterpret what the speaker means. The following study will focus only on multiple-meaning words, metaphors, oxymorons and paradoxes. These particular areas of ambiguous language were chosen due to the fact that they all appear frequently in academic textbooks, in the classroom setting and are also part of the common core state standards of education. While we require that students are able to identify and understand such words and phrases, limited research has been

conducted to demonstrate how a student who is typically developing can perform these tasks.

Ambiguous language occurs in daily communication making it unavoidable and an essential part of English conversations (Keysar & Henly, 2002; Lakoff & Johnson, 1980; Vance & Wells, 1994). It is not only an important part of social exchanges but it is prevalent in the academic setting as well (Vance & Wells, 1994). The use of ambiguous language becomes exponentially more important during the middle school years as peer relationships grow in prominence and communication skills become more intricate (Durkin & Conti-Ramsden, 2010). Expectations and demands during the middle school years bring to light any difficulties in using or understanding ambiguous language that students may have (Roeser & Eccles, 1998).

In the classroom, one third of all utterances, spoken by the teacher to the students, contain ambiguous language (Lazar, Warr-Leeper, Nicholson & Johnson, 1989). Ambiguous language is used in textbooks across all subjects and the student is required to comprehend it in order to appropriately complete each assignment that is required of them (Fang, 2006; Sznajder, 2010). A student's academic performance hinges on their ability to identify, decode and appropriately respond to various uses of ambiguous language (Farrant, Feltcher & Maybery, 2006; Shamay-Tsoory & Tomer, 2005).

Not only does the understanding and use of ambiguous language impact the academic setting but it is also an integral part of daily social communication. According to Adams (2005), social communication is the synergistic emergence of social interaction, social cognition, pragmatics (verbal and nonverbal), and receptive and expressive language processing. Mastering the basics of ambiguous language begins as early as the third grade (Pollio & Pollio, 1973) and the use of ambiguous language continues to become more important as a student progresses through his/her academic years. By middle school it is demanded of him/her to take part in social exchanges that are filled with ambiguous language use (Durkin & Conti-Ramsden, 2010). As the brain matures and continues to develop, social communication becomes more abstract and more frequently used (Blakemore, 2007; Budd, Paulmann, Barry & Clahsen, 2013; Dumontheil, 2015). Expectations of understanding and use of ambiguous language is required as the social settings and social

communication become more complex and increase in importance (Kuhl, 2007). In middle school, peer relationships are a priority and the ability to exchange appropriate interactions, verbally, is a cornerstone to maintaining those relationships (Durkin & Conti-Ramsden, 2010). Ambiguous language use becomes so significant in the middle school years that it is referred to by Vance and Wells, (1994, p. 26) as the "currency of the playground".

Those who find themselves struggling with ambiguous language include students who present with spoken language disorder. Spoken language disorder (SLD), according to ASHA (2017) is a disorder that impacts a child's receptive and/or expressive language across any of the five language areas (phonology, morphology, syntax, semantics and pragmatics). SLD is included as part of multiple diagnoses such as autism spectrum disorder (ASD), intellectual disabilities (ID), developmental disabilities (DD), Attention deficit hyperactivity disorder (ADHD), traumatic brain injury (TBI), psychological/emotional disorders and hearing loss (ASHA, 2017), and can occur without any comorbidity. SLD is thought to be caused by a combination of abnormal neurological development as well as increased exposure to environmental factors (ASHA, 2017).

The consequences of not understanding ambiguous language reach into all areas of a student's life. Daily academic struggles can lead to reduced comprehension of the classroom teaching and failure to complete tasks (Salman, 2016). Social implications can lead to decreased ability to maintain friendships or isolation (Adams, 2005; Durkin & Conti-Ramsden, 2010; Marton, Abramoff & Rosenzweig, 2005; Vance & Wells, 1994).

The demands of the classroom become overwhelming and students may find themselves understanding less and less as they progress through school. As the coursework transitions to be more independent, students who struggle with understanding and using ambiguous language find themselves stumbling through daily tasks as this type of language is used by their teachers and in textbooks (Fang, 2006; Shaftel, Belton-Kocher, Glasnapp & Poggio, 2006;). Specifically, in the academic coursework that addresses thinking abstractly (i.e. essay writing and deductive reasoning tasks) students may find themselves feeling helpless and frustrated (Roeser & Eccles 1998). ASHA (2010) outlines

the common core standards of the school based SLP to address such struggles.

The struggle progresses into the social world as well as students who cannot easily comprehend and use the “currency of the playground” (Vance & Wells, 1994 p. 26) find themselves isolated from peer groups with decreased opportunities to not only be exposed to ambiguous language but to use it as well (Durkin & Conti-Ramsden, 2010). Without real world exposure of ambiguous language with peers, students will have limited opportunities to practice recognition and use this type of communication (Kuhl, Tsao & Liu, 2003). This can result in a negative loop that leads to social rejection from peer groups because they are not able to participate in group-based jokes, humor, slang or sarcasm (Durkin & Conti-Ramsden 2010; Marton, Abramoff & Rosenzweig 2005; Spector, 1997). Due to a decreased ability to interact with peers, these students frequently fall victim to bullying, have increased difficulties in group settings, lower self-esteems and at times encounter run-ins with law enforcement that potentially lead to jail or prison time (Durkin & Conti-Ramsden, 2010). Due to the plethora of social and academic communication difficulties that clinical populations face, the need for speech-language services is undeniable when a student struggles with the understanding and use of ambiguous language.

While it is well documented how various populations, such as ASD, TBI, ESL and SLI, perform on tasks that demand the understanding and use of ambiguous language, (Adams, 2005; Cain & Towsn, 2009; Dennis, Lazenby, & Lockyer, 2001; Gauger, Lombardino & Leonard, 1997; Salman, 2016) there remains a gap in the research to demonstrate how middle school students who are typically developing identify and use ambiguous language.

Given the importance of ambiguous language, the link between difficulties with ambiguous language in academic and social settings, and the limited availability of research for the typical developing population in the middle school years, the following study was designed. The specific aim of the project was to establish a set of ambiguous words and phrases that students, who are typically developing, between the ages of 12-14, could accurately define. For the purposes of this research, ambiguous language was limited to multiple-meaning words, oxymorons, metaphors and paradoxes. It was

hypothesized that there would be a substantial number words and phrases in of each categories tested (multiple-meaning words, oxymorons, metaphors and paradoxes) that would meet criteria to be classified as understood by students who are typically developing and that these stimuli could be used as a foundation for intervention targeting ambiguous language, for students with language disorders, in future work.

The specific aims for this study were

1. Identify commonly understood multiple-meaning words in students who are typically developing, between 12-14 years of age
2. Identify commonly understood oxymorons in students who are typically developing, between 12-14 years of age
3. Identify commonly understood metaphors in students who are typically developing, between 12-14 years of age
4. Identify commonly understood paradoxes in students who are typically developing, between 12-14 years of age

Methods

Recruitment

Recruitment took place on a national level through social media (i.e. Facebook and Instagram) and at the local level through word of mouth and posted fliers. The individuals that participated in the study came from Ohio, Nevada and New Jersey.

Participants

This study was approved through the Institutional Review Board at Case Western Reserve University, Cleveland, OH. Additionally, administrative approval was obtained following the necessary procedures for all school systems that participated in the recruitment process. All students provided electronic assent and each student was given a choice to participate or to abstain.

The study included 295 middle school students. There were 139 females, 135 males, 19 who gave no gender response, and 2 who said they preferred not to answer. Inclusion criteria consisted of self-reporting of being between 12-14 years of age, no history of language disorder and assenting to participate. There were a total of 32 students who were disqualified for not meeting inclusion criteria – 11 were disqualified for not meeting the age criteria, 15 with a history of language disorder,

5 who did not assent and one participant who did not complete the protocol past the assent. The socioeconomic status (SES) of the students was not collected but each school provides annual, public reports and a range of SES from lower to upper class was reported for each. Racial diversity was also not collected; however, each school's public records demonstrate diverse racial populations, with slightly higher Caucasian populations. English was the primary language for all except 2 students, but data was retained based on the fact that English not being their primarily language had no obvious interference to them completing the research.

Procedure

Each student was presented with an online survey, through the website Survey Monkey™. All students were given an assent form that included study justification, aim of the project, and rationale for participating in the project. Three groups of students, ages 12-14, who are typically developing, completed the protocol. The dividing of the students into groups was done in order to control for fatigue, but still allowed for the researchers to be able to test a large number of stimuli. The survey itself was designed in a block randomization with random assignment so that each participant would begin the survey with a different section and item. Random assignment is a particular method used so that each participant would have an equal likelihood of beginning the survey with any one of the four sections (i.e., one participant may begin with metaphors and one with paradoxes) (Passer, 2017 pg. 49). Additionally, block randomization was done so that the items within the four sections would also be randomized so that each item was presented to each participant only once and in random order (i.e., within the multiple-meaning words sections one participant may begin with the word ball and one participant may begin with the word plan) (White & McBurney, 2013 pg. 251). The survey consisted of four sections: multiple-meaning words (A), oxymorons (B), metaphors (C), and paradoxes (D).

For each of the four sections for the survey, participants were given a text box and instructed to provide a brief written explanation of the construct. For example, there were basic instructions at the top of each page which asked the participants to explain each of the phrases, for oxymorons (appendix A), metaphors (appendix B) and paradoxes (appendix C). At the top of the multiple-

meaning words (appendix D) page participants were instructed to give two meanings of each word. At the end of survey the participants were given the opportunity to enter a drawing for a \$50 gift card.

The survey was divided into three sections and each survey section had a minimum of 54 participants and each participant was given no more than 43 stimuli total. The multiple-meaning stimuli were alphabetized prior to being divided into the three sections and the other three categories were randomly divided. The dividing of the total survey into three parts was done to allow for a greater number of stimuli to be tested but without every participant having to answer every item. The sections of multiple-meaning words and metaphors consisted of a total of 37 stimuli, across all three surveys. The section of oxymorons consisted of 38 stimuli total across all three surveys and the section of paradoxes consisted of 15 total stimuli across all three surveys. There was a total of 127 items tested. Total time for study participation was approximately 25 minutes.

Data Analysis

A total of 127 items were analyzed. The data was analyzed using MS Excel™ (2011). Answers were deemed correct, incorrect or unanswered. Correct scores were given to students who were able to provide an appropriate definition for the word or phrase presented whether that be in a traditional definition form or by correctly using the word in a sentence. Incorrect scores were given for answers that were not valid definitions and unanswered scores were given when a participant left a space blank. No stimuli were given multiple scores. Participants were given a score from 0-2. A score of 0 was designated to those participants who were disqualified for not meeting one or more of the three criteria. A correct answer received a score of 2 and an incorrect answer a score of 1. An item analysis with boundaries of 0.26-0.75 for difficulty index (table 1), and 0.3-1.0 for the discrimination index (table 2) was conducted on each item.

Results from 231 participants were reported. An item analysis was completed to examine student responses to individual test items. Item analysis allows for the quality of individual stimuli to be examined quantitatively and also allows for an evaluation of the combined stimuli (Mcgahee & Ball, 2009). Difficulty index, the difficulty of a single item in a test (Mcgahee &

Ball, 2009), was conducted in order to identify the ease or difficulty of the stimuli presented to the participants. The difficulty index is a percentage of the total number of correct responses to a single test item. The formula used for this calculation is $P=R/T$, in which P is the item difficulty, R is the number of participants with the correct answer and T is the total number of responses. Items were considered too difficult if they obtained a score of <0.25 and were identified as too easy if they obtained a score of >0.76 (Mcgahee & Ball, 2009). Discrimination index was conducted, to identify item responses that varied by the highest performers compared to the lowest performers who provided the correct responses. Participants were separated into the top 25% and bottom 25%. Once the participants were broken into the upper and lower categories the analysis was run. The formula for this analysis is DU-DL in which DU indicates discrimination upper and DL indicates discrimination lower. DU is calculated using the formula $DU=R_1/T_1$, in which R_1 indicates number of participants in the upper 25% with the correct answer and T_1 indicates the total number of participants in the upper 25%. DL is calculated using the formula $DL=R_2/T_2$, in which R_2 indicates number of participants in the lower 25% with the correct answer and T_2 indicates the total number of participants in the lower 25% (Mitra, Nagaraja, Ponnudurai & Judson, 2009). The results of this index show each item's ability to discriminate between the groups. Items with a negative index are not able to discriminate between the groups. Items ranging between 0-.2 are able to discriminate but do not indicate a strong discrimination and items .4-1 indicated good to perfect discrimination (Mitra, Nagaraja, Ponnudurai & Judson, 2009).

Results

Difficulty Index

Of the total 127 items that were analyzed 32 multiple meaning words, 29 oxymorons, 25 metaphors, and 6 paradoxes met criteria for difficulty index and retention for the pre- and post-testing. The mean difficulty index for multiple meaning words was .56, for oxymorons .45, for metaphors .58 and for paradoxes .26. Means for paradoxes did not meet criteria for retention in difficulty index.

Table 1. Difficulty Index Ranges

Range	Interpretation	Action
0 – 0.25	Too Difficult	Revise/Discard
0.26 – 0.75	Right Difficulty	Retain
0.76 - Above	Too Easy	Revise/Discard

Dewald, A. (2015, July 20)

Discrimination Index

The discrimination index of all items tested identified 29 multiple-meaning words, 32 oxymorons, 32 metaphors and 11 paradoxes that met criteria. The mean discrimination index for multiple-meaning words was .52, for oxymorons .54, metaphors .57 and paradoxes .45. All items met criteria for retention based on discrimination index.

Table 2. Discrimination Index Ranges

Range	Interpretation	Action
Anything Negative	Can discriminate but the wrong way	Discard
0 to 0.20	Discriminating but not strong	Consider Revision
0.4 to 0.6	Can discriminate the best	Include
1.0	PERFECT	Include

Dewald, A. (2015, July 20)

Discussion

The purpose of the current project was to identify a range of exemplars of ambiguous language, namely multiple-meaning words, oxymorons, metaphors and paradoxes, in students, ages 12-14, who are typically developing. The results of this study demonstrated that there are numerous multiple-meaning words, oxymorons and metaphors that this sample could properly define, few that demonstrated to be too easy and few that demonstrated to be too difficult. Overall paradoxes were too difficult for this sample population but it is hypothesized that they would be more difficult for older sample populations as well. The infrequency of their presence in everyday communication may be a contributing factor as to why these phrases present more difficulty. Due to limited research in this area, it is difficult to definitively explain the increase in difficulty. The data collected, using a range of easy, moderate and difficult, will form a pre- and post-test for an intervention, using sarcasm, for students who present with language disorders.

