Evidence-Based Practice for Speech-Language Pathologists: A Survey of Access and Implementation

by

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Key Words: Evidence-based practice, speech-language pathology, access, facilitators, barriers, usage.

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Abstract

Purpose: The primary aim of this investigation was to identify the extent to which SLPs

implement evidence-based practice (EBP) and discern the facilitators and barriers for use of

EBP, with consideration of access, location of employment, and zip-code.

Methods: An online 40-question Qualtrics survey was distributed to query SLP's current use of

EBP and related facilitators and barriers, with a focus on accessibility and employment zip-code.

Results: Five hundred and thirty-one participants completed the survey and indicated

usually or always using EBP, representing a growth of EBP use. Increased use of journal articles

was also found. The most reported barriers for EBP were lack of time, finances, and access. No

relationship was found between incorporation of EBP and involvement on a multidisciplinary

team. Lack of responses for clinicians employed in rural regions suggested limited accessibility

and/or under-resourced employment settings, rendering increased future research.

Conclusions: While SLPs report increased EBP use, previous facilitators and barriers remain.

Future studies should further inquire about clinicians employed in rural areas, clearly

differentiate between SLPs employed in medical and nonmedical settings to best gather

informative data, and regularly gather data regarding SLPs use of EBP. Future implications

include EBP training at the undergraduate level, research endeavors tailored to clinical need, and

further commitment to remedies for EBP barriers.

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List of Abbreviations

EBP   Evidence-Based Practice

SLP   Speech-Language Pathologist

ASHA   American Speech-Language-Hearing Association

Chapter I

Literature Review

Medical professionals are responsible for making consequential decisions for their patients to achieve optimal health and functional outcomes. Incorporating reliable evidence into clinical decision-making increases the likelihood and reliability of the best health outcomes (Black et al., 2015; Ratner, 2006; Rousseau & Gunia, 2016; Schlosser et al., 2003). There is a wealth of literature that explores the incorporation of evidence into the practice patterns of an array of health professions; however, there appears to be a gap in current research about the reliance on evidence in the field of speech-language pathology related to EBP access, employment location, and zip-code. The aim of this project is to investigate the current facilitators and barriers for use of evidence-based practice (EBP) for currently employed speech-language pathologists with consideration of access, location of employment, and zip-code.

Evidence-based Practice

Evidence-based practice (EBP) is a holistic health care approach that is guided by research supported evidence, clinician experience, and patient preferences (Sackett et al., 1996). The goal of EBP is to use the best evidence available to inform clinical decision making while maintaining a client-centered focus that, ultimately, results in better patient outcomes. Reported use of evidence to inform clinical decision making dates back to the mid-19th century; however, use of the term "evidence-based practice" (EBP) was not formally introduced until 1992 (Sackett, 1997). In collaboration with his colleagues, Sacket (1997) stated that integration of clinical expertise, patient preferences, and best recent research evidence were the three necessary components that support an evidence-based decision. The importance of these three primary components persists today in EBP literature and related discussions. EBP may also provide

frameworks for assessing the quality of clinical outcomes. A simplified yet broad goal of EBP is to incorporate the highest quality of patient care due to informed, supported decisions.

EBP in Healthcare Disciplines

Current EBP research focuses heavily on the medical field, specifically in nursing. The field of nursing introduced an intentional, collective focus on EBP in the early 2000s following years of inconsistent integration of EBP in nursing. This professional shift to prioritize EBP was largely driven by emphasis on patient-centered care via EBP with the aim to improve quality of medical services (Knebel & Greiner, 2003). This focus appears successful as recent studies report that when nurses implemented EBP, they described feeling more empowered and satisfied in their roles and performance as health care providers (Bissett et al., 2016; Farokhzadian et al., 2015; Maljanian et al., 2002). While nursing students and employed nurses expressed support of EBP, nursing faculty survey responses indicated a knowledge gap in how to teach EBP strategies (Kowalski, 2017; Melnyk et al., 2008) and a lack of EBP implementation (Mallion & Brooke, 2016; Warren et al., 2016).

EBP research in the fields of physical therapy, occupational therapy, dietetics, and physiotherapy are also evident in the current available research. In an inclusive survey of these four allied medicine professions and their use of EBP, commonalities and differences between the four professions were identified (Metcalfe et al., 2001). Differences between the specific professions were individuals' views about research barriers and the overall importance placed on research evidence. While differences surfaced between professions, three main common themes related to EBP were revealed: lack of EBP implementation/consistency, similar facilitators for use of EBP, and the need for further EBP training (Metcalfe et al., 2001). These findings support study of EBP through a field-specific approach. Further, conducting EBP research with

specification of context within professions has been purposed to increase specificity (Cheung et al., 2013). Considerations of professions and/or contextual situations can allow research to increase in specificity, while the collection of general incorporative EBP stances are often drawn from in general large-scale manners including diversity within a profession. Whether profession-specific or context-specific, medical research related to EBP was said to double in ten year intervals (Kratochwill & Shernoff, 2004). It is likely that this increase has intensified in the more recent years. For practices to remain up to date and effective with such previously projected progression, information must be updated constantly (Ratner, 2006) and related awareness of the actual incorporation of EBP should parallel this growth.

EBP Influences Outcomes

Understanding that medical professionals are responsible for determining patient diagnosis, prognosis, therapy plan, and other health care considerations further supports the increasing need for EBP (Sackett, 1997). Medical decision-making based on the best available and supported evidence increases quality of patient care and provides support for clinical decision making. Adoption of EBP has been shown to increase the accuracy, precision, proficiency, and effectiveness of medical services (Heiwe et al., 2011; Ratner, 2006; Sackett, 1997; Scurlock-Evans et al., 2014). Implementation of EBP for differential diagnoses determination and treatment planning provides support by linking these clinical processes to previous published outcomes. One study stated that clinical services are improved and variation of services are reduced with prioritization of EBP (Schlosser et al., 2003). Enhancing decisions that affect the patient greatly can increase reliability of the clinical services and recommendations.

Conversely, failure to implement EBP can result in inadequate patient care instead of maximizing and optimizing the patient's well-being. A patient study reports that 30-40% of patients did not receive care that was rooted in published evidence and 20-25% of the care provided was not indicated or potentially harmed the patient (Manske & Lehecka, 2012). This showed that a general deficit in EBP practices may cause harm, as reported from the lens of a patient. Similar studies revealed a potential lack of consistency in EBP, which allows for further investigation the perception, usage, and establishment of EBP in within specific fields (Cheung et al., 2013; Foster et al., 2015).

Facilitators and Barriers for Use of EBP in Healthcare Disciplines

Studies conducted in multiple health professions report overlapping facilitators of EBP such as increased EBP guidance via faculty and administration, a sound foundational understanding of EBP, and medical professionals positive beliefs about EBP (Fineout-Overholt et al., 2004; Pagoto et al., 2007). Usage of EBP is also found to increase confidence in clinical skills (Belden et al., 2012; Patel et al., 2011). Findings from Bridges (2007) suggest that obtaining a higher educational degree allows an increased likelihood of clinician demonstrating propensity to incorporate EBP (Bridges et al., 2007). Facilitators of EBP were reported to increase the likelihood of use of EBP and were associated with greater institutional support. Chang and Grieder (2016) outline the importance of funded institutions sharing research resources to avoid duplication, increase colleague collaboration, and support institutions that could be facing challenges (Chang & Grieder, 2016). They state that such collaboration is a true investment in the acceleration of scientific discoveries that facilitates EBP. Research discoveries are often published in online research journals. Efforts to update and publicize health service

web research materials are reported (Whitener et al., 2005), but barriers on research search engines still exist, years later.

Barriers for implementation of EBP in health care professionals are described as inadequate EBP education, lack of EBP support, negative view of research, perceived lack of time to implement EBP, lack of EBP support in work environment, absence of mentorship, and the omission of EBP in required occupational procedures (Cheung et al., 2013; Fineout-Overholt et al., 2005; Malik et al., 2016; Metcalfe et al., 2001; Pagoto et al., 2007). Increased workload and pressure, ambivalence, inexperience with research, and negative attitudes are also commonly reported as barriers to EBP (Caldwell et al., 2007; Hannes et al., 2009; Scurlock-Evans et al., 2014). Heavy reliance on peer-reviewed research, material primarily tailored to medical settings, and lack of integration of evidence into typical clinical practice created difficulty in efficient adoption of EBP (Foster et al., 2015). A clear barrier found in a study of physiotherapists and EBP was that while practitioners often maintain positive EBP attitudes, they failed to implement EBP consistently (Iles & Davidson, 2006; Nilsagård & Lohse, 2010). This correlates with similar research conducted within the nursing field, as previously mentioned (Mallion & Brooke, 2016; Warren et al., 2016). Failure to implement EBP has been attributed to inconsistency of technology data bases, inability to independently appraise research, perceived lack of relevance, confusion due to incomplete training, inability to interpret statistics, literature not being compiled in one place, and prioritization of traditional models (Dysart & Tomlin, 2002; Malik et al., 2016; Metcalfe et al., 2001; Rappolt & Tassone, 2002; Tacia et al., 2015; Zipoli Jr. & Kennedy, 2005). Table 1 provides commonly reported facilitators and barriers of EBP in allied fields.

Table 1. *Facilitators and barriers for EBP.*

Facilitators	Barriers
Facility and administration guidance and support	Inadequate EBP education
Sound understanding of EBP	Lack of EBP support and mentorship
Positive beliefs about EBP	Negative view of research
Mentorship support	Lack of time
Funding provided by employer	Workload pressure
	Difficulty locating sources

Adapted from: (Belden et al., 2012; Caldwell et al., 2007; Chang & Grieder, 2016; Cheung et al., 2013; Dysart & Tomlin, 2002; Fineout-Overholt et al., 2004; Fineout-Overholt et al., 2005; Foster et al., 2015; Hannes et al., 2009; Malik et al., 2016; Metcalfe et al., 2001; Pagoto et al., 2007; Patel et al., 2011; Rappolt & Tassone, 2002; Scurlock-Evans et al., 2014; Tacia et al., 2015; Zipoli Jr. & Kennedy, 2005)

Particular variables could contribute to facilitators and barriers of EBP such as accessibility, zip-code, employment setting, knowledge of research quality, and interaction with levels of evidence.

Acknowledging Accessibility to EBP

While client preferences, clinical experience, and research evidence should remain a priority for a clinician, these tools cannot be introduced or incorporated without accessibility. A real or perceived lack of access to EBP likely exists for many medical professionals. Further, "access" is more than simply obtaining something. Rather, it means receiving necessary support, shared knowledge, a supported equal right, and the general mutual privilege to approach opportunity. Increased access to evidence could increase the usage of EBP. Benefits of

increasing accessibility via sharing data are to minimize data redundancy, increase reliable conclusions from larger data sets, encourage further novel scientific questions, and expand current studies (Pisani et al., 2016). Sharing access to medical research findings aims to support fellow professionals and colleagues and best benefit patients and related health outcomes. Access to published evidence is highly variable. Studies that are EBP focused frequently list increasing accessibility when proposing important future directions (Brener et al., 2003; De Stefanis & Tomolo, 2010; Fulcher-Rood et al., 2020; Guyatt et al., 2000; Hoffman et al., 2013; McCurtin & Roddam, 2011; Metcalfe et al., 2001; Nail-Chiwetalu & Ratner, 2007; Pisani et al., 2016; Togher et al., 2011; Vallino-Napoli & Reilly, 2004). There is a current, general emphasis on working to make research available to fellow professionals. However, there is a suggested lack of access for particular populations such individuals residing in rural and remote regions (Dew et al., 2013). Hospitals in rural, remote regions are likely to have smaller facilities. For example, it is stated that hospitals with increasing volumes of patients are more effective in their EBP treatment compared to hospitals with lower patient volumes (Halm et al., 2002; Rousseau & Gunia, 2016). Evidence shows that that well-established hospitals maintain consistent evidence protocols for their treatment. This suggests a relationship between the affluence and size of the facility with the ability to maintain quality EBP protocol. Little research has been found investigating the specific reasoning behind the ranging accessibility of EBP for medical professionals.

Zip-code and Employment setting

A specific potential factor for variability in accessibility to EBP is the zip-code and employment setting of a medical professional. Evidence shows that individuals with low socioeconomic status (SES), often residing in rural areas, experience lower quality health services that can contribute to greater health disparities (Adler & Newman, 2002; Rodriguez et al., 2007). This evidence suggests that health care providers in these rural areas are less adept at implementing EBP, perhaps due to lack of access or resources to obtain the most current training. Evidence also addresses hospital size and quality of care, reporting that larger (>200) hospitals implement quality improvement initiatives more than small (>100) or medium-sized (100-200) hospitals (Fadi et al., 2008). Another study reports that higher volume hospitals are associated with better health outcomes (Halm et al., 2002). However, these studies do not detail evidence-based protocols related to quality of care of varying-sized hospitals. Field-specific relationships between zip-code, employment setting, and access to EBP resources are not currently well understood.

Considering Levels of Evidence

Once the evidence has been accessed, the skillful analyses of the evidence available is required. A vital component of understanding and implementing evidence in clinical practice is the ability to adequately determine the quality of the evidence encountered (Barends & Briner, 2014). After acquiring evidence, the professional must analyze and appraise it prior to implementation. It is reported that medical professionals often have difficulty interpreting, understanding, and appraising available evidence (Scurlock-Evans et al., 2014). As a result, EBP can be commonly coined as difficult due to lack of knowledge and understanding. Differentiation is provided through levels of evidence, which are assigned to published studies depending on the

methodological quality of their validity, design, and applicability to client care. When searching

for clinical evidence, it is ideal to rely on the highest level of evidence available whenever

possible (Burns et al., 2011). This supports the evidence outlining the importance of the

development of skills in understanding and differentiating evidence (Rousseau & Gunia, 2016).

Understanding the levels of evidence, how to search journals, and research reading skills may

require further education, particularly for clinicians who are more senior and finished their

formal training prior to the mandate for EBP.

EBP in Speech-Language Pathology Field

While current EBP related research has been largely focused in nursing and other

rehabilitation disciplines, the emphasis on the study and implementation of EBP in the discipline

of speech-language pathology has been more recent. Existing studies occasionally included

speech-language pathologists (SLP) in mass surveys and it is acknowledged that there is

little/less research specific to this field in comparison to other health professions (Hoffman et al.,

2013; Nail-Chiwetalu & Ratner, 2007; Reilly, 2004; Zipoli Jr. & Kennedy, 2005). This deficit in

available research regarding EBP in the speech-language pathology field may inhibit EBP

expansion in the clinical practice of speech-language pathology. According to Ratner (2006), in

order for services to remain effective, research information must be updated constantly (Ratner,

2006). Consistent with anticipated increased publications in this subject area, there is a reported

increased demand for an SLP who is knowledgeable about the value of implementation of EBP

in addition to expectations of departments that merit EBP (Reilly, 2004). Employers may be

reluctant to hire clinicians with only a "superficial" understanding of EBP (Vallino-Napoli &

Reilly, 2004). While there is differentiation in EBP understanding in the field of speech-language

pathology, studies report that practicing SLP's desire an increase of EBP training to sharpen such

skills (Hoffman et al., 2013; Vallino-Napoli & Reilly, 2004). This suggests the need to investigate current EBP usage, accessibility, and future suggestions to provide support for an increase in EBP training.

