

SLP SELF-EFFICACY

EVIDENCE-BASED PRACTICE
SELF-EFFICACY OF SPEECH-LANGUAGE
PATHOLOGISTS ACROSS SETTINGS

A Dissertation
presented to
the Faculty of the Graduate School
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In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
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The undersigned, appointed by the dean of the Graduate School, have examined the
Dissertation entitled

EVIDENCE-BASED PRACTICE SELF-EFFICACY
OF SPEECH-LANGUAGE
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DEDICATION

To my husband, Andy, our sons, Jackson and Carter, and my parents, Donald and Wanda. Without you all, this would not have been possible. To my colleagues, who always believed in me and to my students, who have learned along the way with me and taught me more than I could have ever imagined.

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ii
LIST OF FIGURES	vii
LIST OF TABLES	viii
ABSTRACT	x
Chapter	
1. INTRODUCTION TO THE DISSERTATION-IN-PRACTICE	1
Background of the Study	2
Statement of the Problem	5
Purpose of the Study	9
Research Questions and Hypothesis	13
Conceptual/Theoretical Framework	16
Design of the Study	22
Limitations, Assumptions, and Design Controls	30
Significance of the Study	33
Summary	34
References	36
2. PRACTITIONER SETTING FOR THE STUDY	45
History of the Organization	46
Organizational Analysis	48
Leadership Analysis	51
Implications for Research in the Practitioner Setting	52
Summary	53
References	54
3. SCHOLARLY REVIEW FOR THE STUDY	57

Review of Extant Scholarship	59
Expansive Nature of the Field	59
Evidence-Based Practice	60
Confidence Levels	64
Models of Adult Learning	75
Summary	75
References	77
4. CONTRIBUTION TO PRACTICE.....	85
Statement of the Problem	86
Purpose of the Study	90
Research Questions	94
Methods	97
Results	106
Discussion	139
Limitations of the Study	153
Recommendations	154
Implications for Future Research	156
References	157
5. CONTRIBUTION TO SCHOLARSHIP.....	166
Target Presentation	167
Target Journal	168
Submission-Ready Article	169
References for Section Five	192
6. SCHOLARLY PRACTITIONER REFLECTION	209

Influence of the dissertation process on my practice as an educational leader.....	211
Influence of the dissertation process on me as a scholar	213
References	215
Appendix	
A. EVIDENCE-BASED PRACTICE CONFIDENCE SCALE	216
B. SURVEY CONSENT	217
C. QUALITATIVE SURVEY ITEMS	219
D. RECRUITMENT DOCUMENTS.....	220
E. IRB APPROVAL	221
F. DEMOGRAPHIC SURVEY ITEMS.....	222
G. INTERVIEW CONSENT.....	224
H. INTERVIEW PROTOCOL	226
I. PERMISSION TO USE EPIC SCALE	227
Vita	228

LIST OF FIGURES

Figure

1. SLP Average Self-Efficacy Ratings by Experience Group119

LIST OF TABLES

Table	Page
1. Descriptive Statistics of Survey Participants	107
2. Demographics of Interview Participants	108
3. Mean Rank Self-Efficacy Ratings for SLPs With 1-5 Years of Experience	110
4. Self-Efficacy Ratings of Master's Level SLPs	110
5. Mean Rank Self-Efficacy Ratings for SLPs with 11-20 Years of Experience	111
6. Mean Rank Self-Efficacy Ratings for SLPs with 20+ Years of Experience	112
7. Mean Rank Self-Efficacy Ratings for SLPs with Greater than 20 Years of Experience	113
8. Self-Efficacy Ratings of Master's and Doctoral Level SLPs	114
9. Self-Efficacy Ratings by Practice Category for SLPs in Medical Settings	115
10. Pairwise Comparisons of Self-Efficacy Ratings by Practice Category for SLPs in Medical Settings	115
11. Self-Efficacy Ratings by Practice Category for SLPs in Educational Settings	116
12. Pairwise Comparisons of Self-Efficacy Ratings by Practice Category for SLPs in Educational Settings	117
13. Self-Efficacy Ratings by Practice Category for SLPs in Other Settings	118
14. Pairwise Comparisons of Self-Efficacy Ratings by Practice Category for SLPs in Other Settings	118
15. Pairwise Comparisons of Self-Efficacy Ratings by Experience	120
16. Graduate Program Factors Affecting EBP Self-Efficacy	121
17. Post-Graduate Factors Affecting EBP Self-Efficacy	122

18. Example Quotes for Graduate Program Response Themes126

19. Example Quotes for Post-Graduate Response Themes134

ABSTRACT

The purpose of this mixed-methods sequential explanatory study was to explore self-efficacy of speech-language pathologists (SLPs) employed in various settings. Self-efficacy of master's level SLPs was compared across settings to determine if differences existed in each of four experience groups. Self-efficacy ratings were also compared based on degree held, area of practice, and years of experience. Participants (n = 342) completed a survey containing 10 demographic questions, 11 items from Salbach and Jaglal's (2010) Evidence-Based Practice Confidence (EPIC) scale, and 2 open-ended questions regarding factors impacting self-efficacy. Participants (n=34) completed semi-structured interviews to further explore factors influencing self-efficacy. No significant difference was noted in self-efficacy of master's level SLPs among settings. There was a significant difference between self-efficacy ratings based on degree held and years of experience. A significant difference in self-efficacy was found based on practice category (i.e., identification of knowledge gap, critical appraisal of research, development of treatment plans based on evidence, clinical judgment, and client preferences). Qualitative analysis revealed graduate program and post-graduate factors which impacted self-efficacy ratings both positively and negatively.

Keywords: speech-language pathologist, self-efficacy, confidence, evidence-based practice

**Evidence-Based Practice Self-Efficacy
of Speech-Language Pathologists Across Settings**
Dissertation-in-Practice

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**Evidence-Based Practice Self-Efficacy
of Speech-Language Pathologists Across Settings**

SECTION ONE

INTRODUCTION TO THE DISSERTATION-IN-PRACTICE

Background for the Study

Graduate-level preparation of speech-language pathologists (SLPs) has been a topic of debate in recent years. Many have advocated for a doctoral-level entry degree in speech-language pathology, following the lead of the closely related fields of audiology, physical, and occupational therapy (American Occupational Therapy Association [AOTA], 2020; American Physical Therapy Association [APTA], 2012; American Speech-Language-Hearing Association [ASHA], 2018a; ASHA, 2018c; Clement, 2005; Golper et al., 2010; Seegmiller et al., 2015). The shift to a doctoral degree requirement was enacted for audiologists in 2012 (ASHA, 2018a), for physical therapists in 2018 (APTA, 2012), and dual master's or doctoral entry-level degrees for occupational therapists beginning in 2019 (AOTA, 2020).

The profession of speech-language pathology dates to the early 1900s with the earliest documented practitioners in 1910. When the field of speech-language pathology was in its infancy, SLPs were known as *speech correctionists* in public schools. Their roles primarily consisted of managing children with speech sound disorders. While diagnosis and management of speech sound disorders still comprise a large part of the field, its scope has expanded significantly (ASHA, 2016; Moore & Kester, 1953). According to ASHA (2019c), 53% of SLPs are currently employed in educational settings such as schools and early childhood programs in which they provide screening

and evaluation as well as treatment (individual, group, or in the classroom) to toddlers, preschoolers, school-age children, or adolescents. Thirty-nine percent of SLPs are employed in health care settings in which they diagnose and treat cognitive-communication and language deficits as well as swallowing disorders. Sixteen percent of these are employed in non-residential health care facilities such as outpatient clinics or doctors' offices. Thirteen percent are employed in hospitals such as acute care, rehabilitation, or psychiatric facilities. The remaining 10% employed in health care are employed in residential facilities such as skilled nursing or assisted living facilities. The remainder of SLPs are employed in either higher education, corporate speech-language pathology, or government agencies (ASHA, 2019c).

Upon graduation from an accredited master's degree program, SLPs must be prepared for practice in eight domains of service delivery with nine primary categories of disorders. The eight domains of service delivery include: (a) collaboration, (b) counseling, (c) prevention and wellness, (d) screening, (e) assessment, (f) treatment, (g) modalities, technology, and instrumentation, and (h) population and systems. The nine disorder areas include: (a) articulation, (b) fluency, (c) voice and resonance, (d) receptive and expressive language, (e) hearing, (f) swallowing, (g) cognitive aspects of communication, (h) social aspects of communication, and (i) communication modalities (ASHA, 2016). Students must demonstrate evidence of the acquisition of content knowledge and clinical skills via assessments in academic courses and clinical practice.

To enter the workforce, SLPs must possess a master's degree in speech-language pathology. Most states recognize the Certificate of Clinical Competence (CCC) from ASHA as the gold standard for acknowledging a potential candidate's competence to

provide skilled services as an SLP. Therefore, most employers require a CCC to practice, as it is necessary for reimbursement from third-party payors. To obtain a CCC, an individual must obtain a master's degree from an accredited program (including completion of a minimum of 400 clock hours of supervised clinical experience), pass the Praxis[®] Examination in Speech-Language Pathology, and complete a clinical fellowship (CF) (ASHA, 2019b; Educational Testing Service, 2019). The CF is a period of a minimum of 36 weeks or 1,260 hours in which the clinical fellow is supervised and mentored by a nationally certified SLP (ASHA, 2019d). Generally, clinical fellows are permitted to work in most settings so long as supervision by a certified SLP is available.

Most accredited master's speech-language pathology programs offered in the United States are approximately two years in duration. Most require full-time enrollment to complete in that time frame (ASHA, 2016; ASHA, 2018b). ASHA (2018c) has indicated that academic programs have been unable to address all needs of students for quite some time. Therefore, it is likely that graduates do not feel confident to practice in some settings or with some populations upon graduation. Since ASHA does not provide specific guidelines about the number of credit hours that must be dedicated to each area (e.g., dysphagia, voice and resonance, language disorders) or how standards must be assessed within coursework, inconsistencies exist among academic programs. Students within the same academic program often describe differing levels of preparation based on individual experiences (e.g., unique practicum experiences, additional volunteer opportunities, specialized mentoring by a faculty member). Considering the breadth and depth of knowledge SLPs are required to have when entering the field upon graduation, it is necessary to explore areas in which graduates are confident and those in which

preparation is lacking. This will assist academic programs in providing improved programming and coursework to balance the areas of training and ensure SLPs possess, at the very least, the minimum level of content knowledge necessary to practice competently in all areas of practice upon graduation from master's degree programs.

Statement of the Problem

Evidence-based practice (EBP) has roots in the field of medicine, but has since been applied to other fields, including speech-language pathology (Brackenbury et al., 2008; Dollaghan, 2004; Vallino-Napoli, 2004; Vallino-Napoli & Reilly, 2004). One widely cited definition of EBP is that by Sackett et al. (1996) in which evidence-based medicine “is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” (p. 71). ASHA (2005a) requires that SLPs use EBP. However, despite the clarity of ASHA’s requirement in this position statement, some SLPs continue to practice without implementation of EBP (Fulcher-Rood et al., 2020; Riedeman & Turkstra, 2018; Vallino-Napoli & Reilly, 2004; Ward et al., 2008; Ward et al., 2012). Dollaghan (2004) identifies EBP as instrumental for exploring clinical practice in the field of speech-language pathology. Although challenges to implementation of EBP within the field have been documented by numerous authors, (Elliott, 2004; Enderby, 2004; Fulcher-Rood et al., 2020; Reilly, 2004; Vallino-Napoli, 2004; Vallino-Napoli & Reilly, 2004), few studies have explored confidence using EBP specifically within workplace settings to determine areas in which practitioners struggle to implement EBP.

There is some literature exploring confidence levels of SLPs currently in practice. Several studies have explored preparation levels of SLPs to manage specific disordered populations (e.g., swallowing disorders). However, these studies have focused only on a

limited population and most examined SLPs working in schools (Bailey et al., 2008; Blood et al., 2010; Brisk et al., 1997; Compton et al., 2009; Davis & Murza, 2019; Hutchins et al., 2011; Kelly et al., 1997; Kurjan, 2000; Muncy et al., 2019; O'Donoghue & Dean-Claytor, 2008; Plumb & Plexico, 2013).

Little data currently exist regarding the confidence levels of SLPs in medical settings following graduation. SLPs in medical settings must possess comprehensive knowledge of medical conditions and their effects on patients with communicative, cognitive, and swallowing disorders. However, coursework in most graduate academic programs does not cover this information in great depth due to the expansive scope that must be presented to students within a relatively short time. To date, no studies have compared practitioner self-efficacy between medical and educational settings with the exception of one study (Teten et al., 2016) which informally compared school-based SLPs' perceptions for managing voice disorders to those of medical-based SLPs. Since these data do not exist, academic programs are unable to determine if graduates feel they are adequately prepared for practice upon graduation.

Some studies have identified that confidence levels of SLPs vary significantly based on several factors. For example, O'Donoghue and Dean-Claytor (2008) found that SLPs who received the least amount of continuing education related to swallowing disorders and did not take a course on the subject in graduate school rated their confidence levels higher than those who had much more formal training in the area. This is concerning, but perhaps suggests a trend in levels of self-awareness among practitioners. SLPs often practice as the only provider of speech-language or swallowing services in a facility and therefore, if they do not make a conscious effort to remain

current with contemporary trends in the research, they are likely to overestimate their knowledge. Other studies, however, have identified a clear positive relationship between confidence and training. Some revealing results like those of O'Donoghue and Dean-Clayton (2008) have provided explanations other than overestimation of confidence. Most relate to changes in programs, as more recent graduates may have been better prepared by programs and are therefore, more confident when managing these situations. Despite the limitations of self-rated confidence levels, confidence measures may provide an initial examination of perceptions of practitioners, which will guide further investigation into factors such as competence levels as rated by CF supervisors or mentors.

Academic programs in communication sciences and disorders must be accredited by the Council on Academic Accreditation (CAA) of ASHA. ASHA outlines a specific set of knowledge and skill standards which must be met by students before graduation and subsequent certification (CAA, 2020). However, the standards are somewhat vague, given that ASHA does not determine how each standard is assessed within coursework. This leads to a significant range of interpretations of each standard which results in lack of uniformity among academic preparation programs. ASHA does not impose requirements regarding the amount of instruction students must receive in specific areas, leaving academic programs responsible to determine the levels which they deem to be appropriate. Often, academic programs' curricula are designed based on the areas of expertise among faculty, which may provide heavier emphasis in one area than another. Additionally, graduate clinical experiences also vary significantly across programs. This leaves students less prepared in some areas than others. In addition to the variation in academic programming, there exists a discrepancy in perceptions of preparation of

graduates, which likely translates to confidence levels. One such example may be the variability in experiences in clinical placements, as these are largely determined by availability of qualified clinical supervisors, facilities within the geographic region, and preferences of students. Other considerations include variations among programs such as faculty areas of expertise and hospital affiliations. Some may argue that students graduating from programs with hospital affiliations are more prepared for medical settings and less for educational. The reverse may be true about academic programs without hospital affiliations. However, to date, there are no data exploring whether this is the case.

In 1997, ASHA and The Educational Testing Services surveyed practicing SLPs. Results from the survey identified 53 clinical activities and 85 knowledge areas as skills necessary for entrance into the field. Of 2,800 respondents, practitioners, clinical fellowship supervisors, and clinical directors were in relative agreement that more should be learned in school. These respondents believed that only 16-24% of information was learned in the appropriate place (i.e., school), while an overwhelming number of educators (95% of respondents) felt that students acquire these skills and experiences in graduate programs (ASHA, 2018c). This confirms a discrepancy in perceived preparation levels between educators and practitioners which may lead to reduced self-efficacy in some areas. Some of the current literature regarding self-efficacy speaks to the uncertain connection between confidence ratings and competence (Riedeman & Turkstra, 2018). However, as available studies focus primarily on a specific disorder or patient population, more information is required about confidence levels of SLPs across settings before these ratings can be compared to competence. Additionally, specific standardized measures of

EBP self-efficacy should be used to determine more broadly how prepared practitioners feel they are. When information is obtained regarding areas in which practitioners feel they are underprepared and less confident, academic programs can more accurately determine ways to better prepare their students.

While measurements of self-efficacy have limitations, exploring perceptions of practitioners will provide insight into the factors influencing preparation discussed previously (e.g., inconsistencies in focus across programs, inconsistent experiences within programs, lack of exposure to certain settings or populations during practicum experiences). Knowledge of these factors will assist academic programs and provide guidance about areas which require improvement. Obtaining data regarding self-efficacy of SLPs across a variety of settings will provide preliminary guidance to make further changes in academic programs to better fit the current needs of the profession.

Purpose of the Study

The current study explored self-efficacy of master's- and doctoral-level SLPs following completion of a CF year in a variety of settings. Specifically, this study focused on the differences in self-efficacy ratings implementing EBP based on workplace setting, experience, and area of practice. Since available literature is scarce and primarily focuses on confidence levels of SLPs evaluating and treating specific disorders (e.g., dysphagia), this study sought to answer questions about self-efficacy using EBP in a systematic way by setting rather than a specific disorder area. Bandura (1982) defined self-efficacy as an individual's perception of how well he or she can execute a task, regardless of knowledge or skill related to the task. For the purpose of the current study, Pasupathy and Bogschutz' (2013) definition of self-efficacy was modified for use. Self-efficacy is "the confidence that an individual has in successfully performing tasks related to speech and

language assessment and intervention” (p. 152). Since the current study included all areas within the SLP’s scope of practice, self-efficacy is defined as the confidence of an individual to implement evidence-based practice (EBP) within one’s current employment setting(s). Cane et al. (2012) identified self-efficacy as a crucial factor affecting the use of EBP in healthcare professionals.

In 2005, ASHA’s Joint Coordinating Committee on Evidence-Based Practice released a position statement that SLPs must utilize evidence-based practice when making decisions to provide the best care for those served by the profession. In this position statement, ASHA (2005a) defined EBP as “an approach in which current, high-quality research evidence is integrated with practitioner expertise and client preferences and values into the process of making clinical decisions” (para. 2). The National Joint Committee for the Communication Needs of Persons with Severe Disabilities mirrored this call for the use of EBP, also identifying integration of the same three areas including: (a) “clinical expertise/expert opinion,” (b) “external scientific evidence,” and (c) “perspectives of individuals with severe disabilities and their families and friends” to provide the best patient care (ASHA, 2020d, para. 1). These recommendations guide SLPs to give equal consideration to clinical expertise along with patients’ opinions rather than solely relying on scientific evidence (Dollaghan, 2004). Implementation of EBP provides guidance to SLPs and allows them to avoid using treatment methods that are not likely to produce positive outcomes (Brackenbury et al., 2008; Reilly, 2004). Use of EBP also ensures accountability to those being served, those reimbursing for services, and to the profession (Apel & Scudder, 2005; Reilly, 2004, Vallino-Napoli & Reilly, 2004).