Ambiguous language is a cornerstone to both academic and social communication and its importance intensifies during the middle school years (Durkin & Conti-Ramsden, 2010). While it is well documented that students who present with language disorders often demonstrate difficulty in manipulating language from its literal forms to an ambiguous form (Dewaele & Ip, 2013; Kim & Lantolf, 2016; Patchanok, 2010; Salman, 2016; White, Bruhn-Garavito, Kawasaki, Pater & Prevost, 1997) there is limited research on how students who are typically developing perform this task. The decreased ability to understand and use ambiguous language is an indicator of potential academic and social difficulties (Farrant, Fletcher & Maybery, 2006; Shamay-Tsoory & Tomer, 2005).

While students are required to be able to identify various forms of ambiguous language in the academic setting, across all academic subjects, there are a limited number of studies that have looked into which words and phrases present as more challenging and which words and phrases are most easily understood by this population. The results of this research provide a preliminary list of words and phrases that have been identified as too easy, just right and too hard for this age group to process. This provides insight as to which words and phrases students may require more support for learning. Not only does this provided an outline for teachers in the classroom setting but it also provides a list of reasonable stimuli to be used in the clinical setting as well. The results of this project provides a range of targets from easy to difficult can be used by teachers and clinicians to be able to provide supplementation and direct instruction for students demonstrated difficulty with ambiguous language.

Limitations and Future Research

Due to the fact that this was an anonymous, online survey the data was dependent on the reliability of responses provided by participants. While there was a short profile section that was designed to identify those who did not meet criteria there is a possibility that the participants did not answer the questions honestly (Wright, 2005).

The researchers have one additional section of the survey to administer, in order to obtain data for more stimuli. Once the final version of the survey is complete, analyses will be run and items that met criteria for item

difficulty, index of discrimination and Cronbach's alpha will be retained for a future research intervention.

Based on the fact that paradoxes did not meet criteria for item difficulty, paradoxes may not be a suitable measure of ambiguous language for the adolescent population. Decreased in the ability to define paradoxes could be due to the rapid development of the adolescent brain and the impact that it has on more abstract thinking (Dahl, 2004). We anticipate that increased difficulty in defining paradoxes will be consistent in the fourth and final section of the survey as well. Cronbach's alpha will still be calculated as a measure of internal consistency; however, we anticipate that paradoxes will not be retained for the future research intervention. ♦

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Appendix A: Oxymorons

Section 1:	Stimuli	Difficulty Index	Discrimination Index	Retention
	Adult child	0.56	0.84	*
	Awfully good	0.48	0.79	*
	Bitter sweet	0.34	0.68	*
	Clearly misunderstood	0.54	0.84	*
	Definitely maybe	0.30	0.47	*
	Silent roar	0.11	0.26	
	Even odds	0.28	0.47	*
	Found missing	0.26	0.47	*
	Guest host	0.10	0.05	
	Jumbo shrimp	0.59	0.78	*
	Living dead	0.64	0.68	*
	Negative growth	0.29	0.63	*
	Old news	0.60	0.78	*

Section 2:	Stimuli	Difficulty Index	Discrimination Index	Retention
	Only choice	0.65	0.54	*
	Original copy	0.71	0.46	*
	Poor health	0.76	0.38	
	Pretty ugly	0.73	0.23	
	Random order	0.60	0.70	*
	Ordered chaos	0.37	0.34	*
	Seriously funny	0.68	0.38	*
	Small crowd	0.73	0.46	*
	Terribly good	0.54	0.40	*
	Unbiased opinion	0.41	0.56	*
	Wise fool	0.27	0.42	*
	Behave badly	0.71	0.31	*

Section 3:	Stimuli	Difficulty Index	Discrimination Index	Retention
	Never again	0.56	0.89	*
	One pair	0.50	0.78	*
	Occupied space	0.53	0.82	*
	Act natural	0.58	0.82	*
	Virtual reality	0.39	0.85	*
	Dark light	0.21	0.44	
	Goodbye reception	0.12	0.22	
	Oddly normal	0.23	0.52	
	Same difference	0.25	0.48	
	Almost exact	0.52	0.85	
	New classic	0.14	0.26	
	Passive aggressive	0.04	0.07	
	Friendly competitor	0.43	0.71	*

* Indicates items that met criteria of both difficulty index and discrimination index and will be retained for future use

Appendix B: Metaphors

Section 1: Stimuli	Difficulty Index	Discrimination Index	Retention
The snow is a white blanket	0.30	0.63	*
The hospital was a refrigerator	0.64	0.78	*
The classroom was a zoo	0.70	0.79	*
The news was music to my ears	0.64	1.0	*
Life is a roller coaster	0.65	0.89	*
He is a shining star	0.58	0.89	*
My teacher is an angel	0.68	0.89	*
The world was his oyster	0.16	0.42	
Laughter is the music of the soul	0.34	0.68	*
She is a chicken	0.65	0.94	*
The highway was a parking lot	0.61	0.84	*
Books are keys to your imagination	0.44	0.84	*
He was blue when his dog died	0.69	0.84	*

Section 2: Stimuli	Difficulty Index	Discrimination Index	Retention
Your brain is a computer	0.70	0.38	*
His tempter was a volcano	0.73	0.31	*
The park was a lake, after the rain	0.78	0.38	
The lawn is a green carpet	0.62	0.47	*
The man was a road hog	0.54	0.18	
The stars are sparkling diamonds	0.75	0.38	*
The two girls are two peas in a pod	0.78	0.38	
He is a walking dictionary	0.78	0.31	
Donations for the charity were a tsunami	0.78	0.24	
His brother is a couch potato	0.71	0.38	*
The teenager's stomach was a bottomless pit	0.68	0.17	
The thunder was a mighty lion	0.81	0.23	
The stormy ocean was a raging bull	0.79	0.23	

* Indicates items that met criteria of both difficulty index and discrimination index and will be retained for future use

Appendix B (continued)

Section 3: Stimuli	Difficulty Index	Discrimination Index	Retention
Her tears were a river	0.78	0.79	
She is the apple of my eye	0.44	0.53	*
He was boiling mad	0.76	0.86	*
Life is a journey	0.63	0.67	*
He is a night owl	0.67	0.71	*
They are lost in a sea of love	0.67	0.78	*
All the world's a stage, and all the men and women merely players	0.18	0.33	
All our words are but crumbs that fall down from the feast of the mind	0.24	0.52	
Let us be grateful to people who make us happy, they are the charming gardeners who make our souls blossom	0.27	0.41	*
And your very flesh shall be a great poem	0.178	0.37	
Advertising is the rattling of a stick inside a swill bucket	0.25	0.52	

* Indicates items that met criteria of both difficulty index and discrimination index and will be retained for future use

Appendix C: Paradoxes

Section 1: Stimuli	Difficulty Index	Discrimination Index	Retention
You can save money by spending it	0.16	0.32	
I'm nobody	0.48	0.79	*
What a pity that youth must be wasted on the young	0.10	0.16	
I can resist anything but temptation	0.34	0.68	*
You shouldn't go in the water until you know how to swim	0.15	0.26	

Section 2: Stimuli	Difficulty Index	Discrimination Index	Retention
Men work together whether they work together or apart	0.29	0.35	*
I must be cruel to be kind	0.24	0.49	
The beginning of the end	0.44	0.26	
Drowning in a fountain of eternal life	0.11	0.43	
Deep down, you're really shallow	0.41	0.92	*

Section 3: Stimuli	Difficulty Index	Discrimination Index	Retention
All animals are equal but some are more equal than others	0.18	0.37	
They must go to war to make peace	0.24	0.48	
To believe w/certainty we must begin with doubting	0.19	0.44	
If you wish to preserve your secret, wrap it up in frankness	0.03	0.11	
I know that I know nothing	0.48	0.70	*

* Indicates items that met criteria of both difficulty index and discrimination index and will be retained for future use

Appendix D: Multiple Meaning Words

Section 1:	Stimuli	Difficulty Index	Discrimination Index	Retention
	Ball	0.41	0.47	
	Bark	0.90	1.0	
	Bat	0.90	1.0	
	Bill	0.91	0.95	
	Bitter	0.61	0.84	
	Block	0.75	0.95	
	Blue	0.65	0.95	*
	Box	0.45	0.63	*
	Bright	0.63	0.78	*
	Can	0.70	0.89	*
	Charge	0.73	0.89	
	Check	0.83	1.0	

Section 2:	Stimuli	Difficulty Index	Discrimination Index	Retention
	Cool	0.70	0.54	*
	Current	0.68	0.40	*
	Dart	0.67	0.54	*
	Date	0.75	0.54	*
	Depression	0.43	0.56	*
	Fly	0.68	0.46	*
	Foot	0.63	0.69	*
	Grave	0.35	0.70	*
	Harbor	0.30	0.56	*
	Head	0.57	0.62	*
	initial	0.49	0.55	*
	Left	0.73	0.61	*

Section 3:	Stimuli	Difficulty Index	Discrimination Index	Retention
	Lie	.42	0.93	*
	Light	.30	0.74	*
	Like	.28	0.63	*
	Match	.56	0.93	*
	Might	.39	0.78	*
	Mind	.37	0.63	*
	Miss	.51	0.85	*
	Park	.45	0.82	*
	Party	.26	0.71	*
	Plan	.08	0.19	
	Play	.34	0.85	*
	Point	.49	0.74	*
	Seal	.58	0.85	*

* Indicates items that met criteria of both difficulty index and discrimination index and will be retained for future use

The Normal Swallow: Is It Really What You Think It Is?

Caroline Brindo

Abstract

While Speech Language Pathologists (SLPs) may have an understanding of the basic anatomy and physiology of the swallow, the event of the swallow is extremely complex and is subject to minute changes that can result in differences between swallows from person to person, and even from swallow to swallow in the same person. Differences in anatomical structures, the aging process, and variations in habits can all influence the events of the swallow. However, these differences are not necessarily impairments in need of diet modifications, compensatory strategies and/or treatment. Rather, the clinician should consider these differences as possibly within the spectrum of normal.

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Learning Objectives

- 1) Describe aspects of the oral phase of the swallow that can be considered normal or disordered between individuals.
- 2) Describe aspects of the pharyngeal phase of the swallow that could be considered normal or disordered between individuals.
- 3) Identify other aspects of an individual's background, medical status and/or other factors that need to be considered when determining if an aspect of the swallow is normal or disordered.

Speech Language Pathologists (SLPs) working in the medical setting spend a great deal of time assessing and treating swallowing disorders. According to the ASHA 2013 Health Care survey, SLPs in general medical and long term acute care (LTAC) facilities spend 59% of their time working with patients with dysphagia. However, in the formal education setting of undergraduate and graduate programs, only around 5% of the curriculum and 15% of the clinical training are suggested by ASHA to be dedicated to dysphagia assessment and management (ASHA.org). Clearly, the clinician has a responsibility to continue his or her education, and many continuing education courses (CEUs) offered by ASHA CEU providers are aimed at furthering clinical education in dysphagia. However, the opportunities for SLPs to study the normal swallow are more limited. When considering the small amount of formal education and clinical exposure to swallowing in general, the study of the normal swallow is allotted an even smaller percentage of this time. At the writing of this article, there were six courses listed with ASHA that included information on the normal swallow.

Comparatively speaking, there are hundreds of distinct courses on various aspects of dysphagia management (asha.org/CEU find). This imbalance between the study of what is normal and what is not, coupled with the relative imbalance of training vs practice in dysphagia, can lead to clinicians recommending strategies and treatment for aspects of the swallow that can be in the realm of normal.

Added to the mix is the complication that what is normal in swallowing can change with age, with structural differences in the swallow mechanisms, and that some swallowing events are different between individuals, between bolus types, and between conditions. Clinicians completing instrumental assessments of swallowing are sometimes faced with an event, like penetration of the bolus that can be considered both normal and abnormal. Clearly, other factors need to be considered to determine if a swallowing event falls within the realm of normal. However, to make this determination, clinicians must

first have an idea of what a normal swallow really looks like.

Age related changes to normal

Age related changes in swallowing have been examined extensively. Physiology of the swallow with regard to timing and strength can change in healthy normal individuals as part of the aging process. It is important to realize that aging is not a disease process, and that changes to the swallow are not disordered, but to be expected.

With regard to timing, the swallow will take an increased amount of time through all phases of the swallow. Changes in the oral phase of the swallow can include slower bolus formation and an increased time in the anterior to posterior transfer of the bolus (Robbins, 1992; Tracy, 1989; Logemann, 2000). The physiology in the pharyngeal phase is subject to normal changes with aging as well. As healthy individuals age, the bolus can spend an increased length of time in the pharynx prior to the swallow. The normal aging swallow also results in an increased time needed for relaxation of the pharyngoesophageal segment and a slower clear of the bolus through the esophagus.

In addition to the timing changes that are seen in the normal aging swallow, changes with regard to maximum strength of the swallow mechanism are seen. Sarcopenia, or the age-related changes in muscle mass and strength, also affects the muscles in swallowing (Robbins, 2006). Age related atrophy of the pharyngeal muscles can result in increased residue in the pharynx after the swallow in healthy normal individuals. Reduced isometric tongue pressures have also been seen as normal age-related changes.

When assessing the swallow of an older individual, it is important to keep these normal, age related changes in mind. Clinicians who fail to do so run the risk of the incorrectly assessing a swallow to be disordered, and possibly recommending diet modifications or strategies, when in fact it is a normal, aging swallow.

Structure related variations

Variations in the structures of the swallow mechanisms, as well as nearby anatomical structures can lend themselves to variations on what “normal” is in a swallow. Being aware of these variations is important for a clinician to make an accurate assessment of the

swallow. It is key that a clinician keep in mind that “normal” is not necessarily equated with “perfect”. Adaptations made due to variations in structure can be normal for that particular individual.