The American Speech-Language-Hearing Association (American Speech-Language-Hearing Association [ASHA], 2005) described a four step EBP process (https://www.asha.org/research/ebp/) 1) frame your clinical question 2) find evidence 3) assess the evidence 4) make your clinical decision. This EBP tool can be incorporated in all SLP settings (e.g. education, research, and health care settings). ASHA outlines EBP requirements for SLP's that supports the need to make clinical decisions that are supported by research to provide the upmost effective care to increase safety and quality of care. Specifically, Standard III-F (revised) requires speech-language pathologists to demonstrate clinical processes based off of research through the "integration of research principles into evidence-based practice" (American Speech-Language-Hearing Association [ASHA], 2020). Vallino-Napoli and Reilly (2004) reports the importance of EBP is increasing in part because the scope of speech-language pathology services are continually expanding. The scope of practice now includes identification and diagnosis of swallowing disorders, upper airway disorders, accent modification, transgender communication, and literacy (Tambyraja et al., 2014; Thornton, 2008). With growing expectations within this practice, clinicians are increasingly responsible for supporting their diagnostic and treatment recommendations to increase reliability, justify their decisions, report to insurance companies, and adhere to outlined EBP ASHA expectations.

Of the existing research about SLP's involvement with EBP, there is a lack of consistency related to EBP usage and conceptualization over time. For example, a survey of speech-language pathologists, published in 2003 queried EBP in dysphagia management. Results

described that less than half of the clinicians had any experience with EBP (Brener et al., 2003). More recent studies suggest a recent growth in SLPs undertaking EBP. For example, 35% of SLP's have conducted formal research projects with IRB approvals (Gregorio, 2017). However, another study shows that just 13% of survey respondents were able to provide the three-part definition to EBP and results show inconsistent understanding of levels of evidence (Thome, 2018). While this discrepancy of EBP adoption and conceptualization can appear to lack consistency, consideration of the time frames of data collection reveals a more recent inclusion of EBP in the speech-language pathology field.

Years of clinical experience and perception of EBP of SLP's

Related to tenure in the profession, a relationship likely exists between the number of years a clinician has practiced and their EBP usage. A study found that clinicians who practiced speech-language pathology in a range of settings for 10 years or less were more likely to incorporate research to guide their decisions compared to those practicing for over 10 years (Vallino-Napoli & Reilly, 2004). ASHA published a position statement the following year that required, outlined, and implemented EBP in the field of speech-language pathology. However, since this position statement in 2005, there is not consistent data regarding the extent to which clinicians pursue EBP approaches.

What is known about EBP in the speech-language pathology field

While EBP is universally recognized and mentioned in many SLP practices' mission statements, experience with EBP is reported as lacking when considering progression of allied fields and the growth of the speech-language pathology field (Hoffman et al., 2013; Zipoli Jr. & Kennedy, 2005). Of the limited SLP's that report usage of EBP in their practice, facilitators and barriers appear to align with other medical professions. SLP's report barriers such as a lack of

effective information literacy skills (such as location and retrieval of evidence) in a timely

manner (Cobus-Kuo & Waller, 2016; Venediktov, 2014). Many studies report negativity,

dissonance, and frustration about EBP as barriers, while other studies report increased

confidence and empowerment with the incorporation of EBP, representing the facilitation of

EBP (Anita et al., 2014; Foster et al., 2015). Altogether, the literature reflects an array of

attitudes about EBP among SLPs, as attitudes can vary and be reported as barriers and

facilitators. Lack of consistent EBP usage could also be connected to how often literature is

accessed. In regards to implementation of EBP via reading literature, clinicians report referring

to journal articles weekly (12%), monthly (33%), or never (18%) for their clinical decisions

(Vallino-Napoli & Reilly, 2004). These surveys collectively suggest a disconnect between the

understood importance of EBP and the actual implementation of EBP. Altogether, these studies

show preliminary facilitators and barriers in the field of speech-language pathology and a

consistent lack of EBP implementation, although EBP is reported to be valued.

Accessibility of EBP in speech-language pathology and zip-code

Accessibility allows an increase of exposure to evidence in any medical field. Difficulty

in accessing evidence is related to lack of availability of medical libraries, often at the

postgraduate level, which affects many professionals and students. For example, while Medline

is reported as highly accessible, other engines are noted as lacking accessibility (Metcalfe et al.,

2001). In the field of speech-language pathology, all SLP's who have their CCC-SLP from

ASHA gain free access to peer-reviewed journals due to an updated ASHA position statement

(American Speech-Language-Hearing Association [ASHA], 2005). This resource provides

access to journals to support the ASHA requirement for all practicing SLP's to display research

knowledge and integrate research into clinical EBP (Nail-Chiwetalu & Ratner, 2007). A

hindrance to this privilege is that clinical pathways for medically related disorders may not be published in ASHA accessible journals due to favoring higher impact journals. It is likely that many valuable peer reviewed journal articles are not located in the ASHA accessible portal. Purchasing a single published peer-review paper may be cost prohibitive to an SLP who lacks financial support for high impact evidence. Also, it is unclear if ASHA-certified SLP's are aware of this resource and consistently use this available ASHA access. Altogether, research focusing on SLP accessibility of EBP research is limited, indicating a gap in our understanding of access issues within the discipline of speech-language pathology and if zip-code is related.

Justification

The aim of this project is to investigate current clinical practice patterns for implementation of EBP and identify facilitators and barriers of EBP specific to the field of speech-language pathology. The hypotheses for this investigation are as follows: 1) SLP's EBP usage has increased in the last 15 years; 2) clinicians will report barriers related to research access, time, and confidence; 3) clinicians who indicate that they work in a multidisciplinary team are more likely to incorporate EBP; and 4) SLPs who work in rural areas and/or nonmedical locations will report the least accessibility to evidence. This investigation will characterize current access to and use of EBP in the discipline of speech-language pathology, taking into account accessibility issues, workplace setting, and zip-code.

<div align="center">Chapter II</div>

<div align="center">**Manuscript**</div>
<div align="center">*Evidence-Based Practice for Speech-Language Pathologists: A Survey of Access and*
Implementation</div>

<div align="center">**Introduction**</div>

Incorporating reliable evidence into clinical decision-making increases the likelihood and reliability of the best health outcomes (Black et al., 2015; Ratner, 2006; Rousseau & Gunia, 2016; Schlosser et al., 2003). Little is known about the relationship between access to evidence, employment location, and zip-code in the implementation of evidence-based practice in the field of speech-language pathology. The aim of this project was to investigate the current facilitators and barriers for utilization of evidence-based practice (EBP) for currently employed speech-language pathologists with consideration of access, employment setting, and zip-code.

Evidence-based Practice

Evidence-based practice (EBP) is a holistic health care approach that is guided by research supported evidence, clinician experience, and patient preferences (Sackett et al., 1996). The goal of EBP is to use the best evidence available to inform clinical decision making while maintaining a client-centered focus that, ultimately, results in better patient outcomes. Reported use of evidence to inform clinical decision making dates back to the mid-19th century; however, use of the term "evidence-based practice" (EBP) was not formally introduced until 1992 (Sackett, 1997). In collaboration with his colleagues, Sacket (1997) stated that integration of clinical expertise, patient preferences, and best recent research evidence were the three necessary components that support an evidence-based decision.

EBP Influences Outcomes

Adoption of EBP has been shown to increase the accuracy, precision, proficiency, and effectiveness of medical services (Heiwe et al., 2011; Ratner, 2006; Sackett, 1997; Scurlock-Evans et al., 2014). Conversely, failure to implement EBP can result in inadequate or dangerous patient care (Cheung et al., 2013; Foster et al., 2015), as evidenced by a study reporting that of the 30-40% of patients who did not receive care rooted in published evidence, 20-25% could result in care that potentially harmed the patient (Manske & Lehecka, 2012).

EBP in Speech-Language Pathology

The emphasis on the study and implementation of EBP in the discipline of speech-language pathology has been more recent, as EBP related research has largely focused on nursing and rehabilitation disciplines. Existing studies occasionally included speech-language pathologists (SLP) in mass surveys, but it is acknowledged that there is far less research specific to speech-language pathology compared to other health professions (Hoffman et al., 2013; Nail-Chiwetalu & Ratner, 2007; Reilly, 2004; Zipoli Jr. & Kennedy, 2005). The existing research does, however, show that EBP facilitators and barriers for SLPs appear to align with other medical professions. SLPs report similar barriers such as a lack of effective information literacy skills (such as location and retrieval of evidence) in a timely manner (Cobus-Kuo & Waller, 2016; Venediktov, 2014). Many of these studies describe negativity, dissonance, and frustration about EBP as barriers, while other studies report increased confidence and empowerment with the incorporation of EBP (Anita et al., 2014; Foster et al., 2015). Inconsistent EBP usage could also be connected to how often literature is accessed. In regard to implementation of EBP via reading literature, clinicians reported referring to journal articles weekly (12%), monthly (33%), or never (18%) for their clinical decisions (Vallino-Napoli & Reilly, 2004). These surveys

collectively suggest a disconnect between the understood importance of EBP and the actual implementation of EBP.

Facilitators and Barriers for Use of EBP

Facilitators of EBP in both SLP and health professions in general have included increased EBP guidance via faculty-led coursework, a sound foundational understanding of EBP, and medical professionals' positive beliefs about EBP (Fineout-Overholt et al., 2004; Pagoto et al., 2007). Use of EBP was found to increase confidence in clinical skills (Belden et al., 2012; Patel et al., 2011). Chang and Grieder (2016) outlined the importance of funded institutions sharing research resources to avoid duplication, increase colleague collaboration, and support institutions that could be facing challenges (Chang & Grieder, 2016). Efforts to update and publicize health service web research materials for health care professionals facilitates use of EBP (Whitener et al., 2005); however, barriers still exist.

Barriers for implementation of EBP in health care professionals in general include inadequate EBP education, lack of EBP support, negative view of research, perceived lack of time to implement EBP, lack of EBP support in work environment, absence of mentorship, and the omission of EBP in required occupational procedures (Cheung et al., 2013; Fineout-Overholt et al., 2005; Malik et al., 2016; Metcalfe et al., 2001; Pagoto et al., 2007). Increased workload and pressure, ambivalence, inexperience with research, and negative attitudes are also commonly reported as barriers to EBP (Caldwell et al., 2007; Hannes et al., 2009; Scurlock-Evans et al., 2014). Heavy reliance on peer-reviewed research, material primarily tailored to medical settings, and lack of integration of evidence into typical clinical practice were also described as barriers for efficient adoption of EBP (Foster et al., 2015). Failure to implement EBP has been attributed to evidence located in multiple technology data bases, inability to independently appraise

research, perceived lack of relevance, and insufficient training which created confusion, inability to interpret statistics, literature not being compiled in one place, and prioritization of traditional models (Dysart & Tomlin, 2002; Malik et al., 2016; Metcalfe et al., 2001; Rappolt & Tassone, 2002; Tacia et al., 2015; Zipoli Jr. & Kennedy, 2005). Table 1 summarizes commonly reported facilitators and barriers of EBP in allied fields.

Acknowledging Accessibility to EBP

Access to published evidence is highly variable. Studies that are EBP focused frequently describe increasing accessibility as an important future direction (Brener et al., 2003; De Stefanis & Tomolo, 2010; Fulcher-Rood et al., 2020; Guyatt et al., 2000; Hoffman et al., 2013; McCurtin & Roddam, 2011; Metcalfe et al., 2001; Nail-Chiwetalu & Ratner, 2007; Pisani et al., 2016; Togher et al., 2011; Vallino-Napoli & Reilly, 2004). Despite continued emphasis on improved access, there is a suggested lack of access for medical professionals who reside and work in rural and remote regions (Dew et al., 2013). Hospitals in remote regions are likely to have smaller facilities and, therefore, fewer resources which could influence EBP accessibility. Little research has been conducted to investigate hospital geographic location and resource availability with EBP access and implementation.

Zip-code and Employment setting

Variability in accessibility to EBP may be, in part, due to geographical location (zip-code) and employment setting. Evidence shows that individuals with low socioeconomic status (SES) who reside in rural areas, experience lower quality health services that can contribute to greater health disparities (Adler & Newman, 2002; Rodriguez et al., 2007). This evidence suggests that health care providers in these rural areas may be less adept at implementing EBP, perhaps due to lack of access or resources to obtain the most current training. There is also

evidence also that hospital size may impact quality of care, in that larger (>200) hospitals

implement quality improvement initiatives more frequently than small (<100) or medium-sized

(100-200) hospitals (Fadi et al., 2008). Higher volume hospitals are reported to have better health

outcomes (Halm et al., 2002). Despite the valuable focus on quality of care and patient

outcomes, these studies did not link these outcomes with evidence-based protocols. While the

use of EBP appears to be linearly related to improved patient outcomes, field-specific

relationships between zip-code, employment setting, and access to EBP resources are not

currently well understood.

Professional Resources

The American Speech-Language-Hearing Association (American Speech-Language-

Hearing Association [ASHA], 2005) describes a four step EBP process

(https://www.asha.org/research/ebp/) 1) frame your clinical question 2) find evidence 3) assess

the evidence and 4) make your clinical decision. This EBP tool can be incorporated in all SLP

settings (e.g., education, research, and health care settings). ASHA has an array of resources

related to external evidence searches, understanding research designs, research bias and levels of

evidence, and statistic skills (American Speech-Language-Hearing Association [ASHA], 2005).

ASHA outlines EBP requirements for SLPs that supports the need to make clinical decisions that

are supported by research to provide the upmost effective care to increase safety and quality of

care. Specifically, Standard III-F (revised), requires speech- language pathologists to

demonstrate clinical processes based from research through the "integration of research

principles into evidence-based practice" (American Speech-Language-Hearing Association

[ASHA], 2020). A study by Vallino-Napoli and Reilly (2004) emphasized that the importance of

EBP was increasing in part because the scope of speech-language pathology services continually

expands. With growing expectations within this practice, clinicians are increasingly responsible for supporting their diagnostic and treatment recommendations with evidence to increase reliability, justify their decisions, report to insurance companies, and adhere to ASHA standards for EBP implementation. To aid accessibility, ASHA grants free access to peer-reviewed journals for all SLP's who have and maintain their CCC-SLP from ASHA. A hindrance to this privilege is that clinical pathways for medically-related disorders may not be published in ASHA accessible journals due to favoring higher impact journals or physician-specific journals. Purchasing a single published peer-review paper may be cost prohibitive to a SLP who lacks financial support for high impact evidence.

SLPs EBP Experiences and Clinical Skills

Of the existing research about SLP's involvement with EBP, there is a lack of consistency related to EBP usage over time and EBP conceptualization. For example, a survey of speech-language pathologists, published in 2003, queried EBP in dysphagia management. Results described that less than half of the clinicians used EBP (Brener et al., 2003). However, a recent study suggested growth in SLPs inclusion of EBP (Gregorio, 2017).

Researchers in the speech-language pathology field have emphasized the need for constantly updated research, as demanded by practicing clinicians interested in EBP knowledge and training. According to Ratner (2006), in order for services to remain the most effective, research information must be updated constantly. There is an increased demand by employers for SLPs who value EBP and are knowledgeable about the implementation of EBP (Reilly, 2004). Practicing SLP's have expressed an increased demand for EBP training to sharpen clinical skills (Hoffman et al., 2013; Vallino-Napoli & Reilly, 2004). This suggests the need to investigate

current EBP usage, accessibility, and barriers to provide support to increase EBP training related to evidence, clinician expertise, and client perspective.