Despite repeated calls for implementation of EBP by numerous organizations, findings of available studies conducted related to confidence of SLPs reveal that neither students nor practitioners feel confident in their ability to implement EBP (Blood et al., 2010; Muncy et al., 2019; O'Donoghue & Dean-Claytor, 2008; Pasupathy & Bogenschutz, 2013). In addition to confidence in their ability to implement EBP, numerous studies have documented challenges related to EBP implementation by SLPs. In a recent study, Fulcher-Rood et al. (2020) identified barriers to implementation as clinician (e.g., perception, training), organizational (e.g., time constraints, lack of resources or support from supervisors, established workplace policies), or evidence factors (lack of high quality evidence, difficulty applying research methods into practice).

The current study employed a mixed-methods design. A survey was disseminated to SLPs employed in medical, educational, or other settings including university clinics, private practice, those employed part-time in any setting, or those employed in multiple settings. Initially, the study sought to include self-efficacy ratings from master's level SLPs in their first five years of independent, professional practice following completion of a CF year. Since the CF is intended "to integrate and apply the knowledge from academic education and clinical training, evaluate strengths and identify limitations, develop and refine clinical skills consistent with the Scope of Practice in Speech-Language Pathology" (ASHA, 2019a, para. 2), it is considered a portion of the education of SLPs. Therefore, SLPs currently completing a CF were not included. Data collection occurred during the COVID-19 global pandemic, which negatively impacted recruitment efforts and participation. As a result, the researcher expanded the scope of the study to

include SLPs in all years of practice, with either a master's degree or those with focused formal education beyond the level of a master's or doctorate degree.

The study sought to identify both self-efficacy of SLPs in a variety of settings as well as determining possible factors influencing those levels. Since it is well-known that the expansive nature of the scope of practice of SLPs makes thorough preparation challenging, an in-depth exploration of both self-efficacy as well as areas of practice (e.g., identification of knowledge gaps, appraisal of research and standardized assessments, and developing treatment plans) in which practitioners are most confident is warranted. This will assist academic programs in identifying which content and skill areas are adequately covered within programs and those which require more focus to sufficiently prepare students, so students feel more confident when encountering all situations in practice.

The current study explored self-efficacy of masters- and doctoral-level SLPs to specifically compare self-efficacy among employment settings. Since no studies have explored confidence levels for practice in any setting or compared confidence levels between settings, the current study sought to do so rather than solely examining confidence with one disorder or patient population. Because no specific disorder or patient population was examined, the study focused on self-efficacy implementing EBP which can be applied broadly across the scope of practice of SLPs.

Additionally, the current study examined possible factors influencing self-efficacy levels. Because many allied health professions struggle to adequately prepare students for all areas of practice, this information is vital for educating graduates for a dynamic field in which they are required to possess more knowledge than ever before (ASHA, 2018c;

Brisk et al., 1997; Finn, 2019; Hayward et al., 2013; Kelly et al., 1997; Manley et al., 1999; Plumb & Plexico, 2013; Ward et al., 2008). Specifically, the study explored factors such as specific clinical experiences or other experiences within graduate preparation programs which SLPs perceive to impact their self-efficacy.

Research Questions

The research questions guiding this study are as follows:

1. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists across employment settings?

H₁: There will be a significant difference in self-efficacy ratings of master's level speech-language pathologists across settings.

H₀: There will be no difference in self-efficacy ratings of master's level speech-language pathologists across settings.

- 1a. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 1-5 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

- 1b. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 6-10 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and

other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

1c. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 11-20 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

1d. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists with greater than 20 years of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

2. Is there a significant difference between self-efficacy ratings of master's level speech-language pathologists and speech-language pathologists with a doctoral degree?

H₁: There will be a significant difference between self-efficacy ratings of master's level speech-language pathologists and speech-language pathologists with a doctoral degree.

H₀: There will be no difference between self-efficacy ratings of master's level speech-language pathologists and speech-language pathologists with a doctoral degree.

3. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale among settings?

H₁: There will be a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale within each setting.

H₀: There will be no difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale within each setting.

- 3a. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale in medical (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health) speech-language pathologists?

- 3b. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale in educational (early intervention, preschool, K-12) speech-language pathologists?

- 3c. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories

identified by the EPIC scale in speech-language pathologists employed in other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

4. Is there a significant difference in self-efficacy ratings among speech-language pathologists in the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+ years)?

H₁: There will be a significant difference in self-efficacy ratings among speech-language pathologists among the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+ years).

H₀: There will be no significant difference in self-efficacy ratings among speech-language pathologists among the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+ years)?

5. What are the most influential factors determining self-efficacy ratings of speech-language pathologists across employment settings?

Conceptual/Theoretical Framework

Five Stages of Skill Acquisition

The original theoretical framework guiding the current study is from the work of Dreyfus and Dreyfus (1986). The Five Stages of Skill Acquisition identified are *novice*, *advanced beginner*, *competent*, *proficient*, and *expert* (Dreyfus, H. L., & Dreyfus, S. E., 1986). The authors' model originated from the idea that individuals approach situations within the field based upon the level of knowledge possessed. Therefore, the way the individual approaches situations initially is different than it is following experience. As more experience is obtained, the individual progresses through the Five Stages of Skill

Acquisition until the professional is practicing as an *expert*. However, this level is not always reached in every area of one's practice.

The first stage of Dreyfus and Dreyfus's (1986) model of skill acquisition is *novice*. In this stage, individuals focus solely on facts, objective information, and rules. There is little variance from these rules and individuals are not free to exercise their own judgment. As a novice, rules are "context free" (Dreyfus, H. L., & Dreyfus, S. E., 1986, p. 21) and are very clearly defined. Therefore, individuals utilize "information processing" (p. 21) in which they demonstrate "manipulation of unambiguously defined context-free elements by precise rules" (p. 21). Individuals are unable to break down rules and apply them appropriately to individual situations. Proceeding, the individual must disregard the rules and exercise the specific skill repeatedly. Following repeated experience practicing the skill in real-life situations, the *novice* may progress to become an *advanced beginner*.

As an advanced beginner, an individual begins to acknowledge when situations arise that may be context-free and do not follow the previously learned context-dependent rules. "Situational" elements (Dreyfus, H. L., & Dreyfus, S. E., 1986, p. 23) now define rules for behavior and the individual must reference both context-free features of the rules and the new situational elements that present themselves to determine a plan of action. It is, at this point, that the individual can begin to shape behavior based on rules learned but apply them to new situations. When this occurs, the experience can no longer be put into words because the behavior was shaped by more than simply following an objective set of rules. As individuals begin to observe a great number of both context-free and situational elements, professionals enter the *competence* stage of skill acquisition.

When a competent individual begins to acknowledge more of the context-free and situational elements mentioned above, the professional often becomes overwhelmed. The individual is able to approach situations with an organized plan of action, but now has the skill to prioritize based on the presence of other variables using “conscious deliberation” (Dreyfus, H. L., & Dreyfus, S. E., 1986, p. 360). This ability is preferable to the previous *advanced beginner* stage, in which the individual only possesses the plan of action, but executes it the same across contexts, rather than having the ability to adapt to the current situation. Before becoming competent, individuals lack a feeling of responsibility for the outcome of their actions and attribute poor outcomes to the rules used to execute behavior. Once the individual becomes competent, emotion is attached to the outcome. It is a direct result of that experience and prioritization of behavior.

As skills advance, the professional develops intuition which leads to proficiency. An individual in the *proficient* stage of skill acquisition makes decisions naturally while recalling situations in which the same plan was successful. Therefore, the individual uses the same behavior or action again, without analyzing the different features of the situation. Dreyfus and Dreyfus (1986) define this intuition as “understanding that effortlessly occurs upon seeing similarities with previous experience” (p. 28). Once an individual is making decisions naturally and based upon previous experiences, the professional advances to the *expert* stage of skill acquisition.

Experts do not require awareness of the problem-solving process at all. Individuals in the *expert* stage of skill acquisition do not think about the process or the outcomes, but naturally make decisions and take actions based solely on experience. Most of the process is “nonreflective” (Dreyfus, H. L., & Dreyfus, S. E., 1986, p. 31),

although deliberation does occur when outcomes really matter. Because experts cannot always predict or account for situations that may arise, they are not always right. However, Dreyfus and Dreyfus (1986) indicate that “when things are proceeding normally, experts don’t solve problems and make decisions; they do what normally works” (p. 30).

Guilford et al. (2007) also describe a continuum of expertise in speech-language pathology which closely aligns with the Dreyfus and Dreyfus (1986) model of skill acquisition, despite differing terminology. According to the continuum by Guilford et al., (2007) the levels of expertise are *preprofessional*, *novice*, *competent*, *experienced nonexpert*, and *expert*. While preparing graduate students as *preprofessionals* (Dreyfus and Dreyfus *novice*), the following skills are critical to advance along the continuum: (a) increasing independence, (b) establishing an “attitude of caring and responsibility” (Guilford et al., 2007 p. 34), (c) evolving from a focus on individual needs to focus on client needs, (d) establishment of time management skills, (e) reducing emphasis placed on grades and increase emphasis on knowledge and skill acquisition, and (f) development of initiative to seek assistance in the learning process.

When SLPs enter the field as a CF, Guilford et al., (2007) identifies them as a *novice* (Dreyfus and Dreyfus *advanced beginner*). At this point, they receive support from a CF mentor and other colleagues within the field and other related fields, in most cases. Self-evaluation begins as the CF navigates the world of professional practice, continued learning, and utilization of available resources. At the completion of the CF, the professional enters the stage of *competent* (Dreyfus and Dreyfus *competent*). Some practitioners begin to participate in research at this stage and all should be closely

examining published literature related to their area of practice. Self-evaluation of skills should continue as SLPs complete continuing education. Some may consider specialization in a certain area of the field. Setting changes often accompany these events following the CF, as many SLPs decide they do not wish to continue practice in the setting of their first professional position. As a *competent* SLP, Guilford et al., (2007) identified skills necessary, which include: (a) planning and priority setting, (b) organization and time management, (c) managing diversity, (d) team building, (e) interpersonal savvy and peer relationships, (f) organization agility, (g) conflict management, (h) problem solving, perspective and creativity, and (i) dealing with the paradox of learning on the fly. If SLPs at this stage do not engage in professional development and possess these skills, they often do not continue to progress along the continuum. Those who do progress become *experienced nonexperts* (Guilford et al., 2007). Typically, this is an SLP who has many years of experience in the field. Despite this experience, most *experienced nonexperts* do not publish and are not widely known in the field. *Experts* on the other hand, have become well-known in the field and serve as a resource for others. It is at the level of *expert* that the following skills: (a) interpersonal skills, (b) professional skills, (c) problem-solving skills, (d) technical skills, and (e) knowledge and experience are demonstrated consistently. SLPs in earlier stages of the continuum of practice may inconsistently possess some of these skills as well (Guilford et al., 2007).

Despite reference to the application of skill acquisition by Guilford et al., (2007) to the field of speech-language pathology, the author of the current study acknowledges limitations to this application. While it is helpful to assign a stage to each level of the

field (e.g., student, CF), it is not reasonable to assume that all individuals in each stage are at the same level regarding knowledge, skill application, and learning. Additionally, while an individual may be at a certain level of learning or skill within one area of practice, that does not ensure the same is true across all areas within the scope of practice. As the research methods were modified for data collection during COVID-19, inclusion criteria introduced many factors, other than early experience and academic preparation, which may impact self-efficacy ratings. Some of these included significant experience beyond the first several years of practice, mentoring by other professionals, extensive continuing education, and advanced coursework. Although this theoretical framework is still of interest to the researcher for future studies, it no longer appeared relevant for the current study. The current study focused more on perception of ability rather than knowledge or skill, as was the focus of the Five Stages of Skill Acquisition. Therefore, a new theoretical framework was adopted.

Self-Efficacy Theory

The primary theoretical framework on which the expanded study was based is Bandura's (1977) Theory of Self-Efficacy. Bandura (1982) reports that "perceived self-efficacy is concerned with judgments of how well one can execute courses of action required to deal with prospective situations" (p. 122). A person with high self-efficacy is more likely to attempt a task and a person with low self-efficacy is more likely to avoid a task (Bandura, 1977). Therefore, it seems plausible that SLPs who possess higher self-efficacy for a task (i.e., EBP) will be more likely to implement it in patient care. Despite having the perception of greater ability to complete a particular task, one may not possess the same level of skill to complete the same task. Bandura (1997) reported that perceived

self-efficacy is not reflective of skills or knowledge, but instead an individual's belief in his or her ability to execute a task. Because those with higher self-efficacy are more likely to exert effort completing a task, they are more likely to receive corrective feedback which will, in turn, reinforce their self-efficacy.

Design of the Study

To answer research questions in the current study, an explanatory sequential mixed-methods design was utilized (Creswell, 2014). Quantitative data were obtained initially, followed by further qualitative data via semistructured interviews to inform the study. Quantitative data were obtained via use of a validated 11-item survey, the Evidence-Based Practice Confidence (EPIC) scale (Salbach & Jaglal, 2010; see Appendix A). The survey was distributed via an anonymous Qualtrics link. Prior to survey completion, participants agreed to the survey Informed Consent (see Appendix B). Initial qualitative data were collected using two, open-ended survey questions (see Appendix C) included following the questions from the EPIC scale (Salbach & Jaglal, 2010). These two questions were designed to answer the single qualitative question in the study (Research Question 5). At the end of the survey, participants were asked if they were willing to participate in an interview, which was also designed to answer Research Question 5. If participants agreed, the researcher contacted them via email to schedule a one-on-one interview via Zoom web conferencing software. All participants were given the opportunity to enter a random drawing for a gift card in return for survey participation. If participants agreed to complete an interview, they were entered into an additional random drawing for another gift card.

The survey was distributed to potential participants via several online avenues. As an ASHA member, the researcher posted a message (see Appendix D) on several ASHA Community sites inviting members to participate in the survey. The researcher posted to the following ASHA Communities: (a) Research, (b) Early Intervention, (c) Healthcare, (d) Private Practice, (e) SLP Schools, (f) Early Career Professionals, and (g) Clinicians and Researchers Collaborating. An invitation to participate in the study was also distributed to ASHA Special Interest Groups (SIGs) including: (a) SIG 2: Neurogenic Communication Disorders, (b) SIG 3: Voice and Upper Airway Disorders, (c) SIG 11: Administration and Supervision, (d) SIG 13: Swallowing and Swallowing Disorders, and (e) SIG 15: Gerontology. Links were posted on Facebook groups including: (a) School-Based SLPs: For Professionals Only, (b) Medical SLP Forum, (c) Speech Pathologists at Large, (d) SLPs for Evidence-Based Practice, and (e) Med SLP Newbies. Several graduate academic programs were also contacted and agreed to disseminate the survey to alumni. The sample was a convenience sample and included SLPs with a CCC throughout the United States to ensure a representative sample (Creswell, 2014; Fink, 2017; Hutchins, et al., 2011; O'Donoghue & Dean-Claytor, 2008).

Prior to beginning data collection and recruiting participants, the researcher applied for study approval through the Institutional Review Board at the University of Missouri-Columbia. The study (IRB#2022721) was approved on April 30, 2020 (see Appendix E). Participation in the study was voluntary and steps were taken to ensure anonymity. All survey responses were anonymous and were not linked to participants' identifying information unless they chose to provide email addresses for interview participation or to enter a random drawing for a gift card to compensate for their time

completing the survey. All email addresses were stored in a password protected electronic file only accessible to the researcher.

Setting

SLPs working in medical, educational, and other settings including university clinics, private practice, or home health were the focus of the study; however, the settings themselves were not explored. A significant amount of variability among healthcare facilities exist including patient populations served, goals (e.g., rehabilitation versus maintenance of skills, end-of-life care), and services (e.g., evaluation or treatment). Medical settings were defined as inpatient hospitals, outpatient facilities, long-term acute care facilities, home health, and skilled nursing facilities for the purpose of this study. Educational SLPs were defined as those serving children from birth to 21 years of age in primarily educational settings (i.e., preschool, K-12). This also included those providing early intervention services within the home or daycare setting for those birth to age three. SLPs employed in settings other than medical or educational included those employed in university clinics, private practice, part-time in any setting, or in multiple settings.

Participants

Initially, the researcher intended to include participants that were master's-level SLPs certified by ASHA practicing in either medical or educational settings. Initial inclusion criteria included: (a) SLPs who had completed a CF and obtained a CCC, (b) SLPs currently in their first five years of independent professional practice beyond the CF, (c) employment of any status (full or part-time) in a medical or educational setting, and (d) SLPs who completed a graduate academic program in the United States. Exclusion criteria included: (a) SLPs who had not completed a CF or had not obtained a CCC, (b) SLPs beyond the first five years of professional practice, (c) SLPs who did not

practice in both medical and educational settings, and (d) SLPs who completed a graduate academic program outside the United States. As mentioned previously, the COVID-19 pandemic affected recruitment and participation and therefore, the scope of the study was expanded to include master's level SLPs as well as those with a doctorate. SLPs in any year of practice were recruited as well as those practicing in any setting, rather than limiting participants to medical or educational settings initially defined. This allowed participation from those employed in multiple settings or in other settings such as university clinics and private practice.

Those currently in the process of completing a CF were not considered in the study because the CF is part of the educational process for SLPs (ASHA, 2019a). The initial selection of novice SLPs was guided by findings of a study by Hayward et al. (2013) revealing significant growth and learning between the first and second years of practice for physical therapists. The study focused on novice SLPs also served to reduce influence from other educational experiences (e.g., hands-on learning, mentoring from more experienced therapists, continuing education courses). However, with changes to inclusion criteria following COVID-19, the study did not control for these factors. However, this is consistent with other studies completed about confidence and competency levels of professionals from various disciplines, which have included participants with a variety of experience levels (Finn, 2019; Hutchins et al., 2011; O'Donoghue & Dean-Claytor, 2008).

Data Collection Tools

Prior to survey distribution, a pilot survey was sent to 11 SLPs (5 educational, 3 medical, 3 university clinic) to ensure questions were easily understood by a variety of

respondents and that no questions would be misinterpreted (Creswell, 2014; Fink, 2017). Demographic questions (see Appendix F) were modified based on feedback from this group of SLPs; however, no changes were recommended for EPIC scale items. The EPIC scale (see Appendix A) consists of 11 questions requiring participants to rate confidence in their ability to complete activities in practice. These questions explore confidence levels of SLPs to complete various functions in practice including critical thinking and problem-solving skills, identification of knowledge deficits, and the ability to critically appraise available research to provide individualized evidence-based care to patients. Each question was answered using a visual analog scale with options to select from 0% (“No Confidence”) to 100% (“Completely Confident”) which ensured accurate responses (Fink, 2017). Use of a visual analog scale for the current study rather than a Likert scale was ideal to reduce bias in responses, a ceiling effect, and to allow for parametric statistical analyses, which are considered preferable over non-parametric analyses (Bishop & Herron, 2015; Voutilainen et al., 2016).