One structure that clinicians should be aware of is a torus palatine, or torus palatinus. This bony protrusion on the palate is fairly common, and is usually midline. It can be lobular shaped (Fig.1), flat (Fig. 2), or spindle (Fig. 3). They are usually less than 2 cm in size, but can increase in size over time. Individuals with a larger torus palatine may demonstrate a longer oral phase time and less overall coordination with regard to bolus manipulation and propulsion (Neville, 2002). Again, normal does not mean perfect, and diet modifications based solely on a variation in structure that the individual has likely had for some time are unwarranted.

Figure 1. Lobular-shaped torus palatine.

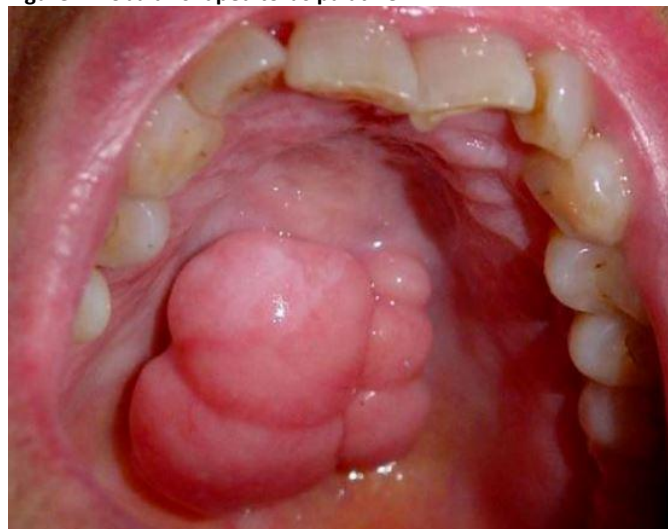


Figure 2. Flat torus palatine.



Figure 3. Spindle tortus palatine

Another structural variation that needs to be considered by the assessing clinician is dentition status. There is evidence that changes to the swallow with regard to dentition status is not limited to increased mastication time needed, but also to total deglutition time, increased time of pharyngeal transfer, and changes in the physiology of the pharyngeal structures during the swallow (Furuya et al, 2015; Gokce et al, 2012; Onodera et al, 2016; Yoshikawa et al, 2006). Because of these changes, it is important that swallowing be assessed with dentures when possible. However, it is also important to recognize that patients do sometimes eat without dentures and the clinician should expect a longer mastication time. For some patients, this is their baseline mastication time, or their “normal” and diet changes or strategies to “fix” may be unwarranted.

Human related variations

Just as there are variations in normal gait, speech, and cognition between individuals, there are variations in swallowing physiology that are within the domain of a normal swallow. When assessing a swallow, it is crucial for a clinician to take into consideration these “human related variations” when recommending changes to diet consistencies and/or use of strategies. Failing to do so has the potential to negatively impact the patient’s quality of life unnecessarily.

One area that is particularly susceptible to variations on normal is mastication. The oral phase of the swallow is under voluntary control, and therefore more likely to be

influenced by an individual’s habits. Studies that have examined mastication time and patterns have found a wide range amongst healthy normal subjects with regard to time of mastication per bolus, the pattern of movement, and the number of strokes (Mishellany et al, 2006; Saitoh et al, 2007; Woda et al 2006). At the moment, there is no established range of time, pattern or number of jaw strokes that are considered normal or disordered. Some authors suggest that what is more relevant is the level of granularity to which the bolus is reduced to by the mastication, in other words, how “chewed up” the bolus is prior to being swallowed. Some studies have shown that there is more consistency in this granularity, rather than in how long or how much the bolus is masticated (Mishellany, 2006). Clinicians assessing mastication need to be aware of the variability in the components of normal mastication to make accurate judgments.

Piecemeal deglutition, or multiple swallows per bite of food, is a common impairment noted on instrumental swallow assessment. Clinicians will sometimes recommend diet modification in response to this finding. In fact, it can be sign of decreased lingual strength (Perlman, 1997). However, in larger bolus size, particularly 20 mL and above, taking multiple swallows per bite can be seen in normal individuals (Dziadziola, 1992; Ertekin, 1996). It can also be a voluntarily controlled behavior in individuals with a history of and/or fear of choking (Perlman). Clinicians should carefully consider bolus size, as well as prior history, when making recommendations based on this swallowing event.

Another area that clinicians need to recognize the variability of normal is the entry of the bolus into the pharynx prior to the initiation of the swallow, commonly identified as “premature spillage”. Studies of healthy normal individuals have shown accumulation of the bolus as far as into the pyriform prior to the initiation of the swallow, particularly with masticated solids (Saitoh, 2007; Hiimae 1999). Not only is there evidence of a range of normal between normal subjects with regard to accumulation of the bolus in the pharynx prior to the swallow, there is also evidence of a variation within subjects as well. In other words, normal healthy individuals may show a range of where the bolus accumulates prior to initiation of the swallow from one bolus to the next (Stephen et al, 2005). When assessing a patient for dysphagia, a clinician needs to be

aware that accumulation of the bolus in the pharynx prior to the initiation of the swallow can be normal. Labelling this occurrence as “premature spillage” is perhaps misleading, as it could give the impression that it is disordered, and requires compensatory strategies and/or diet modifications.

Penetration of the bolus into the laryngeal vestibule is often identified during instrumental assessment as an indication of dysphagia. However, many researchers have found penetration to occur somewhat commonly in healthy normal. Various research groups have found penetration occurring in healthy, normal subjects in a variety of age ranges, with incidences being reported from 19.3% (Robbins et al, 1999) to 11% (Allen et al, 2010). Furthermore, one study of 98 healthy individuals reported no sensorimotor response to penetration (Daggett, 2006). The evidence in our field currently points to the fact that not only can penetration be normal, it can also be normal to have no cough/throat clear/ etc. response when penetration does occur. Clinicians who consider a diet modification based on the presence of “silent penetration” need to be aware of this facet of the normal swallow.

Finally, one area that clinicians really need to examine during an instrumental assessment is aspiration. Many clinicians may believe that this is the definitive indicator of an impaired swallow. However, there is evidence that normal, healthy individuals aspirate at times with no negative health consequences. In 2009, one research group examined 545 swallows of healthy volunteers and found 3% of the swallows resulted in aspiration (Butler, 2009). Robbins et al found a normal subject in their work with aspiration as well. In this particular study, it was noted that normal subjects tended to have a worse penetration-aspiration score on their first swallow of a new condition (Robbins et al, 1999). Given the fact that instrumental assessments examine the swallow under many new conditions (barium, patients being fed by another person, the presence of a scope in the nose, etc.), clinicians must take this into account prior to making diet changes, etc. based solely on the presence or absence of aspiration. It is also interesting to note that some sleep studies have found that around 45% of the normal individuals tested aspirated their own secretions in their sleep (Gleeson, 1997). Clearly, more research in the area of aspiration in normal subjects is needed.

Conclusion

The normal swallow is a complicated series of physical and neurological events, and yet clinicians receive comparatively little formal education on this topic, with few opportunities in continuing education. Clinicians need to recognize that swallowing and assessment of swallowing is not “black and white”. There is rarely one isolated event in a swallow that can define it as normal or impaired. Rather, clinicians must look at the entire picture of the patient’s medical status, history, cognition, complaints as well as the instrumental assessment to draw an accurate picture of the patient’s swallow and make appropriate recommendations. Critical thinking is essential part of comprehensive dysphagia assessment and treatment. Being aware of the range of normal in swallowing events is part of this critical thinking and can aid the clinician in arriving at the best possible plan of care for their patients. ♦

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Assessment Protocol for Cognitive and Auditory Processing Skills for Clients Receiving Neurofeedback Treatment for Traumatic Brain Injury & Concussion: Literature Review

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Abstract

According to research conducted by Dr. Tanju Surmeli (2016), “[E]very year, 1.5 million Americans sustain a TBI, with a new case added every 21 seconds, which leads to 80,000 new cases of long-term disability and 50,000 deaths” (p. 3). The devastating amount of traumatic brain injuries (TBI) cases beckons for more research to formulate newer, more effective treatments and technologies. The search for TBI treatments has progressed within the past decades, opening doors for new research projects and an expansion in knowledge.

The increased research initiatives have improved the technologies and treatments utilized for a TBI. One technology, neurofeedback, has become increasingly popular. However, there is a lack of a singular, baseline and progression diagnostic tool to measure a client’s cognitive and auditory processing skills once they are referred for neurofeedback treatment. This article will review the Neurofeedback Assessment for Cognitive and Auditory Processing as a screening tool. However, it is important to note that this tool has not been utilized in the therapy setting. Currently, the Neurofeedback Assessment for Cognitive and Auditory Processing does contain a lack of reliability and validity. Information in this preliminary review should be used as a guideline until future research is conducted.

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Learning Objectives

- 1) Describe severity of concussion and traumatic brain injury as well as significance of diagnosis.
- 2) State effects of neurofeedback and relevance of utilizing this machine during speech pathology and audiology assessments.
- 3) Summarize the significance of further research on formally creating a standard protocol for neurofeedback machines.

Auditory and cognitive processing are a combination of skills that the brain performs to process knowing, perceiving, and remembering stimuli. The auditory system, which is comprised of the outer ear (pinna), middle ear (ossicles and tympanic membrane) and inner ear (cochlea), aids in audition. The pinna acts as a

funnel, guiding the sound vibrations through the ear canal to the middle ear. When the sound waves reach the tympanic membrane (eardrum), the ossicles begin to vibrate. These sound vibrations then travel to the cochlea. The cochlea transduces the sound vibrations into electrochemical forms of energy that the brain can understand. This two-part auditory nerve is known as

cranial nerve VIII, or the vestibulocochlear nerve. The vestibular part of the nerve is responsible for transmitting changes in equilibrium and head position. The cochlear portion of the nerve accounts for transferring electrochemical neural impulses to the brain. Once the brain receives this communication, it helps the person understand what is being heard through communication in different lobes of the brain (Seikel, Drumright, & King, 2014). Therefore, this interpretation of sound vibrations is known as auditory processing. An example of this is that if an individual was asked to touch their nose, the individual would have to understand the direction given and then have the ability to use their motor ability to carry out the function.

While there are certain areas of the brain that are responsible for cognitive and auditory processing, it is important to note their other physiological functions. It is necessary to understand the brain as a whole, in order to understand the extent of the sustained injuries.

The frontal lobe is the largest, making up one third of the cortex (Seikel, Drumwright, & King, 2014). This area is associated with reasoning, planning, parts of speech, movement, emotions, personality, and problem solving (Martini, Nath, & Bartholomew, 2011). This lobe also houses the precentral gyrus, referred to as the motor strip (Martini et al., 2011). This precentral gyrus oversees the voluntary control of skeletal muscles, such as smiling or even walking. If the frontal lobe is damaged, it can have adverse effects on memory, emotions, and the processing of reward and punishment (Seikel et al, 2014). Overall, the frontal lobe sends signals to the other brain lobes in order to aid in the focus and goal-orientation of an individual.-

Housed just posterior to the frontal lobe is the parietal lobe, which is associated with sensation, orientation, recognition, and perception of stimuli (Martini et al., 2011). The postcentral gyrus (known as the primary sensory cortex) is found here. This gyrus is in charge of touch, pressure, pain, vibration, taste, and temperature (Martini et al., 2011). These sensations are important for perceiving outside stimuli. If this gyrus becomes injured, a person may not understand or process sensory stimuli. An example of this is if an individual is touching something hot and cannot perceive that it is burning through their skin.

Located inferior to the parietal lobe, in the posterior position of the skull, lies the occipital lobe which aids in visual reception and processing. This section allows an individual to understand the outside stimuli being viewed. If this portion of the brain becomes damaged it can lead to blindness or visual processing difficulties.

The temporal lobe, which can be found laterally on either side of the skull, houses specific functions that are related to perception and recognition of auditory stimuli, memory and speech (Martini et al., 2011). All auditory stimuli are processed here. This area of the brain also houses the olfactory cortex. The olfactory tract and bulb, which comprise the olfactory cortex, are located near the frontal lobe. All processing of the stimuli from the olfactory system is deciphered in the temporal lobe (Martini et al. 2011).

The cerebellum, separate from the cerebrum, is comprised of four different lobes. The cerebellum aids in an individual's coordination, posture, and balance (Brain Structures and their Functions, 2012). This structure allows an individual to perform the same movements over and over (Martini et al., 2011). Damage to the cerebellum can cause problems with communication of stimuli to the brain stem, spinal cord, and cerebral cortex (Seikel et al., 2014). Overall, the cerebellum ensures that signals are sent and received properly throughout the entire body.

There are other components of the brain that can be affected post-injury: the insula, basal ganglia, thalamus, frontal-subcortical circuit, gray matter, and white matter. The insula dominates an individual's perception of taste, sense of self and processing emotions (Seikel et. al., 2014). Basal ganglia are connected to neuronal activity. Motor activity is controlled and monitored by way of the basal ganglia. When there is damage to the basal ganglia, motor control is compromised (Seikel et. al., 2014). The thalamus detects the different sensory information that the brain receives. This causes issues then if the thalamus is damaged. Once the thalamus is damaged, the brain has a harder time receiving the sensory information (sounds, pressure, temperature, etc.) (Seikel et al., 2014). Frontal-subcortical circuits tie everything together. This component essentially tells the brain how to respond to outside stimuli. It is linked to the thalamus. Therefore, if the thalamus or frontal-subcortical circuits were damaged, the individual would produce abnormal stimulus responses (Bonelli &

Cummings, 2007). In addition to the aforementioned components, gray and white matter are equally important. Gray matter houses the cell bodies of the brain (receptors), while white matter contains the myelin (conductor). Together, the two structures allow for communication throughout the brain (Seikel et al., 2014).