Given the documented and proposed barriers to EBP in speech-language pathology, the aim of this project was to investigate clinical practice patterns for implementation of EBP and identify facilitators and barriers of EBP specific to the field of speech-language pathology. The hypotheses for this investigation were as follows: 1) SLP's EBP usage has increased in the last 15 years; 2) clinicians will report barriers for EBP related to access, time, and confidence; 3) clinicians who work on a multidisciplinary team would be more likely to incorporate EBP; and 4) SLP's who work in rural areas and/or nonmedical employment settings would report the least accessibility to evidence.

Methods

Participants

Speech-language pathologists currently practicing in the United States were recruited to complete this survey. Inclusion criteria were as follows: a degree in speech-language pathology, a state license to practice speech-language pathology, have their CCC's, and current employment as a speech-language pathologist. Inclusion criteria were as follows: a degree in speech-language pathology, speech-language pathology state licensure, and current employment as a speech-language pathologist in the United States.

Survey Procedures

A questionnaire that investigated speech-language pathologists' access and usage related to EBP was sent through Qualtrics (version 50). The survey was developed after a current literature review of EBP in the field of speech-language pathology. To address the study

hypotheses, questions regarding financial support, zip-code, and employment setting were included. The format of this survey included 40 questions, with one open-ended question.

Survey distribution methods outlined in the literature were included to allow for optimal survey results (Dillman et al., 2014). Recommendations implemented were as follows: including the benefit of survey participation, allowing responses to be saved and revisited, distribution between intentional time frames (7:00am - 9:00am and 8:00pm - 10:00pm) to target the recipient at the start and/or end of their workday, sending reminder messages in two to three week increments, allowing survey compatibility for multi-media devices, and emphasizing confidentiality of all survey responses. Access to an EBP handout that listed suggestions for accessing EBP was promised to the participants upon survey completion. Survey questions were evaluated and refined through pilot testing prior to distribution. The survey questions are available in Appendix A.

Following approval from the university Institutional Review Board, multiple outreach methods were used to disseminate the survey. Survey participants were contacted through postings to the following ASHA Communities: Autism, Early Intervention, Early-Career Professionals, Research, Rural and Remote Service Delivery, Language Learning and Education (SIG 1), Neurogenic Communication Disorders (SIG 2), Voice and Upper Airway Disorders (SIG 3), Swallowing and Swallowing Disorders- Dysphagia (SIG 13), SLP Health Care, SLP Private Practice, SLP Schools; b) Facebook groups (AAC for the SLP School-Based SLP, Adult Rehab Speech Therapy, Clinical Research for SLPs, Clinical Voice Therapy, Dabbling with Speech Fun, Dysphagia Journal Club, Early Intervention SLPs ~ Birth to 3, Early Intervention Telepractice, FEES and MBS Discussion Group, Gender Spectrum Voice & Communication, Medical SLP Forum, Medical Speech-Language Pathologist Professional Learning Community,

Pediatric Medical SLPs, MedSLP Mentoring: The Curious SLP, NY Speech and Language Pathologists (SLP), Pediatric Physical-Occupational-Speech Therapy Telehealth, PREESCHOOL Speech Language Pathologists, Private Pay SLPs, School-Based SLP, SENSEable Literacy Book Club, S.I.S.T.A.s, Inc., SLPeeps- Middle & High School: For Speech-Language Pathologists in Schools, SLPs going Abroad, SLPs in Home Health Care, SLPs of South Florida (Speech Language Pathologists), SLP Private Practice Beginners, SLP Telepractice Collaboration, Speech-Language Pathologists of Texas, Speech Language Pathology Teletherapy/Telepractice in Schools Discussion, Speech Pathologists at Large, Speech-Language Pathologists & Autism, Speech & Language Therapy- Free resources & evidence-based discussion, Swallowing and Swallowing Disorders Journal Club, Telepractice for SLPs, The Dysphagia Squad, The SLP Revolution, Therapy Ideas for SLPS, Young Autism SLPs); and c) email distribution. Email recipients received a link to the Qualtrics survey and an introductory message explaining the justification for the survey. Recipients of the survey were encouraged to share the survey link with SLP colleagues.

Data Analyses

Descriptive Analysis

Descriptive statistics were used to summarize demographic information, employment experiences, exposure to EBP, facilitators and barriers for EBP, and employment zip-code information. Zip-code responses were differentiated into rural and urban groups based upon population and population density. A population of 50,000 or more and population density of 2,500 or more was classified as urban (Beatty et al., 2020; Ratcliffe et al., 2016). If the zip-code did not clearly fall into rural or urban, geographical investigation occurred to analyze the

location of the zip-code. Due to the minimal number of responses from clinicians working in rural areas, data were analyzed and reported descriptively.

Qualitative Analysis

The aim of analysis of the open-ended question, "Define EBP in your own words," was thematic. Elaborations for answers included in "other" options were similarly qualitatively analyzed for categories and evaluated (on a smaller scale). Qualitative analyses based upon the grounded theory (Reuter et al., 2016; Strauss & Corbin, 1994) were used to address the open-ended responses and examine how SLPs define EBP in their own words. Responses ranged from phrases to brief paragraphs. The grounded theory was applied via an iterative process of open coding, organizing and dividing the data into thematic categories. Initial coding was completed by the leading author: each individual response was carefully read and resulted in either: a) the creation of a new theme; and/or b) assigned to one or multiple existing themes. Coding created categories that contributed to established themes. This process was recorded and detailed in a table to display and organize themes. Answers that were increasingly similar were organized accordingly (i.e. color coded; sub-themes within broad themes). This process occurred twice (by the leading author) and then peer-reviewed to increase quality of the data analysis. Then, the most reported themes were organized into three overarching themes. A graduate speech-language pathology student served as a peer debriefer to question the categorization and formation of themes, expose researcher biases, and share any additional feedback. Final review analysis was completed by the thesis mentor and thesis committee.

Results

Participants

A total of 739 SLPs initiated the survey and completed electronic consent. Of the total number, 208 of the participants provided incomplete responses (i.e., did not respond to over half of the questions) to the extent that they could not be included in data analyses and were thus excluded from the final participant pool. Five hundred and thirty-one SLPs responded to the survey with sufficient data completed to be included in data analyses. All demographic data below are described from the pool of 531 participants and remaining data were analyzed by the number of respondents per question. Participants (N=531) reported being employed in 47 of the 50 states in the U.S. (all states except Maine, North Dakota, Wyoming). Participants' employment state (N=531) was consistent with their resident state for 98% (519) of the respondents and differed for 12 (2%) of the respondents. Five hundred and seven (95%) participants identified as female, 17 (3%) identified as male, four (<1%) selected "other," and three (<1%) did not respond. For the three respondents who selected "other" for sex identification, two indicated N/A, one participant identified as nonbinary and another as genderqueer.

Four hundred and seventy-seven (90%) participants selected White as their race/ethnicity, 19 (4%) selected Hispanic/Latinx, 10 (2%) indicated Black/African American, 10 (2%) identified as Asian, 10 (2%) indicated that they preferred not to answer, 3 (<1%) identified as Native American, and 2 (<1%) did not respond.

One hundred and seventy-one (32%) respondents were within the age range 25-34, 124 (23%) indicated their age range was 35-44, 112 (21%) indicated age range of 45-54, 90 (17%) reported their age range was 55-64, 25 (5%) selected the age range of 65-74, one (<1%)

participant selected 75 years or older and eight (2%) participants did not respond. Over half (57%) of the participants selected the age ranges between 25 and 44 years old.

When asked their highest level of educational achievement, 483 (91%) selected earning a Master's degree, 33 (6%) respondents obtained a PhD, and 15 (3%) indicated that they have a clinical doctorate. When asked how many years since graduating with highest SLP degree, 122 (23%) reported less than five years, 112 (21%) selected 5-10 years, 66 (12%) reported 11-15 years, 42 (8%) said 16-20 years, 107 (20%) selected 20-30 years, and 82 (15%) reported more than 30 years. When asked the total years of speech-language pathology employment, 37 (7%) respondents reported less than 2 years, 139 (26%) said 3-7 years, 92 (17%) indicated 8-14 years, 122 (23%) reported 15-24 years, 91 (17%) said 25-34 years, 44 (8%) indicated employment for 35 years or more, and 6 (1%) did not respond.

Participants were asked to check all the employment settings in which they currently work. Two hundred and twenty seven (43%) indicated school employment, 148 (28%) said they work in a hospital, 121 (23%) reported employment in an outpatient rehabilitation, 109 (21%) work in a private practice, 106 (20%) indicated employment in early intervention, 100 (19%) said they complete work via telepractice, 76 (14%) were employed at a university, 72 (14%) work in a skilled nursing facility/residential health care facility, 57 (11%) reported employment at an inpatient rehabilitation facility, 40 (8%) work in home care/hospice, 10 (2%) respondents selected "other," two (<1%) reported employment at nonresidential health care facility, and no (0%) respondents indicated employment in uniformed services/military. For the 10 respondents who indicated employment at "other" intuitions, their responses included two respondents employed at "non-profit centers," three worked at "specialty clinics," two were involved in "state

education agencies," one employed at a "mental health practice," one was an "independent

contractor," and one worked in "reimbursement." Refer to Table 2 for participant demographics.

Table 2. *Participant Demographics*

Demographic Variable (N=531)	Response Count (Percentage %)		
Sex		**Highest Level of**	
Female	507 (95%)	**Educational Achievement**	
Male	17 (3%)	Masters degree	483 (91%)
Other	4 (<1%)	PhD	33 (6%)
No response	3 (<1%)	Clinical doctorate	15 (3%)
Race/Ethnicity		**Years since graduate**	
White	477 (90%)	**highest SLP degree**	
Hispanic/Latinx	19 (4%)	Less than 5 years	122 (23%)
Black/African American	10 (2%)	5-10 years	112 (21%)
Asian	10 (2%)	11-15 years	66 (12%)
Prefer not to answer	10 (2%)	16-20 years	42 (8%)
Native American	3 (<1%)	20-30 years	107 (20%)
No response	2 (<1%)	More than 30 years	82 (15%)
Age		**Employment Setting***	
25-34	171 (32%)	School	227 (43%)
35-44	124 (23%)	Hospital	148 (29%)
45-54	112 (21%)	Outpatient Rehabilitation	121 (23%)
55-64	90 (17%)	Private Practice	109 (21%)
65-74	25 (5%)	Early Intervention	106 (20%)
75 years or older	1 (<1%)	Telepractice	100 (19%)
No response	8 (2%)	University	76 (14%)
		Skilled nursing/residential	
Total years of SLP		health care facility	72 (14%)
employment		Inpatient rehabilitation	57 (11%)
less than 2 years	37 (7%)	Home care/hospice	40 (8%)
3-7 years	139 (26%)	Other	10 (2%)
8-14 years	92 (17%)	Nonresidential health care	
15-24 years	122 (23%)	facility	2 (<1%)
25-34 years	91 (17%)	Uniformed services/military	0 (0%)
35 years or more	44 (8%)		
No response	6 (1%)		

N = total number of respondents; % = percentage of respondents based on 531 respondents;
**Employment setting question: check all that apply, will not sum to 100%.*

When asked how they heard about this survey (N=497), 225 (45%) respondents said via a

Facebook page, 186 (37%) reported hearing of the survey through an ASHA Community group,

40 (8%) said through email, 37 (7%) indicated they heard about the survey through other

avenues, and 9 (2%) said a coworker. For the 37 respondents who selected "other," 33 (7%) clinicians did not provide the other avenue, two (<1%) participants reported hearing about the survey "through a friend," one (<1%) respondent reported advertisement on "Twitter," the remaining respondent (<1%) said they "cannot recall."

Barriers to EBP

Participants were asked to select all experienced barriers related to EBP (see Figure 1; N=508). Three hundred and ten (61%) respondents said that time was a barrier, 259 (51%) indicated finances as a barrier, and 179 (35%) said that lack of accessibility was a barrier. Time, finances, and lack of accessibility were the top three reported barriers related to EBP. One hundred and twenty four (24%) of respondents indicated that EBP was not emphasized in occupational procedures as a barrier, 92 (18%) reported research inexperience, 57 (11%) identified lack of mentorship, 56 (11%) said their colleagues' views of EBP was a barrier, 56 (11%) indicated difficulty understanding material as a barrier, 26 (5%) selected "other," 26 (5%) said lack of technology created a barrier, 24 (5%) selected lack of knowledge, and the remaining 13 (3%) reported their own personal view of EBP as a barrier. For the 26 participants that selected "other," eight (2%) reported their superior/boss/administration as a barrier, four (<1%) said deficits in available research material (i.e. "small heterogeneous participant groups in available research") was a barrier, four (<1%) reported "none" regarding EBP barriers, two (<1%) indicated their heavy caseload as a barrier, two (<1%) said the prioritization of tradition was a barrier, two (<1%) provided unrelated comments, one (<1%) respondent mentioned COVID-19 restrictions as a barrier, and the remaining respondent (<1%) said they were unsure.

Figure 1. *Barriers related to EBP*

Barriers to EBP use
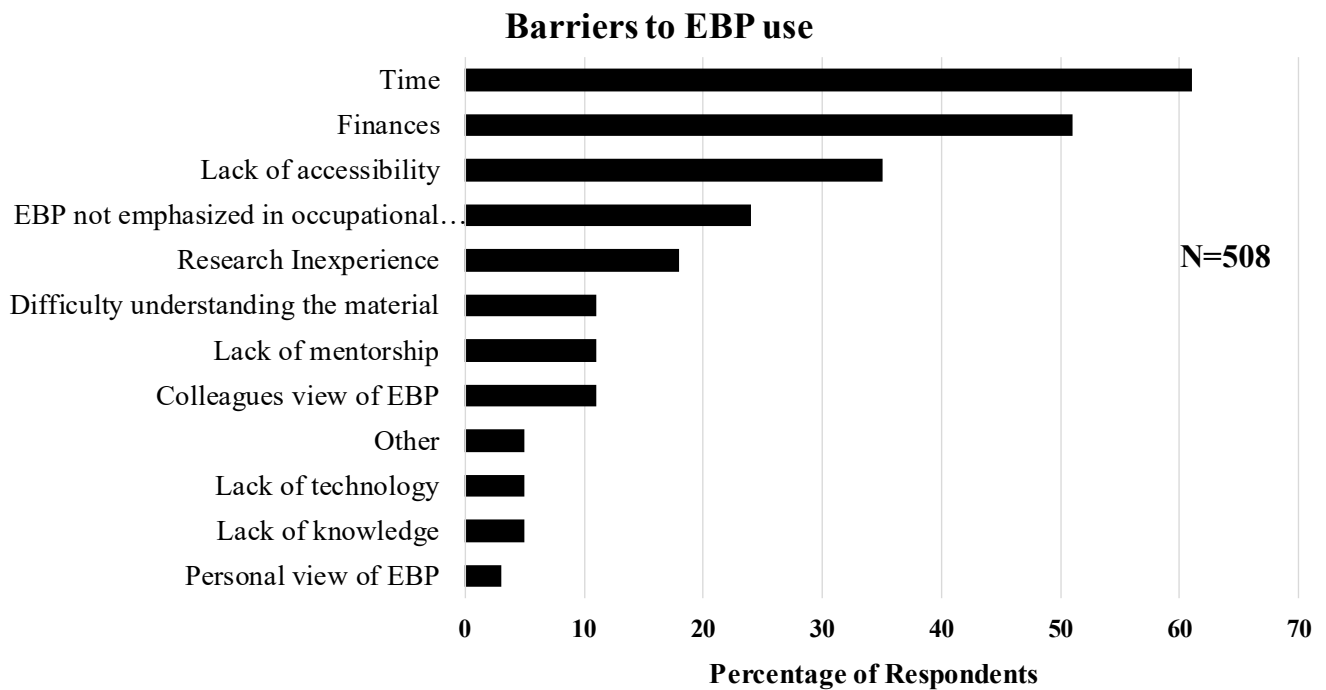
Financial Barrier Emphasized: Employer Support

Finances were ranked as the second most reported barrier to EBP (N=508), with 259 (51%) of clinicians experiencing lack of monetary support. Participants also indicated the amount of individual financial support that their employers provide per year, specifically to build EBP (N=519). Two hundred and eighteen (42%) said their employer did not provide any financial support, 30 (6%) said less than $100 per year was provided, 75 (14%) of respondents indicated $100-$300, 57 (11%) selected $300-$600, 36 (7%) reported $600-$1,000 of financial support per year, 35 (7%) said they receive $1,000-$2,000, 14 (3%) selected $2,000 or more, and the remaining 54 (10%) respondents said they were unsure. See Table 3 for financial support details.