The EPIC scale was created by Salbach and Jaglal (2010) to measure self-efficacy of healthcare practitioners regarding implementation of EBP. The authors of the EPIC scale sought to develop a measure to comprehensively assess self-efficacy using the entire process of EBP. After creation of the measure, face and content validity of the scale were evaluated. Experts in EBP including a physician, nurse, SLP, physical therapist, occupational therapist, and epidemiologist were recruited to review the scale using a questionnaire containing five items. The scale was revised based on feedback from the EBP experts. Following modifications, healthcare practitioners in clinical practice were recruited to evaluate comprehensibility. Further modifications were made

based on feedback. Based on findings from the sample of EBP experts and professionals in clinical practice, the authors determined that the EPIC scale had sufficient face and content validity as well as comprehensibility and is validated for use with a variety of professionals within the healthcare field including physicians, nurses, physical and occupational therapists as well as SLPs.

Several limitations exist regarding use of the EPIC scale. The authors indicated that cross-cultural adaptation may be required for use in different countries; however, the validation study included professionals from both the United States and Canada to control for differences in language and terminology. Recommendations were also provided for further research to examine reproducibility and construct validity (Salbach & Jaglal, 2010).

In 2013, Salbach et al. conducted a study examining reliability, minimal detectable change, and construct validity of the EPIC scale with physical therapists. In this study, 275 physical therapists completed the survey, with findings determining that higher self-efficacy ratings were provided by those with more education and those who reported more frequently locating and evaluating research as a part of their clinical decision-making, which supports the measure's construct validity. The test-retest reliability was .89, which the authors deemed adequate to use as a measure of progress monitoring of self-efficacy ratings over time in physical therapists (Salbach et al., 2013).

Clyde et al. (2016) conducted another study to determine the reliability, minimal detectable change, and construct validity of the EPIC scale with occupational therapists. A smaller sample of occupational therapists (n=126) completed the EPIC scale survey. The authors determined that test-retest reliability was sufficient for occupational

therapists with an interclass correlation coefficient of .92. Results did not indicate a floor or ceiling effect allowing for use with practitioners with a wide variety of experiences. Construct validity of the EPIC scale was also supported by the findings of this study. EBP scores of the occupational therapist participants revealed positive relationships between degree held, EBP-related education, and participation in EBP activities (Clyde et al., 2016).

Two qualitative questions were asked as a part of the survey (see Appendix C). This created an open-ended opportunity for respondents to provide reasoning for their answers as well as additional comments or information relating to self-efficacy levels they felt were pertinent to the study. Responses were analyzed using open and axial coding to identify themes in responses (Creswell, 2014; Merriam & Tisdell, 2016).

At the end of the survey, participants were asked if they were willing to participate in an interview. If they agreed, the researcher contacted them via email to schedule an interview. Once the researcher and participant agreed to a scheduled time, the researcher emailed a Zoom link. The Interview Consent form was also attached in the scheduling email (see Appendix G). All participants were asked to provide verbal consent at the beginning of the interview. Participants were given the option to turn on the camera in Zoom or to leave it off and use audio only for the interview. Participants were asked eight pre-identified questions to answer Research Question 5 (see Appendix H) during semistructured interviews (Merriam & Tisdell, 2016).

Data Analysis

Survey responses were analyzed using IBM SPSS (version 26; IBM Corp., 2019) to answer research questions about differences among self-efficacy levels of SLPs employed in medical settings, educational settings, and other settings. The researcher

determined if between-group (i.e., medical, educational, other settings) differences existed in self-efficacy levels of SLPs in each experience group (1-5 years; 6-10 years; 11-20 years; 21+ years) among the 11 activities identified in the EPIC scale. Between-group differences were analyzed to determine if differences existed between master's level SLPs and doctoral-level SLPs. Within-group differences were analyzed to determine if differences in confidence levels existed in three categories of practice identified by the EPIC scale. These included the ability to: (a) identify knowledge gaps and locate information related to that gap, (b) critically appraise research and standardized assessment measures and statistical analyses, and (c) develop treatment plans based on evidence, clinical judgment and patient preference, and evaluate treatment effects on outcomes. Lastly, between-group differences were analyzed to determine if there was a significant difference in self-efficacy ratings among SLPs in the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+ years).

After results were obtained, descriptive statistics including frequency, mean, and standard deviation were reported (Field, 2017). Kruskal-Wallis H tests were conducted to determine if statistically significant differences were present in confidence levels for 11 activities in the EPIC scale (Salbach & Jaglal, 2010) when SLPs employed in medical, educational, and other settings were compared. This was compared for each of the experience groups of participants (1-5 years, 6-10 years, 11-20 years, 21+ years). Between-group differences were compared using a Mann Whitney U. Within-group differences in confidence levels for three categories developed from responses to the EPIC scale were determined using Friedman's test. A post hoc Dunn-Bonferroni analysis with pairwise comparisons was conducted to determine between which categories

significant differences existed. To determine differences in self-efficacy ratings among SLPs in the four experience groups, a Kruskal-Wallis H was conducted. A post hoc Dunn's test was also completed to further determine specifically in which experience groups significant differences existed.

Responses from each qualitative question were transcribed by the researcher and coded using open and axial coding (Creswell, 2014; Creswell, 2016; Merriam & Tisdell, 2016). A second researcher was identified to analyze responses and ensure intercoder agreement of at least 90% as recommended by Miles and Huberman (1994). The second rater was another SLP who was familiar with the field and was a researcher with a PhD. Frequency and percentages of responses by themes were analyzed and reported.

Limitations, Assumptions, and Design Controls

There were several limitations to the current study. First, limitations existed regarding the sample. Bias cannot be eliminated when utilizing social media groups to recruit participants, as the researcher's selection bias is present when certain groups are selected for survey distribution. Additionally, use of the ASHA community site cannot ensure that respondents' answers to survey questions are representative of the entire population of SLPs throughout the United States. Distribution of the survey link in SIGs is also limiting, as membership in SIGs are subscription services and not all SLPs join these groups.

Generalizability of results is also limited due to small sample size regarding the total population of SLPs in the United States. Because ASHA does not provide access to member lists or email addresses, recruitment was limited to online groups on social media, ASHA community sites, and SIG members as well as academic programs sending

the survey link to alumni. It is possible that, because the researcher asked academic programs with which she had some connection either personally or through other colleagues, some bias exists in responses.

In addition, nearly all SLPs in any setting began to see dramatic changes to their practice as a result of COVID-19. Many school districts moved to remote learning models, while many in healthcare experienced a reduction in hours, layoffs, or furloughs. It is worth considering that personal lives of all in the United States shifted, whether it meant working from home, seeing patients through telepractice, or working full-time while also providing academic instruction for their school-age children in the home. SLPs have experienced much of the same, which likely affected response and completion rates. Since many SLPs experienced reduced hours or changes in service delivery models (e.g., direct service to enrichment packets to students in schools), some did not complete a sufficient number of hours to satisfy CF requirements. Therefore, even if SLPs were contacted by academic programs, they may not have been eligible to participate in the study, as they had not yet received their CCC as they would have without COVID related employment changes.

Using the EPIC scale (Salbach & Jaglal, 2010) did not allow the researcher to determine differences in confidence levels of specific areas of practice within the SLP's Scope of Practice (ASHA, 2016). Although the EPIC scale (Salbach & Jaglal, 2010) has been validated for use with other disciplines, it has not been validated as a measure to use with SLPs.

Definition of Key Terms

In addition to the terms previously defined, the following terms are also used throughout the study:

American Speech Language Hearing Association (ASHA) refers to the professional credentialing body for the United States for audiologists, speech-language pathologists, speech, language, and hearing scientists, audiology and speech-language pathology support personnel, and students (ASHA, 2020b).

Speech-Language Pathologist (SLP) refers to professionals who work with individuals impacted by communication and swallowing disorders. SLPs are responsible for prevention, evaluation, and treatment of language, social communication, cognitive-communication, and swallowing disorders across the lifespan (ASHA, 2020c).

Clinical Fellowship (CF) refers to the period of time between completion of student requirements (academic coursework and clinical practicum) and independent practice as a speech-language pathologist. Requires a minimum of 1,260 hours and 36 weeks of full-time experience or longer, if employed part-time (ASHA, 2020a).

Medical Settings refer to inpatient hospitals, outpatient facilities, long term acute care facilities, and skilled nursing facilities.

Educational Settings refer to early intervention, preschools, or K-12 schools.

Other Settings refer to university clinics, private practice, part-time employment in any setting, or employment in multiple settings.

Self-Efficacy refers to the confidence of an individual to implement evidence-based practice within an employment setting(s).

Significance of the Study

The current study provided insight into the self-efficacy levels of graduates from speech-language pathology programs across the United States. As there are limited data regarding preparation levels of SLPs and factors contributing to their confidence including a focus on medical or educational settings, this information will guide academic programs and help identify whether programs provide a comprehensive curriculum that is adequate to prepare students for professional practice in a variety of settings. Trends in responses will provide information about whether programs have appropriately responded to the shift in areas of practice that have been added to the scope of practice of SLPs in past decades.

Findings from this research will allow programs to determine the crucial need for change in curricular offerings for graduate students. Since outcome measures such as Praxis[®] examination pass rates, graduation rates, and job placement rates are frequently the only data maintained by programs, this will provide another perspective that is, perhaps, even more valuable in guiding programs. Some programs encourage students to complete an exit evaluation of the program, but this is completed prior to graduation and employment experiences. In programs historically offering more educational experiences than medical (e.g., course offerings, additional practicum offerings), it is crucial to consider the changing needs of graduates. This information will assist programs in determining areas in which students perceive that they are most and least prepared and allow the faculty to adjust current courses and possibly provide new offerings to better prepare students for the dynamic field.

Current literature is limited and primarily only explores confidence levels of professionals with assessment and management of patients with certain types of disorders

(e.g., swallowing disorders) rather than setting-specific challenges (Davis & Murza, 2019; Kelly et al., 1997; O'Donoghue & Dean-Claytor, 2008; Plumb & Plexico, 2013). This study explored and compared self-efficacy ratings among settings and provided insight into some of the factors that influence those levels. Although many more factors are likely involved, information provided by the current study contributes to published literature to initiate research focused on determining the complexity of the situation faced by academic preparation programs.

Summary

The current research study sought to determine if there are differences in self-efficacy levels of medical SLPs versus educational SLPs when beginning their independent practice. Since little evidence currently exists for identifying confidence levels of SLPs in medical settings, this study provided that information and compared to that of SLPs in educational settings. The data collected provided insight into areas in which graduates are most and least prepared, as evidenced by confidence levels to complete certain activities of practice identified on the EPIC scale (Salbach & Jaglal, 2010).

In addition to self-efficacy levels for completing certain practice activities as SLPs, other factors affecting self-efficacy levels of SLPs in a variety of settings were explored. While the Council on Academic Accreditation (2020) makes recommendations based on evaluation of academic programs, “judging the degree to which a program has achieved those goals and objectives,” (p. 1), continual evaluation by programs is warranted (ASHA, 2005b). The Council on Academic Accreditation does not specify procedures programs must follow to ensure that outcomes are met. Results of this study

provided the foundation which is imperative for academic programs to consider when planning changes in structure and curriculum.

Since many programs have designed curricula based on limited scientific and anecdotal evidence, as little scientific data exist, the data collected in this study provided valuable information to assist with program curricular evaluation and redesign. Programs can use this knowledge as a basis for initiating change within their curricula (both academic and clinical) to ensure that graduates are equally prepared and competent in all areas within the Scope of Practice of SLPs (ASHA, 2016).

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SECTION TWO

Practitioner Setting for the Study

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Practitioner Setting for the Study

Introduction

Despite the push from the American Speech-Language Hearing Association ([ASHA]; 2005a) to utilize evidence-based practice (EBP), studies have found that not all in the field are doing so (Fulcher-Rood et al., 2020; Riedeman & Turkstra, 2018; Vallino-Napoli & Reilly, 2004; Ward et al., 2008; Ward et al., 2012). Numerous barriers to use of EBP have been identified in studies, although one barrier is lack of high-quality evidence within the field (Apel & Scudder, 2005; Elliott, 2004; Metcalfe et al., 2001; Reilly, 2004). Other studies have found that training affects use of EBP (Enderby, 2004; Fulcher-Rood et al., 2020; Metcalfe et al., 2001).

Graduate preparation of speech-language pathologists (SLPs) has been a topic of debate for many years. Clinical education proves challenging for academic programs in many allied health fields, as the breadth of knowledge required upon graduation continues to expand. The field of speech-language pathology is often divided by area of practice (e.g., medical or educational) and many academic programs follow suit. However, this results in inconsistent preparation of students who are not confident in their preparation for all practice settings (Compton et al., 2009; Kelly et al., 1997; O'Donoghue & Dean-Claytor, 2008; Wilson et al., 2020). Therefore, the current study sought to determine if differences exist in self-efficacy levels of SLPs in educational and medical settings.

History of Organization

The American Speech-Language-Hearing Association (ASHA) is the national credentialing body for SLPs. ASHA began in 1925 in New York City at a meeting of

several professionals working in rhetoric, debate, and theater who were members of the National Association of Teachers of Speech (ASHA, n.d.). As interest in the field expanded, the American Academy of Speech Correction was established. As the organization has grown and the scope of the field has broadened, membership has increased from 25 members to the current 211,000. Membership of ASHA is comprised of SLPs, audiologists, and speech-language-hearing scientists. ASHA provides guidelines for ethics and practice of SLPs and publishes peer reviewed journals, promoting research and advocacy for professionals in the field.

SLPs are employed in a variety of settings including early intervention, preschool, K-12 schools, colleges and universities, hospitals, residential and non-residential health care facilities, and private practice (ASHA, 2020b). Although the focus of the study was not on employment settings of SLPs, it is necessary to define these settings for the purpose of clarity. For the purpose of the study, medical settings were defined as inpatient hospitals, outpatient clinics, home health, and skilled nursing. In these settings, SLPs provide services to screen, evaluate, and treat patients with cognitive-communicative deficits, speech, language, and swallowing disorders. These services are provided to individuals across the lifespan, although some facilities focus primarily on certain populations (e.g., children's hospitals, VA hospitals). Education and collaboration with other healthcare professionals are also essential functions of the SLP's role in these settings.

Educational settings, as defined by the current study, were comprised of early intervention, preschools, and K-12 schools. Ages of those served range based on the setting, although some SLPs in educational settings are employed at more than one

school serving a variety of age ranges. Educational SLPs provide screening and diagnostic services as well as treatment. Services are provided to ensure access to the educational curriculum in both general education and special education classrooms. Students who receive services by SLPs in schools may present with speech, language, cognitive, and feeding and swallowing disorders. SLPs in educational settings must collaborate with all members of the child's educational team including teachers, families, and support personnel (ASHA, 2020b).

Study participants employed in settings outside of those previously mentioned including university clinics, private practice, and day programs were considered as employed in other settings. Those working part-time (<80%) in any setting as well as those employed in multiple settings were also included in this group.

Organizational Analysis

ASHA and the settings in which SLPs are employed (i.e., medical, educational, or other) were not the focus of the current study. However, ASHA will be analyzed briefly as an organization using the structural frame (Bolman & Deal, 2013) to provide context for the reader. The structural frame is based upon the assumption that humans are rational beings. The structural frame underscores the importance of placing people in appropriate roles and relationships to maximize effectiveness and efficiency within organizations. Structural frame assumptions include the following:

- organizations seek to achieve common goals,
- appropriate division of labor and specialization of individuals within organizations improve productivity,

- structured coordination must be in place to confirm the interests of individuals and divisions work well together and rationality exceeds personal feelings or interests,
- problem-solving and organizational restructuring solve dilemmas when performance begins to decrease (Bolman & Deal, 2013).

As an organization, ASHA provides strategic planning for the body. The organization operates under a Board of Directors consisting of 17 elected members representing both speech-language pathology and audiology. The organization provides guidelines for ethics (ASHA, 2016a) and scope of practice for speech-language pathology and audiology (ASHA, 2016b; ASHA, 2018). The organization has very structured policies and procedures which guide practices such as gaining and renewing membership, composition of the Board of Directors, nominations, and elections. Bylaws are also in place to ensure consistent practice across committees, boards, councils, and other working groups (ASHA, 2017). In addition to these policies, the ASHA bylaws also designate guidelines for honors and recognition of state organizations. In addition to formal meetings of the groups for decision-making, ASHA hosts an annual convention and numerous continuing education events throughout the country and online.

Employment settings of SLPs (i.e., medical and educational) as previously defined will also be briefly analyzed using the human resource frame (Bolman & Deal, 2013). *Other* settings will not be analyzed due to great variability within the settings and the repetitive nature of settings for those employed part-time in a medical or educational setting or in multiple settings already described. The human resources frame is based upon the following assumptions:

- human needs are to be met by organizations,
- a mutual need exists between humans and organizations,
- both individuals and organizations suffer if a mismatch exists between the two,
- organizations and individuals both stand to benefit when there is a good match between the two (Bolman & Deal, 2013).

The human resource frame was selected for this analysis based upon the premise that “organizations exist to serve human needs rather than the converse” (Bolman & Deal, 2013, p. 117). As speech-language pathology is a helping profession, each of the employment settings included in this study exists with the primary purpose of providing needed services to its clientele (e.g., students in schools, patients in medical settings).

In medical settings (i.e., inpatient hospitals, outpatient hospital or clinics, long term acute care, skilled nursing, or home health), individuals are served in a variety of ways. The purpose of the organization is to provide services from physicians, nurses, therapists and other healthcare professionals. Needs of patients vary based on setting, but all seek services from the professionals in each respective facility depending on current conditions and medical diagnoses. Over the years, medical facilities have sought to request feedback from patients to improve patient care. This desire to implement feedback to improve services while helping employees grow and improve their skills and knowledge base is a key element of the human resources frame (Bolman & Deal, 2013). In addition to patient feedback, many medical facilities have aimed to involve employees at all levels in decision-making processes in hopes that the open lines of communication and relationships established by members of the organization will help to increase commitment of employees to the organization (Bolman & Deal, 2013). Currently, many

medical facilities operate as businesses even if they identify as non-profit organizations. Therefore, finances play an integral role in decision-making. The human resources frame identifies money as an important motivator for human performance, but also recognizes that humans have many other needs. If leaders of these organizations seek to meet these other needs (e.g., belonging, self-actualization, achievement, recognition, affiliation, autonomy), employees will, in turn, improve motivation to optimize performance in the workplace.

Although educational settings vary by type (e.g., early intervention, K-12, private, public), all have commonalities when viewed through a human resource lens. A school's primary focus is to serve the needs of the community in which it exists. One may argue that a school should be just as focused on serving the needs of its employees as it is on serving the community. Most employees in school districts of any type work in teams. In many cases, these teams allow the employees to build relationships with others and open lines of communication often improve commitment to the organization (Bolman & Deal, 2013). Because of limited funding provided to schools, budgetary limitations do not often allow districts to reward and motivate their employees with money. Rather, intrinsic motivation often drives teachers, SLPs and other support staff in educational settings.

Leadership Analysis

The purpose of the current study was to examine confidence levels of SLPs in medical and educational settings. Because the focus of the study was only practitioners rather than settings, an in-depth analysis of the organization (i.e., ASHA) and settings (i.e., medical and educational) will not be provided.

ASHA is led by a Board of Directors which consists of 17 elected members who oversee all areas of the organization. Within the organization, ASHA also consists of the National Student Speech Language Hearing Association, National Association for Hearing and Speech Action, and American Speech-Language-Hearing Foundation. Approximately 45 committees, boards, and councils also operate as a part of ASHA (ASHA 2020a) which consist of volunteer members.