Finally, there are other accessory brain systems that work automatically to keep an individual fully functional. The brainstem houses the midbrain, pons, and the medulla. The midbrain, referred to as the mesencephalon, contains nuclei for both auditory and visual information (Martini et al., 2011). For example, the midbrain is in use when an individual has an automatic response such as moving the eyes toward an abrupt sound. The reticular activating system is within the midbrain, pons and medulla. The midbrain helps a person maintain consciousness. The pons is the bridge that connects the cerebellum to the cerebrum (Martini et al., 2011). The pons also contains relay centers for somatic and visceral motor control. Visceral controls are involuntary bodily functions, such as blood circulation, which do not require conscious thought (Martini et al., 2011). The conjoining area, before the spinal cord, is the medulla oblongata. The medulla oblongata contains major centers that regulate autonomic functions including heart rate, blood pressure, and the digestion process (Brain Structures and their Functions, 2012). These accessory systems of the brain are important to sustain life and regulatory functions (Seikel et al., 2014). The brain is a delicate and complex organ that controls many of the physiological aspects of the body. A TBI can complicate or interfere with these physiological processes.

Traumatic Brain Injury

Traumatic brain injuries affect nearly 2.5 million people in the United States (Traumatic Brain Injury and Concussion, 2016). According to the Centers for Disease Control and Prevention (CDC), a TBI is caused by a bump, blow or jolt to the head. This may also include penetration of the head during injury that disrupts normal brain functions. An important consideration though, is that not every head injury results in a TBI. Also, not every head injury is the same depending on severity, area that was disrupted and behavioral manifestations.

The brain injuries sustained throughout World War II (WWII) promoted research on brain injuries and rehabilitation. Researchers have shown that a combination of specialists working as a team to help with the cognitive and communication disorders in individuals was the best approach. This community approach helped to combat brain injuries at a faster rate. Medical teams consisted of speech-language pathologists and psychologists, working alongside physicians (High, 2005). This wartime research offered positive support for TBI specialized rehabilitation services. The team approach not only helped TBI patients, but also victims with strokes, amputations, and other conditions that veterans incurred during WWII.

During the 1970's, there was a rapid growth in the number of physicians concentrating on TBI. Brain injuries also became a public health concern with the rise in the number of vehicular crashes. The incidence of vehicular crashes increased due to the increased speed limit on highways (Mendelow & Crawford 1997). During this era, the primary and secondary brain injuries were discovered, along with the ability to issue drugs to control intra-cranial pressure, and standardized guidelines for the treatment of TBIs were written (Mendelow & Crawford, 1997). A primary brain injury occurs at the time of impact. On the other hand, a secondary brain injury occurs after some time has passed after the initial impact. Secondary brain injuries are largely preventable and/or treatable (Mendelow & Crawford, 1997). These types of injuries include hearing loss, tinnitus, headaches, seizures, dizziness, nausea, vomiting, and blurred vision.

In the 1990's, there were significant advancements in technology, treatment, and diagnoses including the use of CT scans, genetic research and, MRIs. President George H.W. Bush signed Presidential Proclamation 6158, which emphasized the importance of the brain and the need for more research (Bush, 1990). With this new proclamation, President Bush announced that 1990 was the "Decade of the Brain" in an effort to improve the nation's medical knowledge related to the brain and TBI (Bush, 1990).

The death of Mike Webster, a former National Football League (NFL) athlete, in late September during 2002 brought about more advanced and aggressive research headed by Dr. Bennet Omalu. Dr. Omalu's research led

to a hypothesis (Omalu, DeKosky, Minister, Kambh, Hamilton, & Wecht, 2005). These symptoms have been described as cognitive impairment, mood disorders and Parkinson's or Alzheimer's disease (Omalu et al., 2005). These are all problems that NFL players may face during or even after their careers. These symptoms may arise depending on the location of the traumatic impact, severity, and re-injury. However, every individual is different in the way an injury can affect a person. One single impact may lead to these symptoms, in the same way multiple head injuries can.

The emphasis placed on improving knowledge regarding the brain and TBIs has led to the discovery of three different types of TBIs that are dependent on the level of consciousness disruption. The first is a mild traumatic brain injury, which is characterized by a brief period of loss of consciousness and/or dizziness or none at all. Only when there is an alteration of consciousness, does an individual potentially receive a diagnosis of mild TBI. The next level is a moderate TBI, which is caused by a violent blow to the head or shaking. At first glance, this level may not have apparent consequences. However, some individuals may have lifelong disabilities and impairments after a moderate TBI ("Types and Levels", n.d.). Some symptoms may be confusion that lasts for days to weeks; physical, cognitive, and/or behavioral impairments that last for months; and loss of consciousness that may last for a few minutes to hours ("Types and Levels", n.d.) The worst level is a severe TBI which results from a crushing blow or a penetrating wound to the head. Severe TBIs are the most life altering to a patient ("Types and Levels", n.d.). Severe TBIs cause a wide range of short-term and long-term changes in overall thinking, sensation, language, and emotions and may also cause epilepsy and other severe conditions ("Types and Levels", n.d.). Each TBI severity has important implications that can cause a complete overhaul of an individual's life.

Traumatic Brain Injury Assessments

Many assessment and screening tools have been created to assess resulting symptoms and difficulties after a TBI that are utilized by physicians or other medical personnel, as well as those that a speech-language pathologist or audiologist may administer. However, it is important to understand that screening tools are only useful in a moderate or severe TBI once the patient is in stable medical condition. A clinician can

administer a screening tool for someone with a mild TBI almost immediately upon onset of the injury.

The general and specific assessments are essential tools that aid in understanding a client's symptoms. These assessments allow for the professionals to formulate treatment plan, make referrals, and gather baseline data. However, one problem with many of these speech-language pathology and audiology tools is that they are not comprehensive. Many do not account for the person's physical or mental symptoms. Also, each of these assessments focuses on a specific concept rather than gathering information regarding cognitive processing, auditory processing and physical and mental symptoms. As a result, clinicians often must administer more than one test instrument in order to assess a variety of cognitive functions and auditory processing ability. Alternatively, clinicians may need to "pick and choose" which sections from these tools to administer during baseline and therapy progression data collection, in order to gather the types of data that are required for planning treatment for the clients.

Neurofeedback

Around the 1970s, treatments such as neurofeedback and biofeedback were being formulated under the primary guidance of Hershel Toomim (Siever, 2008). His idea catapulted the creation of the brain mapping cap as well as neurofeedback (Siever, 2008). Since the beginning prototype, neurofeedback has evolved. Today's neurofeedback devices are utilized to measure the brainwaves, as well as train the brain to strengthen certain areas based on the recorded data. However, you cannot diagnose a TBI using this device.

Neurofeedback stems from the original therapeutic process of biofeedback, which is "...a mind-body therapy using electronic instruments to help individuals gain awareness and control over psychological processes" (Gilbert & Moss, 2003; Moss, 2001; Schwartz & Andrasik, 2003). Biofeedback focuses on the physiological processes of the body, such as heart rate, respiration, sweat production, blood pressure, and muscle activity. Neurofeedback focuses more on the brainwave functioning and electrical brain currents, such as slow cortical potentials. "During typical training, one or more electrodes are placed on the scalp and one or two are usually put on the earlobes. Then, high-tech electronic equipment provides real-time, instantaneous feedback (usually auditory and visual) about your

brainwave activity. The electrodes allow us to measure the electrical patterns coming from the brain... Your brain's electrical activity is relayed to the computer and recorded" (Hammond, 2011, p.306).

There are five specific brainwaves that are monitored through neurofeedback devices: delta, theta, alpha, beta, and gamma (Hammond, 2011). Delta brainwaves can be extremely slow, being recorded as 0.5 to 3.5 Hertz (Hz). If delta brainwaves are the strongest on the neurofeedback data sheet, then the person is usually in a state of "...deep, restorative sleep..." (Hammond, 2011, p. 306). Theta brainwaves, on the other hand, register at approximately 4 to 8 Hz. When these brainwaves are recorded, people are in a state of relaxation. While we are preparing to sleep, or even daydreaming, the theta brainwaves are the strongest. "...[A]ctivity generally represents a more daydream-like, rather spacey state of mind that is associated with mental inefficiency..." (Hammond, 2011, p. 305). Relaxed states, where a person is still aware of their surroundings, are known to exhibit strength in the alpha brainwaves. These brainwaves tend to measure at 8 to 12 Hz. The person will be free from pressing matters and not particularly focused on one specific matter. The last two brainwaves depend on faster brain functioning that may be triggered by stress or anxiety. Beta brainwaves, measured at approximately 13 to 30 Hz, represent an elevated state of alertness. These waves are "...associated with a state of mental, intellectual activity and outwardly focused concentration..." (Hammond, 2011, p. 305). Lastly, gamma brainwaves are recorded at 30 Hz and above. Gamma brainwaves are heightened when people are task-driven (Hammond, 2011).

Each level of brainwave activity and function is unique to each individual. However, based on the above information, those with anxiety disorders may be more inclined to experience prominent beta brainwaves over the others. On the other hand, theta brainwaves may be heightened for someone who experiences bouts of depression. However, each individual who experiences anxiety and depression will still have different brainwave measurements (Hammond, 2011).

The prefrontal cortex and motor strips can affect what is known as slow cortical potentials. According to research by D. Corydon Hammond (2011), slow cortical potentials are "the positive or negative polarizations of

the EEG in the very slow frequency range from .3 Hz to usually 1.5 Hz..." (p. 308). In essence, slow cortical potentials should shift negatively while performing tasks. These negatively shifted potentials create "excitatory effects" (Hammond, 2011, p. 308). Slow cortical potentials account for the electrical currents in the brain. These currents are driven by the level and intensity of processing in which a person is engaging. There are two reactions that occur with slow cortical potentials, negative shifts and positive shifts. The negative shifts are task-driven, leaving an individual's brainwaves in an excitatory state during the duration of the task. On the other hand, positive shifts result in a much slower rate of brainwave function. Positive shifts are the consequence of little to no activity. When the brain is in a relaxed or inattentive state, these positive slow cortical potentials are more apparent (Albrecht, et. al, 2014).

Essentially, the negative shifts and positive shifts in the slow cortical potentials can be observed in a variety of situations, as well as being paired with the different types of brainwaves. Negative shifts will be paired more often than not with beta and gamma brainwaves, while delta and theta brainwaves would be associated with positive slow cortical potentials. Therefore, anxiety and stress levels could elevate the negative shifts. These negative shifts may occur if a person is having difficulties processing information, which in turn causes stress and anxiety. In comparison, the positive shifts would occur more with a person who could be experiencing depression or impaired/decreased brain functioning. Neurofeedback is a treatment method that has been developed to manage these shifts in brainwave functioning.

This process of measuring neurological responses allows for the professional to monitor either the progression or regression of certain ailments. Trackable disorders/conditions utilizing neurofeedback include, but are not limited to: anxiety, chronic pain, depression, insomnia, post-traumatic stress disorder, stroke, temporomandibular disorders, and TBI. For the purpose of this paper, the main focus will be on the use of neurofeedback with TBIs. The purpose of neurofeedback is to identify the triggered areas and the responses that are produced, and then to modify the brain's activity, which is the "feedback" part of the therapy. (Baskin, et. al., 2004). Again, this does not

mean a TBI diagnosis will solely result from just the use of neurofeedback.

Brain Mapping, Neurofeedback, and Traumatic Brain Injuries

The use of neurofeedback to treat TBIs has grown in recent decades. For this method, the neurofeedback measurement device can record the areas of the brain that seem to have irregular brainwaves. This allows for the clinician to document the findings. The data collected may help the clinician choose certain therapeutic tasks that target the specific brain area and also help understand how the therapy is working by looking at feedback.

The Quantitative Electroencephalogram (qEEG) is one type of device that records the monitored brainwaves (Warner, 2013). This tool usually takes approximately 60 to 75 minutes to collect enough data. During this process, the brainwaves are visually recorded in order for analysis of normal and abnormal brainwaves. The results are recorded on a brain map, which is color coded based on the severity of damage to the specific area of the brain (Warner, 2013). The important aspect of the qEEG is the objectivity of the results, which is highly important for an accurate treatment plan surrounding the damaged brain areas (Hammond, 2011). The right and left hemispheres of the brain are specifically targeted and analyzed during neurofeedback. The right hemisphere is responsible for synthesizing information, thinking spatially (puzzles or brain teasers), perceiving, comprehending and expressing based on visual and auditory cues, and experiencing and expressing emotion. Conversely, the left hemisphere houses: analyzing complex concepts, thinking sequentially, thinking linguistically, storing memories, and thinking logically (Warner, 2013).

Neurofeedback is essentially used to train the brain. The data collected from the brain map, in unison with knowledge of what each brain lobe and hemisphere is responsible for, greatly affects how therapy is conducted. The clinician uses this data and creates treatment plans for the client to enhance those damaged brain areas through the feedback process (EEG Institute, 2017).

Recently, NeuroOptimal Advanced Brain Training Systems has contributed to the research and development of a neurofeedback device (NeuroOptimal

Advanced Brain Training Systems, 2016). This device is utilized by the University of Akron's Speech and Hearing Clinic, this device, in particular will be the main focus. This system, produced by Zengar (2016), is aimed at providing real-time results of how the brainwaves are functioning throughout treatment sessions, giving instantaneous feedback automatically. The clinician does not need to first interpret an EEG and then devise a treatment plan for the "faulty" brainwaves; the system automatically does the interpretation and feedback. Its portability makes it easy for the clinician to use in a variety of settings. Also, many professionals, such as speech-language pathologists, psychologists, and neurologists, may all be trained in using this system to administer neurofeedback therapy (NeuroOptimal Advanced Brain Training Systems, 2016).

The device works by placing a set of wires containing the electrodes into the amplifier box, which is connected to a laptop (containing the Zengar NeuroOptimal software), and the headphone jack is connected into an extended adapter with headphones. The sensors are then attached to the client: one electrode on each ear, one electrode on each side of the head, and one electrode, or "grounding" electrode, on the right ear lobe (NeuroOptimal Advanced Brain Training Systems, 2016).

Once the client is connected to the device, he/she will then put on the headphones, which play a recording of relaxing music. This ensues for approximately 30 minutes. The person does not have to do anything but sit and relax. If the Zengar device detects an abnormal brainwave function, the relaxing sounds will subtly skip a beat, or sound "scratched". After the 30 minutes of neurofeedback training is completed, the Zengar software records the data, which appears on the laptop screen within minutes. The data will illustrate the normalcy of brainwave functioning. (NeuroOptimal Advanced Brain Training Systems, 2016).