Table 3. *Financial support from employer per year* (N=519)

Monetary Support	Responses (Percentage)
No support provided	218 (42%)
Less than $100	30 (6%)
$100-$300	75 (14%)
$300-$600	57 (11%)
$600-$1,000	36 (7%)
$1,000-$2,000	35 (7%)
$2,000 or more	14 (3%)
Unsure	54 (10%)

When clinicians were asked if they used their personal finances to access a research article (N=528), 208 (39%) responded yes, 233 (44%) said no, and 87 (16%) reported no but they would consider it. Respondents were asked to select all of the areas in which the employer provided access support (N=527). Two hundred and fifteen (41%) respondents indicated that their employer provided EBP training opportunities, 151 (29%) said they were provided support for convention/travel, 150 (28%) indicated receiving technology resources from employers, 143 (27%) reported receiving financial support, 116 (22%) selected "other," and the remaining 94 (18%) said their employers provide EBP courses. Of the 116 participants who selected "other," 72 (14%) said that their employer did not provide any EBP access support, 13 (2%) indicated that EBP access was an individual pursuit, six (1%) said that COVID-19 has reduced employ support/access, six (1%) said their employer provides accounts with access to peer reviewed journals, five (1%) reported CEU's, four (<1%) said that unpaid time off to conduct research/travel to convention supports EBP, three (<1%) said that carrying support levels for EBP access is provided by their employer, two (<1%) indicated library access (i.e. hospital, university) supports EBP, two (<1%) reported their employer provided online EBP courses, one (<1%) said that research assistants support EBP access, one (<1%) respondent wrote "N/A" does not apply due to part time employment, and one (<1%) said their employer purchases EBP

materials which supports EBP access. See Figure 2 for access support to EBP, provided by employer.

Figure 2. *Employer provided access support for EBP*

Access support provided by employer

Category	Percentage
Training Opportunities	25
Conventional/Travel Support	17
Technology Resources	17
Financial Support	16
EBP Courses	11
None	7
Other	4

Percentage of Respondents   N=527
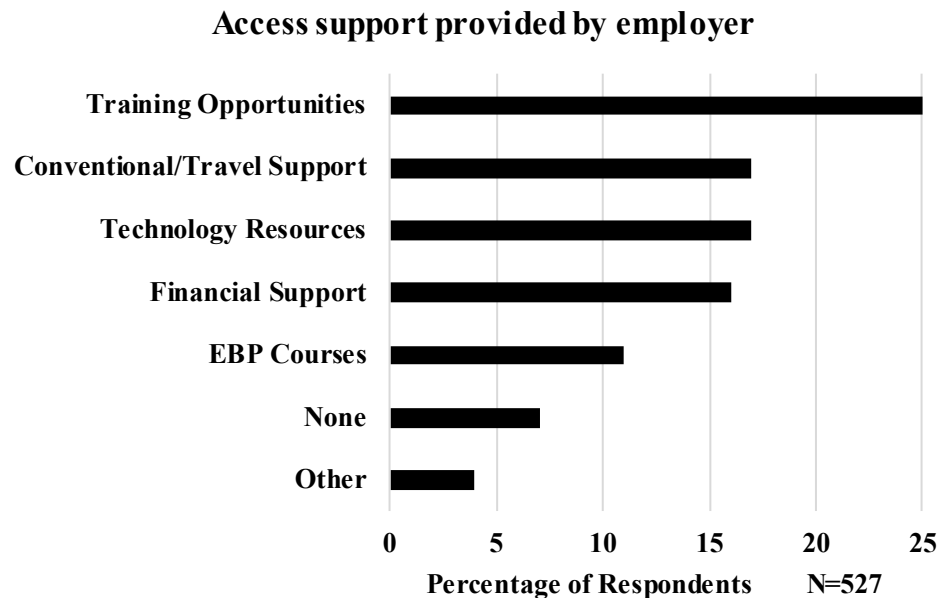
Figure 3 (N= 517) shows that 74 (14%) respondents reported their access to professional libraries as very/always easy, 97 (19%) described access as easy, 162 (31%) respondents said it was somewhat easy, 117 (23%) reported it difficult, 55 (11%) said it was very difficult, and 12 (2%) respondents described it as impossible. Figure 3 reveals a differentation between the 333 (64%) of respondents that described their access to professional libraries within a range of easy, compared to 184 (36%) respondents that said their access experiences ranged more difficult.

Figure 3. *Access to Professional Libraries*

Access to Professional Libraries
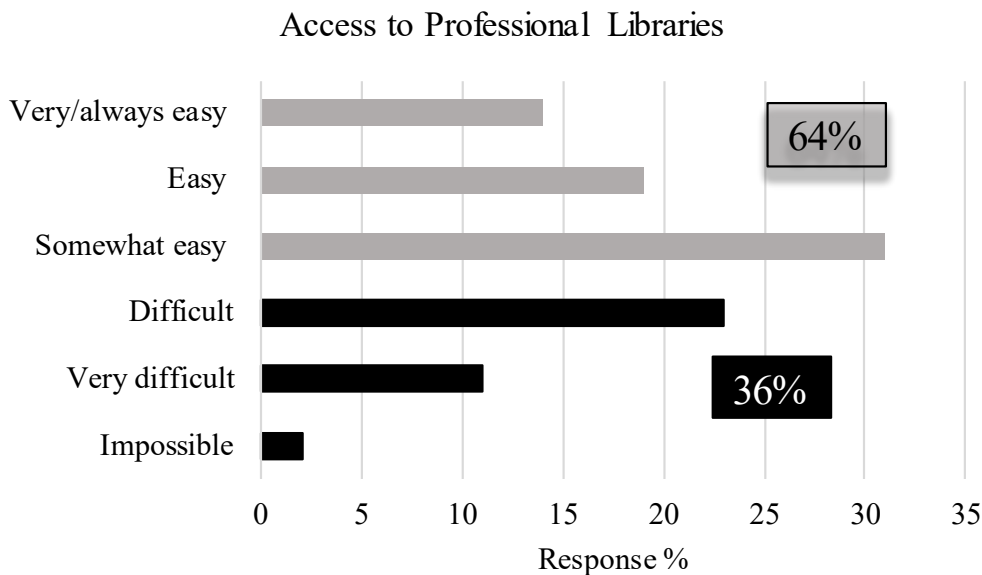
EBP Confidence Ratings

Participants were asked to rate their confidence related to EBP (N=526). One hundred and twenty-five (24%) clinicians reported that they are always confident, 305 (58%) said they are usually confident, 88 (16.7%) reported they are sometimes confident, 8 (1.5%) said rarely, and no respondents reported never having EBP confidence.

Role of Multidisciplinary Team

Across all employment settings (N=530), 419 (79%) of the respondents reported working on a multidisciplinary team, 99 (19%) respondents did not, and the remaining 12 (2%) of respondents were unsure. Of the 419 participants who worked on multidisciplinary teams, 117 (28%) of respondents said they always use EBP in their practice, 241 (58%) said they usually use EBP, 59 (14%) reported sometimes using EBP, 2 (<1%) described rarely using EBP, and no participants (0%) said they never use EBP. Of the clinicians that indicated they did not work on a multidisciplinary team (n=99), 28 (28%) reported always using EBP in their practice, 61 (62%)

reported usually using EBP, 10 (10%) of respondents said they sometimes use EBP, and no respondents (0%) reported either rarely or never using EBP in their practice. Regarding the clinicians who were unsure if they worked on a multidisciplinary team (n=12), one (8%) of them reported always using EBP in their practice, nine (75%) said they usually use EBP, two (17%) said sometimes, and no (0%) respondents said they rarely or never use EBP.

Accessibility to EBP

Urban vs. Rural

Four hundred and ninety-five (97%) of participants, out of 509 participants, were classified as working in an urban region, via the zip-code differentiation method described above in the *a priori* data analyses section. The remaining 14 (3%) respondents were classified as rural. Due to low number of responses from the rural work setting, correlational analyses could not be completed. Therefore, responses were analyzed descriptively. Of the 495 clinicians who work in urban regions, 136 (27.5%) said that they always use EBP, 289 (58.4%) said they usually use EBP, 65 (13.1%) reported sometimes, two (<1%) said rarely, and no respondents (0%) reported never using EBP. Of all clinicians employed in an urban area (N=495), 263 (53%) reported that they access EBP literature at home, 185 (37.4%) reported accessing at their workplace, and 9 (2%) indicated access in both settings, and 38 (7.6%) did not respond.

Of the 14 clinicians employed in rural settings (N=14), 11 (78.6%) indicated that they usually use EBP, two (14.3%) reported always using EBP, one (7.1%) reported sometimes using EBP, and no (0%) respondents said they rarely or never use EBP. Seven (50%) of the respondents employed in a rural area (N=14) reported that their employer did not provide any financial support. Nine (64%) of the 14 respondents said that they access EBP literature at home,

two (14%) reported accessing literature at their workplace, two (14%) respondents said they access literature at home and at their workplace, and one (<1%) did not respond.

Hospital Size and EBP

For the 147 participants who indicated hospital employment (N=147), 28 (19%) indicated employment at a hospital with less than 100 hospital beds, 33 (22%) said 100-200 hospital beds, and 86 (59%) said they are employed at a hospital with more than 200 beds. When respondents employed at a hospital with less than 100 beds were asked how much individual financial support their employer provides each year to build EBP (N=29), 9 (31%) said finances were not provided, 3 (10.3%) indicated less than $100, 3 (10.3%) said $100-300, 4 (14%) selected $300-600, 3 (10.3%) indicated $600-1000, 3 (10.3%) said $1000-2000, 2 (7%) selected $2000, and the remaining 2 (7%) said that they were unsure of the financial support provided. When respondents employed at a hospital with 100- 200 beds were asked how much individual financial support their employer provides each year to build EBP (N=32), 13 (40%) said finances were not provided, 1 (3%) indicated less than $100, 5 (16%) said $100-300, 4 (13%) selected $300-600, 5 (16%) indicated $600-1000, 1 (3%) said $1000-2000, 0 (0%) selected $2000, and the remaining 3 (9%) said that they were unsure of the financial support provided. When respondents employed at a hospital with more than 200 beds were asked how much individual financial support their employer provides each year to build EBP (N=84), 35 (42%) said finances were not provided, (0%) indicated less than $100, 8 (9.5%) said $100-300, 8 (9.5%) selected $300-600, 11 (13%) indicated $600-1000, 9 (11%) said $1000-2000, 2 (2%) selected $2000, and the remaining 11 (13%) said that they were unsure of the financial support provided. When respondents employed at a hospital with less than 100 beds were asked if they ever received EBP training (N=28), 26 (93%) said yes, 1 (3.5%) selected no, and the remaining respondent (3.5%)

said they were unsure. When respondents employed at a hospital with 100- 200 beds were asked

if they ever received EBP training (N=31), 24 (77%) indicated yes, 3 (10%) said no, and the

remaining four respondents (13%) said they were unsure. When respondents employed at a

hospital with more than 200 beds were asked if they ever received EBP training (N=87), 70

(80%) indicated yes, 8 (10%) said no, and the remaining nine respondents (10%) said they were

unsure. When respondents employed at a hospital with less than 100 beds were asked if EBP was

supported/encouraged in their workplace (N=28), seven (25%) said always, eight (29%) selected

usually, nine (32%) reported sometimes, four (14%) said rarely, and no (0%) respondents said

they never receive EBP encouragement in their workplace. When respondents employed at a

hospital with 100 to 200 beds were asked if EBP was supported/encouraged in their workplace

(N=32), 11 (34%) said always, 13 (41%) selected usually, seven (22%) reported sometimes, one

(3%) said rarely, and no (0%) respondents selected never. When respondents employed at a

hospital with more than 200 beds were asked if EBP was supported/encouraged in their

workplace (N=86), 39 (45.3%) said always, 33 (38.4%) selected usually, 12 (14%) reported

sometimes, two (2.3%) said rarely, and no (0%) respondents reported never receiving EBP

support in their workplace. Table 4 details the data related to hospital size, financial support

provided by employers each year, EBP training, and the support/encouragement of EBP in the

workplace setting.

Table 4. *Hospital size; financial support; EBP training; EBP workplace support.*

Variable	< 100 beds	100-200 beds	>200 beds
Individual financial support employer provides per year (to build EBP)	**(n=29)**	**(n=32)**	**(n=84)**
Finances not provided	9 (31%)	13 (40%)	35 (42%)
Less than $100	3 (10.3%)	1 (3%)	0 (0%)
$100-300	3 (10.3%)	5 (16%)	8 (9.5%)
$300-600	4 (14%)	4 (13%)	8 (9.5%)
$600-1000	3 (10.3%)	5 (16%)	11 (13%)
$1000-2000	3 (10.3%)	1 (3%)	9 (11%)
$2000	2 (7%)	0 (0%)	2 (2%)
Unsure	2 (7%)	3 (9%)	11 (13%)
Have you ever received EBP training?	**(n=28)**	**(n=31)**	**(n=87)**
Yes	26 (93%)	24 (77%)	70 (80%)
No	1 (3.5%)	3 (10%)	8 (10%)
Unsure	1 (3.5%)	4 (13%)	9 (10%)
EBP is supported/ encouraged in my workplace.	**(n=28)**	**(n=32)**	**(n=86)**
Always	7 (25%)	11 (34%)	39 (45%)
Usually	8 (29%)	13 (41%)	33 (39%)
Sometimes	9 (32%)	7 (22%)	12 (14%)
Rarely	4 (14%)	1 (3%)	2 (2%)
Never	0 (0%)	0 (0%)	0 (0%)

Note: N = total number of respondents. % = percentage of respondents based on respondents per question.

Defining EBP

Respondents were asked to "Define, in your own words, what evidence-based practice (EBP) means." (N=479), using an open response format. The narrative responses were analyzed by the leading author, thesis mentor, thesis committee, and a peer debriefer. Themes were closely evaluated, edited, and confirmed by a peer debriefer, who served as an unbiased critical thinker (Lincoln & Guba, 1985). Common themes identified were a) Discernment of current and effective research; b) Client-specific considerations; c) Clinician judgment informed by multidisciplinary support; and d) Clinician as a channel for EBP. Themes and frequented terms are shown in Figure 4.