Medical facilities differ greatly in leadership and governance structure depending on the type of facility. Broadly, medical facilities in the U.S. are governed by the U.S. Department of Health and Human Services (n.d.), which consists of many organizations and agencies providing guidelines to medical facilities (e.g., Centers for Medicare and Medicaid, Centers for Disease Control and Prevention, Food and Drug Administration).

The leadership structure of educational settings varies based upon level (e.g., early intervention, K-12). However, some commonalities can be found among all schools. Federally, all public schools are governed by the U.S. Department of Education which provides federal laws guiding education. However, many decisions are provided at the state level for schools (e.g., Missouri Department of Elementary and Secondary Education; Missouri Department of Elementary & Secondary Education, n.d.). Public schools are guided at the local level by a Board of Education, district superintendent, and building administrators (e.g., principal, assistant principal).

Implications for Research in the Practitioner Setting

The current study provided insight into a variety of factors impacting self-efficacy of SLPs for implementation of EBP across settings, experience, education level, and practice area. Results filled gaps in the current literature base, as previous studies have focused solely on the benefits of EBP and barriers to implementation. This study

provided insight into practice areas (identified by the EPIC scale) which are most challenging for SLPs in all settings. Results were similar to other studies regarding the effects of educational level and experience.

Summary

A thorough understanding of ASHA as the governing body of SLPs in the United States as well as the settings in which SLPs are employed provides context for the current study. After participants completed a survey with questions from the EPIC scale (Salbach & Jaglal, 2010), the researcher compiled responses to compare self-efficacy levels of SLPs across settings.

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SECTION THREE

Scholarly Review for the Study

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Scholarly Review for the Study

Introduction

Although evidence-based practice (EBP) is the gold standard of patient care, many challenges are present in its implementation for speech-language pathologists. The American Speech-Language Hearing Association ([ASHA]; 2005a) released a position statement identifying evidence-based practice (EBP) as a critical component of clinical decision-making, in which practitioners must consider available scientific evidence, clinical expertise, and client preferences. Barriers such as lack of high quality evidence (Apel & Scudder, 2005; Elliott, 2004; Metcalfe et al., 2001; Reilly, 2004), education (Enderby, 2004; Fulcher-Rood et al., 2020; Metcalfe et al., 2001), and workplace factors (Fulcher-Rood et al., 2020; Metcalfe et al., 2001; Vallino-Napoli & Reilly, 2004) have been cited in literature. Because academic programs provide the initial foundational knowledge from which practitioners draw, curricular modifications are a logical place to begin to confront the issues.

Academic preparation of speech-language pathologists (SLPs) has been debated in recent years, as some have advocated for a transition to a doctoral level entry degree. Many advocates for an entry-level doctoral degree cite changes in the field as justification, as the length of academic master's programs is not adequate to prepare practitioners for all areas of practice as evidenced by numerous studies (ASHA, 2012). Therefore, it is crucial that research continues to examine self-efficacy levels of SLPs to determine areas in which academic programs need to further develop curricula. With approximately half (53%) of SLPs employed in educational settings and 39% employed in healthcare or medical settings, it is necessary to consider differences in practice to

determine how preparation needs differ among types of settings (ASHA, 2019c).

Anecdotal reports often describe deficient preparation focusing on various aspects of practice, including certain patient populations, disorders, or skills. While research regarding self-efficacy ratings across settings does not currently exist, it is necessary to guide the future of academic preparation programs, as the necessary knowledge upon graduation continues to expand.

Review of the Extant Scholarship

Expansive Nature of the Field

The field of speech-language pathology has expanded and new areas continue to emerge, adding areas involving patients with many complex medical conditions including dysphagia, pediatric feeding and swallowing, respiratory complications requiring tracheostomy and ventilatory support, among others (ASHA, 2012; ASHA, 2016). As a result of this expansion, academic programs are challenged to provide exposure to all areas within the scope of practice. This is difficult for a variety of reasons including geographic location among lack of supervision, among others. Therefore, it is not reasonable to expect that students are proficient in the evaluation and management of all patients with such a wide variety of disorders (ASHA, 2012). Although many academic programs have modified curricula to accommodate changes, most have been unable to change enough given the lack of time for coursework in traditional master's timelines. This challenge is not unknown to practitioners in the field or ASHA. ASHA (2018c) cited a 1999 report that, "The current model(s) for education/preparation of SLPs, audiologists, and speech, language, and hearing scientists does not address the conflicting expectations of academicians, practitioners, and employers that confront students upon graduation" (para. 4).

Evidence-Based Practice

EBP has been defined by numerous disciplines. ASHA (2005a) defines EBP as “an approach in which current, high-quality research evidence is integrated with practitioner expertise and client preferences and values into the process of making clinical decisions” (para. 2). In addition to ASHA’s position on use of EBP in all areas within the scope of practice (ASHA, 2005a), several authors have identified challenges to use of EBP (Dollaghan, 2004; Elliott, 2004; Enderby, 2004; Fulcher-Rood et al., 2020; Reilly, 2004; Vallino-Napoli & Reilly, 2004). This has highlighted the need for more research in this area, as most studies examining EBP use have been general and those exploring confidence have focused on a single disorder or patient population (Davis & Murza, 2019; Muncy et al., 2019; O’Donoghue & Dean-Claytor, 2008; Plumb & Plexico, 2013; Ward et al., 2008; Ward et al., 2012).

Vallino-Napoli and Reilly (2004) conducted a study surveying SLPs to determine details about EBP use. Although all participants had internet access and reported attending continuing education events within the year prior to the survey, only about half reporting conducting literature searches online. An overwhelming number of participants (90%) reported using research from professional journals as a source of evidence, although an alarming number (18%) indicated never accessing journals while managing a case. Nearly all respondents felt time should be allocated in their workday for research related to caseloads, but only 69% reported having this time to do so. When asked what EBP meant within their clinical practice, only 25% of participants considered all three components of EBP. Analysis of results revealed a significant relationship between years of experience and use of research findings in practice, with participants practicing 10

years or less being more likely to use research to guide decision making in practice. No significant difference was noted between years of experience and using the other two components (i.e., clinical experience and patient views) within practice.

Zipoli and Kennedy (2005) conducted a study investigating attitudes regarding use of research and EBP. Participants' attitudes regarding research and EBP were generally positive. Results of the study revealed that exposure to research and EBP during graduate training and the CF were significant predictors of attitudes about the two. Participants indicated reliance on their own clinical experience and opinions of colleagues most frequently and case studies, video or audiotapes, and research studies the least. This is alarming and shows a trend within professionals in the field, but studies have shown positive effects can be gleaned when explicit instruction is provided regarding evidence-based practice. A study by Doble et al. (2019) explored confidence of undergraduate speech pathology students regarding EBP. Participants in this study included 171 undergraduate students in their final year who enrolled in an EBP course. During this course, students were taught the five steps of the EBP process, literature search skills, and skills evaluating the quality of methodology in research. Following the EBP course, students demonstrated significant gains in confidence on all test items. Participants' self-efficacy was greatest for identification of knowledge gaps and deciding on a course of action and lowest for interpreting statistics.

Fulcher-Rood et al. (2018) studied school-based SLPs' perceptions regarding decision-making for children with suspected language impairment and although the authors did not explicitly ask about external research as a part of EBP use, SLPs participating in the study did not mention it as a factor which impacted their decision

making. The lack of mention does not confirm that participants do not use external research, but it is of note that this area of EBP was not mentioned in an interview eliciting information about assessment practices. A more recent follow-up investigation by Fulcher-Rood et al. (2020) examined school-based SLPs' perceptions of EBP use, specifically the definitions SLPs used of EBP, value placed on research, sources used for external evidence and patterns in implementation of EBP. Participants in this study did not define EBP as having three components (external evidence, internal evidence, and client preferences). Based on responses, the authors concluded that SLPs value research when they perceive it as relevant and easy to implement. Time was also identified as a barrier to use of EBP.

Evidence-Based Practice Confidence Scale. The Evidence-Based Practice Confidence (EPIC) scale was created by Salbach and Jaglal in 2010 as a measure to assess the perceptions of healthcare practitioners' ability to implement evidence-based practice. The measure was validated for use with physical therapists in a study completed by Salbach et al. (2013) and later for use with occupational therapists by Clyde et al. (2016).

In 2019, Mickan et al. utilized the EPIC scale along with a modified Fresno test to evaluate the effectiveness of an education program provided to allied health professionals. The authors designed four, monthly two-hour long workshops that were offered to 24 allied health professionals including those from dietetics, medical imaging, occupational therapy, pharmacy, social work, speech pathology, physiotherapy, music therapy. Topics covered in the education program targeted the five steps of the EBP process, using both instruction and exercises to facilitate application of knowledge gained

about the EBP process. Self-efficacy related to implementation of EBP was evaluated pre- and post-education using the EPIC scale, while knowledge of EBP and skills related to EBP were assessed using the adapted Fresno test. Self-reported EBP behaviors were also evaluated during the study using an adapted EBP Implementation Scale. In addition to providing feedback about the educational program, participants also participated in a semistructured focus group to further explore their clinical decision making.

All participating allied health professionals reported strong agreement that small group EBP education was valuable and was well organized and all indicated they would recommend it to other allied health professionals. Qualitative analyses by the author yielded positive feedback from participants regarding effectiveness and usefulness of the training. On the EPIC scale, participants' self-efficacy improved significantly ($p < .001$) following education and the authors indicated these ratings were consistent with focus group responses. No significant change in knowledge and skills was noted on the modified Fresno test ($p=.21$). Statistically significant improvements were noted in self-reported behaviors related to EBP implementation ($p < .001$; Mickan et al., 2019).

A study by Widyahening et al. (2019) utilized the EPIC scale to evaluate near-peer teaching of critical appraisal skills to medical students. The study utilized a randomized crossover trial of 241 fourth-year medical students completing a Clinical Epidemiology and Evidence-based Medicine module at the Faculty of Medicine Universitas Indonesia. Students were either in a group who was assigned near-peer tutors (doctors who had recently graduated) or staff tutors. Research appraisal skills were targeted during four, two-hour tutoring group discussions. Self-efficacy was assessed using a modified EPIC scale along with evaluations of knowledge and skills by a written

multiple-choice test, attitudes by a portion of the Knowledge Attitudes and Behaviors questionnaire, and educational experience ratings as assessed by a questionnaire.

Following completion of the module by medical students, no statistically significant difference in attitude scores was noted. Average self-efficacy ratings by students on the EPIC scale were not significantly different for individual items or for overall average self-efficacy scores following tutoring. Near-peer tutors received more positive ratings by students than did staff tutors for most items.

The EPIC scale has also been utilized to assess confidence of occupational therapy students. In this study, the scale was used with a convenience sample of 158 master's occupational therapy students along with the Knowledge of Research Evidence Competencies to assess knowledge of evidence-based practice (DeCleene Huber et al., 2015). Participants reported the highest confidence in their ability to gather information about client needs, values, and preferences by asking questions. Although the ability to conduct a search for literature online was rated as the area of second highest confidence by students, the lowest overall ratings of all students were on items requiring evaluation of measurement properties of standardized assessments including reliability and validity, sensitivity and specificity; as well as interpretation of research results using knowledge of statistical analyses. Third-year occupational therapy students rated their confidence higher on all items of the EPIC scale than first-year occupational therapy students. Third-year students also rated knowledge higher than first- or second-year students did.

Confidence Levels

Several disciplines have utilized confidence levels to determine how comfortable practitioners are for managing certain situations encountered in practice (Finn, 2019; Hayward et al., 2013; Muncy et al., 2019). Among some of the studies completed, many

concluded that confidence levels are related to several factors (Brisk et al., 1997; Hutchins et al., 2011; O'Donoghue & Dean-Claytor, 2008; Plumb & Plexico, 2013), while others consistently determined that confidence levels increase with experience and education regarding the situation (Hutchins et al., 2011; Hux et al., 1996; Muncy et al., 2019; Plumb & Plexico, 2013; Ward et al., 2012). Despite the prevalence of studies about confidence levels in SLPs, findings of studies are not related, and none focus on more than a single disorder or population (e.g., fluency disorder). Dysphagia is the most frequently examined disorder regarding preparation or confidence levels and most focused on schools (Hutchins et al., 2011; O'Donoghue & Dean-Claytor, 2008; O'Donoghue et al., 2004; Wilson et al., 2020). Few studies exist about confidence in any disorder area in medical settings (Ward et al., 2008; Ward et al., 2012). Due to the paucity of literature in medical fields related to confidence of practitioners, no literature currently exists comparing confidence levels of SLPs in educational settings to that of SLPs in medical settings.

Studies dating back to 2000 began providing insight about SLPs' perspectives of assessing and managing dysphagia in the schools (Bailey et al., 2008; Hutchins et al., 2011; Kurjan, 2000; O'Donoghue & Dean-Claytor, 2008; O'Donoghue et al., 2004). Kurjan (2000) provided an overview of a service delivery model in a public-school system with a rapidly growing number of preschool children with dysphagia. Kurjan (2000) expressed concerns about preparation, indicating that "a master's degree in speech-language pathology does not necessarily imply expertise in dysphagia" (p. 48). In addition to concerns about lack of training in pediatric feeding and swallowing,

participants expressed that limited funds for additional training, limited equipment, and professional liability were concerns.

Bailey et al. (2008) completed a qualitative investigation about perceptions of school based SLPs regarding the management of dysphagia. Although the researchers did not directly explore confidence levels, it is important to note perceptions of dysphagia management in schools, which likely lead to reduced confidence levels that have been demonstrated in the other studies mentioned. Numerous focus group participants expressed disagreement that dysphagia management should be a part of a school based SLPs caseload, as many believe medical issues should be addressed by healthcare professionals (Bailey et al., 2008). Some consistencies may be found with Bandura's (1977) statement that higher self-efficacy results in greater likelihood that an individual will attempt a task and lower self-efficacy results in avoidance. This contrasts with findings by Hutchins et al. (2011), whose respondents (also school based SLPs) felt dysphagia services were their responsibility to provide and seek training on and that the services were educationally relevant. Perhaps perceptions such as those revealed in the study by Bailey et al. (2008) led school based SLPs to not actively seek continuing education because they do not believe that feeding and swallowing problems may affect students' academic performance.

O'Donoghue and Dean-Claytor (2008) conducted a study investigating confidence levels of educational SLPs for managing children with dysphagia. Responses of participants revealed lower confidence levels for SLPs graduating earlier, which suggests that SLPs may not have had coursework in dysphagia or that more time following dysphagia training may have a negative impact on confidence levels.

Interestingly, a strong inverse relationship was discovered between continuing education in dysphagia and confidence levels. In other words, the more post-graduate training participants had, the lower their confidence levels were. Findings also revealed a strong positive influence of currency of continuing education on confidence levels, as those with training in the previous two years reported higher levels of confidence (O'Donoghue & Dean-Clayton, 2008).

These findings provide some support for the argument that confidence levels may not be reliable indicators of preparation or competence due to overestimations with self-ratings (O'Donoghue & Dean-Clayton, 2008; Riedeman & Turkstra, 2018). However, numerous other studies' findings across disciplines dispute this idea (Clyde et al., 2016; Hutchins, et al., 2011; Muncy et al., 2019; Salbach et al., 2013). Several limitations must be considered when interpreting these results including characteristics of the sample which were not controlled. Although all participants had a master's degree and were ASHA certified, it is worth noting that no consideration was made for employment setting, since respondents were only required to report primary employment in a school. This neglects possible influences from previous or simultaneous experience from other settings (e.g., medical). The proportion of participants' caseloads that consisted of children with dysphagia was also not reported, which possibly affected confidence levels, as other studies have found that SLPs (Hutchins et al., 2011; Ward et al., 2012) who have fewer experiences with a disorder are often not as confident in treating individuals with that disorder.

Medical experience and percentage of caseload of students with dysphagia were considered in a similar study completed by Hutchins et al. (2011). This study, however,

found a moderate positive relationship between confidence and (a) number of clinical hours received during training; (b) number of continuing education courses; (c) amount of continuing education in the past two years; (d) and number of children with dysphagia on respondents' caseloads. In other words, more education in dysphagia, especially within the past two years, was related to higher levels of confidence for treating children with the disorder. The same was true of clinical hours during training and the number of children requiring dysphagia services on SLPs' caseloads (Hutchins et al., 2011). A more recent study completed in 2020 by Wilson et al. revealed similar trends among SLPs regarding preparation for managing pediatric dysphagia in graduate programs.

Unsurprisingly, participants from this study who graduated within the last 10 years reported completing fewer continuing education courses related to pediatric dysphagia than those graduating more than 10 years prior to study completion. Findings also revealed that caseload and setting contributed to whether participants sought continuing education in pediatric dysphagia. An alarming number of respondents (under 9%) reported feeling prepared by their graduate program to manage pediatric dysphagia and (approximately 73%) indicated that all academic programs should have an entire course dedicated to pediatric dysphagia (Wilson et al., 2020).

Although more studies have been conducted about dysphagia than other disorders, earlier studies were completed investigating self-reported competence in the management of fluency disorders and traumatic brain injury in schools (Brisk et al, 1997; Kelly et al., 1997) and a more recent study examined management of voice disorders in schools (Teten et al., 2016). Kelly et al. (1997) conducted a study in which SLPs reported on the quantity and quality of their coursework received in graduate school as well as the

clinical experience and estimated competence for providing services for those who stutter. Reports overwhelmingly indicated that participants did not receive adequate training in academic programs to treat those who stutter (i.e., fluency disorder). In addition, ratings of current ability to treat those who stutter revealed that approximately half of the study participants continued to rate competence as inadequate. Brisk et al. (1997) also examined school-based SLPs' confidence and training in fluency. Most SLPs surveyed felt they were confident in evaluating children who stutter and most (97%) reported having a fluency course in graduate school in addition to treating at least one client with a fluency disorder (97%) during training. However, higher confidence levels may be attributed to significantly more master's-level SLPs compared to earlier studies (Mallard et al., 1988).

One study explored management of children with traumatic brain injury (TBI) in schools (Hux et al., 1996). Most participants did not rate themselves as qualified to serve as primary providers of services for children with TBIs. This is concerning, as in many cases, SLPs are likely the professionals with the most training in the area in a school setting. This was reported about many traditional services provided by SLPs including augmentative and alternative communication and aphasia; however, most reported they were qualified to treat cognitive-communication deficits resulting from TBI. Although higher confidence was related to increased training in the subject, results of the study make it apparent that the majority of SLPs do not receive adequate training to be prepared and qualified to confidently provide services to students with TBI.

In a more recent study, Teten et al. (2016) investigated school-based SLPs' perceptions of management of voice disorders. Results from this study revealed that

participants did not feel competent to assess and treat students with voice disorders. Most participants' ratings were below "moderately competent." Results indicated a positive relationship between perceived competence for evaluating and managing voice disorders and continuing education as well as those on the caseload, exposure to those with voice disorders, and perceptions about preparation related to voice disorders following graduation.