According to the article, "Efficacy of QEEG and Neurofeedback in the Assessment and Treatment of Post-Concussive Syndrome: A Clinical Case Series," Dr. Tanju Surmeli (2016) states:

"Approximately two-thirds of mildly injured patients will regain 80% of their functioning with the first six months of recovery and continue to improve over the next one and one half years. Treatment [neurofeedback] therefore, should be relegated to

those patients who are not improving, whose improvement has reached a plateau, or who after six months still have significant dysfunction” (p.8).

This 40-subject case series led to the conclusion that neurofeedback can improve cognitive functioning, and overall somatic symptoms. According to this study’s data (Surmeli, 2016), neurofeedback should be fully completed (20, 60-minute sessions) in order to see lasting effects. The study conducted had an adequate number of subjects; however, it did not test the effects of neurofeedback on auditory processing skills. The long-term effectiveness data collected was also based on phone conversations with the subjects after approximately a 3-year period post-treatment. Unfortunately, another flaw in the research regarding the effectiveness of neurofeedback was the amount of assessment and screening tools that Surmeli (2016) used. Surmeli (2016) utilized The Symptom Assessment-45 Questionnaire, The Positive Symptom Index, Hamilton Rating Scale for Depression, Test of Variable Attention, and Clinical Global Impressions (Surmeli, 2016). Combined, these assessments and screening tools account for the somatic and emotional symptoms a client may face following a concussion or TBI. The tools do not collect data regarding cognitive or auditory processing skills. The Test of Variable Attention is the closest tool that examines a person’s ability to focus and respond to cognitive processing tasks that involve shapes (the TOVA Company, 2015). This study exhibits the need for a singular baseline assessment tool.

The NeuroOptimal Company has created their own set of screening measures. The following forms are provided with the purchase of the NeuroOptimal device: Checklist of Client Concerns, Pre- and Post-Session Evaluation, Tracking Your Progress, and a goal setting form. The Pre- and Post-Session Evaluation and the Tracking Your Progress forms account for the client’s somatic symptoms and are intended to assign a qualitative measure, via rating scales, to the client’s reported symptoms. These forms also ask the frequency of the symptoms. Clinicians can use these data tools to measure changes in the client’s somatic symptoms over time. The Checklist of Client Concerns contains 101 somatic symptoms that a client may experience. The client can circle any of the symptoms that he/she may be experiencing as baseline data is collected, and periodically throughout ongoing therapy (NeuroOptimal Advanced Brain Training Systems, 2016). However, the

downside with this specific NeuroOptimal data collection sheet is that out of 101 items there are only 16 that account for cognitive skills and 3 that account for auditory processing skills. The other forms provided by the NeuroOptimal Company (NeuroOptimal Advanced Brain Training Systems, 2016) do not account for anything but somatic symptoms, such as fatigue, mood swings, panic attacks, and nausea to name a few.

While neurofeedback has been proven to help individuals, it is not a singular ‘cure’. In fact, it is not a ‘cure’ at all. This should be used in conjunction with other therapies. It is also important to remember that it will have different effects on individuals. Also, neurofeedback may not have any effect on certain conditions or issues. Research conducted on patients with insomnia, highlight the potential ineffective nature of neurofeedback. In summary, there were 25 young, healthy patients that received 12 neurofeedback sessions, as well as 12 placebo sessions. From the collected data, researchers concluded that there was a lack of short-term carry over following neurofeedback sessions. There also seemed to be a plateau effect on these patients. Neurofeedback alone does not correct the conditions or issues one may have (Schabus et. al., 2016).

Another important consideration is the lack of neurofeedback research regarding TBIs. Research and data are deficient in this area. Due to this, it is uncertain as to whether or not neurofeedback will help improve an individual’s cognition, attention, or overall quality of life. Further research does need to be conducted.

The Future of Assessment and Neurofeedback

Based on the aforementioned qEEG research, it is reasonable to conclude that there is a lack of comprehensive assessments specifically related to qEEG. This may contribute to the difficulty in collecting and recording the actual baseline and therapy progression data. For instance, clients A and B may come to a clinic for similar cognitive processing issues. Neither client is administered the same assessment, because there is a lack of a standardized protocol to utilize before beginning neurofeedback training. While both clients have cognitive processing difficulties, the clinician may be unsure of where the problem lies. Therefore, he/she cannot place the electrode sensors on to the areas of the skull thought to be abnormal. A clinician may become frustrated because while client A

is progressing, client B is not. If the clinician was able to administer a comprehensive assessment battery, he/she may have been able to detect the problematic areas quicker and with much more ease.

A concern revolving around the use of neurofeedback as a therapeutic approach is the lack of a standard assessment protocol to test a baseline for cognitive and auditory processing skills. Clinicians may use an abundance of different test batteries to gather data, but at this time there is a lack of a singular standard or recommended assessment protocol to measure a patient's baseline cognitive and/or auditory processing abilities prior to beginning neurofeedback treatment for these deficits. The use of existing assessment batteries and screening tools may take extended time to administer, taking away time from the client's treatment. In addition, while the aforementioned assessments and screenings may be widely used in other treatment contexts, they may not provide standard or consistent baseline data for neurofeedback, due to the fact that clinicians may utilize different portions of these tools in order to obtain the necessary baseline measurements. For this reason, an assessment tool should be developed for neurofeedback treatment, which is quick to administer and will establish objective baselines for cognitive and auditory processing skills. This will ensure effective neurofeedback treatment and provide the ability to document response to treatment in a more objective manner.

The Neurofeedback Assessment for Cognitive and Auditory Processing (Appendix A) is a proposed new tool that creates an objective and consistent approach to collecting baseline data for clients referred for neurofeedback treatment, who exhibit cognitive and/or auditory processing deficits following a TBI. It allows the clinician to test both cognitive and auditory processing skills. The tool collects data on client and family history, symptoms (before the session, during the task and after the tasks are completed), as well as the specific cognitive and auditory processing tasks. These sections involve concentration, memory (recall), attention to detail, comprehension, orientation, and audition. Included in this new assessment are sections that assess the patient's background history, symptoms, memory, concentration, senses, hearing and auditory processing. It is important to note, the symptoms that are listed in each of the sections are common, everyday symptoms. The symptoms do not signify a TBI. A medical physician

should be the one to diagnose a TBI – not this protocol. These different sections allow a wide variety of skills and abilities to be evaluated. The assessment battery can be completed in about 30 minutes. This new method would allow clinicians to complete the pre-treatment assessment in a relatively short period of time. Treatment plans and referrals can be created and the neurofeedback treatment started more quickly, since the client will only need the duration of one session to complete the assessment.

This method can also serve as a way to assess the client's progress after a course of therapy. However, this assessment has not been tested to gather information concerning the validity and reliability since it is a newly developed assessment. Once this tool has been tested, it can be implemented in clinics as a singular baseline and progression assessment tool.

Conclusions

Neurofeedback, a branch of biofeedback, has created opportunities for concussion and TBI intervention. This technology has also prompted more TBI and concussion research. The newer Zengar neurofeedback system (NeuroOptimal Advanced Brain Training Systems, 2016) can provide the clinician with quick, real-time results regarding abnormal brainwave functioning. However, the effectiveness of this therapeutic intervention for cognitive and auditory processing disorders can be difficult to determine. Clinicians have the option of a multitude of assessment and screening tools. Currently, there is no one recommended protocol for assessing clients' pre-treatment cognitive and auditory processing skills. The data collection tools provided by Zengar concentrate on subjective reporting of somatic symptoms (NeuroOptimal Advanced Brain Training Systems, 2016). A standard, consistently-used, and more objective assessment protocol that collects data on cognitive and auditory processing skills, in addition to somatic symptoms, should be developed.

The goal of the proposed Neurofeedback Assessment for Cognitive and Auditory Processing (2017) is to provide the practitioner with just that – a singular screening tool. This assessment can be performed to collect baseline data, as well as track progress throughout therapy. It relieves the clinician of lengthy assessments that surpass 30-60 minutes to administer. It also helps the clinician save time before and after sessions, because he/she only has to use one

assessment battery to collect data, rather than select portions from other assessment and screening tools. Thorough research needs to be conducted on this proposed tool, to determine the quality of this tool. This is the first step to developing a tool that can be used consistently for measuring both baseline status and progress after neurofeedback treatment for clients experiencing cognitive and auditory processing difficulties after a concussion or TBI. It will be a guide for future research endeavors by the author(s) and other professionals. ♦

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The University of Akron

Appendix A: The Neurofeedback Assessment for Cognitive and Auditory Processing

CLIENT NAME: _____

D.O.B: _____

GENDER: _____

Assessor: _____

Date of Assessment: _____

PATIENT HISTORY:

Have you suffered an injury to your head? If so, what was the course of treatment you and/or your physician decided to take?	
Was your head injury ever severe enough to be hospitalized overnight?	
How many times have you suffered an injury to your head? Were the injuries in the same area/spot?	
Were any MRIs or CT scans performed due to your injury?	

FAMILY HISTORY:

Has anyone in your family or yourself been diagnosed with any of the following?	Y/N	Explain the diagnosis and when you were diagnosed with any of these:
• Migraines		
• ADD/ADHD		
• Depression &/or anxiety		
• Any mood or psychiatric disorder that may affect personality changes including but not limited to: <ul style="list-style-type: none"> ○ Dissociative identity disorder ○ Bipolar disorder ○ Schizophrenia ○ Antisocial personality disorder ○ Conduct disorder ○ Histrionic personality disorder ○ Narcissistic personality disorder ○ Paranoid personality disorder 		
• Epilepsy		
• Learning disabilities		
• Alzheimer's or Dementia		
• Hearing loss due to: <ul style="list-style-type: none"> ○ Congenital ○ Acquired or noise exposure ○ Ear infections (otitis media) 		
• Medications		

SYMPTOM CHECKLIST:		
At this moment, are you experiencing any of the following, if so mark the level of severity:	Y/N	Circle one of the numbers. 1 = highly bothersome 2 = bothersome 3= bearable 4 = no problem at all
Headache		1 2 3 4
Head pressure or throbbing		1 2 3 4
Nausea/vomiting		1 2 3 4
Dizziness or spinning		1 2 3 4
Fatigue		1 2 3 4
Sleeping more than usual, list how much sleep you usually had before injury and then after injury :		1 2 3 4
Confusion		1 2 3 4
Vision problems		1 2 3 4
Tinnitus (ringing in ears)		1 2 3 4
Reduced hearing		1 2 3 4
Balance problems		1 2 3 4
Sensitivity to noise or light		1 2 3 4
Difficulty reading, problem solving, writing, etc.		1 2 3 4
Paranoia		1 2 3 4
Personality changes post injury (i.e., more irritable, loss of enjoyment)		1 2 3 4
Numbness or tingling		1 2 3 4
Symptoms Checklist TOTAL		___ / 64

MEMORY EVALUATION:

Ask the patient to remember a list of five random words:
These words will be asked again later to assess short term memory

BALL	GIRL	FOOTBALL
SCHOOL	MONKEY	

ORIENTATION EVALUATION

Interviewer Questions:	Client Responses	Accuracy based on 0-3 scale (per response): 0 = more than 5 errors 1 = 3-5 errors 2 = 1-2 errors 3 = no mistakes
What is the month, date today and the year?		0 1 2 3
Name the current President of the United States		0 1 2 3
Where do you currently reside?		0 1 2 3
What is your phone number?		0 1 2 3
How many U.S. states are there?		0 1 2 3
What are the colors of the U.S flag?		0 1 2 3
What is your date of birth (spell out the month)?		0 1 2 3
Orientation TOTAL		___ / 21

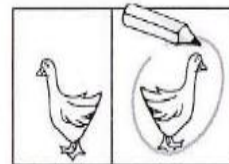
MEMORY

Examiner to repeat in 1 second intervals the words to the client. Client is to wait 5 seconds then repeat the words back to examiner.

Mark the number in which the client recalls the words. For example, circle a '2' next to the word 'ball' if the client says it second in their sequence. If the client omits a word, mark a '0'.

Target	Trial #1	Trial #2	Trial #3
Ball	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
Girl	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
Football	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
School	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
Monkey	0 1 2 3 4 5	0 1 2 3 4 5	0 1 2 3 4 5
TOTAL	___ / 75		

CONCENTRATION TASKS			
Interviewer Questions:	Client Responses	Accuracy based on 0-3 scale: 0 = more than 5 errors 1 = 3-5 errors 2 = 1-2 errors 3 = no mistakes	
Name the ABC's in order		0	1 2 3
Count by even numbers starting with '0' and ending with '20'		0	1 2 3
Name as many differences in the picture as possible: (following page, can tear out of booklet)		0	1 2 3
Concentration TOTAL		___ / 9	



Taken from Bridging with a Smile

SYMPTOM CHECKLIST:					
At this moment, are you experiencing any of the following, if so mark the level of severity:	Y/N	Circle one of the numbers. 1 = highly bothersome 2 = bothersome 3= bearable 4 = no problem at all			
Headache		1	2	3	4
Nausea/vomiting		1	2	3	4
Dizziness or spinning		1	2	3	4
Difficulty concentrating		1	2	3	4
Anxiety, if so, is it caused by not knowing how to answer the questions?		1	2	3	4
Difficulty recalling information		1	2	3	4
Vision problems (trouble focusing your eyes)		1	2	3	4
Tinnitus (ringing in ears)		1	2	3	4
Trouble hearing conversations and understanding instructions		1	2	3	4
Sensitivity to noise or light		1	2	3	4
Difficulty reading, problem solving, writing, etc.		1	2	3	4
Symptoms Checklist TOTAL		___ / 44			

SENSORY EVALUATION (SMELL)

Have the patient relax in their chair with their eyes closed; after they seem to be completely relaxed wave the cotton ball just below their nostrils. They should be able to identify these smells verbally.