Figure 4. *Thematic breakdown and commonly used terms*
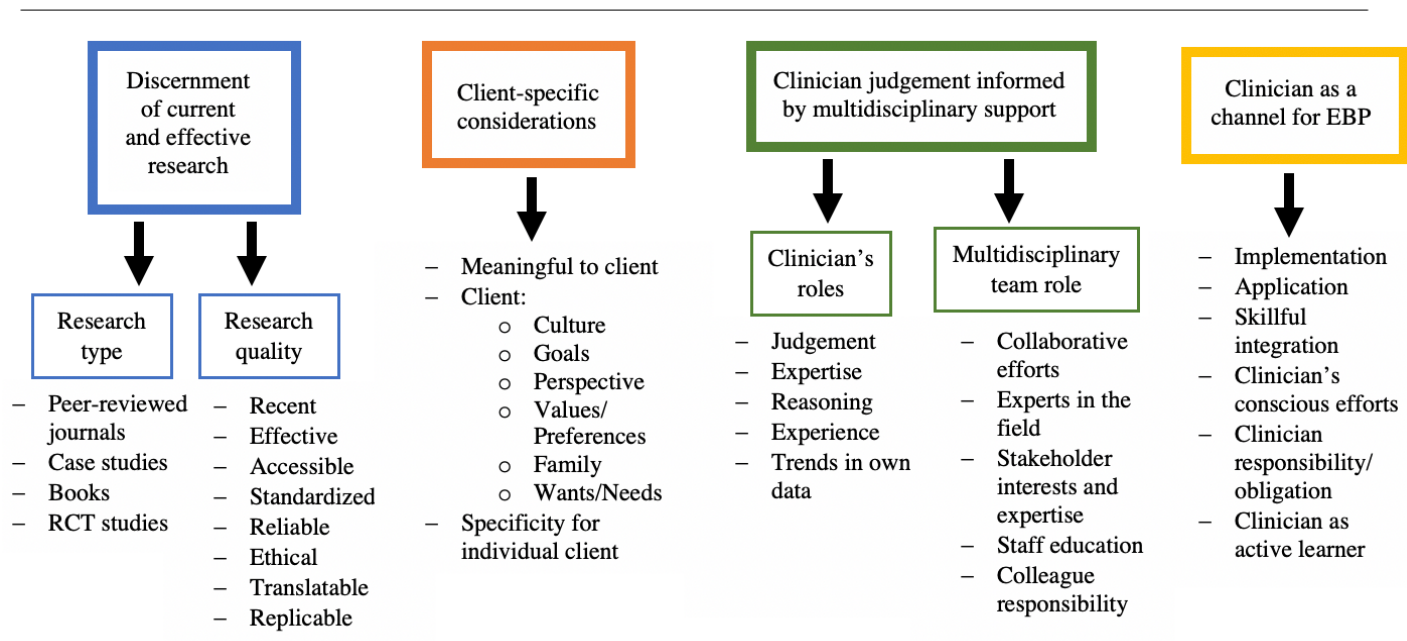
Theme 1: Discernment of current and effective research

The discernment of current and effective research theme was coded from responses that defined EBP with terms that encompass research types and quality measures. For those that elaborated on the *type* of research evidence, terms such as "peer-reviewed journals," "case studies and books," and "RCT studies" were listed. Some respondents elaborated on the levels of evidence when describing EBP in their own words, often associating higher levels of evidence with effectiveness. When describing EBP research by *quality*, many respondents used the following words: "recent," "effective," "accessible," "standardized," "reliable," "ethical," "translatable," and "replicable." Some clinicians report level of research quality by most current publishing dates while other clinicians prioritize data that exhibits larger participant pools.

Theme 2: Client-specific considerations

The theme of client-specific considerations was identified from responses that defined EBP with terms that emphasized the recipient of services and surrounding influential factors. Respondents that defined EBP by client prioritization used the following example phrases: consideration of "client goals," "meaningful to my client" (Participant 381, female, 25-34), and "apply to a specific client" (Participant 45, female, 55-64). Regarding surrounding influential factors, respondents defined EBP by considering the specific clients "culture," "family," "perspective," "values," and "goals." One respondent emphasized these factors in their definition of EBP: "integrate experience and client goals/perspectives/culture/diversity" (Participant 35, female, 55-64). One respondent described EBP as providing services "specific" to the client that "causes no harm" (Participant 180, female, 25-34). This requires clinicians to evaluate what is hypothesized to benefit versus "harm" the client.

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Theme 3: Clinician judgment informed by multidisciplinary support

The third emergent theme, clinician judgment informed by multidisciplinary support, was born from responses that defined EBP as efforts and expertise of the clinician and their colleagues. Respondents used words such as the clinician's "judgment," "expertise," "reasoning," and "experience." One respondent stated that EBP includes "identifying trends in our own data" (Participant 171, female, 35-44)," and another described EBP as an integration of "research with my expertise as an SLP" (Participant 111, female, 55-64). Related to this theme, respondents reported that EBP is the clinical judgment of assessment and treatment materials. Many respondents included multidisciplinary efforts when defining EBP. A trend was noted by words frequented such as "collaborative efforts" with colleagues, "experts in the field," and "stakeholder" expertise/interest, while utilizing team opportunities such as "staff education." Support behind *what* the clinician is using and *why* deemed crucial within this theme of clinician and colleague responsibility. Also, one respondent mentioned "following ASHA guidelines" (Participant 341, female, 65-74) as an ethical responsibility, implemented by the clinician and held accountable by colleagues.

Theme 4: Clinician as a channel of EBP

Another theme observed was the clinician's responsibility to provide EBP. Participants emphasized the clinician's responsibility to "skillfully integrate and apply EBP knowledge" (Participant 62, female, 25-34). The clinician serves as both a provider and channel of EBP and should remain an "active learner" in these efforts. While this theme relates to clinical expertise, it focuses on the implementation efforts of the SLP, described by one participant as "conscious EBP efforts, by practicing clinician" (Participant 149, female, 35-44). EBP is made possible for clients by the clinician. The clinician serves as the driver of EBP, responsible for skillful delivery

of evaluated research, consistently prioritizing clients, and intertwining individual clinical judgment with colleagues. This further emphasizes the clinician's responsibility to provide services rooted in EBP themes.

Also, it should be noted that some participants responded to the prompt by describing what EBP is *not*. For example, EBP was described as "not just Willy Nilly" (Participant 56, female, 35-44) or not "services based on opinions and 'how we've always done it'" (Participant 105, female, 35-44). The later response discourages blind reliance on habitual/traditional approaches because they are widely previously practiced and taught, which has been previously reported (Dodd, 2007).

ASHA EBP Component Awareness

The open responses (N=479) were separately compared to the ASHA EBP three-part definition, previously described in the introduction. One hundred (21%) of the respondents identified all three parts of the definition. Within those responses, evidence/research was most commonly mentioned in provided EBP definitions, by 477 (99%) of respondents, while 148 (31%) of respondents identified the component of clinical expertise, and the remaining 119 (25%) participants identified the component of client perspective. Figure 5 (N=479) details the participants' abilities to provide each portion of ASHA's three-part definition.

Figure 5. *Identification the three parts of EBP*

Defining EBP: 3 parts

1 of 3   **2 of 3**   **3 of 3**   **0 of 3**
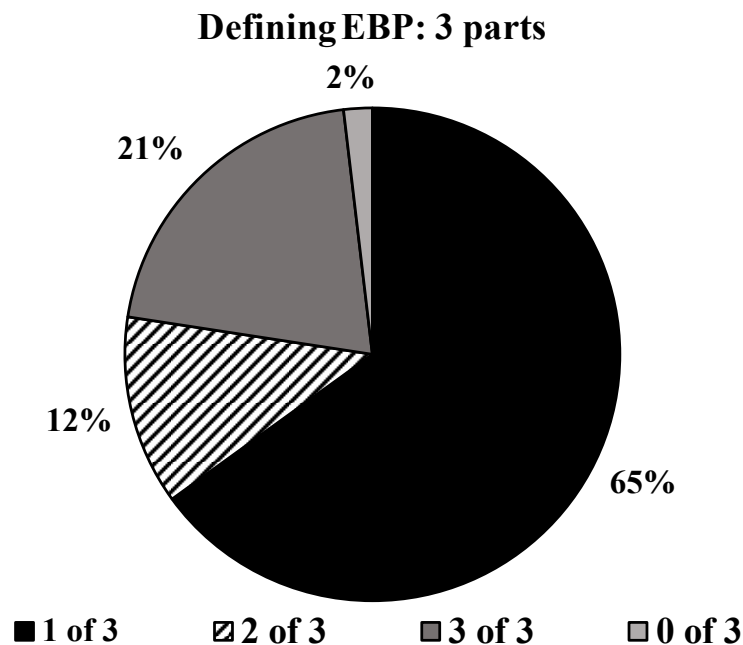
Experiences with EBP: use, foundation, emphasis, and support

One hundred and forty-five (27.3%) reported always using EBP (N=530), while 311 (59%) selected usually, 71 (31.4%) said sometimes, 3 (>1%) reported rarely, and no respondents said they never use EBP. When asked to describe their foundation of EBP (N=530), 86 (16%) said their EBP foundation was exceptional, 207 (39%) reported it as good, 180 (34%) of respondents said their EBP foundation was adequate/average, and the remaining 57 (11%) said their EBP foundation was minimal. When asked to select all sources of EBP evidence (N=528), 453 (86%) selected ASHA journals, 416 (79%) reported an ASHA website, 379 (72%) said educational courses, 358 (68%) indicated professional conferences, 299 (57%) of respondents reported getting evidence from other peer reviewed journals, 257 (49%) said colleagues, 252 (48%) selected their own clinical experiences, 205 (39%) reported use of social media groups/listserves, 160 (30%) respondents selected medical websites, 154 (29%) selected

textbooks, 131 (25%) said they used blogs, and the remaining 33 (6%) respondents selected "other." Of the 33 participants who indicated "other," 20 of the respondents reported receiving EBP evidence from "The Informed SLP," nine said podcasts, two reported EBP originating from professional colleagues from other disciplines, one said "word of mouth," and one respondent reported gaining EBP evidence from Pearson EBP briefs.

When asked which of the listed speech-language pathology experiences emphasize EBP decision-making the most (N=529), 241 (46%) indicated graduate school course work, 188 (36%) said employment, 35 (6%) reported graduate school on campus clinical work, 30 (6%) reported that none of the experiences emphasizes EBP, 16 (2%) graduate school off campus clinical work/externship, 11 (2%) indicated clinical fellowship year, and the remaining 8 (2%) said that their undergraduate experience emphasized EBP. When asked which of the listed experiences emphasized EBP decision-making the least (N=530), 181 (34%) reported their undergraduate experiences, 112 (21%) said employment, 88 (17%) selected clinical fellowship year, 86 (16%) indicated that none of the experiences emphasized EBP the least, 49 (9%) said graduate school off campus clinical work/externship, 8 (2%) said graduate school course work, and the remaining 6 (1%) selected graduate school on campus clinical work. Clinician responses showed that graduate school course work best emphasized EBP, while undergraduate school experiences emphasized EBP the least. Figure 6 represents the participants ranking of speech-language pathology experiences that most and least emphasized EBP.

Figure 6. *Emphasis of EBP per field experience*

Emphasis on EBP
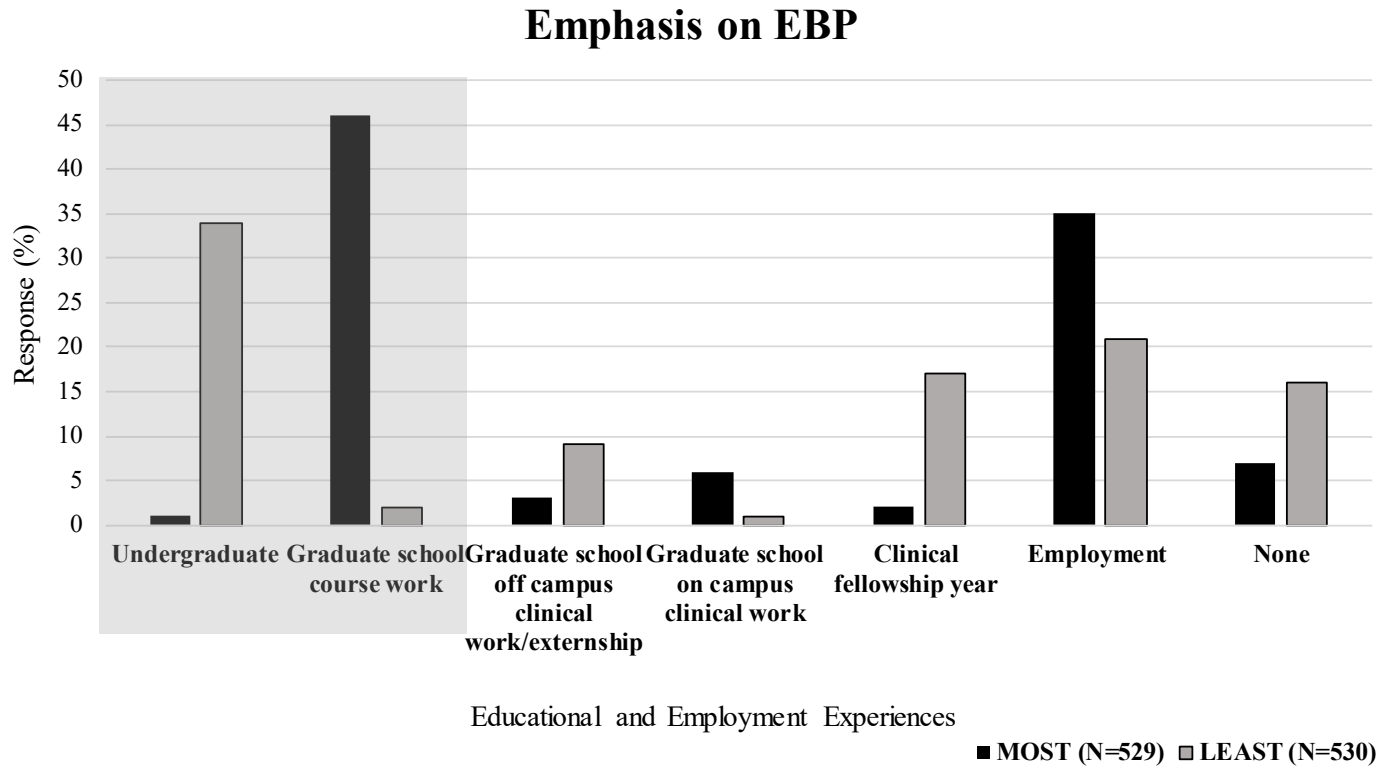
Support for EBP

When asked to select all applicable EBP facilitators (N=528), 454 (86%) selected continued education, 410 (78%) said trainings such as conferences/online CEU's, 305 (58%) indicated personal positive view of EBP as facilitating, 276 (52%) selected easy access to EBP resources, 254 (48%) said research journal availability, 238 (45%) selected workplace support such as professional development, 233 (44%) said previous education, 207 (39%) indicated that available time for EBP research was facilitating, 196 (37%) indicated colleagues' positive view of EBP, 140 (27%) selected trainings provided by employer, 112 (21%) indicated that mentorship was a facilitating factor, 87 (16%) selected financial support, 22 (4%) respondents selected "other." Regarding the value of EBP by a mentor (N=322), 118 (37%) participants reported always having a mentor who values EBP, 89 (28%) reported usually, 42 (13%)

respondents indicated sometimes, 38 (11%) said rarely, and 35 (11%) selected never having a mentor who values EBP. EBP training experience (N=529) was reported by 398 (75%) participants, denied by 73 (14%) respondents, and 58 (11%) were unsure of their EBP training experience.