More studies have explored confidence in service delivery in a variety of areas including autism spectrum disorder (Plumb & Plexico, 2013), hearing loss (Muncy et al., 2019), literacy (Davis & Murza, 2019), written language disorders (Blood et al., 2010), and bilingual populations (Hammer et al., 2013). In a study conducted by Plumb and Plexico (2013), SLPs were surveyed regarding their training and confidence in service delivery to children with autism spectrum disorder. This study found that most respondents reported feeling confident in their ability to serve children with autism spectrum disorder. However, when comparing participants graduating prior to 2006 to those graduating after 2006, confidence levels were higher in several areas of practice related to children with autism spectrum disorder. Despite higher confidence levels, more experienced SLPs reported having less coursework related to autism spectrum disorders and less clinical exposure during graduate school with children with autism spectrum disorder. The authors concluded that findings underscored the importance of clinical experience and that more experienced clinicians likely sought out more continuing education related to the population. The researchers asserted that the combination of experience and additional post-graduate training resulted in greater confidence levels for managing children with autism spectrum disorder (Plumb & Plexico, 2013).

A 2019 study by Muncy et al. investigated the confidence of educational SLPs and school psychologists for working with students who had hearing loss and other co-occurring disabilities. This study found that confidence levels were improved with exposure and experience working with children with hearing loss up to a certain point. As to be expected based on exposure in academic preparation programs, SLPs' confidence levels were higher than those of school psychologists. The authors of the study predicted, based on results of the study, that if professionals have even limited exposure to those with hearing loss, their confidence will increase. A study by Compton et al. (2009) regarding SLPs' perceived level of confidence and preparation when managing children with cochlear implants revealed most SLPs (79%) surveyed reported little to no confidence in their ability for service provision or to manage technology required for children with cochlear implants. Although exposure in training programs appears to have a positive influence on confidence, it poses a challenge for academic programs, as many populations are not easily accessible based on several factors (e.g., geographical region, lack of programming).

A study by Davis and Murza (2019) examined confidence and knowledge levels of school-based SLPs when managing children with literacy deficits. Results of the study supported the idea that as respondents gained more clinical experience and as the duration of practice increased, most individuals reported reduced confidence in the impact of services provided to children's literacy achievement. These results are consistent with those found by O'Donoghue and Dean-Claytor (2008) which the authors attributed to the Dunning-Kruger effect (Kruger & Dunning, 2009) which states that the most experienced clinicians rate confidence lowest. This occurs as more exposure in

training opportunities brings attention to knowledge gaps. Although results support theories such as Dunning-Kruger (Kruger & Dunning, 2009) several other possible explanations exist. Since literacy intervention is relatively new to the scope of practice of SLPs (Schuele, 2009) and many have differing opinions about it (Casby, 1988), it is plausible that SLPs graduating more than a decade ago received less training in school than more recent graduates. This suggests that less experienced, novice therapists may, in fact, be more confident due to better academic preparation.

Blood et al. (2010) conducted a study to determine confidence levels and preparation of SLPs to target written language disorders. The researchers found that participants who graduated more recently and had less experience reported greater satisfaction with academic and clinical preparation in assessing and treating written language disorders, so the authors speculated that the programs prepared them better than those practicing for longer. Despite this, many provided a high rating of dissatisfaction with academic preparation. The number of SLPs expressing dissatisfaction did not predict confidence levels, as those reporting high levels of confidence with written language disorders were much higher than expected. Therefore, the authors concluded that confidence did not appear to be related to academic or clinical training. Similarly, a study by Hammer et al. (2003) investigated confidence levels of SLPs managing Spanish-English bilingual children. One-fifth of respondents were unable to recall if they had training in multicultural/multilingual issues; one-third did not receive training.

Approximately one-fourth reported having a lecture in at least one course in the area. No differences were noted in confidence levels serving bilingual children despite differences

in exposure during training. Most reported low confidence levels when serving bilingual children.

Confidence Levels in Medical Settings. Little is currently known about confidence levels of SLPs employed in medical settings. Given the focus on confidence of SLPs in the management of dysphagia in schools, it is surprising that only studies examining service provision with patients with tracheostomy and TBI have been conducted. While these patients often require treatment for dysphagia, that was not the focus of the studies available.

A study conducted by Riedeman and Turkstra (2018) explored confidence and practice patterns of SLPs working with adults with TBI. They found that not all practicing SLPs reported consistently utilizing continuing education and many had not received previous workplace training to serve this population. Despite reports of nonuse of evidence-based practices and resources, some participants rated confidence levels as high. The authors cited the Dunning-Kruger effect (as cited in Riedeman & Turkstra, 2018) as the reason for this, as often-times those with the lowest confidence ratings evaluate themselves as having high levels of competence or skills. Riedeman and Turkstra (2018) cited other studies in which the same phenomenon was noted in nurses.

Ward et al. (2008) conducted a study examining the preparation and confidence of SLPs to manage tracheostomy in Australia. Over half of participants indicated they had current knowledge for managing tracheostomy, with approximately 18% reporting they were not current and nearly 28% were unsure. Despite the large number of those who were not current in knowledge, most respondents (76.5%) felt confident managing patients with a tracheostomy, but also indicated they viewed additional training

opportunities would benefit them. When patients required ventilatory support in addition to tracheostomy, fewer of the respondents reported confidence. Ward et al. (2012) duplicated the previous study with SLPs managing patients with tracheostomy in the United Kingdom. Most participants (71%) reported feeling confident to manage patients with a tracheostomy. Those with the smallest caseloads of patients with tracheostomies reported lower levels of confidence. Like the previous study by Ward et al. (2008), fewer (approximately half) of participants felt confident to provide services when patients required ventilatory support in addition to a tracheostomy. These results must be interpreted with caution, as most participants in the first study by Ward et al. (2008) only had bachelor's degrees while only 33% of those in the study by Ward et al. (2012) had master's degree, which does not directly compare to SLPs practicing in the United States.

Confidence as a Measure of Competence. Numerous critical views exist regarding the use of self-reported confidence levels. Perhaps one of the most well-known theories supporting this critique is the Dunning-Kruger Effect (Kruger & Dunning, 2009), which asserts that “incompetent individuals lack the metacognitive skills necessary for accurate self-assessment” (p. 31). The author of the current study acknowledges this concern. However, since the extant literature within the field of speech-language pathology primarily focuses on confidence, this is a logical place to continue exploration. Confidence ratings that exist focus only on a specific disorder area, most within educational settings. Little research exists exploring confidence related to practice in medical settings, and at the writing of this paper, no literature exists examining confidence within an entire setting (i.e., educational or medical) or comparing the two practice settings. The current study added to this literature base and allowed for future

examination of factors contributing to self-efficacy levels (e.g., workplace factors, academic programs). It also allowed for more research to compare self-efficacy or confidence to competence, which to date, has only been completed with student self-confidence ratings (Lee & Schaman, 1987; Pasupathy & Bogshutz, 2013).

Models of Adult Learning

Literature across disciplines has identified ways in which adults learn and with which they learn based on experiences, often progressing through several stages of development. Dreyfus and Dreyfus (1986) identified Five Stages of Skill Acquisition. This model acknowledges that an individual's approach to problem-solving evolves as they gain more experience in their respective field. This model has been applied in nursing (Benner, 2001) and other allied health professions such as physical therapy (Hayward et al., 2013) in addition to speech-language pathology (Brumfitt & Freeman, 2007). McAllister et al. (2011) utilized the Dreyfus model of skill acquisition along with several other frameworks to develop a competency-based assessment tool for speech-language pathology students in the workplace.

Summary

Since findings from numerous studies have documented the surprisingly low numbers of professionals using EBP, it is crucial to determine self-efficacy of SLPs across settings as well as factors impacting those ratings. Since ASHA (2005a) requires SLPs to use EBP in all clinical decision-making, knowledge of ratings (outside of specific disorders or patient populations) and factors influencing those provide guidance for academic preparation programs. Because the scope and involvement of SLPs in all settings continues to rapidly change, academic programs must adapt to the changing needs of graduates. Current literature does not provide adequate information to guide

these changes. Therefore, the current study was necessary to further explore confidence levels as a start to determining whether curricula provide graduates with a balanced education that adequately prepares them for any setting in which they may be employed following graduation.

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SECTION FOUR

Contribution to Practice

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Statement of the Problem

Evidence-based practice (EBP) has roots in the field of medicine, but has since been applied to other fields, including speech-language pathology (Brackenbury et al., 2008; Dollaghan, 2004; Vallino-Napoli, 2004; Vallino-Napoli & Reilly, 2004). One widely-cited definition of EBP is that by Sackett et al. (1996) in which evidence-based medicine “is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” (p. 71). ASHA (2005a) requires that SLPs use EBP in practice. However, despite the clarity of ASHA’s requirement in this position statement, some SLPs continue to practice without implementation of EBP (Fulcher-Rood et al., 2020; Riedeman & Turkstra, 2018; Vallino-Napoli & Reilly, 2004; Ward et al., 2008; Ward et al., 2012). Dollaghan (2004) identifies EBP as instrumental for exploring clinical practice in the field of speech-language pathology. Although challenges to implementation of EBP within the field have been documented by numerous authors, (Elliott, 2004; Enderby, 2004; Fulcher-Rood et al., 2020; Reilly, 2004; Vallino-Napoli, 2004; Vallino-Napoli & Reilly, 2004), few studies have explored confidence using EBP specifically within workplace settings to determine areas in which practitioners struggle to implement EBP.

There is some literature exploring confidence levels of SLPs currently in practice. Several studies have explored preparation levels of SLPs to manage specific clinical populations (e.g., swallowing disorders). However, these studies have focused only on a limited population and most examined SLPs working in schools (Bailey et al., 2008; Blood et al., 2010; Brisk et al., 1997; Compton et al., 2009; Davis & Murza, 2019;

Hutchins et al., 2011; Kelly et al., 1997; Kurjan, 2000; Muncy et al., 2019; O'Donoghue & Dean-Claytor, 2008; Plumb & Plexico, 2013).

Little data currently exist regarding the confidence levels of SLPs working in medical settings. SLPs in medical settings must possess comprehensive knowledge of medical conditions and their effects on patients with communicative, cognitive, and swallowing disorders. However, some studies have provided evidence that coursework in most graduate academic programs does not cover this information in great depth due to the expansive scope that must be presented to students within a relatively short time (Krueger & Conlon, 2006; Finch et al., 2013; Hammer et al., 2004; Livingston & DiLollo, 2010; Wilson et al., 2020). To date, no studies have compared practitioner self-efficacy between medical and educational settings. Since these data do not exist, academic programs are unable to determine if graduates feel they are adequately prepared for practice upon graduation.

Some studies have identified that confidence levels of SLPs vary significantly based on several factors. For example, O'Donoghue and Dean-Claytor (2008) found that SLPs who received the least amount of continuing education related to swallowing disorders and did not take a course on the subject in graduate school rated their confidence levels higher than those who had much more formal training in the area. This is concerning, but perhaps suggests a trend in levels of self-awareness among practitioners. SLPs often practice as the only provider of speech-language or swallowing services in a facility and therefore, if they do not make a conscious effort to remain current with contemporary trends in the research, they are likely to overestimate their knowledge. Other studies, however, have identified a clear positive relationship between

confidence and training. Some revealing results like those of O'Donoghue and Dean-Claytor (2008) have provided explanations other than overestimation of confidence. Most relate to changes in programs, as more recent graduates may have been better prepared by programs and are therefore, more confident when managing these situations. Despite the limitations of self-rated confidence levels, confidence measures may provide an initial examination of perceptions of practitioners, which will guide further investigation into factors such as competence levels as rated by CF supervisors or mentors.

Academic programs in communication sciences and disorders must be accredited by the Council on Academic Accreditation (CAA) of ASHA. ASHA outlines a specific set of knowledge and skill standards which must be met by students before graduation and subsequent certification (CAA, 2020). However, the standards are somewhat vague, given that ASHA does not determine how each standard is assessed within coursework. This leads to a significant range of interpretation for each standard which results in lack of uniformity among academic preparation programs. ASHA does not impose requirements regarding the amount of instruction students must receive in specific areas, leaving academic programs responsible to determine the levels which they deem to be appropriate. Often, academic programs' curricula are designed based on the areas of expertise among faculty, which may provide heavier emphasis in one area than another. Additionally, graduate clinical experiences also vary significantly across programs. This leaves students less prepared in some areas than others. In addition to the variation in academic programming, there exists a discrepancy in perceptions of preparation of graduates, which likely translates to confidence levels (ASHA, 2018c). One such example may be the variability in experiences in clinical placements, as these are largely

determined by availability of qualified clinical supervisors, facilities within the geographic region, and preferences of students. Other considerations include variations among programs such as faculty areas of expertise and hospital affiliations. Some may argue that students graduating from programs with hospital affiliations are more prepared for medical settings and less for educational. The reverse may be true about academic programs without hospital affiliations. However, to date, there are no data exploring whether this is the case.

In 1997, ASHA and The Educational Testing Services (ETS) surveyed practicing SLPs. Results from the survey identified 53 clinical activities and 85 knowledge areas as skills necessary for entrance into the field. Of 2,800 respondents, practitioners, clinical fellowship supervisors, and clinical directors were in relative agreement that more should be learned in school. These respondents believed that only 16-24% of information was learned in the appropriate place (i.e., school), while an overwhelming number of educators (95% of respondents) felt that students acquire these skills and experiences in graduate programs (ASHA, 2018c). This confirms a discrepancy in perceived preparation levels between educators and practitioners which may lead to a reduced self-efficacy in some areas. Some of the current literature regarding self-efficacy speaks to the uncertain connection between confidence ratings and competence (Riedeman & Turkstra, 2018). However, as available studies focus primarily on a specific disorder or patient population, more information is required about confidence levels of SLPs across settings before these ratings can be compared to competence. Additionally, specific standardized measures of EBP self-efficacy should be used to determine more broadly how prepared practitioners feel they are. When information is obtained regarding areas in which practitioners feel

they are underprepared and less confident, academic programs can more accurately determine ways to better prepare their students.

While measurements of self-efficacy have limitations, exploring perceptions of practitioners will provide insight into the factors influencing preparation discussed previously (e.g., inconsistencies in focus across programs, inconsistent experiences within programs, lack of exposure to certain settings or populations during practicum experiences). Knowledge of these factors will assist academic programs and provide guidance about areas which require improvement. Obtaining data regarding self-efficacy of SLPs across a variety of settings will provide preliminary guidance to make further changes in academic programs to better fit the current needs of the profession.

Purpose of the Study

The current study explored EBP self-efficacy of master's- and doctoral-level SLPs following completion of a CF year in a variety of settings. Specifically, this study focused on the differences in self-efficacy ratings implementing EBP based on workplace setting, experience, and area of practice. Since available literature is scarce and primarily focuses on confidence levels of SLPs evaluating and treating specific disorders (Blood et al., 2010; Brisk et al., 1997; Compton et al., 2009; Muncy et al., 2009; Plumb & Plexico, 2013), this study sought to answer questions about self-efficacy using EBP in a systematic way by setting rather than a specific clinical area. Bandura (1982) defined self-efficacy as an individual's perception of how well he or she can execute a task, regardless of knowledge or skill related to the task. For the purpose of the current study, Pasupathy and Bogschutz' (2013) definition of self-efficacy was modified for use. Self-efficacy is "the confidence that an individual has in successfully performing tasks related to speech and language assessment and intervention" (p. 152). Since the current study

included all areas within the SLP's scope of practice, self-efficacy is defined as the confidence of an individual to implement evidence-based practice (EBP) within one's current employment setting(s). Cane et al. (2012) identified self-efficacy as a crucial factor affecting the use of EBP in healthcare professionals.

In 2005, ASHA's Joint Coordinating Committee on Evidence-Based Practice released a position statement that SLPs must utilize evidence-based practice when making decisions in order to provide the best care for those served by the profession. In this position statement, ASHA (2005a) defined EBP as "an approach in which current, high-quality research evidence is integrated with practitioner expertise and client preferences and values into the process of making clinical decisions" (para. 2). The National Joint Committee for the Communication Needs of Persons with Severe Disabilities mirrored this call for the use of EBP, also identifying integration of the same three areas including: (a) "clinical expertise/expert opinion," (b) "external scientific evidence," and (c) "perspectives of individuals with severe disabilities and their families and friends" to provide the best patient care (ASHA, 2020d, para. 1). These recommendations guide SLPs to give equal consideration to clinical expertise along with patients' opinions rather than solely relying on scientific evidence (Dollaghan, 2004). Implementation of EBP provides guidance to SLPs and allows them to avoid using treatment methods that are not likely to produce positive outcomes (Brackenbury et al., 2008; Reilly, 2004). Use of EBP also ensures accountability to those being served, those reimbursing for services, and to the profession (Apel & Scudder, 2005; Reilly, 2004, Vallino-Napoli & Reilly, 2004).

Despite repeated calls for implementation of EBP by numerous organizations, findings of available studies conducted related to confidence of SLPs reveal that neither students nor practitioners feel confident in their ability to implement EBP (Blood et al., 2010; Muncy et al., 2019; O'Donoghue & Dean-Claytor, 2008; Pasupathy & Bogenschutz, 2013). In addition to confidence in their ability to implement EBP, numerous studies have documented challenges related to EBP implementation for SLPs. In a recent study, Fulcher-Rood et al. (2020) identified barriers of implementation as clinician (e.g., perception, training), organizational (e.g., time constraints, lack of resources or support from supervisors, established workplace policies), or evidence factors (lack of high quality evidence, difficulty applying research methods into practice).

The current study employed a mixed-methods design. A survey was disseminated to SLPs employed in medical, educational, or other settings including university clinics, private practice, those employed part-time in any setting, or those employed in multiple settings. Initially, the study sought to include self-efficacy ratings from master's level SLPs in their first five years of independent, professional practice following completion of a CF year. Since the CF is intended "to integrate and apply the knowledge from academic education and clinical training, evaluate strengths and identify limitations, develop and refine clinical skills consistent with the Scope of Practice in Speech-Language Pathology" (ASHA, 2019a, para. 2), it is considered a portion of the education of SLPs. Therefore, SLPs currently completing a CF were not included. Data collection occurred during the COVID-19 global pandemic, which negatively impacted recruitment efforts and participation. As a result, the researcher expanded the scope of the study to

include SLPs in all years of practice, with either a master's degree or those with focused formal education beyond the level of a master's or doctorate degree.

The study sought to identify both self-efficacy of SLPs in a variety of settings as well as determining possible factors influencing those levels. Since it is well-known that the expansive nature of the scope of practice of SLPs makes thorough preparation challenging, an in-depth exploration of both self-efficacy as well as areas of practice (e.g., identification of knowledge gaps, appraisal of research and standardized assessments, and developing treatment plans) in which practitioners are most confident is warranted. This will assist academic programs in identifying which content and skill areas are adequately covered within programs and those which require more focus to sufficiently prepare students, so students feel more confident when encountering all situations in practice.

The current study explored self-efficacy of masters- and doctoral-level SLPs to specifically compare self-efficacy among employment settings. Since no studies have explored confidence levels for practice in any setting or compared confidence levels between settings, the current study sought to do so rather than solely examining confidence with one disorder or patient population. Because no specific disorder or patient population was examined, the study focused on self-efficacy implementing EBP which can be applied broadly across the scope of practice of SLPs.