Rate the response from 0-3:

0= No response 1 = Slight response (barely noticeable) 2 = Delayed Response 3 = Full Response

Target	Trial #1				Trial #2				Trial #3			
Lemon	0	1	2	3	0	1	2	3	0	1	2	3
Peppermint	0	1	2	3	0	1	2	3	0	1	2	3
Lavender	0	1	2	3	0	1	2	3	0	1	2	3
Basil	0	1	2	3	0	1	2	3	0	1	2	3
TOTAL	___ / 36											

AUDITORY PROCESSING

Have the patient relax in their chair; after they seem to be completely relaxed. Examiner should tell them to listen carefully and following the directions

At random, ask the patient to follow these directions. If there is no hesitation in a topic in trial #1, the patient may receive full credit for the other trials within that same topic. If there is any indication of a hesitant response, the clinician should gather another trial's worth of responses.

Rate the response from 0-3:

0= No response 1 = Slight response (barely noticeable) 2 = Delayed Response 3 = Full Response

Direction/Command	Trial #1				Trial #2				Trial #3			
Touch your nose	0	1	2	3	0	1	2	3	0	1	2	3
Show me your smile	0	1	2	3	0	1	2	3	0	1	2	3
Lift your right arm	0	1	2	3	0	1	2	3	0	1	2	3
Wiggle your fingers	0	1	2	3	0	1	2	3	0	1	2	3
Point to the door	0	1	2	3	0	1	2	3	0	1	2	3
Stand up	0	1	2	3	0	1	2	3	0	1	2	3
Point to me	0	1	2	3	0	1	2	3	0	1	2	3
Touch your toes	0	1	2	3	0	1	2	3	0	1	2	3
Auditory Processing TOTAL	___ / 72											

HEARING

Examiner: Have the patient sit across from you and cover your mouth with either a dark paper or a Speech Hoop (e.g., SPICE Acoustic Hoop). Read the following words out loud at different intensities, while having the client repeating what word was said.

Scoring: Mark an 'X' by the words that were repeated wrong. Put a '~' by the words that were hesitated and leave the words that were correct blank.

Week	Home	Tooth	Jar	Note
Ditch	Team	Mop	Cab	Germ
Tough	Yes	Chair	Hush	Search
Bean	Sub	Soup	Room	Ring
Size	Life	Death	Whip	Goal
TOTAL CORRECT:	___ / 25			

SHORT TERM RECALL:

What were the five words that you were asked to remember at the beginning of the assessment?

Target	Recalled yes/no?	Observations (e.g., articulation errors, hesitations, etc.)
Ball		
Football		
Girl		
School		
Monkey		
TOTAL Correct	___ / 5 or ___ %	

SYMPTOM CHECKLIST:					
At this moment, are you experiencing any of the following, if so mark the level of severity:	Y/N	Circle one of the numbers. 1 = highly bothersome 2 = bothersome 3 = bearable 4 = no problem at all			
Headache		1	2	3	4
Nausea/vomiting		1	2	3	4
Dizziness or spinning		1	2	3	4
Difficulty concentrating		1	2	3	4
Anxiety, if so, is it caused by not knowing how to answer the questions?		1	2	3	4
Difficulty recalling information		1	2	3	4
Vision problems (trouble focusing your eyes)		1	2	3	4
Tinnitus (ringing in ears)		1	2	3	4
Trouble hearing conversations and understanding instructions		1	2	3	4
Sensitivity to noise or light		1	2	3	4
Difficulty reading, problem solving, writing, etc.		1	2	3	4
Symptoms Checklist TOTAL		___ / 44			

**The Neurofeedback Assessment for Cognitive and Auditory Processing
SUMMARY OF PERFORMANCE**

CLIENT NAME: _____ **D.O.B:** _____ **GENDER:** _____

Area Assessed	Points earned / Total possible	
Symptom checklist overall Sum total of 3 checklists	___/152	
Orientation total	___/21	
Memory (word recall) overall	___/75	
Concentration total	___/9	
Sensory (smell) total	___/36	
Auditory Processing total	___/72	
Hearing total	___/25	
Short Term Recall	___/5	
TOTAL	___/395	

Final Comments or Observations

Examiner Signature

Date

Client/Caregiver Signature

Date

Score:	Explanation of results:	Plan of Action:
395-352	The client's cognitive and/or auditory functioning was NOT greatly impacted by the injury.	
351-325	The client's cognitive and/or auditory functioning was slightly impacted due to the injury.	
324-295	The client's cognitive and/or auditory functioning was impacted due to the injury.	
294-250	The client's cognitive and/or auditory functioning was greatly impacted due to the injury.	
249-214	The client's cognitive and/or auditory functioning was significantly impacted due to the injury.	
213>	The client's cognitive and/or auditory functioning was immensely impacted due to the injury.	

Author comment: The equivalency for the scoring was based on a random number out of 303 to provide us with a percentage. Assuming that this assessment is seen as an academic exam, we wanted the scoring to be as similar to academic grading scales. The following are the scoring ranges as percentages for a better understanding of why these scores would be concerning to the assessor: 395-352 = 100%-89%, 351-325 = 88.8%-82.3%, 324-295 = 82%-74.7%, 294-250 = 74.4%-63.3%, 249-235 = 63%"-54.1%, 213> = 53%>. The scoring is a guideline of how to proceed following this assessment, not a perfect solution. The score should be a baseline measurement of cognitive and auditory processing skills, for use in measuring future progress, after treatment.

School-Based SLPs & the Caseload vs Workload Debate: Identifying Current Barriers to Service Delivery & Considerations for Technology as a Facilitator

Leslie Kokotek & Sandra G. Combs

Abstract

Purpose: The immediate purpose of this article is to describe the burden school-based SLPs are encountering with the caseload vs workload model and to provide insight into how accessing technology can reduce workload demands. The aim of this article is to enable school-based SLPs to see (1) how easy technology is to implement as a data collection tool (2) how the benefits of accessing a technology based data collection tool outweigh more traditional systems and save time, (3) how one technology based tool can be used to collect and graph data simultaneously and (4) the importance of having easy access to visual representations of data for parent communication

Method: Review of current caseload vs workload standards is reviewed. Several examples of screen-shots from active data collection are provided for demonstration. Example analysis and visual supports are provided as examples.

Conclusion: School-based SLPs are facing a large variability in standards of caseload vs workload, leaving many SLPs still experiencing high caseload numbers that has a negative impact on overall job performance and student progress. School-based SLPs should be aware that there are affordable tools that are now easily accessible through the abundance of technology now available (e.g., iPads, tablets, smart phones, laptops, etc.). These simple tools have the potential to reduce large workload demands of data collection and report generation. Additionally, they can simultaneously create visually represented data that can support comprehension and help facilitate parent communication.

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Learning Objectives

- 1) Describe the difficulties of the caseload vs workload model and identify workload issues for school-based SLPs in Ohio
- 2) Discuss considerations for how implementing a technology based data collection system can reduce workload demands
- 3) Describe the unexpected findings which contribute to the argument for using a technology based data collection system.

High caseloads continue to be at the forefront of stressors facing the school-based SLP. While caseloads in Ohio have a maximum cap of 80 students, states around the country continue to have no cap at all. A caseload vs. workload model has emerged in response to this challenge, which impacts the day-to-day work lives of school-based speech-language pathologists (SLPs) around the country. The differences between these two concepts can be summarily reduced to the basic notion of the mere number of students an SLP is required to provide services to (i.e., caseload) and the challenges of meeting the needs of each of those unique students (i.e., workload). For example, one would expect that it may be more challenging to provide services to a student who is non-verbal than to a student who has an articulation impairment.

However, this reductionist way of considering the differences between caseload vs workload, actually describes more of a weighted caseload model, and tends to leave out several other key factors that are essential to the workload discussion.

One example of this is in the American Speech-Language-Hearing Association's (ASHA) overview of Caseload vs Workload stating, "*all* workload activities required and performed by school-based SLPs must be taken into account when setting appropriate caseload standards" (ASHA, 2002). These activities consist of both direct and indirect services that include but are not limited: evaluations, service delivery, data collection, progress monitoring and reporting, parent training and communication, Response to Intervention (RtI), teacher consultation, report writing, Individualized Education Plan (IEP) and non-IEP meetings, increased demand of skills, and building responsibilities (e.g., bus duty or recess monitor), etc., Having served as a school-based SLP it seems Schooling's (2003) position that high caseloads lead to less measurable progress towards goals, negative impacts on decisions regarding placement and Free Appropriate Public Education (FAPE), and consequently lower rates of job retention are echoed frequently by school-based SLPs. According to the above list of workload activities, school-based SLPs must consider more than just the intensity of student needs. And, as such will need to explore options for managing those demands.

Differences across States

The concept of caseload vs workload fluctuates across states and districts. Consider ASHA's summary on state caseload guidelines (ASHA, 2015-2016). While this is not an exhaustive list we can see that states like Arizona, Alabama, Delaware, and Connecticut, have no minimum or maximum caseload guidelines. However, Illinois and Michigan have a maximum caseload cap of 60 students. Similarly, Georgia has a maximum caseload cap of 55 students while Oklahoma has a caseload cap of 50 students. When it comes to caseload restrictions and capacity there is clearly a wide range of variability from state to state. This variability can make it difficult to pinpoint best practice standards for caseload.

As of 2014 we've certainly seen an increase in advocacy from our representatives in Ohio to transition to a workload model. The effort is valiant and respected but change can still take time; particularly when districts in

Ohio continue to receive conflicting messages regarding the calculation of workload and the maximum capacity of caseload. The Ohio Board of Speech-Language Pathology and Audiology (2014) issued a guidance paper on the workload determination process stating, "If you have been assigned a caseload without implementing the workload determination process, you could be practicing in violation of Chapter 4753" (p. 1). However, the same document also indicated that the maximum caseload number of 80 students remained "unchanged." Moreover, the Ohio Operating Standards for the Education of Children with Disabilities (2014) continues to cite 80 as the maximum number of school age students to be served by a SLP (the exception being 50 preschool students and 50 students with multiple disabilities) (I)(3)(i), (ii), (iii), (iv).

As you can see, there is certainly an on-going effort to reduce the demands of caseload, which was made especially apparent in the 2014 Licensure Board Issues Guidance on Workload Determination Process. However, many scenarios remain in which individual SLPs can continue to bear the burden of high caseloads. As long as there is a high maximum caseload cap, SLPs will need to continue to work diligently to identify tools and resources to reduce the negative impacts which were highlighted by Schooling (2003).

Creating Our Own Solutions

What then can we do about this slow-moving process? While it is important to encourage advancement within the field, caseload regulations may never categorically change across state lines and it is not realistic to expect a one size fits all solution. However, this does not mean that SLPs across states cannot implement similar strategies and tactics to address this mutual issue. As the workload demands of the school-based SLP have evolved, so to as the capability of technology. That being said, the remainder of this article will focus on how the implementation of a technology based data collection system was used to reduce both workload demands and the demands of a high caseload in a school setting.

As a school-based SLP completing a clinical fellowship year, with a caseload of 78 students, traveling between three different schools, and being responsible for a variety of workload duties (i.e., Response to Intervention (RTI), parent communication, teacher collaboration, completing CFY requirements etc.,) it was

imperative to find a way to manage all of these responsibilities and avoid burn out. Implementing technology based data collection system, helped make that a reality. By using a system that facilitated data collection and parent communication in a convenient manner, this high caseload and workload became manageable. Although the individual system that was used in this scenario is not the final solution, there are technological underpinnings that can be channeled to develop a personalized system. For that reason, we will explore: (1) how this technology can be implemented, (2) the underlying features that contributed to its success, and (3) a few unexpected revelations to the importance of using technology based resources.

Using Technology to Simplify Data Collection

Data collection can occur in many different forms. School-based providers have creatively organized binders, formatted excel documents, and tallied on labels, post-its, and masking-tape for years. Fundamentally there is nothing wrong with using these data collection tools, especially if data is being collected and educators can demonstrate measurable outcomes for their students. However, as workload demands evolve, SLPs and various educational professionals are participating in school wide RTI processes. Interestingly, even at the state level these previously mentioned data collection methods are being replaced with technology based systems that cost thousands of dollars.

For example, one such tool that allows SLPs and other educators to easily record and graph student data for academic skills is aimsweb® (2013). For the convenience of this program, the Ohio Department of Education 2017-2018 Student Assessments for Teacher and Principal Evaluation Service Provider Publicly-Available Service Summary indicates districts will pay \$6.50 per student and \$199-\$3500 for additional training and support. This means that even for a small district of three thousand students, the cost for such a program is estimated to be \$19,500.

Although this seems like a costly initiative, individual SLPs can reap the same benefits of these large systemic data collection systems, but conducting a simple exploration of student data collection tools in their app store. By searching for resources that will allow you to systemically collect student data that will simultaneously graph and distribute the figures, providers can locate any number of affordable

resources, including ones such as the featured example, the \$1.99 Super Duper Data Tracker app.

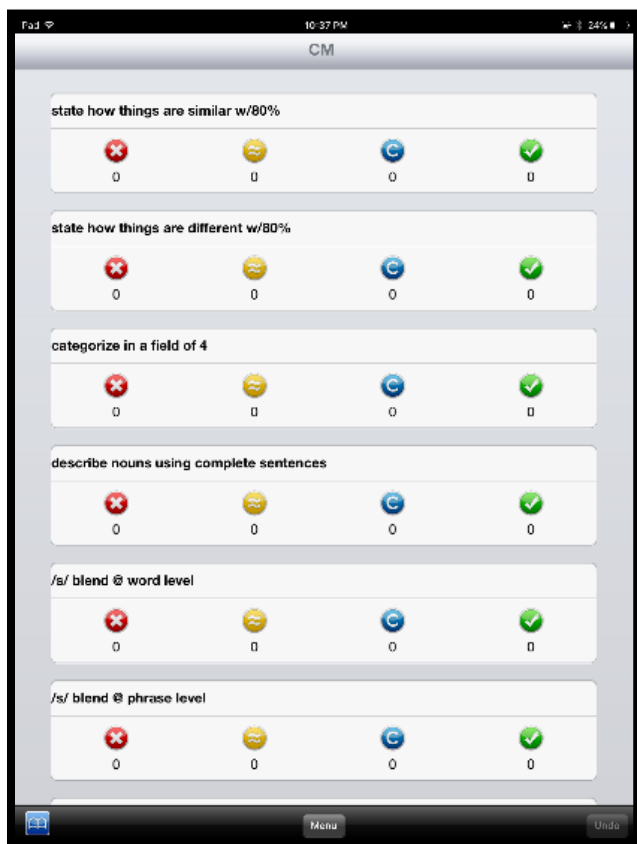
This system allows for multiple students to have their data tracked during the same session. Additionally, providers can actively record individual subjective notes for each student during a designated session. Students can be entered by initials for confidentiality, providers can “undo” incorrectly entered information, and sessions will not closeout during unexpected shutdowns. But, the most important consideration for electing to use a technology based data collection system (such as the Super Duper Data Tracker) over other manual data collection methods is that they allow for student data to be collected, graphed, and reported within a matter of seconds.