View of EBP

When asked about the relationship between EBP and better clinical results (N=528), 195 (37%) respondents said that EBP always facilitates better clinical results, 283 (54%) indicated it usually facilitates better clinical results, 46 (9%) said sometimes, 4 (<1%) selected rarely, and no (0%) respondents selected that EBP never facilitates better clinical results. When asked about EBP prioritization (N=526), 323 (61%) respondents indicated EBP should always remain a high priority, 163 (31%) selected usually, 35 (7%) indicated sometimes, 5 (<1%) indicated rarely, and no (0%) respondents said that EBP should never remain a high priority. When asked if clinical competence was directly related to the incorporation of EBP (N=526), 418 (79%) selected "I agree," 31 (6%) disagreed, and the remaining 77 (15%) respondents reported that they were neutral.

When asked to select all the disorder areas in which they are *satisfied* with the EBP availability (N=407), 173 (43%) selected language learning and education, 171 (42%) said swallowing and swallowing disorders-dysphagia, 123 (30%) indicated neurogenic communication disorders, 110 (27%) said school-based issues, 106 (26%) reported voice and upper airway disorders, 96 (24%) said augmentative and alternative communication, 85 (21%) selected fluency and fluency disorders, 57 (14%) said cultural and linguistic diversity, 55 (14%) selected "other," 52 (13%) said craniofacial and velopharyngeal disorders, 47 (12%) selected telepractice, and the remaining 37 (9%) reported gerontology. Of the respondents that selected

"other" when asked which areas they are *satisfied* with the available EBP, 12 provided reflective responses about the constant need to improve in EBP within the field (emphasizing an evolving process), nine expanded with a reflection indicating EBP dissatisfaction and/or inaccessibility, eight said they were unsure or not qualified to respond, four said there is a specific need for research in the pediatric population, three respondents said they were satisfied in the area of early intervention, three reported satisfaction of EBP research related to autism, two said they were satisfied with the area of speech sound disorders, one said they were satisfied with research in childhood apraxia of speech, one reported literacy research satisfaction, one said they were satisfied with head and neck cancer EBP research, and one reported a need to research insurance issues.

When asked to select all of the areas they are *not satisfied* with the EBP available (N=394), 195 (49%) selected telepractice, 125 (32%) indicated augmentative and alternative communication, 125 (32%) said cultural and linguistic diversity, 109 (28%) reported swallowing and swallowing disorders-dysphagia, 98 (25%) indicated neurogenic communication disorders, 85 (22%) selected school-based issues, 78 (20%) said voice and upper airway disorders, 74 (19%) indicated language learning and education, 72 (18%) selected fluency and fluency disorders, 63 (16%) said craniofacial and velopharyngeal disorders, 58 (15%) said gerontology, and the remaining 57 (14%) selected "other." Of the respondents that selected "other" when asked which areas they are *not satisfied* with the available EBP, 16 respondents said they were unsure, nine said they were not satisfied with research of the pediatric population, eight reported that they will not reach satisfaction due to the persistent striving to improve research in the field, three reported research needs related to hearing loss, three respondents said oral motor exercises, three respondents referenced research needs related to respiratory needs, one indicated research

needed for scholarship of teaching and learning, one respondent was not satisfied with EBP research in counseling, one respondent said simulation-based learning, and dissatisfaction was reported in specific disorders (i.e. dysarthria, Autism, adults with intellectually disabilities, pediatric fluency). Figure 7 shows participants satisfaction and lack of satisfaction regarding the EBP available for speech-language pathology specialty areas.

Figure 7. *Satisfaction level of EBP in area expertise*

Satisfaction with EBP available per specialty area
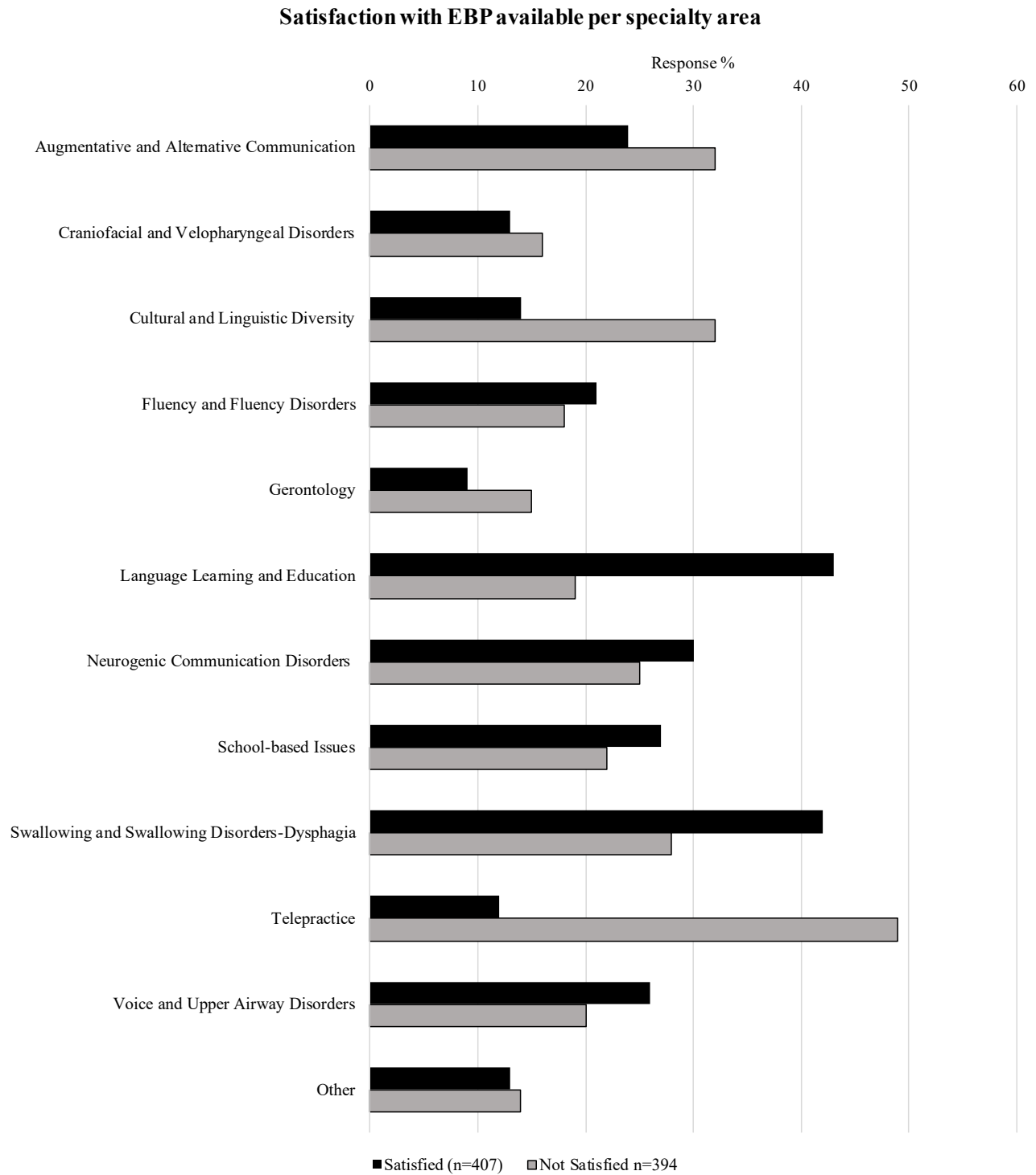
Journal Article Access

When asked how many peer-reviewed research journal articles they have read in the past month (N=530), 107 (20%) said zero, 114 (22%) selected one, 224 (42%) indicated 2-5, 85 (16%) indicated that they read more than six articles per month. When asked how many peer-reviewed research journal articles they have read in the past year (N=529), 16 (3%) said zero, 24 (5%) indicated one, 143 (27%) said 2-5 articles, and 346 (65%) indicated they read more than six peer-reviewed research journal articles within the past year

The most reported physical location during accessing/reading EBP research articles (N=528) was home, which was reported by 283 (54%) of respondents. One hundred and ninety-seven (37%) respondents reported accessing/reading EBP research articles in their work setting, 11 (2%) said both work and home, and 37 (7%) of respondents indicated "other." Of the 37 respondents that selected "other," 15 participants described the technology that they used for online access (e.g., "computer," "online"), eight reported use of ASHA resources, five reported use of journals/list serves, four indicated university library, three mentioned "Informed SLP," and two reported conferences.

When asked to select the prompt that describes their experience when they want to read a peer-reviewed journal article (N=527), 279 (53%) selected "I am usually able to locate it, access it, read it, and understand it," 160 (30%) indicated that they "can locate it but cannot access it," 49 (9%) said that they "can locate it, access it, and read it, but have difficulty understanding it," 25 (5%) selected "other," 14 (3%) said that they "can't locate it to read it." Figure 8 details the reported experiences of respondents when they want to read a peer-reviewed journal article. Responses were crafted to differentiate between steps of a successful experience with research journal articles: ability to locate articles, access articles, read them, and then understand them. Of

the 25 respondents that indicated "other," six mentioned lack of time related to reading research articles, five referenced financial distress, three reported difficulty relating research to clinical experiences, two indicated that research difficulty directly relates to the subject at hand, one respondent said they have never attempted to search a journal article, one respondent said that they solely read the research article abstract, and additional respondents provided personal reflective responses.

Figure 8. *Experiences reading peer review journal articles*

When I want to read a peer reviewed journal article...

Percentage of Respondents   N=527
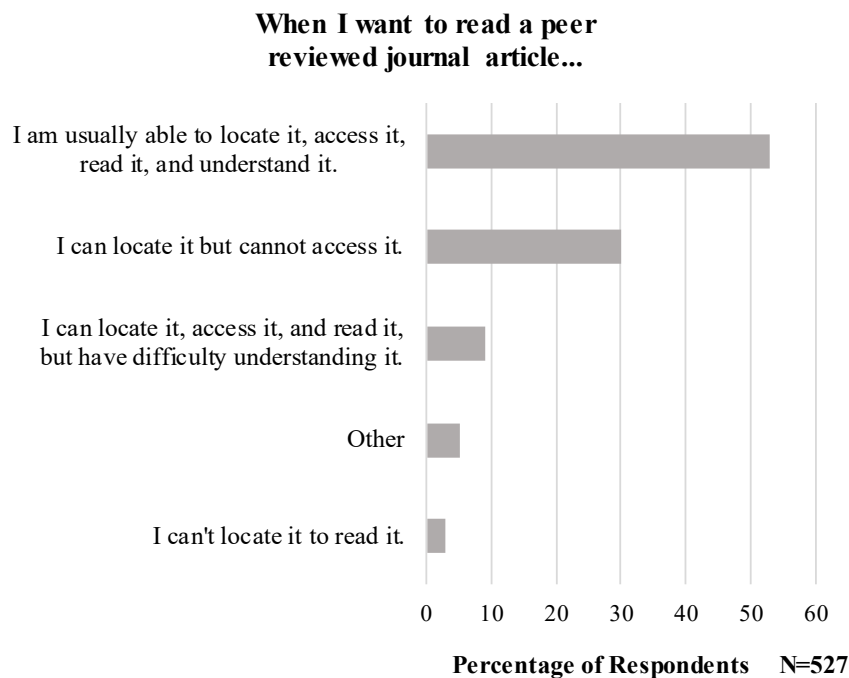
Discussion

The aim of this study was to characterize the current state of EBP implementation among practicing SLPs across employments settings and geographical locations in the United States. The following were hypothesized: 1) SLP's EBP usage has increased in last 15 years; 2) clinicians will report barriers for EBP related to access, time, and confidence; 3) clinicians who

work on a multidisciplinary team would be more likely to incorporate EBP; and 4) SLP's who work in rural areas and/or nonmedical employment settings would report the least accessibility to evidence.

The first hypothesis was evidence-supported in that the majority of participants in this investigation indicated that they always or usually used EBP (27% detailed *always* and 59% indicated *usually* using EBP) when compared to prior surveys as follows: 46% of SLPs use EBP for dysphagia clients (Brener et al., 2003) and 34% of school SLPs reported EBP use at a consistently high level (Jolly, 2009). Further, there is indication of increased EBP use via reliance on journal articles for clinical management. Vallino-Napoli & Reilly (2004) published that 18% of SLPs reported never accessing journal articles and this investigation identified that just 3% of clinician participants have not read a peer-reviewed research journal article within the past year.

The second hypothesis addressing clinician reported barriers related to research accessibility, time, and confidence was partially supported. Time was the most commonly reported barrier, by 61% of survey respondents, which is consistent with other findings (Brener et al., 2003; Close & Lewin, 1998; Cormack, 2010; Fulcher-Rood et al., 2020; Hoffman et al., 2013; Meline & Paradiso, 2003; Mollon et al., 2012; Mullen, 2005; O'Connor & Pettigrew, 2009; Pennington, 2001; Vallino-Napoli & Reilly, 2004; Zipoli Jr. & Kennedy, 2005). Remedies for time constraints are difficult to identify given pressures to achieve productivity benchmarks. One solution that has been proposed is specifically hiring an individual as the EBP team researcher for clinical cases (Hopper, 2007). Because the amount of appropriate allotted time to conduct research for SLPs has not been consistently reported (McCurtin & Roddam, 2011), investigations to identify a realistic and ideal balance of work hours set aside for research are warranted.

Increased completion of EBP education and trainings (i.e., continuing education/CE courses) could also indirectly aid time constraints (Cormack, 2010; McCurtin & Roddam, 2011). Another solution for limited time for accessing EBP could be use of a multidisciplinary team approach in order to increase collaboration via shared responsibilities for the time it takes to search EBP journals.

Finances were reported as the second most relevant barrier by 51% of clinicians, which is consistent with Cheung (2013). High quality EBP training requires financial resources, the limitation of which is somewhat mitigated by the increased availability of free CE courses through various universities, professional organizations, and companies that produce medical devices used by SLPs. High quality, low-cost options for EBP resources include memberships to special interest groups, free seminars for CE credit (i.e. InHealth®), and/or offsetting research convention fees.

Access was the third most reported barrier to EBP by 35% of respondents, which has previously been described (O'Connor & Pettigrew, 2009; Ratner, 2006). Increased access to evidence could increase EBP use. It is not certain whether the 35% of respondents are aware of the professional journals that are freely available to them as a benefit of professional membership. Researchers and academics are often rewarded for publication in higher impact journals, many of which may not be available to SLPs who have no access to medical library resources. Authors of clinically relevant outcomes data may want to weigh the benefits of publication in a professionally accessible or open access journal for the evidence to be available to the clinicians who need it most. Additionally, participation in disorder-themed communities available through professional membership or via social media can also link clinicians to the most recent evidence and fellow colleagues' clinical experiences. Professional journals are

increasingly pushing evidence-based content on social media platforms, which are freely available to all.

When asked about their confidence related to their EBP, 58% of clinicians reported they are *usually* confident. It should be noted that many published studies queried SLPs' view of EBP as a subject, rather than the degree of confidence in their implementation of EBP. Salbach and Jaglal (2011) created and validated an EBP confidence scale for health care professionals that could be used in future studies to quantify SLPs confidence related to their EBP. Confidence scales would be useful benchmarks against which EBP implementation activities could be evaluated for their benefits.

The third hypothesis was not supported in that the data did not establish a relationship between incorporation of EBP with participation in a multidisciplinary team. This could be secondary to differing definitions of the term "multidisciplinary." One respondent indicated that they were not familiar with the term multidisciplinary and, as a result, could not answer the question. Cormack (2010) reported that generation and sharing of ideas with colleagues and clinical teams can support SLPs in their EBP endeavor. For those clinicians who work in a rather isolated manner, online forums, social media groups, and membership in ASHA online Communities may be a way to connect with others and stay updated on current evidence.