Additionally, the current study examined possible factors influencing self-efficacy levels. Because many allied health professions struggle to adequately prepare students for all areas of practice, this information is vital for educating graduates for a dynamic field in which they are required to possess more knowledge than ever before (ASHA, 2018;

Brisk et al., 1997; Finn, 2019; Hayward et al., 2013; Kelly et al., 1997; Manley et al., 1999; Plumb & Plexico, 2013; Ward et al., 2008). Specifically, the study explored factors such as specific clinical experiences or other experiences within graduate preparation programs which SLPs perceive to impact their self-efficacy.

Research Questions

The research questions guiding this study are as follows:

1. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists across employment settings?

H₁: There will be a significant difference in self-efficacy ratings of master's level speech-language pathologists across settings.

H₀: There will be no difference in self-efficacy ratings of master's level speech-language pathologists across settings.

1a. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 1-5 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

1b. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 6-10 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and

other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

1c. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 11-20 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

1d. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists with greater than 20 years of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

2. Is there a significant difference between self-efficacy ratings of master's level speech-language pathologists and speech-language pathologists with a doctoral degree?

H₁: There will be a significant difference between self-efficacy ratings of master's level speech-language pathologists and speech-language pathologists with a doctoral degree.

H₀: There will be no difference between self-efficacy ratings of master's level speech-language pathologists and speech-language pathologists with a doctoral degree.

3. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale among settings?

H₁: There will be a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale within each setting.

H₀: There will be no difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale within each setting.

- 3a. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale in medical (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health) speech-language pathologists?

- 3b. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale in educational (early intervention, preschool, K-12) speech-language pathologists?

- 3c. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories

identified by the EPIC scale in speech-language pathologists employed in other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)?

4. Is there a significant difference in self-efficacy ratings among speech-language pathologists in the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+ years)?

H₁: There will be a significant difference in self-efficacy ratings among speech-language pathologists among the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+ years).

H₀: There will be no significant difference in self-efficacy ratings among speech-language pathologists among the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+ years)?

5. What are the most influential factors determining self-efficacy ratings of speech-language pathologists across employment settings?

Methods

To answer research questions in the current study, an explanatory sequential mixed-methods design was utilized (Creswell, 2014). Quantitative data were obtained initially, followed by further qualitative data via semistructured interviews to investigate factors affecting EBP self-efficacy. Quantitative data were obtained via use of a validated 11-item survey, the Evidence-Based Practice Confidence (EPIC) scale (Salbach & Jaglal, 2010; see Appendix A). The survey was distributed via an anonymous Qualtrics link. Initial qualitative data were collected using two, open-ended survey questions (see Appendix B) included following the questions from the EPIC scale (Salbach & Jaglal,

2010). At the end of the survey, participants were asked if they were willing to participate in an interview. If participants agreed, the researcher contacted them via email to schedule a one-on-one interview via Zoom web conferencing software. All participants were given the opportunity to enter a random drawing for a gift card in return for survey participation. If participants agreed to complete an interview, they were entered into an additional random drawing for another gift card.

The survey was distributed to potential participants via several online sites. As an ASHA member, the researcher posted a message (see Appendix C) on several ASHA Community sites inviting members to participate in the survey. The researcher posted to the following ASHA Communities: (a) Research, (b) Early Intervention, (c) Healthcare, (4) Private Practice, (5) SLP Schools, (6) Early Career Professionals, and (7) Clinicians and Researchers Collaborating. An invitation to participate in the study was also distributed to ASHA Special Interest Groups (SIGs) including: (a) SIG 2: Neurogenic Communication Disorders, (b) SIG 3: Voice and Upper Airway Disorders, (c) SIG 11: Administration and Supervision, (d) SIG 13: Swallowing and Swallowing Disorders, and (e) SIG 15: Gerontology. Links were posted on Facebook groups including: (a) School-Based SLPs: For Professionals Only, (b) Medical SLP Forum, (c) Speech Pathologists at Large, (d) SLPs for Evidence-Based Practice, and (e) Med SLP Newbies. Several graduate academic programs were also contacted and agreed to disseminate the survey to alumni. The sample was a convenience sample and included SLPs with a CCC throughout the United States to ensure a representative sample (Creswell, 2014; Fink, 2017; Hutchins, et al., 2011; O'Donoghue & Dean-Claytor, 2008).

Prior to beginning data collection and recruiting participants, the researcher applied for study approval through the Institutional Review Board at the University of Missouri-Columbia. The study (IRB#2022721) was approved on April 30, 2020 (see Appendix D). Participation in the study was voluntary and steps were taken to ensure anonymity. All survey responses were anonymous and were not linked to participants' identifying information unless they chose to provide email addresses for interview participation or to enter a random drawing for a gift card to compensate for their time completing the survey. All email addresses were stored in a password protected electronic file only accessible to the researcher.

Setting

SLPs working in medical, educational, and other settings including university clinics, private practice, or home health were the focus of the study; however, the settings themselves were not explored. A significant amount of variability among healthcare facilities exist including patient populations served, goals (e.g., rehabilitation versus maintenance of skills, end-of-life care), and services (e.g., evaluation or treatment). For the purposes of this study, medical settings were defined as inpatient hospitals, outpatient facilities, long-term acute care facilities, home health, and skilled nursing facilities for the purpose of this study. Educational SLPs were defined as those serving children from birth to 21 years of age in primarily educational settings (i.e., preschool, K-12). This also included those providing early intervention services within the home or daycare setting. SLPs employed in settings other than medical or educational included those employed in university clinics, and private practice.

Participants

Initially, the researcher intended to include participants that were master's-level SLPs certified by ASHA practicing in either medical or educational settings. Initial inclusion criteria included: (a) SLPs who had completed a CF and obtained a CCC, (b) SLPs currently in their first five years of independent professional practice beyond the CF, (c) employment of any status (full or part-time) in a medical or educational setting, and (d) SLPs who completed a graduate academic program in the United States. Exclusion criteria included: (a) SLPs currently completing a CF and have not obtained a CCC, (b) SLPs beyond the first five years of professional practice, (c) SLPs who currently practice in both medical and educational settings, and (d) SLPs who completed a graduate academic program outside the United States. As mentioned previously, the COVID-19 pandemic affected recruitment and participation and therefore, the scope of the study was expanded to include master's level SLPs as well as those with a doctorate. SLPs in any year of practice were recruited as well as those practicing in any setting, rather than limiting participants to medical or educational settings initially defined. This allowed participation from those employed in multiple settings or in other settings such as university clinics and private practice.

Those currently in the process of completing a CF were not considered in the study because the CF is considered part of the educational process for SLPs (ASHA, 2019a). The initial selection of novice SLPs was guided by findings of a study by Hayward et al. (2013) revealing significant growth and learning between the first and second years of practice for physical therapists. The study focusing on novice SLPs also served to reduce influence from other educational experiences (e.g., hands-on learning, mentoring from more experienced therapists, continuing education courses). However,

with changes to inclusion criteria following COVID-19, the study did not control for these factors. However, this is consistent with other studies completed about confidence and competency levels of professionals from various disciplines, which have included participants with a variety of experience levels (Finn, 2019; Hutchins et al., 2011; O'Donoghue, Dean-Claytor, 2008).

Data Collection Tools

Prior to survey distribution, a pilot survey was sent to a convenience sample of 11 SLPs (5 educational, 3 medical, 3 university clinic) to ensure questions were easily understood by a variety of respondents and that no questions would be misinterpreted (Creswell, 2014; Fink, 2017). Demographic questions (see Appendix D) were modified based on feedback from this group of SLPs; however, no changes were recommended for EPIC scale items. The EPIC scale (see Appendix A) consists of 11 questions requiring participants to rate confidence in their ability to complete activities in practice. These questions explore confidence levels of SLPs to complete various functions in practice including critical thinking and problem-solving skills, identification of knowledge deficits, and the ability to critically appraise available research to provide individualized evidence-based care to patients. Each question was answered using a visual analog scale with options to select from 0% ("No Confidence) to 100% ("Completely Confident) which ensured accurate responses (Fink, 2017). Use of a visual analog scale for the current study rather than a Likert scale was ideal to reduce bias in responses, a ceiling effect, and to allow for parametric statistical analyses, which are considered preferable over non-parametric analyses (Bishop & Herron, 2015; Voutilainen et al., 2016).

The EPIC scale was created by Salbach and Jaglal (2010) as a way to measure self-efficacy of healthcare practitioners regarding implementation of EBP. The authors of the EPIC scale sought to develop a measure to comprehensively assess self-efficacy using the entire process of EBP. After creation of the measure, face and content validity of the scale were evaluated. Experts in the area of EBP including a physician, nurse, SLP, physical therapist, occupational therapist, and epidemiologist were recruited to review the scale using a questionnaire containing five items. The scale was revised based on feedback from the EBP experts. Following modifications, healthcare practitioners in clinical practice were recruited to evaluate comprehensibility. Further modifications were made based on feedback. Based on findings from the sample of EBP experts and professionals in clinical practice, the authors determined that the EPIC scale had sufficient face and content validity as well as comprehensibility and is validated for use with a variety of professionals within the healthcare field including physicians, nurses, physical and occupational therapists as well as SLPs.

Several limitations exist regarding the use of the EPIC scale. The authors indicated that cross-cultural adaptation may be required for use in different countries; however, the validation study included professionals from both the United States and Canada to control for differences in language and terminology. Recommendations were also provided for further research to examine reproducibility and construct validity (Salbach & Jaglal, 2010).

In 2013, Salbach et al. conducted a study examining reliability, minimal detectable change, and construct validity of the EPIC scale with physical therapists. In this study, 275 physical therapists completed the survey, with findings determining that

higher self-efficacy ratings were provided by those with more education and those who reported more frequently locating and evaluating research as a part of their clinical decision-making, which supports the measure's construct validity. The test-retest reliability was .89, which the authors deemed adequate to use as a measure of progress monitoring of self-efficacy ratings over time in physical therapists (Salbach et al., 2013).

Clyde et al. (2016) conducted another study to determine the reliability, minimal detectable change, and construct validity of the EPIC scale with occupational therapists. A smaller sample of occupational therapists (n=126) completed the EPIC scale survey. The authors determined that test-retest reliability was sufficient for occupational therapists with an interclass correlation coefficient of .92. Results did not indicate a floor or ceiling effect allowing for use with practitioners with a wide variety of experiences. Construct validity of the EPIC scale was also supported by the findings of this study. EBP scores of the occupational therapist participants revealed positive relationships between degree held, EBP-related education, and participation in EBP activities (Clyde et al., 2016).

Two qualitative questions were asked as a part of the survey. This created an open-ended opportunity for respondents to provide reasoning for their answers as well as additional comments or information relating to self-efficacy levels they felt were pertinent to the study. Responses were analyzed using open and axial coding to identify themes in responses (Creswell, 2014; Merriam & Tisdell, 2016).

At the end of the survey, participants were asked if they were willing to participate in an interview. If they agreed, the researcher contacted them via email to schedule an interview. Once the researcher and participant agreed to a scheduled time,

the researcher sent a Zoom link via email. The interview consent form was also attached in the scheduling email. All participants were asked to provide verbal consent at the beginning of the interview. Participants were given the option to turn on the camera in Zoom or to leave it off and use audio only for the interview. Participants were asked eight pre-identified questions (see Appendix E) during semistructured interviews (Merriam & Tisdell, 2016).

Data Analysis

Survey responses were analyzed using IBM SPSS (Version 26) to answer research questions about differences among self-efficacy levels of SLPs employed in medical settings, educational settings, and other settings. Participants were separated into four experience groups including 1-5 years, 6-10 years, 11-20 years, and 21 years or more. Participants employed at least 80% of the time in inpatient hospitals, outpatient hospitals or clinics, skilled nursing facilities, long term acute care facilities, or home health were assigned to the “medical” group. Those employed at least 80% of the time in early intervention, preschool, or K-12 were assigned to the “educational” group. All participants that could not be assigned to either of these categories were assigned to the “other” group, which consisted of those employed in private practice, university clinics, day programs, part-time in any setting, or in multiple settings. Item-level responses of self-efficacy on the EPIC scale (see Appendix A) were averaged to obtain an overall self-efficacy score. Scores were also averaged in each of the three practice categories of the EPIC scale as follows. Responses for questions 1-3 were averaged to obtain the self-efficacy score for the first practice category: identify knowledge gaps and locate information related to that gap. Responses for questions 4-7 were averaged to obtain the self-efficacy score for the second practice category: critically appraise research and

standardized assessment measures and statistical analyses. Responses from questions 8-11 were averaged to obtain the self-efficacy score for the third practice category: develop treatment plans based on evidence, clinical judgment and patient preference and evaluate treatment effects on outcomes.

After results were obtained, descriptive statistics including frequency, mean, and standard deviation were reported (Field, 2017). Because the number of participants were not evenly distributed across settings, nonparametric analyses were completed. To determine if there was a significant difference in self-efficacy ratings of master's level SLPs across employment settings, a Kruskal-Wallis H was conducted for each experience group (i.e., 1-5 years; 6-10 years; 11-20 years; 21+ years) among the 11 activities identified in the EPIC scale. A Kruskal-Wallis H was conducted to determine if there was a significant difference between master's level SLPs versus SLPs with a doctorate. A two-way Friedman's ANOVA was utilized to determine if significant within-group differences were present among the three practice categories of the EPIC scale within each setting. To determine if there was a significant difference in self-efficacy ratings among SLPs in the four experience groups, a Kruskal-Wallis H was conducted followed by a Dunn's post hoc analysis.

All interviews were transcribed, and a unique identifier was assigned to each transcript to protect the identify of participants. Responses were coded by the primary researcher using open and axial coding (Creswell, 2014; Merriam & Tisdell, 2016). Participant responses were assigned to multiple themes if they included information from numerous themes (e.g., "I think having real world experience really helped. That, and my professors were so supportive and knowledgeable"). Themes emerging from the coding

process were provided for a second researcher to assign all responses to themes. Check-coding was completed to ensure interrater reliability (Miles & Huberman, 1994). The formula used to determine intercoder agreement was:

$$reliability = \frac{\# \text{ of agreements}}{\# \text{ agreements} + \text{disagreements}}$$

The two researchers reached 77.8% agreement initially, but met to discuss themes and responses, eventually reaching 100% agreement on all responses and themes. Therefore, interrater agreement exceeded the recommended 90% by Miles and Huberman (1994). Then, survey response themes were merged into interview response themes. Qualitative survey responses were also assigned to multiple themes if the information provided fit into multiple themes (e.g., “I have done so much continuing education and reading current research keeps me up-to-date”). The second researcher was then provided with the themes and responses and agreed to all the primary researcher’s assignments.

Results

A total of 342 SLPs provided complete responses to the survey. All participants graduated from a master’s program in the United States, had completed a CF, and received a CCC. A total of 310 participants had a master’s degree and 31 had a doctoral degree. Years of experience in practice following completion of the CF ranged from 1 year to 50 years with a mean of 12.78 years of experience in the field (see Table 1). Of the participants that responded, 166 were employed at least 80% of the time in medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), 107 were employed at least 80% of the time in educational settings (early intervention, preschool, K-12), and the remaining 67 participants were classified as employed in other settings (private practice, part-time in any setting,

multiple settings, university clinic, day programs). A total of 34 SLPs completed interviews. All interview participants were master's level. Years of experience ranged from 1 to 20 years ($M = 5.3$ years). See Table 2 for demographics of interview participants.

Table 1

Descriptive Statistics of Survey Participants

Years experience	<i>n</i>	Percent
1	42	12.3
2	21	6.1
3	21	6.1
4	20	5.8
5	24	7.0
6	15	4.4
7	11	3.2
8	10	2.9
9	14	4.1
10	9	2.6
11	13	3.8
12	3	0.9
13	9	2.6
14	6	1.8
15	4	1.2
16	7	2.0
17	7	2.0
18	6	1.8
19	6	1.8
20	8	2.3
21	4	1.2
22	4	1.2
23	4	1.2
24	3	0.9
25	15	4.4
26	5	1.5
27	6	1.8
28	5	1.5
29	7	2.0

Years experience	<i>n</i>	Percent
30	7	2.0
31	2	0.6
32	1	0.3
33	5	1.5
34	2	0.6
35	3	0.9
36	2	0.6
37	3	0.9
38	1	0.3
39	2	0.6
40	2	0.6
45	1	0.3
47	1	0.3
50	1	0.3

Table 2*Demographics of Interview Participants*

Participant	Years of experience	Employment setting
1	4	Other
2	1	Educational
3	4	Medical
4	5	Educational
5	5	Educational
6	1	Medical
7	4	Medical
8	2	Other
9	1	Medical
10	3	Educational
11	1	Educational
12	3	Educational
13	5	Educational
14	2	Medical
15	1	Medical
16	2	Medical
17	3	Educational
18	4	Educational

Participant	Years of experience	Employment Setting
19	3	Educational
20	3	Educational
21	1	Medical
22	4	Medical
23	2	Medical
24	4	Medical
25	12	Educational
26	6	Medical
27	11	Medical
28	9	Medical
29	9	Medical
30	11	Educational
31	20	Medical
32	10	Educational
33	10	Educational
34	15	Medical

Research Question 1

1a. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 1-5 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)? See Table 3 for mean rank self-efficacy ratings. A Kruskal-Wallis H test was conducted comparing self-efficacy levels of SLPs in years 1-5 of independent practice among practice settings. No significant difference was found ($H(2) = 1.584, p = 0.453$), indicating that the self-efficacy ratings of SLPs in years 1-5 of practice across settings did not differ from one another (see Table 4). The null hypothesis was supported. Setting did not appear to affect self-efficacy ratings in those with 1-5 years of experience following CF completion.

Table 3*Mean Rank Self-Efficacy Ratings for SLPs with 1-5 Years of Experience*

	N	Mean rank self-efficacy rating
Setting		
Medical	64	60.70
Educational	40	56.58
Other	16	69.50

Table 4*Self-Efficacy Ratings of Master's Level SLPs*

Years of experience	<i>M</i> (%)	<i>n</i>	<i>SD</i>	Range	Kruskal- Wallis <i>H</i>	df	<i>p</i>
1-5	72.68	120	14.79	30.00-100.00	1.584	2	.453
6-10	70.97	58	14.70	33.64-95.45	0.098	2	.952
11-20	74.61	59	15.88	34.55-100.00	0.647	2	.724
21+	77.31	70	15.28	25.45-100.00	3.747	2	.154

1b. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 6-10 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility,

long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)? See Table 5 for mean rank self-efficacy ratings. A Kruskal-Wallis H test was conducted comparing self-efficacy levels of SLPs in years 6-10 of independent practice among practice settings. No significant difference was found ($H(2) = .098, p = .952$), indicating that the self-efficacy ratings of SLPs in years 6-10 years of practice across settings did not differ from one another (see Table 4). The null hypothesis was supported. Setting did not appear to affect self-efficacy ratings in those with 6-10 years of experience following CF completion.