An additional benefit to using this method of data collection is for the traveling school-based SLP. It is not uncommon for school-based SLPs to work between buildings within the same district, travel to different Head Start locations, or even to travel between districts. Using a tool such as the Super Duper Data Tracker on the iPad allows you to protect the confidentiality of your students at all times by using an initial system and grouping students by building or skills-group. This enables SLPs to access files every day of the week from any of their site locations, as opposed to only being able to access student data on the day the days they are on-site for that student, which can be problematic if different districts use different report writing systems (see figures 1-4 on how data is collected and graphed within the same session).

Although a similar binder system could be created manually with the same confidentially safeguards in place, the purpose of the technology is the ease of report generation, file backup, and transportation of data. If a SLP is working in separate districts they may use different IEP writing systems. For example, one district may use Filemaker Pro and the other district may use EdPlan. One program can be accessed from the internet while the other program needs to have a networked district computer. If a parent calls to schedule an impromptu meeting on days the SLP is at their other site, using this iPad system provides a more convenient way to share data with the team (See Fig 1-4), while continuing to maintain the confidentiality of files. If a SLP were taking advantage of a tool such as the Super Duper Data Tracker app in this scenario, they

could email data graphs to the students IEP team and parents within minutes of being notified.

Figure 1.



Unexpected Discoveries

As previously mentioned, there were also some unexpected revelations that were discovered through the implementation process, which was the improved communication with parents. This phenomenon was realized as two experiences began to converge. First, as I became more familiar and comfortable with using the technology, I was able to show parents visual data on the spot, which could sometimes help assure a concerned or worried parent about their child's progress. Second, as I applied my education to my career experience, I began to develop insight as to why the visual representation of data was providing so much support during meetings with parents. From there, I became inspired to do more investigating based on what I had previously learned.

Figure 2.

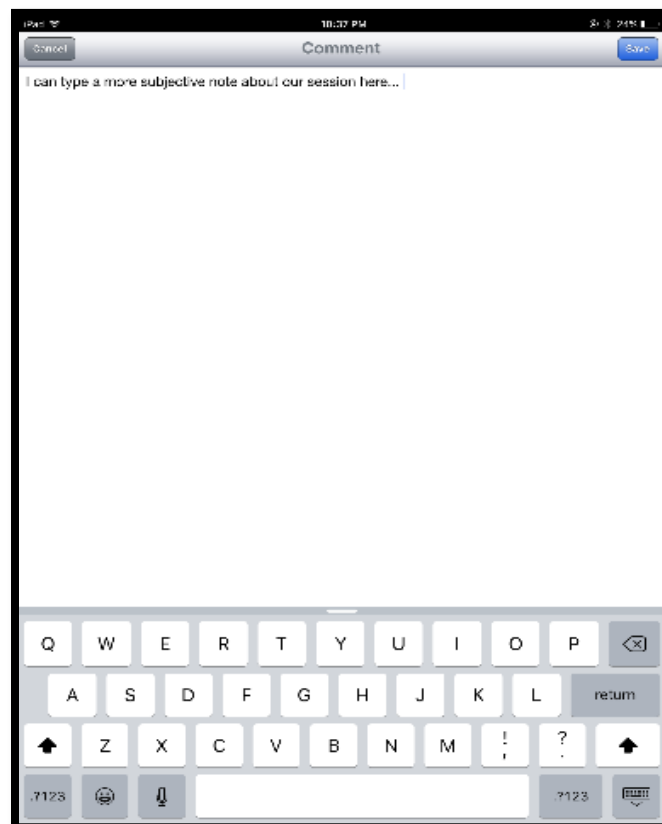
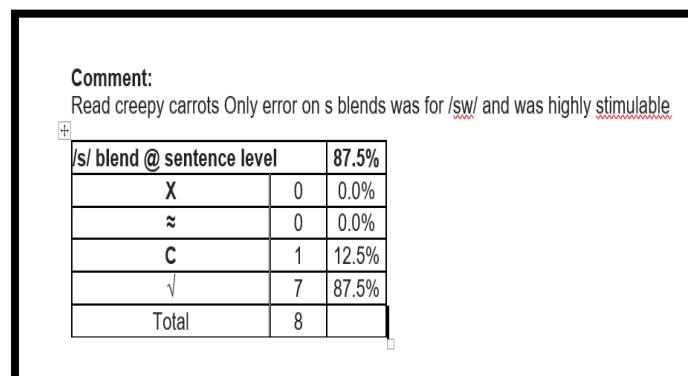


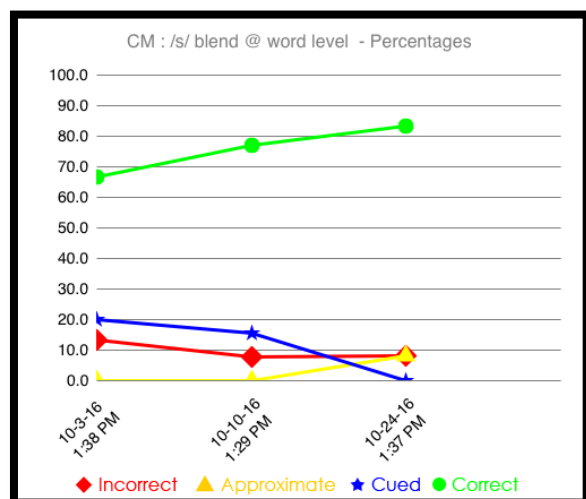
Figure 3.



While I was still working towards my graduate degree, I had attended a Health Literacy lecture at Cincinnati Children's Hospital, which emphasized the need for simplifying the language of medical and educational documents that are provided to families. The readability of these documents was demonstrated using a Flesch-Kincaid analysis, which is an analysis that can be

performed in Word that provides a grade level reading equivalent (Morgan, 2011). In short, the grade level equivalent of many of these documents was well above the National reading average, and a suggested measure for improvement was the consideration of using “plain language” documents.

Figure 4.



A few years later, as I began my professional career, the district I worked in received two documents from the Ohio Department of Education (ODE) based on our recent audit. These two documents were considered the “gold-standard” examples on how to write an evaluation team report (ETR) and an Individual Education Program (IEP). Recalling the previously mentioned health literacy lecture, I decided to repeat their project and I completed a Flesch-Kincaid analysis on what ODE was now suggesting in 2014 as best practice for writing compliant ETRs and IEPs. Here are the results:

Flesch-Kincaid Grade Level by Profession for an ETR

- Speech-Language Pathologist ETR: Grade 15
- Occupational Therapist ETR: Grade 8.8
- Intervention Specialist ETR: Grade 10.5
- School Psychologist ETR: Grade 9.7

Flesch-Kincaid Grade Level for an IEP by section

- IEP Profile: Grade 10.2
- PLOP: Grade 15.3
- Goal: Grade 27.5
- Objective: Grade 27.9

This analysis is concerning, especially considering that ETRs and IEPs are mandated documents with specific guidelines regarding compliance that school teams are obligated to provide to parents. It’s even more concerning when one considers that the National Center for Educational Statistics, (2003) suggests that anything above an 8th grade reading level is difficult for most adults to read. Therefore, if states such as Ohio are mandating that we write goals and objectives that can reach up to a 27th grade reading level, while there is still a wide range of variability regarding caseload vs workload (ASHA, 2015-2016), it is essential that providers find resources which allow them to provide simplified, “plain language,” progress data to parents in a way that doesn’t overburden their workload.

The Equally Unexpected Benefit that Supports the Implementation of Technology Based Data Collection

As SLPs we often tout the validity and sensibility of using visual supports for our students. According to Cuevas & Haydee (2002) the implementation of diagrams are not only beneficial as learning aids, but they significantly increase comprehension of integrative tasks as well increase metacognition (i.e., the ability to recognize your own level of comprehension) (p.458). Therefore, why not expand the implementation of using technology for data collection to facilitate your workload in a manner that will also the benefit parents?

Figures 1-4 demonstrated the ease of using technology as a data collection tool and how it can be implemented. While the data about the reading levels in our mandated documentation, served to inform you about how many families are at a disadvantage when trying to read educational forms and how these factors contribute to our overall workload demands. Although a Flesch-Kincaid analysis was not able to be performed on the graphs, it is the presence of the visual supports which facilitates the integration and comprehension of information (Cuevas & Haydee, 2002).

Therefore, we will review several examples that illustrate the consolidation of the information discussed so far. Which, is a demonstration on how using technology as a data collection tool enables you to reduce workload demands by allowing you to (1) Easily track and collect data on multiple students (2) Use a system that simultaneously graphs that data with the click of a button and (3) Provides visual supports that

facilitate communication and the comprehension of information for parents.

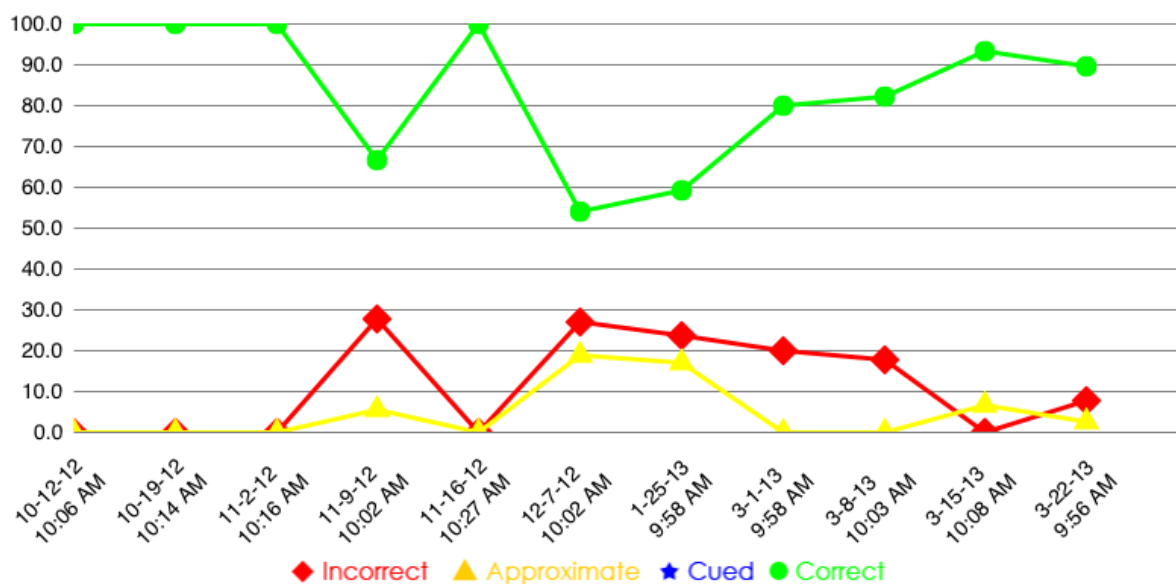
Consider the following statement that was provided when attempting to qualify a student for extended school year services based on regression. In the below paragraph, I provide a lengthy explanation that clocks in at a Flesch-Kincaid 12th grade reading level.

"Student has just recently begun to meet this objective during the most recent three sessions. Additionally, even though Student has just begun meeting this objective in the initial position he demonstrates fatigue during sessions and his accuracy tends to decrease the longer a session lasts. 12/7/2012 was the first session back from Thanksgiving break at which point there was a significant regression. When considering Extended School Year Services, despite regression being an anticipated result of extended time off, any regression that occurs is expected to be recouped within 2-3 weeks. When reviewing Student's progress, it is clear that prior to Thanksgiving break he had mastered this goal but has yet to perform at the level which he was demonstrating prior to Thanksgiving break."

Now, compare reading this above statement as if you were a parent without any guidance to reading it with the following Figure 5.

During a structured speech session and provided with no more than one tactile cue Student will imitate initial fricative sounds with 90% accuracy on 3/4 consecutively documented sessions by the end of the IEP cycle as measured by running records.

Figure 5.



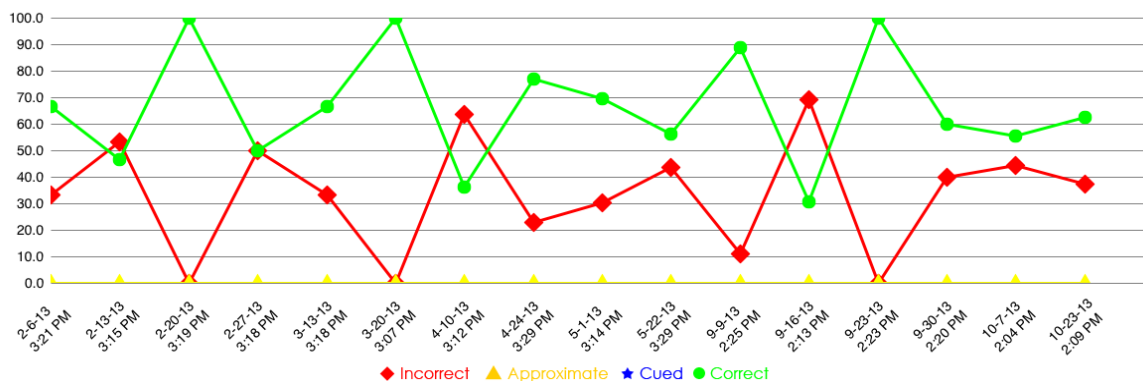
As you can see Figure 5 helps readers to more easily recognize that there was a loss of skills that the student never quite recuperated over an extended period of time. The purpose here is to discuss issues with workload, how technology can be used to address those issues, and to consider some unexpected findings which contribute to the importance of why technology should

be used to address workload issues aside from convenience. These example diagrams are intended to demonstrate the feasibility of implementing technology to reduce workload demands as well as to illustrate how their implementation can lead to improved comprehension, particularly for parents i.e., the unexpected benefit.