It was also hypothesized that SLPs working in rural areas and/or non-medical settings would report less EBP accessibility. While correlational analyses could not be completed due to the small number of participants indicating a rural zip-code, descriptive analyses indicated that rural clinicians reported searching for evidence at home more often than in their workplace setting. This suggests that their employment setting may be under-resourced. A particular

concern for all rural citizens is limited availability or lack of access to broad band internet, referred to as "digital inequality" (DiMaggio et al., 2004; Robinson et al., 2015). It should be noted that quality of access results in an array of user benefits (DiMaggio et al., 2004), indicating that lack of access would result in limited benefits.

It was hypothesized that medical settings would have increased EBP access compared to nonmedical settings. Given the manner in which the survey was constructed, however, evidence to support or refute this hypothesis was difficult to discern. Respondents were instructed to select all of the employment settings in which they work. Because some participants selected both medical and nonmedical work settings, the data could not be cleanly divided into medical versus nonmedical settings for analysis of EBP access. In future studies, investigators should allow for clearer differentiation of medical versus nonmedical settings, reported by the respondent.

Larger hospital size was also hypothesized to provide better access to EBP resources and practice; this was partially evidence-supported. Financial support for EBP did not appear to differ greatly between hospital sizes (number of beds) as shown in Table 4. Hospitals with fewer than 100 beds reported more EBP training, but the lowest amount of EBP support and encouragement in the workplace. On the other hand, most respondents indicating employment at hospitals with more than 200 beds reported always having support/encouragement in the workplace but less training. This suggests that larger hospitals provide increase support and encouragement to incorporate EBP in the workplace, but clinicians may desire more training to reach this priority goal. Well-established hospitals have been associated with better outcomes (Halm et al., 2002), which could be in part related to increased EBP workplace support and encouragement. It may be that clinicians who staff larger hospitals that encourage and support

incorporation of EBP into clinical practice perceive their training opportunities differently than clinicians who staff small hospitals that are less well resourced.

Qualitative Analysis: What is EBP?

While hypotheses did not address how respondents defined EBP, an inquiry regarding how clinicians define EBP rendered important due to the central subject of the study. As previously described, identified themes were a) Discernment of current and effective research; b) Client-specific considerations; c) Clinician judgment informed by multidisciplinary support; and d) Clinician as a channel for EBP. Overlapping ideas surfaced between the themes in that respondent remarks suggested that clinicians should obtain research discernment and evaluation skills to select EBP evidence (related to theme one), prior to use in their practice. This discernment parallels the third emerging theme related to use of clinical judgment because of the commonality in evaluation. Interestingly, participants appeared to evaluate research quality using differing measures, showing individuality in research selection approaches. The balance between individuality in EBP implementation and incorporation of multidisciplinary efforts renders important to clinical EBP. While the second theme encompasses the idea that specificity of services is predominately client-driven, an additional focus was paid to the clinicians role.

Evaluating EBP definitions based upon ASHA EBP components

The majority of responses defining EBP indicated 'evidence' when defining EBP, significantly more often than the other two components of EBP, a bias within the profession which was previously described and resulted in recommended efforts to balance the three EBP components (Dollaghan, 2007; Fulcher-Rood et al., 2020; McCurtin & Roddam, 2011). A way to increase focus on the client, one of the three pillars of EBP, could be to prioritize patient-reported outcomes such as effort, participation, self-efficacy, and psychosocial functioning

measures. Inclusion of these measures in assessment and treatment allows for more of a client focus (Cohen & Hula, 2020). These measures should be tailored to age (i.e., child versus adult) and disorder area considerations (i.e., voice impairment versus swallowing impairment). Integration of motivational interviewing (Behrman, 2006; Miller & Rollnick, 2012; van Leer et al., 2008) and ethnographic interviewing (Westby et al., 2003) approaches supports patient-centered services. To increase the incorporation of clinical expertise, another pillar of EBP, an emphasis of both individual (Dodd, 2007) and colleague's (Cormack, 2010) clinical judgment can be embedded in evaluation and treatment plans.

Research Demands: research clinical nexus & specific subject areas

Within the accessed research materials (ASHA related or not), participants reported demands for research to be more clinically relevant and needs for research related to specific subject areas in the field. Extended elaboration in open responses revealed a dissatisfaction between clinical needs and available research, which may relate to SLPs likelihood to use EBP research. This need for research to be "clinically friendly" has been previously reported (McCurtin & Roddam, 2011). Further development of the research clinical nexus by requiring intentional collaboration between clinicians and researchers could close the reported discrepancy between current published research and SLPs interests/demands (McCurtin & Roddam, 2011) and increase EBP usage. Approaches to merge research output and clinical needs could include the use of a research utility test to ensure research endeavors as 'usable knowledge' (Justice, 2008).

In addition to a general demand for clinically driven research, respondents reported increased needs for research in particular field specialty areas. Respondents were not satisfied with the evidence available for the specialty areas of gerontology, telepractice, and cultural and

linguistic diversity. While respondents indicated satisfaction with regard to the evidence available for the area of language learning & education, they also communicated research needs in other pediatric subjects. This is expected, as research conducted on young children is generally difficult to conduct due to accommodation of protocols to be children-friendly and complexities related to parental consent (Field et al., 2004).

EBP Training: at the undergraduate and graduate level

While respondents elaborated on the current state of EBP use among clinicians, the foundational training and emphasis of EBP was also addressed in this study. This survey indicated little perceived emphasis of EBP during undergraduate training, signaling that this may be an ideal time to initiate foundational EBP education. Research shows that EBP implementation is related to learned core research skills (Kajermo et al., 2000; Straus, 2007), which may be of more benefit if taught earlier. This focused early learning of EBP research during undergraduate courses is likely ideal before students encounter more time-consuming responsibilities associated with graduate level coursework and clinical training. In addition, EBP research emphasis at the undergraduate level could allow for a more informed decision regarding pursuit of a thesis option at the masters level. The importance of purposeful inclusion of EBP in graduate level training and clinical fellowship year has been shown (Cormack, 2010; Zipoli Jr. & Kennedy, 2005). Curriculum for learning about EBP is reported both at the graduate (Cormack, 2010; Gillam & Gillam, 2008; Goldstein, 2008; Proly & Murza, 2009; Raghavendra, 2009; Rangamani et al., 2016) and undergraduate level (Anema, 2014; Klee et al., 2009; McCabe et al., 2009; Nail-Chiwetalu & Ratner, 2007; Reilly, 2004).

Graduate level experiences yielded more EBP focus than undergraduate; however, data showed that graduate course work emphasized EBP more than graduate clinical/extern

experiences. This finding supports the reported difficulty of clinical crossover/implementation previously reported (McCurtin & Roddam, 2011). A remedy to increase the amount of EBP emphasis for clinical students is to facilitate free access to university library, if possible, to off-site and extern SLP clinical mentors. Access to EBP resources could improve clinical implementation of EBP for those SLPs who are willing to volunteer their time and expertise to supervise and mentor students and allow for collaboration between student and supervisor in the identification of EBP-related research materials. While this will likely benefit the client in experiencing increase EBP treatment, it will also increase collaborative efforts to gather, digest, and implement EBP clinically.

The finding that undergraduate courses were shown to emphasize EBP the least is critical in light of the increase in use of SLPA's in clinical practice and SLPA training programs (American Speech-Language Hearing Association [ASHA], n.d.a; Ostergren & Aguilar, 2015; Paul-Brown & Goldberg, 2001; Robinson Jr., 2010). Given that the minimum ASHA requirements for state licensure board approval for SLPA employment is the receipt of an undergraduate degree in communication disorders, these findings suggest that these SLPA's could be lacking the requisite education regarding EBP for implementation of treatment strategies to achieve the therapy goals determined by the SLP.

COVID-19 Considerations

A common theme throughout entire survey was the influence of the COVID-19 pandemic on the workplace, specifically related to EBP support. It should be noted that this survey was distributed in the midst of the COVID-19 pandemic in June 2020. Multiple participants provided commentary regarding the effects that COVID-19 had on their EBP access, resources, and experience. Reduced financial support for EBP due to COVID-19 was reported by five

participants. Finances during COVID-19 were described as "reduced," "put on hold," "tight," and "put to a halt." Also, COVID-19 caused a sudden spike in clinicians use of telepractice. While this current study reported telepractice as lacking EBP research material, clinicians have reported within the year that telepractice yields similar clinical results as face-to-face therapy (Cangi & Toğram, 2020; del Carmen Pamplona & Ysunza, 2020; McLeod et al., 2020). Given the vital shift to telepractice to provide continuity of care during the pandemic, the reported indication of SLPs positive view of shifting to telepractice (Aggarwal et al., 2020), and the published evidence of effective service delivery via the telepractice model, it is likely that a demand for this evidence will remain high. Further, it should be acknowledged that the current pandemic may have influenced the response rate and accessibility to this survey. For example, some clinicians could have had access to survey in the work setting and not in their home setting from which they provided telepractice during the pandemic.

Strengths and Limitations

Strengths of this investigation included large participant pool, geographical diversity in SLP respondent's representation of 47 states, multiple work settings, and an array of specialty populations. An additional benefit of this survey was the inclusion of EBP resources for survey participants. Once respondents finished the survey, a handout that outlined EBP information and resources based upon the current literature review was made available (Appendix E).

It is acknowledged that a limitation of the study was the large number of participants (208; 28% of total that initiated survey) who did not finish the survey sufficiently enough to be included in data analysis. The broad survey dissemination approach created a large response and survey initiation; however, 171 out of 208 (82%) excluded individuals who did not finish the survey stopped when the survey transitioned from demographic information to the open-ended

prompt. This suggests that respondents were not interested and/or motivated to continue the survey when they reached a prompt requiring a typed response. Relocating the open-ended question to the end of the survey may have yielded a higher percentage of participants included in data analyses.

Surveys are inherently limiting due to the manner in which questions are stated and choices that are made during development of the survey to attract participants and retain their motivation and interest to finish. For example, questions related to medical versus nonmedical settings did not allow for clear differentiation. The low response rate from clinicians employed in rural areas serves as a limitation and could be due to accessibility issues. Future studies should plan for a targeted approach to consent clinicians who practice in rural areas. Also, the method used to differentiate between urban and rural areas did not easily apply to some regions. An alternative method to better evaluate rural versus urban areas could be to divide this data point into three groups: urban, urban cluster, and rural (Ratcliffe et al., 2016). In this method urban area and urban cluster are two distinct groups. A better understanding and differentiation of the geographical areas would provide a stronger study. Future efforts should also consider socioeconomic status when analyzing geographic regions to approach a more holistic understanding of each area. Also, questions in this survey more heavily addressed research/evidence. The survey structure may have biased the participants toward an emphasis of research/evidence when discussing EBP. Awareness of this common bias in future research efforts should be considered.

Additionally, this study posed questions that evaluated SLPs EBP experiences related to gathering evidence (step two) and assessing evidence (step three) of ASHA's four steps of EBP process (American Speech-Language-Hearing Association [ASHA], 2005). This survey did not

specifically emphasize framing clinical questions (step one) and making a clinical decision (step four). Future studies should incorporate investigation of all four steps of the EBP process and inquire if the participants are aware of ASHA resources (i.e. free available access to peer-reviewed journals for all SLP's who have their CCC-SLP from ASHA).

Conclusion

Increased implementation of EBP over the last fifteen years was identified in this survey while facilitators and barriers for EBP implementation as reported by the participants was consistent with previous literature. Many survey responses indicated that increased support is needed for EBP to be accessible and clinically implemented. Findings from this study support the need for more implementation science that addresses clinical pathways for a variety of disorders, earlier EBP training at the undergraduate and graduate levels, and improved workplace support for the time and financial commitment required to identify the appropriate evidence to optimize patient outcomes.

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Evidence Based Practice in the field of Speech Language Pathology

Q55 **INFORMATION LETTER for a Research Study entitled "Evidence Based Practice For Speech-Language Pathologists: Does Workplace or Zip Code Support Access?"**
                                         You are invited to participate in a research study to characterize the current state of Evidence Based Practice (EBP) in the discipline of speech-language pathology across work settings and geographic regions. The study is being conducted by Lauren Allison, Graduate Student, under the direction of Dr. Mary Sandage, Associate Professor in the Auburn University Department of Speech, Language, and Hearing Sciences.   You are invited to participate because you are a speech-language pathologist (SLP) practicing in the United States who obtains the following: a degree in speech-language pathology, a state license to practice, and current CCC's.
What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete a confidential survey. Your total time commitment will be approximately 10 minutes.

 Are there any risks or discomforts? The risks associated with participating in this study are risk of loss of confidentiality. To minimize these risks, we will analyze and report data anonymously, using Qualtrics security protection and measures.

 Are there any benefits to yourself or others? Identification of the facilitators and barriers for access to EBP for SLPs is a vital first step for improving access to EBP for SLPs regardless of work setting.

 Will you receive compensation for participating? If you participate in this study, you can expect to receive a profession-specific guide that provides the most recent EBP support and resources available for SLPs in the U.S.

 If you change your mind about participating, you can withdraw at any time by closing your browser window. Once you've submitted data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University or the Department of Speech, Language, and Hearing Sciences at Auburn University.

 Any data obtained in connection with this study will remain confidential. We will protect your privacy and the data you provide by using Qualtrics, a password protected survey software that features the following: firewall system protection, regular security scans, usage of transport layer security (TLS) encryption, and backups saved daily. Information collected through your participation will be used to complete a graduate thesis project and be submitted for publication in a professional journal.

 If you have questions about this study, please contact Lauren Allison at lha0004@auburn.edu
 If you have questions about your rights as a research participant, you may contact the Auburn

University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

      HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK "I agree to participate."

      Thank you.

◯ I agree to participate (1)

Q1 1. Do you have a license to practice speech-language pathology in your state?

◯ Yes (1)

◯ No (2)

Q2 2. Have you worked in the past 12 months and maintain your CCC's?

◯ Yes (1)

◯ No (2)

Q51 **Demographics**

Q4 3. Age

    ○ 18-24 (1)

    ○ 25-34 (2)

    ○ 35-44 (3)

    ○ 45-54 (4)

    ○ 55-64 (5)

    ○ 65-74 (6)

    ○ 75 years or older (7)

Q5 4. Gender

○ Male (1)

○ Female (2)

○ Other (3) _____

Q6 5. Race/Ethnicity that you identify with: (select all that apply)

☐ Asian (1)

☐ Black/African American (2)

☐ Hispanic/Latinx (3)

☐ Native American (4)

☐ Pacific Islander (5)

☐ Prefer not to answer (6)

☐ White (7)

☐ Other (8) _____

Q7 6. State where you are employed.

▼ Select a state (1) ... Wyoming (51)

Q49 7. State where you live.

▼ Select a state (1) ... Wyoming (51)

Q8 8. Provide the zip code of your place of employment. (To preserve anonymity, individual responses will not be reported in results).

_____

Page Break ──

Q52 **Experience**

Q9 9. Highest level of educational achievement: (Select one).

○ Bachelors Degree (1)

○ Masters Degree (2)

○ PhD (3)

○ Clinical Doctorate (4)

Q10 10. Number of years since graduated with speech-language pathology highest degree.

▼ less than 5 (2) ... more than 30 (7)

Q11 11. Total years of speech-language pathology employment.

▼ less than 2 (2) ... 35 years or more (7)

Q14 12. Current employment setting (check all that apply)

☐   Early Intervention (1)

☐   Home care/Hospice (2)

☐   Hospital (3)

☐   Inpatient rehabilitation (4)

☐   Nonresidential health care facility (5)

☐   Outpatient rehabilitation (6)

☐   Private Practice (7)

☐   Skilled nursing facility/Residential health care facility (8)

☐   School (9)

☐   Telepractice (10)

☐   Uniformed Services/Military (11)

☐   University (12)

☐   Other (13) _____

Q15 13. Do you work on a multidisciplinary team?