Table 5

Mean Rank Self-Efficacy Ratings for SLPs with 6-10 Years of Experience

Setting	N	Mean rank self-efficacy rating
Medical	35	29.83
Educational	14	29.29
Other	9	30.11

1c. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists in years 11-20 of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-

12), and other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)? See Table 6 for mean rank self-efficacy. A Kruskal-Wallis H test was conducted comparing self-efficacy levels of SLPs in years 11-20 of independent practice among practice settings. No significant difference was found ($H(2) = .647, p = .724$), indicating that the self-efficacy ratings of SLPs in years 11-20 of practice across settings did not differ from one another (see Table 4). The null hypothesis was supported. Setting did not appear to affect self-efficacy ratings in those with 11-20 years of experience following CF completion.

Table 6

Mean Rank Self-Efficacy Ratings for SLPs with 11-20 Years of Experience

Setting	N	Mean rank self-efficacy rating
Medical	29	28.17
Educational	23	31.76
Other	7	31.79

1d. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists with greater than 20 years of professional independent practice among medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health), educational settings (early intervention, preschool, K-12), and other settings (private practice, part-time in any

setting, multiple settings, university clinic, day programs)? See Table 7 for mean rank self-efficacy ratings. A Kruskal-Wallis H test was conducted comparing self-efficacy levels of SLPs with greater than 20 years of independent practice among practice settings. No significant difference was found ($H(2) = 3.747, p = 0.154$), indicating that the self-efficacy ratings of SLPs with greater than 20 years of practice across settings did not differ from one another (see Table 4). The null hypothesis was supported. Setting did not appear to affect self-efficacy ratings in those with greater than 20 years of experience following CF completion.

Table 7

Mean Rank Self-Efficacy Ratings for SLPs with Greater than 20 Years of Experience

	N	Mean rank self-efficacy rating
Setting		
Medical	34	37.44
Educational	24	29.42
Other	12	42.17

Research Question 2

Is there a significant difference between self-efficacy ratings of master's level speech-language pathologists and speech-language pathologists with a doctoral degree? A Mann-Whitney U test was conducted to examine whether there was a significant

difference in self-efficacy ratings of SLPs with master's degrees and those with doctoral degrees. A significant difference was noted between the groups ($U = 1849.5, p < .001$), indicating that the level of degree SLPs possess had a significant effect on self-efficacy ratings (see Table 8). The alternative hypothesis is supported.

Table 8

Self-Efficacy Ratings of Master's and Doctoral Level SLPs

Degree	<i>M</i>	<i>n</i>	<i>SD</i>	Range
	(%)			
Master's	74.15	310	15.20	25.45-100.00
Doctorate	86.16	32	8.93	63.64-100.00

Research Question 3

3a. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale in medical (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health) speech-language pathologists? A Friedman two-way ANOVA test was conducted to determine if a significant difference was noted among the three practice categories identified by the EPIC scale in this setting. A significant difference was found ($\chi^2(2) = 234.349, p = < .001$). The alternative hypothesis was supported. Practice category had a significant effect on self-efficacy ratings (see Table 9). A post hoc Dunn's test with Bonferroni correction was completed to determine between which categories significant differences in self-efficacy exist. A pairwise comparison revealed significant differences between category 1 (identify knowledge gaps and locate

information related to that gap) and category 2 (critically appraise research and standardized assessment measures and statistical analyses ($p < .01$); category 2 and category 3 (develop treatment plans based on evidence, clinical judgment and patient preference and evaluate treatment effects on outcomes ($p < .01$); and between category 1 and 3 ($p < .05$). See Table 10 for results.

Table 9*Self-efficacy Ratings by Practice Category for SLPs in Medical Settings*

Practice category	<i>N</i>	<i>M</i> (%)	<i>SD</i>	Range
1	162	81.91	15.77	33.33-100
2	162	55.28	22.52	00.00-100
3	162	86.47	11.26	35.00-100

Table 10*Pairwise Comparisons of Self-Efficacy Ratings by Practice Category for SLPs in Medical Settings*

Practice Category	Test Statistic	Standard Error	Standard Test Statistic	Significance	Adjusted Significance
2-1	1.269	.111	11.417	.000	.000
2-3	-1.565	.111	-14.083	.000	.000
1-3	-0.296	.111	-2.667	.008	.023

3b. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale in educational (early intervention, preschool, K-12) speech-language pathologists? A Friedman two-way ANOVA test was conducted to determine if a significant difference was noted among the three practice categories identified by the EPIC scale in this setting. A significant difference was found ($\chi^2(2) = 118.751, p = < .001$). The alternative hypothesis was supported. Practice category had a significant effect on self-efficacy ratings (see Table 11). A post hoc Dunn's test with Bonferroni correction was completed to determine between which categories significant differences in self-efficacy exist. A pairwise comparison revealed significant differences between category 1 (identify knowledge gaps and locate information related to that gap) and category 2 (critically appraise research and standardized assessment measures and statistical analyses ($p < .01$) and category 2 and category 3 (develop treatment plans based on evidence, clinical judgment and patient preference and evaluate treatment effects on outcomes ($p < .01$).

See Table 12

Table 11

Self-Efficacy Ratings by Practice Category for SLPs in Educational Settings

Practice category	<i>N</i>	<i>M</i> (%)	<i>SD</i>	Range
1	101	79.04	16.27	23.33-100
2	101	56.54	24.72	5.00-100
3	101	82.57	13.56	22.50-100

Table 12

Pairwise Comparisons of Self-Efficacy Ratings by Practice Category for SLPs in Educational Settings

Practice Category	Test Statistic	Standard Error	Standard Test Statistic	Significance	Adjusted Significance
2-1	1.158	.141	8.232	.000	.000
2-3	-1.411	.141	-10.026	.000	.000
1-3	-.0252	.141	-1.794	.073	.218

3c. Is there a significant difference in self-efficacy ratings of master's level speech-language pathologists among the three practice categories identified by the EPIC scale in speech-language pathologists employed in other settings (private practice, part-time in any setting, multiple settings, university clinic, day programs)? A Friedman two-way ANOVA test was conducted to determine if a significant difference was noted among the three practice categories identified by the EPIC scale in this setting. A significant difference was found ($\chi^2(2) = 61.318, p = < .001$). The alternative hypothesis was supported. Practice category had a significant effect on self-efficacy ratings (see Table 13). A post hoc Dunn's test with Bonferroni correction was completed to determine between which categories significant differences in self-efficacy exist. A pairwise comparison indicated significant differences between category 1 (identify knowledge gaps and locate information related to that gap) and category 2 (critically appraise research and standardized assessment measure and statistical analyses ($p < .01$) and

category 2 and category 3 (develop treatment plans based on evidence, clinical judgment and patient preference and evaluate treatment effects on outcomes ($p < .01$). See Table 14 for results.

Table 13

Self-Efficacy Ratings by Practice Category for SLPs in Other Settings

Practice category	<i>N</i>	<i>M</i> (%)	<i>SD</i>	Range
1	45	82.67	16.39	36.67-100
2	45	60.83	26.90	2.50-100
3	45	89.56	10.16	25.00-100

Table 14

Pairwise Comparisons of Self-Efficacy Ratings by Practice Category for SLPs in Other Settings

Practice Category	Test Statistic	Standard Error	Standard Test Statistic	Significance	Adjusted Significance
2-1	1.222	.211	5.798	.000	.000
2-3	-1.511	.211	-7.168	.000	.000
1-3	-0.289	.211	-1.370	.171	.512

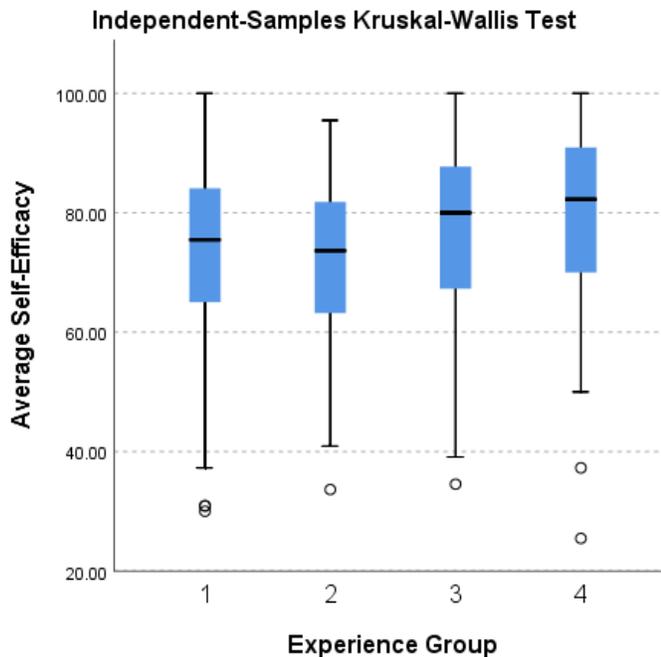
Research Question 4

Is there a significant difference in self-efficacy ratings among speech-language pathologists in the four experience groups (1-5 years, 6-10 years, 11-20 years, 21+

years)? A Kruskal-Wallis H was conducted comparing self-efficacy ratings among SLPs in the four experience groups. A significant result was found ($H=16.018, p=.001$), indicating that experience groups differed from each other regarding self-efficacy ratings (see Figure 1). The alternative hypothesis is supported. A Dunn's test with Bonferroni correction post hoc analysis was completed to determine between which groups significant differences were noted (see Table 15). Significant differences were noted between groups 1 (1-5 years) and 4 (21+ years) as well as groups 2 (6-10 years) and 4 (21+ years). This indicates that self-efficacy ratings are not significantly different until individuals have been practicing for more than 20 years in the field.

Figure 1

SLP Average Self-Efficacy Ratings by Experience Group



Note. Experience group 1: 1-5 years; Experience group 2: 6-10 years; Experience group 3: 11-20 years; Experience group 4: 21+ years.

Table 15*Pairwise Comparisons of Self-Efficacy Ratings by Experience*

Experience	<i>Test</i>	<i>Standard</i>	Standard	Significance	Adjusted
Groups	<i>Statistic</i>	<i>Error</i>	Test		Significance
			Statistic		
2-1	14.109	15.439	0.914	.361	1.00
2-3	-41.850	17.456	-2.397	.017	.099
2-4	-56.734	16.578	-3.422	.001	.004
1-3	-27.740	14.810	-1.873	.061	.366
1-4	-42.625	13.763	-3.097	.002	.012
3-4	-14.884	15.993	-0.931	.352	1.00

Research Question 5

What are the most influential factors determining self-efficacy ratings of speech-language pathologists across employment settings? Results of qualitative questions including open-ended survey questions and interview questions were divided into two broad categories: graduate program factors and post graduate factors (see Tables 16 and 17). Post graduate factors from survey responses were merged into specific themes identified from interview responses. Graduate program factors identified from survey responses are reported generally below and separate from interview responses due to the significant variability of responses.

Table 16*Graduate Program Factors Affecting EBP Self-Efficacy*

Response theme	<i>n</i>	%
Clinical placements		
“Real world” experience	14	41.18
Variety of experiences (setting, populations, supervisors)	14	41.18
Clinical supervisors	12	35.29
Placements	12	35.29
Documentation experience	8	23.53
Supervisory style	5	14.71
Learned to ask questions/seek knowledge	3	8.82
Inadequate supervision/guidance in external placements	3	8.82
Collaboration with other students in cohort	2	5.88
Setting/population not for me	2	5.88
Placement was not in setting I did not seek employment	1	2.94
Did not learn enough about billing	1	2.94
Collaborating with other professionals	1	2.94
Coursework/program emphasis (e.g., EBP, thorough nature, research)	11	32.35
Coursework not adequate or current/focus of program not appropriate	7	20.59
Professors	7	20.59
Not confident in first job/clinical placement	3	8.82
Not taught to apply knowledge	2	5.88

Table 17*Post-Graduate Factors Affecting EBP Self-Efficacy*

	Interview		Survey		Total
	participants		participants		participants
	<i>n</i>	%	<i>n</i>	%	<i>n</i>
<hr/>					
Response theme					
Positive					
Time/experience (exposure to					
clients/Tx methods/settings)	21	61.76	100	29.24	121
Reading research	9	26.47	74	21.64	83
Continuing education	19	55.88	62	18.13	81
Collaboration with others in my					
Setting (OT, PT,					
school/medical staff)	14	41.18	43	12.57	57
Collaboration with other SLPs	20	58.82	18	5.26	38
Mentor/supervisor model	13	38.24	15	4.39	28
Advanced degree/coursework			23	6.73	23
Positive tx outcomes/pt or					
family feedback	6	17.65	17	4.97	23
Access to resources (e.g.,					
ASHA Practice Portal, SIGs,					
literature)	2	5.88	22	6.43	22
<hr/>					

	Interview		Survey		Total
	participants		participants		participants
	<i>n</i>	%	<i>n</i>	%	<i>n</i>
Personal desire to learn/provide					
the best care	2	5.88	20	5.85	22
Self-reflection			20	5.85	20
Support from employer/other					
Professionals (non-SLPs)	4	11.76	14	4.09	18
Supervising students, SLPAs,					
teaching, leadership	2	5.88	14	4.09	16
Relying on others who					
understand research/researchers					
I trust			14	4.09	14
Conducting research			11	3.22	11
Field is too expansive	2	5.88	8	2.34	10
Clinical decision-					
making/critical Thinking skills	6	17.65			6
Learning to problem solve/be					
independent	3	8.82			3

	Interview		Survey		Total
	participants		participants		participants
	<i>n</i>	%	<i>n</i>	%	<i>n</i>
<hr/>					
Negative					
Unable to access research or materials/unable to understand research					
			37	10.82	37
Time constraints					
			23	6.73	23
Not enough use EBP/not enough EBP in the field					
			21	6.14	21
Unsure how to apply evidence to clinical practice					
			11	3.22	11
Lack of mentorship or others to collaborate with/employer challenges					
	3	8.82	7	2.05	7
Not confident					
	2	5.88	2	0.58	2

Note. OT = occupational therapist; PT = physical therapist; pt = patient; tx = treatment;

ASHA = American Speech-Language Hearing Association; SIG = special interest group;

SLPA = speech-language pathology assistant; EBP = evidence-based practice

A total of 6 dominant graduate program themes and 13 sub themes emerged from participant responses to interview questions. See Table 16 for frequency of responses for each theme and Table 18 for sample quotes for each graduate program response theme. Regarding clinical placements, of 34 participants, 41% (n=14) reported “real world” experience during their graduate program as a factor influencing self-efficacy. One participant stated:

In general that you had a realistic understanding of what the day-to-day operations were. So, and that was the biggest area with that for me was caseload. Because oftentimes I would speak to other people that were in other master’s programs where they would only maybe see five patients during their term, but I was seeing the exact same caseload that my supervisor was. I was responsible for that caseload. So as far as how many were on during that week, I was responsible for that amount of folks and then also the big one for me was the opportunity to complete documentation.

Another participant stated the following about “real world” experiences and their effects on EBP self-efficacy:

I think just in general, kind of getting thrown into it and having to do it full time rather than sitting behind a desk and learning about it. So, getting that hands-on, actually using things that you do learn about in school, but actually having to do it was probably the best thing that I learned.

Another participant added that other responsibilities in addition to treating patients were helpful in increasing self-efficacy by stating, “also, the reality of having to not only treat

the patients, but then document and do insurance things or IEP things. So just the reality that it's not just fun treatments all the time."

Table 18

Example Quotes for Graduate Program Response Themes

Response theme	Example quote
"Real world" experience	<p>"Just seeing the variance between how things are taught and how things are actually done in the real world."</p> <p>"The most helpful thing to me was having that hands-on experience."</p>
Variety of experiences (setting, populations, supervisors)	<p>"I think my experiences visiting different cleft teams with my supervisors. Now, I've seen and worked with four different cleft teams. I like that I've seen all the different ways it can go. It gives me the perspectives that, just because we're doing it this way, doesn't mean it has to be done that way all the time."</p> <p>"Then, obviously, just like exposure to all of the different kinds of clients that you can have. I really got a pretty broad experience across very different settings."</p>
Clinical supervisors	<p>"My clinical supervisors were everything to me."</p> <p>"I think it was really helpful for ours, we have two-way mirrors in the clinic so our supervisors would watch what we were doing on our own. Then we could meet with them and kind of talk about what we did and what was working and what wasn't."</p>
Placements	<p>"I think the part where I learned the most was definitely internships and externships. I felt like on campus clinic is too it's almost too structured and it's not realistic when looking at what I do every day in a "real world" clinic. It's just not the same."</p> <p>"I think that by far and away, the experience that impacted where I wound up professionally was the last extern I had for the half semester in an inpatient rehab hospital, which is actually where I did my CFY."</p>

Response theme	Example quote
Documentation experience	<p>“My school-based one I felt like it was probably the most helpful overall because I learned a lot more of the ins and outs of not just therapy, but all the IEP requirements.”</p> <p>“Because within our coursework, I mean maybe we would do like one evaluation based off a case history and maybe do like very generic SOAP notes. So, to be actually in and with different documentation systems is that I think that was the most valuable thing for me.”</p>
Supervisory style	<p>“If I had any issues even, you know, even in the middle of a session they would come around from the other side or from their office where they were observing and come into the session and provide the support right there.”</p> <p>“That supervisor also sometimes would tell us to prepare for a therapy session, then 10 minutes before take away all our materials. You get paper and crayons or something, figure it out. That was helpful because I had to learn quickly even though it was frustrating.”</p>
Learned to ask questions or seek knowledge	<p>“So it was a lot of like self-teaching and carrying around a notebook all day long and writing down terms I didn’t know. Taught me I have to take ownership of things I don’t know. Asking questions.”</p>
Inadequate supervision or guidance in external placements	<p>“It gave me confidence and I was scared, the fact that I had such free reign to do what I wanted to do in clinic. But I was also, part of me was hoping that someone would correct me if I was completely off the wall.”</p>
Coursework/program emphasis (e.g., EBP, thorough nature, research)	<p>“Also, I like how our classes we did a lot of labs and I feel like those labs are really the hands-on things that helped us to apply the knowledge we learned. So, I feel like our graduate program was really good about actually letting us use and try the skills out in labs or in the clinical setting.”</p> <p>“Well, the classes were great.”</p>

Response theme	Example quote
Coursework not adequate or current/focus of program not Appropriate	<p>“I feel like what I had learned about swallowing was not anything that was current. So, that was frustrating.”</p> <p>“I felt like just the coursework focused a lot on kids with typical artic, language disorders.”</p>
Professors	“The mentorship from [professor].”
Not confident in first job/clinical placement	“I felt like I had the interpersonal skills necessary to do well and I felt like I could catch on quickly, but entering my externship, I was very unsure of myself because just because of my prior training.”

The same number (n=14; 41%) of participants indicated that the variety of clinical experiences (e.g., settings, populations, supervisors) they had in clinical placements during graduate school influenced their self-efficacy. One participant reported, “I think the most valuable really was working in the university’s clinic because we got a variety of ages, populations, disorders.” Another indicated, “I’m grateful that I was able to have placements in so many different schools.” Another participant said:

Just like exposure to all the different kinds of clients that you can have. I really got like a pretty broad experience across like very different settings. So, I kind of felt prepared for whatever path my career was going to take after graduate school.