Below is another example of how the graphed data can be used in the decision-making process (figure 6). The student referenced in Figure 6 was a Head Start student who we had concerns about potentially moving to the preschool disability classroom. This graph plainly shows that, over an extended period of time, the student was not making consistent progress. The visual representation of the data helped to facilitate team discussions with the parent and allowed us to discuss with greater degree of certainty, the effectiveness of the intervention and the need for increased services.

During preschool class session, the student will independently answer varied WH questions with 80% accuracy on 3/4 consecutively documented sessions by the end of the IEP cycle as measured by running records

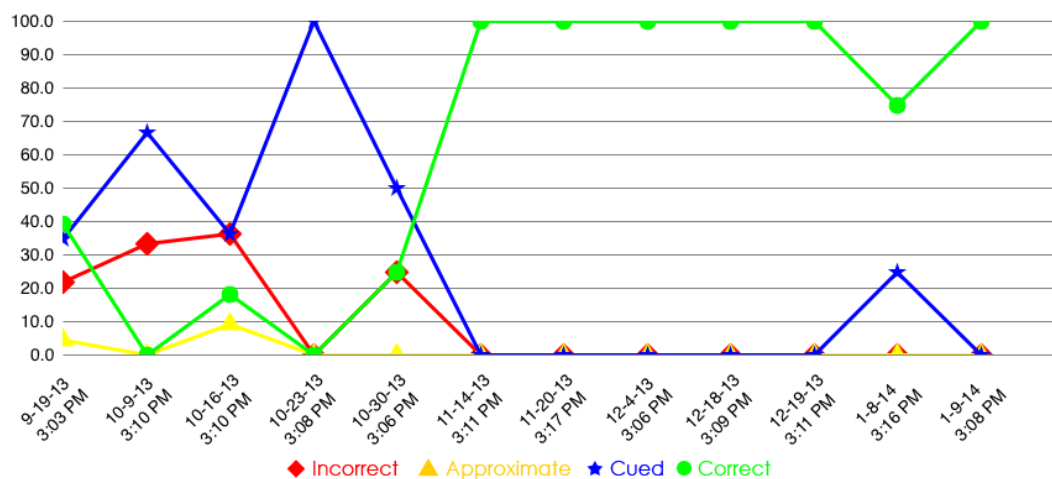
Figure 6.



And of course, graphs that every parent, SLP, and administrator loves to see is the graph that shows consistent and measurable progress, which can be seen clearly in Figure 7 below.

During a structured language session, and provided with a grade level reading passage student will independently answer inferential reading comprehension questions with 80% opportunities on 3/4 consecutively documented sessions by the end of the IEP cycle as measured by running records.

Figure 7.



Remember, the purpose here is to discuss issues with workload, how technology can be used to address those issues, and to consider some unexpected findings which contribute to the importance of why technology should be used to address workload issue aside from convenience. These example diagrams (Figures 5-7) are intended to demonstrate the feasibility of implementing technology to reduce workload demands as well as to illustrate how their implementation can lead to improved understanding for parents (i.e., the unexpected benefit).

Conclusion

As school-based SLPs we are faced with many unique challenges and circumstances. We're both allied health professionals and educators; experts, yet generalists. We have a responsibility to help ensure that every child accesses their right to a free and appropriate public education, but at no point in time could we ever consider placing a student on a waiting list without serious consequences. We wear many hats and try to find balance within the many facets of our busy workloads, on our sometimes maxed out caseloads, with ever changing and evolving state and federal mandates. Yet, we all want to do what is best for our students. Hopefully, by demonstrating some of the ways technology can simplify data collection and support parent communication you will have, at minimum, a new set of strategies to try and implement which will allow you to spend your time more resourcefully.

The benefit of this saved time is more individualized lesson planning for students, increased teacher collaboration, and increased time spent in the classroom providing language enrichment, RTI, Co-teaching, etc., The amount of time saved throughout the year directly and indirectly can surely benefit students in the district. How many of us have that project we would just love to get done if we "only had the time." School-based SLPs can no longer wait for an immediate and drastic reduction to caseload and workload standards, but must start finding practical solutions while we continue to advocate for systemic change. ♦

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Continuing Education Questions

Directions: Consider or note the best answer for each question below as you read each article. Then log in at <https://www.ohioslha.org/login/> to answer the CE Assessment questions for this issue. The choice of receiving a certificate of completion or submission to the ASHA Registry will be available to you as proof of your participation.

Generation Z

12. Why do those in Generation Z indicate preferring face-to-face communication more than other communication methods?
 - a. Believe that verbal and nonverbal interactions cannot be re-created through other communication channels
 - b. Believe it is the fastest method to communicate the most amount of information
 - c. Believe that it lowers the chances for miscommunication
 - d. Believe it enhances the relationship between those communicating with each other
13. Which of the following is NOT a preferred motivation strategy by many in Generation Z?
 - a. Not wanting to let others down
 - b. Advocating for something they believe in
 - c. Public recognition
 - d. Receiving credit towards a larger goal
14. What is the primary online platform those in Generation Z get information?
 - a. BuzzFeed
 - b. YouTube
 - c. Twitter
 - d. Snapchat
15. Which of the following characteristics do those in Generation Z use to describe themselves?
 - a. Optimistic
 - b. Responsible
 - c. Resilient
 - d. Honest

Autonomy & Informed Consent

16. Upholding the bioethical principle of autonomy
 - a. Protects against non-evidence based practice
 - b. Focuses on doing 'good' and providing treatment benefits for client
 - c. Facilitates respect for clients' health care decisions
 - d. Prevents risks to clients
17. While obtaining informed consent during an interdisciplinary procedures, one barrier would be:
 - a. Discriminatory attitudes by medical officers
 - b. Unclear roles and responsibilities for each member of the team concerning overall informed consent
 - c. Clients with communication impairment are never able to provide informed consent
 - d. Interdisciplinary teams are better equipped to address informed consent compared with sole practitioners
18. The facilitating informed consent model
 - a. Guides SLPs to critically evaluate their informed consent interactions
 - b. May only be applied when funding is available to produce accessible healthcare information
 - c. Prescribes wording for informed consent in dysphagia management
 - d. Includes reporting unethical practices
19. Narrative ethics may support client autonomy by
 - a. Shifting health care decision making to a client's family or carer
 - b. Emphasizing spoken over written information during informed consent interactions
 - c. Ensuring clients comply with healthcare team's recommendations
 - d. Placing a client's life story as central to health care decision making

Defining Ambiguous Language

20. According to research, approximately how frequently does a teacher use some form of ambiguous language in the classroom?
- a. 30% of the time
 - b. 50% of the time
 - c. 10% of the time
 - d. Less than 1% of the time
21. A potential factor for adolescents is:
- a. High level of distraction
 - b. Low level of interest
 - c. Infrequency of the use of paradoxes in daily communication
 - d. Academic standing
22. Students who demonstrate a reduced ability to manipulate language into various forms are at risk for
- a. Reduced classroom involvement
 - b. Reduced math skills
 - c. Decreased music skills
 - d. Higher drop out rates
23. The difficulty index allows you to identify
- a. Top performers vs. bottom performers
 - b. The difficulty of a single item
 - c. The difficulty of all items collectively
 - d. The internal consistency of the test as a whole

The Normal Swallow

24. An assessing clinician could expect slower anterior to posterior transfer of the bolus in a normal individual with:
- a. poor labial seal
 - b. a lobular torus palatine
 - c. edentulous status
 - d. vocal fold paralysis
25. During instrumental examination, the clinician could assess mastication most accurately by:
- a. number of jaw strokes
 - b. pattern of jaw strokes
 - c. granularity of the bolus prior to swallow
 - d. length of time of mastication
26. With a bolus size over 10mL, an assessing clinician could expect:
- a. aspiration
 - b. inadequate mastication
 - c. little bolus formation
 - d. piecemeal deglutition/multiple swallows
27. In healthy individuals, accumulation of the bolus can be seen
- a. in the valleculae
 - b. in the oropharynx
 - c. in the pyriform
 - d. all of the above

Neurofeedback Treatment for Traumatic Brain Injury & Concussion

28. Which of the following patients could be recommended for neurofeedback?
- The patient/client continues to notice an increase in memory, somatic symptoms and cognition.
 - The patient/client continues to experience difficulty concentrating on tasks that require receptive and/or expressive language.
 - The patient/client is increasingly agitated despite relaxation and meditation techniques.
 - The patient/client has expressed a lack of interest in trying new therapy techniques.
29. During neurofeedback sessions, there are five specific brainwaves that are recorded for analysis on a brain map that is color coded base based on the severity of damage to the specific area of the brain. What are the five brainwaves?
- alpha, nu, beta, xi, gamma
 - alpha, beta, delta, gamma, theta
 - alpha, beta, gamma, delta, epsilon
 - theta, phi, zeta, rho, delta
30. According to NeuroOptimal, how long do the Zengar neurofeedback sessions typically last?
- 30 minutes
 - 33 minutes
 - 20 minutes
 - 45 minutes
31. Presently, what does a typical neurofeedback assessment tool collect data over?
- somatic symptoms
 - cognitive abilities
 - physical limitations
 - cognitive impairments

Current Barriers to Service Delivery and Considerations

32. What is the primary issue identified with the Ohio “workload” model?
- Ohio has adopted a “workload” model but the caseload maximum of 80 school-age students remains “unchanged.”
 - There is currently state specific legislation which allows each state to adopt the workload or caseload policy that best reflects their own needs. Ohio currently has a workload only model.
 - Caseload vs workload is an essential discussion in our field because high caseloads have been shown to lead to lower measurable outcomes for students, questionable decisions for FAPE, and high job turn-over rates. Ohio has not made an effort to move to a workload model to resolve this issue.
 - Workload and weighted caseload are the same thing.
33. In Ohio, what is the document that provides the official caseload maximum information?
- Whose IDEA is it?
 - The OBSLPA’s Guidance statement on workload determination
 - The Ohio Operating Standards for the Education of Children with Disabilities (2014)
 - Ohio’s Learning Content Standards
34. What information does a Flesch-Kincaid analysis provide?
- An analysis of the vocabulary used within a document
 - How well a person can understand the information in a document
 - The overall word count of a document
 - The readability and grade level equivalent of a document
35. How does the incorporation of visual supports facilitate understanding of documentation?
- Visual supports reduce the grad level reading equivalent of a document.
 - They don’t
 - Visual supports significantly increase comprehension of integrative tasks as well increase metacognition
 - Visual supports are used by everyone to different degrees



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
- Affirms that all applicable research adheres to basic ethical considerations for the protection of human or animal participants in research
- Affirms that there is no copyrighted material in the manuscript or includes a copy of the permission granted to reproduce or adapt any copyrighted material in the paper
- Affirms that the manuscript has not been previously published in the same, or essentially the same, form
- Affirms that the manuscript is not currently under review elsewhere. OSLHA prefers to publish previously unpublished material
- Discloses information about any previous public presentation of the data reported in the submitted manuscript, including at a scientific meeting or in conference proceedings, book chapters, websites, or related media
- Discloses any real or potential conflicts of interest that could be seen as having an influence on the research (e.g., financial interests in a test or procedure, funding by an equipment or materials manufacturer for efficacy research)

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**Submit your manuscript at any time by sending it to the
Journal Editor: Laurie.sheehy@utoledo.edu or the
Business Office oslhaoffice@ohioslha.org**

In The Next Issue of *eHearsay*

Dear OSLHA Members,

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

As I look to what is ahead in 2018-2019, I'm really excited about our upcoming issues and the wonderful people who have volunteered to act as Guest Editor(s).

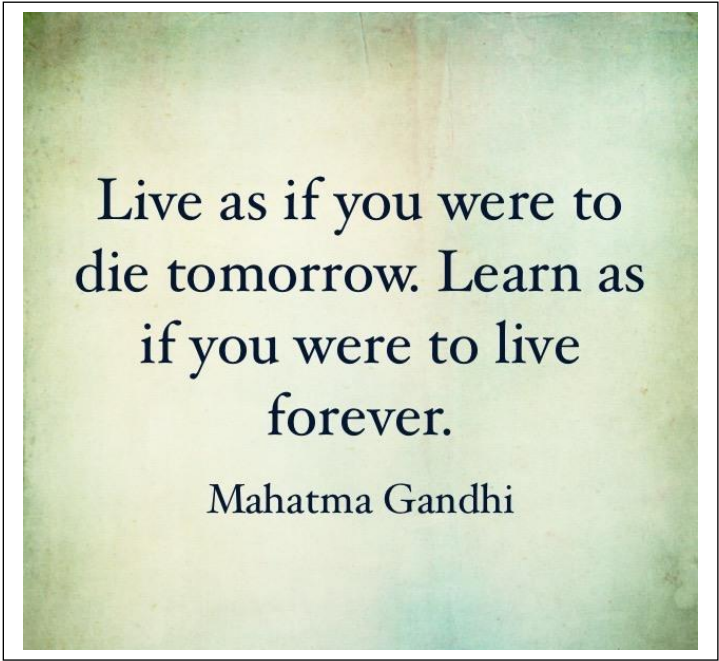
Here is a list (in no particular order) of what will be published and the name/email of the Guest Editor (just in case YOU would like to contribute):

- **Feeding/Swallowing** – Donna Edwards donnaedwards15@icloud.com
- **Audiology** - Maggie Kettler & Dora Murphy
Margaret.Kettler@cchmc.org
Dora.Murphy@thechristhospital.com
- **Culturally & Linguistically Diverse Populations** – Laurie Sheehy Laurie.Sheehy@utoledo.edu
- **Supervision** – Monica Gordon-Pershey m.pershey@csuohio.edu

I'd also love to hear from **YOU**. eHearsay is a peer reviewed journal and is a great way to get your feet wet (so to speak) in publishing.

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

Laurie M. Sheehy
eHearsay Journal Editor



Live as if you were to
die tomorrow. Learn as
if you were to live
forever.

Mahatma Gandhi