○ Yes (1)

○ No (2)

○ Unsure (3)

Q59 14. If you currently work in a hospital, how many hospital beds does your hospital have?

○ less than 100 beds (1)

○ 100-200 beds (2)

○ more than 200 beds (3)

○ NA/I do not work in a hospital. (4)

Page Break ───────────────────────────────────

Q53 Evidence-Based Practice

- -

Q16 15. Define, in your own words, what evidence-based practice (EBP) means.

_____

_____

_____

_____

_____

- -

Q17 16. Have you ever received EBP training?

○ Yes (1)

○ No (2)

○ Unsure (3)

- -

Q18 17. How many peer-reviewed research journal articles have you read in the past month?

○ 0 (1)

○ 1 (2)

○ 2-5 (3)

○ 6+ (4)

- -

Q19 18. How many peer-reviewed research journal articles have you read in the past year?

○ 0 (1)

○ 1 (2)

○ 2-5 (3)

○ 6+ (4)

Q50 19. Where do you access EBP literature, most of the time?

○ Workplace (1)

○ Home (2)

○ Other (3) _____

Q20 20. Of the listed experiences, which emphasized evidence-based decision-making the most?

○ Undergraduate (1)

○ Graduate school course work (2)

○ Graduate school off campus clinical work/externship (3)

○ Graduate school on campus clinical work (4)

○ Clinical fellowship year (5)

○ Employment (6)

○ None (7)

Q45 21. Of the listed experiences, which emphasized-evidence based decision-making the least?

○ Undergraduate (1)

○ Graduate school course work (2)

○ Graduate school off campus clinical work/externship (3)

○ Graduate school on campus clinical work (4)

○ Clinical fellowship year (5)

○ Employment (6)

○ None (7)

Q21 22. Finish the following statement:
I have received a(n) _____ foundation of what EBP is.

○ minimal (1)

○ adequate/average (2)

○ good (3)

○ exceptional (4)

Q22 23. Check any factors that facilitate EBP in your practice. (Check all that apply).

☐   Available time for EBP research (1)

☐   Colleagues' positive view of EBP (2)

☐   Continued Education (3)

☐   Easy access to EBP resources (4)

☐   Financial support (5)

☐   Mentorship (6)

☐   Personal positive view of EBP (7)

☐   Previous education (8)

☐   Research journal availability (9)

☐   Trainings (e.g. conferences, online CEU's) (10)

☐   Trainings provided by employer (11)

☐   Workplace support (e.g. professional development) (12)

☐   Other (13) _____

Q24 24. Check all barriers to EBP in your practice. (Check all that apply).

☐   Colleagues view of EBP (1)

☐   EBP not emphasized in occupational procedures (2)

☐   Finances (3)

☐   Difficulty understanding the material (4)

☐   Lack of accessibility (5)

☐   Lack of knowledge (6)

☐   Lack of mentorship (7)

☐   Lack of technology (8)

☐   Personal view of EBP (9)

☐   Research Inexperience (10)

☐   Time (11)

☐   Other (12) _____

Q26 25. Where do you get EBP evidence? (Check all that apply).

- [ ] ASHA journals (1)

- [ ] ASHA website, (e.g. Practice Portal) (2)

- [ ] Blogs (3)

- [ ] Clinical experiences (4)

- [ ] Colleagues (5)

- [ ] Educational courses (6)

- [ ] Medical websites (7)

- [ ] Other peer-reviewed journals (8)

- [ ] Professional conference (9)

- [ ] Social media groups/listservs (10)

- [ ] Textbooks (11)

- [ ] Wikipedia (12)

- [ ] Other (13) _____

- -

Q35 26. I use EBP.

○ Always (1)

○ Usually (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

Q31 27. I feel confident in my usage and understanding of EBP in my current practice.

○ Always (1)

○ Usually (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

Q34 28. I have a mentor who values EBP in my practice.

○ Always (1)

○ Usually (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

○ N/A (6)

Q36 29. EBP is supported/encouraged in my workplace.

○ Always (1)

○ Usually (2)

○ Sometimes (3)

○ Rarely (4)

○ Never (5)

Q38 30. EBP facilitates better clinical results.

   ○ Always (1)

   ○ Usually (2)

   ○ Sometimes (3)

   ○ Rarely (4)

   ○ Never (5)

Q39 31. EBP should be of high priority.

   ○ Always (1)

   ○ Usually (2)

   ○ Sometimes (3)

   ○ Rarely (4)

   ○ Never (5)

Q41 32. Clinical competence is directly related to the incorporation of EBP.

   ○ I agree (1)

   ○ I disagree (2)

   ○ Neutral (3)

Q42 33. Select which statement best describes your experience or describe in your own words:

○ When I want to read a peer-reviewed journal article, I am usually able to locate it, access it, read it, and understand it. (1)

○ When I want to read a peer-reviewed journal article, I can locate it, access it, and read it, but have difficulty understanding it. (2)

○ When I want to read a peer-reviewed journal article, I can locate it but cannot access it. (3)

○ When I want to read a peer-reviewed journal article, I can't locate it to read it. (4)

○ Other (5) _____

Q60 34. I am satisfied with the EBP available for the following areas. (Check all that apply).

☐ Augmentative and Alternative Communication (1)

☐ Craniofacial and Velopharyngeal Disorders (2)

☐ Cultural and Linguistic Diversity (3)

☐ Fluency and Fluency Disorders (4)

☐ Gerontology (5)

☐ Language Learning and Education (6)

☐ Neurogenic Communication Disorders (7)

☐ School-based Issues (8)

☐ Swallowing and Swallowing Disorders- Dysphagia (9)

☐ Telepractice (10)

☐ Voice and Upper Airway Disorders (11)

☐ None of the above (12)

☐ Other (13) _____

Q66 35. I am not satisfied with the EBP available for the following areas. (Check all that apply).

☐   Augmentative and Alternative Communication (1)

☐   Craniofacial and Velopharyngeal Disorders (2)

☐   Cultural and Linguistic Diversity (3)

☐   Fluency and Fluency Disorders (4)

☐   Gerontology (5)

☐   Language Learning and Education (6)

☐   Neurogenic Communication Disorders (7)

☐   School-based Issues (8)

☐   Swallowing and Swallowing Disorders- Dysphagia (9)

☐   Telepractice (10)

☐   Voice and Upper Airway Disorders (11)

☐   None of the above (12)

☐   Other (13) _____

- -

Q43 36. My place of employment currently provides _____ to facilitate EBP access. (Select all that apply).

☐   Convention/Travel support (1)

☐   EBP courses (2)

☐   Financial support (3)

☐   Technology resources (4)

☐   Training opportunities (5)

☐   Other (6) _____

Q47 37. How much individual financial support does your employer provide per year (to build EBP)?

○ Does not apply: employer does not provide financial support. (1)

○ less than $100 (2)

○ $100-$300 (3)

○ $300-$600 (4)

○ $600-$1,000 (5)

○ $1,000-$2,000 (6)

○ $2,000 or more (7)

○ Unsure (8)

Q57 38. Have you ever paid for access to a research article (with personal finances)?

○ Yes (1)

○ No (2)

○ No, but I would consider it. (3)

Q44 39. How would you describe your access to professional library resources? (Select one)

○ Very/always easy (1)

○ Easy (2)

○ Somewhat easy (3)

○ Difficult (4)

○ Very difficult (5)

○ Impossible (6)

○ N/A (7)

Q45 40. How did you hear about this survey?

○ ASHA community group (1)

○ ASHA facebook page (2)

○ Coworker (3)

○ Email (4)

○ Independent facebook page (5)

○ Other (6) _____

End of Block: Background Information/Demographics

Appendix B

Script

Hello,

I hope this message finds you well! My name is Lauren Allison and I am a graduate researcher in the Department of Communication Disorders at Auburn University. For my master's thesis, mentored by Dr. Mary Sandage, Associate Professor at Auburn University, I developed a survey to query the current practices regarding evidence-based practices (EBP) in the field of speech language pathology.

This 10-minute survey will help characterize the current state of EBP in the discipline of speech language pathology across work settings and geographic regions. All answers will be kept confidential and will be used for research purposes only.

If you are interested, please click on the following link to access the survey:

Paste link here

Your help is appreciated.

Thank you for your time and consideration!

Lauren Allison, B.S., Graduate Researcher
Mary Sandage, Ph.D., CCC-SLP, Associate Professor
Department of Speech, Language, and Hearing Sciences
Auburn University

Appendix C

Approved IRB

AUBURN UNIVERSITY INSTITUTIONAL REVIEW BOARD for RESEARCH INVOLVING HUMAN SUBJECTS
R E S E A R C H   P R O T O C O L   R E V I E W   F O R M
F U L L   B O A R D   o r   E X P E D I T E D

For Information or help contact THE OFFICE OF RESEARCH COMPLIANCE (ORC), 115 Ramsay Hall, Auburn University
Phone: 334-844-5966   e-mail: IRBAdmin@auburn.edu Web Address: http://www.auburn.edu/research/vpr/ohs/index.htm

Revised 5.19.2020   Submit completed form to IRBsubmit@auburn.edu or 115 Ramsay Hall, Auburn University 36849.

Complete this form using Adobe Acrobat Writer (versions 5.0 and greater). Hand written copies not accepted.

1. PROPOSED START DATE of STUDY: 5/1/20   Today's Date: 6/10/20

PROPOSED REVIEW CATEGORY (Check one):   ☐ FULL BOARD   ■ EXPEDITED

SUBMISSION STATUS (Check one):   ■ NEW   ☐ REVISIONS (to address IRB Review Comments)

2. PROJECT TITLE: Evidence Based Practice For Speech-Language Pathologists: Does Workplace or

3. Lauren Allison   Graduate Student   CMDS   lha0004@auburn.edu
   PRINCIPAL INVESTIGATOR   TITLE   DEPT   AU E-MAIL

   1199 Haley Center   7577273092
   MAILING ADDRESS   PHONE   ALTERNATE E-MAIL

4. FUNDING SUPPORT: ☐ N/A ☐ Internal ☐ External Agency: _____   ☐ Pending ☐ Received

For federal funding, list agency and grant number (if available). _____

5a. List any contractors, sub-contractors, other entities associated with this project:
NA

b. List any other IRBs associated with this project (including Reviewed, Deferred, Determination, etc.):
NA

PROTOCOL PACKET CHECKLIST

All protocols must include the following items:

☐ Research Protocol Review Form (All signatures included and all sections completed)
(Examples of appended documents are found on the OHSR website: http://www.auburn.edu/research/vpr/ohs/sample.htm)

☐ CITI Training Certificates for all Key Personnel.

☐ Consent Form or Information Letter and any Releases (audio, video or photo) that the participant will sign.

☐ Appendix A, "Reference List"

☐ Appendix B if e-mails, flyers, advertisements, generalized announcements or scripts, etc., are used to recruit participants.

☐ Appendix C if data collection sheets, surveys, tests, other recording instruments, interview scripts, etc. will be used for data collection. Be sure to attach them in the order in which they are listed in # 13c.

☐ Appendix D if you will be using a debriefing form or include emergency plans/procedures and medical referral lists (A referral list may be attached to the consent document).

☐ Appendix E if research is being conducted at sites other than Auburn University or in cooperation with other entities. A permission letter from the site / program director must be included indicating their cooperation or involvement in the project. NOTE: If the proposed research is a multi-site project, involving investigators or participants at other academic institutions, hospitals or private research organizations, a letter of IRB approval from each entity is required prior to initiating the project.

☐ Appendix F - Written evidence of acceptance by the host country if research is conducted outside the United States.

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Appendix D

Approved Information Letter

INFORMATION LETTER
for a Research Study entitled
"Evidence Based Practice For Speech-Language Pathologists: Does Workplace or Zip Code Support Access?"

You are invited to participate in a research study to characterize the current state of Evidence Based Practice in the discipline of speech language pathology across work settings and geographic regions. The study is being conducted by Lauren Allison, Graduate Student, under the direction of Dr. Mary Sandage, Associate Professor at Auburn University in the Auburn University Department of Speech, Language, and Hearing Sciences.
You are invited to participate because you are a speech-language pathologist (SLP) practicing in the United States who obtains the following: a degree in speech-language pathology, a state license to practice, and current CCC's.

What will be involved if you participate? Your participation is completely voluntary. If you decide to participate in this research study, you will be asked to complete a confidential survey. Your total time commitment will be approximately 10 minutes.

Are there any risks or discomforts? The risks associated with participating in this study are risk of loss of confidentiality. To minimize these risks, we will analyze and report data anonymously, using Qualtrics security protection and measures.

Are there any benefits to yourself or others? Identification of the facilitators and barriers for access to EBP for SLPs is a vital first step for improving access to EBP for SLPs regardless of work setting.

Will you receive compensation for participating? If you participate in this study, you can expect to receive a profession-specific guide that provides the most recent EBP support and resources available for SLPs in the U.S..

If you change your mind about participating, you can withdraw at any time by closing your browser window. Once you've submitted data, it cannot be withdrawn since it will be unidentifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University or the Department of Speech, Language, and Hearing Sciences at Auburn University.

Any data obtained in connection with this study will remain confidential. We will protect your privacy and the data you provide by using Qualtrics, a password protected survey software that features the following: firewall system protection, regular security scans, usage of transport layer security (TLS) encryption, and backups saved daily. Information collected through your participation will be used to complete a graduate thesis project and be submitted for publication in a professional journal.

If you have questions about this study, please contact Lauren Allison at lha0004@auburn.edu

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 844-5966 or e-mail at IRBadmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION ABOVE, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, PLEASE CLICK ON THE LINK BELOW. YOU MAY PRINT A COPY OF THIS LETTER TO KEEP.

_____
Investigator   Date

_____
Co-Investigator   Date

The Auburn University Institutional Review Board has approved this document for use from _____ to _____. Protocol #_____

<u>LINK TO SURVEY</u>

Version Date (date document created):

EBP Resource

Evidence-based practice (EBP) in field of speech-language pathology		
What is EBP?	**Common EBP Facilitators**	**Practical EBP Tips**
− Research supported evidence + clinician experience + patient preferences= **EBP** − Goal of EBP: provide the best patient care and better patient outcomes. − EBP term coined in 1992.	− Understands & values EBP − Confidence in EBP − Facility, mentorship support **Common EBP Barriers** − Time − Difficulty locating and retrieving evidence − Negative attitude(s) − Lack of EBP support and mentorship	− ASHA journals are freely accessible to all ASHA members − PubMed Central offers publicly funded research resulting in final manuscript articles − Contact author directly to request access or pose questions − Check local community and/or university library − Follow journals and publishers on social media − Reach out to an expert or mentor for support − Pose questions in ASHA SIG community − Refer to employment EBP protocols − Use previous clinical experience as guidance − Ask client for their preferences, related to their specific case − Collaborate with colleagues about EBP and clinical experiences
Accessibility, Employment zip code, and EBP		ASHA EBP Resources
There is a suggested lack of EBP access for particular populations, such as individuals residing in rural and remote regions. Further research is required to better understand the relationship between EBP accessibility, employment zip code, and the influence on patient care in the speech-language pathology field.		ASHA EBP Glossary ASHA EBP Policy

(Sackett, 1997; Belden et al., 2012; Patel et al., 2011; Venediktov, 2014; Foster et al, 2015; Skeat & Roddam, 2010; Salbach et al., 2007; ASHA, 2005; Dew et al., 2013)