Both clinical supervisors and clinical placements were reported as influential factors for self-efficacy by 35% (n=12) of interview participants. When asked what part of their graduate program or clinical experiences influenced confidence the most, one participant reported, “I think the most helpful was having supervisors that I really trusted

and looked up to and we gelled well together. My hospital supervisor, I really appreciated him and his really patient-centered and frank nature.” Another participant said:

I think the part where I learned the most was definitely internships and externships. I felt like on campus clinic is too, it’s almost too structured, and it’s not realistic when looking at what I do every day in a real-world clinic. It’s just not the same.

Experience with documentation was reported by 24% of participants (n=8), supervisory style by 15% (n=5), learned to ask questions and seek information was reported by 9% (n=3) of participants. Collaboration with other students in the cohort was reported by 6% of respondents (n=2) and with other professionals during clinical placements by 3% (n=1) of participants. Several participants (n=3) reported negative clinical experience, identifying inadequate supervision or guidance in external placements, while 6% (n=2) of respondents indicated they learned that a particular setting or population was not for them. A small number (n=1) of participants reported that placements in settings in which they did not become employed were not helpful, they did not learn enough about billing in a particular setting.

Regarding graduate programs in general, 32% of participants (n=11) reported coursework or program emphasis (e.g., EBP, thorough nature of the program, research) as an important factor affecting self-efficacy. One participant, for example, said:

Also, I like how our classes, we did a lot of labs and I feel like those labs are really the hands-on things that helped us to apply the knowledge we learned. So, I feel like our graduate program was really good about actually letting us use and try the skills out in labs or in the clinical setting.

Another comment by a different participant was similar:

There was a lot more applicability of kind of the concepts that we learned. I mean, so much of undergrad is built on just learning kind of the basics. Whether it's, you know, anatomy and physiology or just kind of understanding disorders, but I felt like my courses in particular were, you know, they focused on different disorders. But, they always, so much of it was about application with those disorders instead of just learning the little tidbits about the disorder itself.

Several participants commented on program emphasis including, "my graduate work was greatly founded in EBP and application of research in a clinical setting" and another said:

I was able to seek out kind of pseudospeciality. So, they did allow me to expand a lot with voice so I think typically folks will leave the graduate program with maybe 25 hours in voice, but I left with over 100 . . . so their degree of specificity within populations was most helpful for me as far as my own trajectory.

A total of 21% (n=7) participants indicated professors were instrumental in impacting self-efficacy. One participant noted, "basically just reaching out to my professors. I still keep in touch with them if I'm unsure of certain areas. I would just reach out and communicate with them" and another stated, "the mentorship from [*names professor*]." Several participants also reported factors from their graduate programs that had a negative effect on self-efficacy. Twenty-one percent (n=7) indicated that coursework was not adequate or current or that the program focus was not appropriate. One participant stated, "The social emotional part, I feel like I had no training whatsoever and have just had to figure it out as I go," while another reported, "I think if I had gone

into pediatrics, that would be a completely different answer, but my program was extremely pediatrics focused.” Another participant reported:

My experience at the hospital and even in my externship at [*names town*], I feel like what I had learned about swallowing was not what anything that was current. So, that was frustrating. I ended up spending like close to \$1,000 in CEUs just to feel prepared. I kind of felt jipped because I shouldn't have had to spend \$1,000 after I had just graduated.

One other participant reported the same concerns:

When I look back at my graduate education as it pertains to where I'm at right now, I honestly am not sure that I got much out of my master's degree. Most of my learning that has benefited my career has been post graduate.

Nine percent (n=3) of participants reported not feeling confident entering their first job or clinical placements, and six percent (n=2) reported that they were not taught to apply knowledge from coursework.

Graduate program factors identified from survey responses were reported separately from interview responses due to the significant variability of responses. Survey participants reported factors affecting self-efficacy both positively and negatively in regard to undergraduate or graduate programs. Of the 342 total survey participants, approximately 12% (n=40) reported that components of their undergraduate or graduate programs positively impacted their self-efficacy, while 2% (n=8) reported these had a negative impact on self-efficacy. Those reporting positive effects of academic training on self-efficacy made comments such as, “evidence-based practice was integrated into every aspect of our coursework throughout undergrad and graduate school: external scientific

evidence, client views/values, and clinical expertise should be use with all clients on a regular basis” and “graduate work was greatly founded in EBP and application of research in a clinical setting.” Some participants reporting negative impacts of academic training on self-efficacy reported, “experience in the field, but lack of understanding of statistics (never had a statistics course)” or “I was not required to take a statistics course in undergrad or graduate school which has since been changed.”

A total of 23 post-graduate themes emerged based on survey and interview responses (see Table 17). See Table 19 for sample quotes for each post-graduate response theme. Approximately 61% (n=21) of interview participants and 29% (n=100) of survey participants felt that time and experience (exposure different clients, treatment methods, or settings) were factors influencing self-efficacy. A survey participant reported, “I feel confident due to my experience in the field, my motivation to continue to learn, my sense of responsibility to my patients in providing the best care possible.” One interview participant reported:

I was hired on as a CF starting that summer and I got so many clinical experiences across the continuum of care that I think made me feel confident for whatever was going to come after. Like whether it was acute care, outpatient, skilled nursing, anything I got the chance to do at [*names hospital*] and I felt really confident that I could do whatever job was out there.

Reading research was cited as a factor impacting self-efficacy of SLPs by 26% (n=9) of interview participants and 22% (n=74) of survey participants. This was reported in comments such as, “I also make sure to look at the literature every once in a while to see if any changes or enhancements have bene made” or “I take the time to search

databases and read journal articles regularly.” One participant also commented, “I love research and always make the time,” while another said, “I read journal articles constantly.” Continuing education was also reported as a contributor of self-efficacy with 56% (n=19) interview participants and 18% (n=62) of survey respondents reporting. One participant said, “I do spend a significant amount of time obtaining additional CEUs and reading research to know that I am attempting within my ability to carryover best practices” while another reported, “Lots of CEUs. I’ve had six ACE awards. I focus my CEUs selectively to learn evidence-based procedures.” Collaboration with others in participants’ settings including other therapists (e.g., physical and occupational therapists), school staff (e.g., teachers, psychological examiners, or medical staff (e.g., physicians) was identified as important by 41% (n=14) of interview participants and 13% (n=43) of survey participants. One participant reported, “I’m in a multidisciplinary practice. So, I do have access to the laryngologists and the residents here so that kind of team environment keeps me fresh.” Another said, “getting to work with OTs and PTs for sure, I think helped out. I was like, whoa, I didn’t even know this world exists here.” Collaboration with SLPs was also rated as important by 59% (n=20) of interview participants and 5% (n=18) of survey respondents. One participant said, “there’s a team of five SLPs who were all in the career 40 years or so. So, I had a really strong knowledge base with them, but they were also very encouraging.” Another participant cited collaboration with SLPs by saying:

I had a great supervisor throughout my CF who I still work with. She’s not my supervisor anymore, but she definitely answers more questions a week than she should. I have another coworker speech therapist that I am just constantly in

contact with those two. So, I think having the support system has probably been the best asset since I graduated.

Table 19*Example Quotes for Post-Graduate Response Themes*

Response theme	Example quote
Time/experience (exposure to clients/tx methods/settings)	<p>“So, I was hired on as a CF starting that summer and I got so many clinical experiences across the continuum of care that I think made me feel confident for whatever was going to come after.”</p> <p>“I feel like I left with the confidence to work in any of those settings like outpatient acute rehab or acute care.”</p>
Reading research	<p>“Time to continually read and research ever changing EBP for assessment and treatment strategies.”</p> <p>“I also make sure to look at literature every once in a while to see if any changes or enhancements have been made.”</p>
Continuing education	<p>“Our required continuing education units are valuable to continue the learning aspect of our profession.”</p> <p>“Continuing education. I did a ton. Even before I graduated. I did a ton in my CF year. I would say that’s probably a big factor.”</p>
Collaboration with others in my Setting (OT, PT, school/medical staff)	<p>“And then getting to work with OTs and PTs for sure I think helped out.”</p>
Collaboration with other SLPs	<p>“And really collaborating with my colleagues who either had worked in high school for years or had been an SLP for years.”</p>
Advanced degree/coursework	<p>“I am a Ph.D. candidate in Speech and Hearing Science so I have gained significant research, statistics, and study design experience which I can apply to my clinical practice.”</p> <p>“Experience/years reviewing literature in a PhD program.”</p>

Response theme	Example quote
Mentor/supervisor model	“Examples from previous supervisors”
	“Having a mentor in a particular workplace makes a big difference.”
Positive tx outcomes/pt or family feedback	“You could see progress with kids, but now I know I wouldn’t necessarily have something to gauge that progress against, but I think being able to see one kid for three years straight. I think you could really see the progression of treatment and intervention.”
	“I think just having success with students.”
Access to resources (e.g., ASHA Practice Portal, SIGs, literature)	“I am a member of multiple helpful sites and utilize the SIGs in ASHA.”
	“Readily available resources in my setting that integrate best practices.”
Personal desire to learn/provide the best care	“Striving to help the individuals I service reach their highest potential.”
	“My sense of responsibility to my patients in providing the best care possible.”
Self-reflection	“Having the time to sit and think for extended periods of time.”
	“I constantly analyze my weaknesses and strengths as I work with my clients.”
Support from employer/other Professionals (non-SLPs)	“I work with a company that is very strong with using evidence-based practice and supporting us.”
	“And it was a small enough hospital that I felt supported, not just by her, but also by my director, by PTs, Ots, by the physiatrist that I worked with and it helped me gain confidence and competence.”

Response theme	Example quote
Supervising students, SLPAs, teaching, leadership	<p>“By teaching it to students under my supervision as a clinical supervisor.”</p> <p>“Serving as a clinical instructor to CDS graduate studies students.”</p> <p>“I also do supervision of SLPAs on a very limited basis on the side.”</p>
Relying on others who understand research/researchers I trust	<p>“My weakness in statistics is a stumbling block and I often have to trust the authors interpretation of the statistical analysis.</p> <p>“I'm not as confident as I'd like to be, but I have found that I tend to follow researchers I trust or who's opinion mirrors my own thoughts about a particular treatment option.”</p>
Conducting research	<p>“Having done research has been essential for me to understand, appraise, and apply literature.”</p> <p>“I also perform research.”</p>
Field is too expansive	<p>“You can't be an expert at everything in this field. You will always have some weak spots whether it's an age range or a specific competency area.”</p>
Clinical decision-making/critical Thinking skills	<p>“Pairing my personal anecdotal experiences with EBP along with historical outcomes. Always basing this on the specifics of each patient individually, using comprehensive chart review, patient and caregiver interview etc.”</p>

Response theme	Example quote
Negative	
Unable to access research or materials/unable to understand research	<p>“Limited access to academic journals is the biggest hindrance to my ability to research effectively.”</p> <p>“I feel like I don't know where to look for treatment ideas that are evidence based/there are not a ton of easily accessible options.”</p> <p>“I have long since forgotten statistical analysis and realize I need a simple refresher!”</p>
Time constraints	<p>“I don't feel I have enough time to complete adequate research at this point in my life.”</p> <p>“In the past, devoting appropriate time to keep up to date with current research within specific areas has been difficult due to increased workload demands within my setting.”</p>
Not enough use EBP/not enough EBP in the field	<p>“In my experience, I have come across only a few speech pathologists who exercise clinical judgment in an evidence-based manner.”</p> <p>“With the amount of research that is conducted, it is difficult at times to specifically find what I am looking for in regards to my students.”</p>
Unsure how to apply evidence to clinical practice	<p>“I learned how to find and understand the evidence in graduate school, but where my confidence lacks is the application of the evidence to practice.”</p> <p>“Translating the statistical findings to practical implementation.”</p>
Lack of mentorship or others to collaborate with/employer challenges	<p>“There was a lack of collaboration with SLPs from hospital setting with the home-based setting.”</p> <p>“I just felt like our PTs and OTs, they always had mentors with more experience and I just felt like I didn't have a mentor who had more experience than me until my third job probably.”</p>

Some participants with advanced degrees or other coursework beyond the master's degree identified that as an influencer of self-efficacy (7% of survey participants; n=23). No interview participants had an advanced degree and therefore, no responses were recorded from interviews for this theme.

Approximately 38% (n=13) of interview participants and 4% (n=15) of those surveyed identified mentor or supervisor models as important factors affecting self-efficacy. Interview respondents (18%; n=6) and survey participants (5%; n=17) identified positive treatment outcomes or feedback from patients or their families as contributors to self-efficacy. Of those surveyed, 6% (n=22) along with 6% (n=2) of those interviewed reported that their access to resources (e.g., ASHA Practice Portal, SIGs, literature) positively influenced their self-efficacy. Six percent (n=2) of interview respondents and (n=20) of survey respondents indicated that their personal desire to learn and provide best the best care to those they served influenced self-efficacy. Although no interview participants identified self-reflection as an influencer of self-efficacy, 6% (n=20) of those surveyed did.

Support from participants' employers or other (i.e., non-SLP) professionals was rated important by 12% (n=4) of interview participants and 4% of survey respondents (n=14). Several SLPs (6% of interview participants, n=2; and 4% of survey participants, n=14) indicated that experience supervising or teaching students, supervising speech-language pathology assistants, or serving in a leadership role positively impacted self-efficacy. Several SLPs surveyed (4%; n=14) disclosed that relying on others who understand research or researchers they trust affected self-efficacy positively while 3% of

those surveyed (n=11) reported that conducting research as a researcher or as a part of a research team influenced their self-efficacy.

Of those interviewed, 6% (n=2) reported that the field of speech pathology is too expansive to feel competent and confident in all areas of practice while 2% (n=8) of survey participants reported the same. Eighteen percent (n=6) of those interviewed indicated that their clinical decision-making and critical thinking skills affect their self-efficacy ratings. Nine percent (n=3) of interview participants reported that learning to problem solve and become independent impacted their self-efficacy.

Several participants in both surveys and interviews reported factors which had a negative impact on self-efficacy. Eleven percent (n=37) of survey participants indicated they were either unable to access research or materials or were unable to understand research and 3% (n=11) reported they did not know how to apply evidence to clinical practice. Seven percent (n=23) of those surveyed cited time constraints as a barrier to self-efficacy. Survey participants (6%, n=21) reported that not enough SLPs use EBP or there is not currently enough EBP in the field or related to their area of practice or population. Of those interviewed, 8% (n=3) and 2% (n=7) of those surveyed indicated that lack of mentorship, others to collaborate with, or employer challenges negatively impacted self-efficacy. Two participants who were interviewed (6% of total interviewed) and two of those surveyed (.58% of total surveyed) reported that they are not confident in their ability to implement EBP.

Discussion

Previous studies have explored confidence levels of SLPs in a variety of settings in regard to a variety of disorder areas or patient populations including dysphagia

(Hutchins et al., 2001; O'Donoghue & Dean-Claytor, 2008), fluency (Brisk et al, 1997), autism spectrum disorders (Plumb & Plexico, 2013), hearing loss (Muncy et al., 2019), language and literacy disorders (Blood et al., 2010; Davis & Murza, 2019), Spanish-English speaking bilingual children (Hammer et al., 2003), traumatic brain injury (Riedeman & Turkstra, 2018), and tracheostomy (Ward et al., 2008; Ward et al., 2012). This study sought to expand to explore self-efficacy of SLPs across employment settings rather than solely focusing on disorders or populations. To do so, the study consisted of an electronic survey and semistructured interviews to determine self-efficacy of SLPs across settings using EBP as well as factors contributing to these ratings.

Research Questions 1a-1d.

These questions sought to determine if there was a significant difference in self-efficacy ratings of master's level SLPs across settings (i.e., medical, educational, other) within each experience group of SLPs participating in the study. No significant difference was found in self-efficacy ratings of EBP implementation across settings (i.e., medical, educational, other) for SLPs in any of the experience groups (i.e., 1-5 years, 6-10 years, 11-20 years, 21+ years). This suggests that facilitators to implementation of EBP are consistent across settings (e.g., time and experience, reading research, collaboration) and barriers to implementation of EBP are not isolated to setting or patient population, but rather are issues related to either graduate preparation or issues that span SLP practice across settings (e.g., access to resources, time constraints, inability to understand research), which have been identified in numerous studies (Dollaghan, 2004; Elliott, 2004; Enderby, 2004; Fulcher-Rood et al., 2020; Reilly, 2004; Vallino-Napoli & Reilly, 2004). This is also supported by qualitative responses in this study. Time constraints were

identified by numerous participants. One addressed this issue by stating, “in the past, devoting appropriate time to keep up to date with current research within specific areas has been difficult due to increased workload demands within my setting.” Another identified the same problem by reporting:

I know how to find and use it, but there is NEVER ENOUGH TIME! Productivity standards make it even more difficult to address new or complex diagnoses. It all ends up being in “off” time which means, quite frankly, that I do not have a life and I have not had one now for 5 years.

Access to research was identified by participants as both a facilitator and barrier when working in all settings. One participant stated, “I believe more research should be free to clinicians,” while another reported that “access to literature in educational settings continues to be a challenge for most SLPs in clinical practice.” Another participant elaborated more on the topic by stating the following:

Unsure of lit search options now that I’m graduated without a university library login. No free access or limited to reading only synopsis of study. This problem should be fixed, if we’re expected to conduct the research for our practice then we need the resources available to do so, without adding an extra paid account on top of other expenses required for maintaining professional status.

Those reporting access as having a positive impact on self-efficacy made statements such as, “I also access ASHA’s Practice Portal if needed when working with a patient with an unfamiliar diagnosis,” or “working in a research lab and having access to research literature.”

Research Question 2

This question sought to determine if a significant difference exists in self-efficacy ratings of master's level SLPs compared to SLPs with a doctoral degree. As hypothesized, there was a significant difference between self-efficacy ratings for implementation of EBP when master's and doctoral level SLPs were compared. This finding is consistent with some other studies, which found that confidence ratings for EBP on the EPIC scale were related to more education or degree held (Clyde et al., 2016; DeCleene Huber et al., 2015; Salbach et al., 2013) and others which have shown positive relationships between SLPs', SLP students', and others' confidence and education or training (DeCleene Huber et al., 2015; Doble et al., 2019; Hutchins et al., 2011; Mickan et al., 2019). Qualitative survey results also confirm these findings with comments from participants stating, "my current position as a PhD student has allowed me to expand my knowledge base quickly" and another who reported, "I am a current doctoral student and have received additional training in research design and statistical analysis, and feel more informed in my interpretation of relevant research literature than when I was working clinical after obtaining my MA." Another participant commented about a doctoral program by stating, "I had to take research methods classes as a part of my program, which helped me feel more comfortable critically reading research literature. EBP is something I believe in personally, and I teach students about in my clinical teaching."

These results emphasize the importance of not only continuing education, but explicit education in evidence-based practice for SLPs. However, these findings conflict with those of Blood et al. (2010) which found no relationship between confidence and academic or clinical training.

Research Questions 3a-3c

These questions sought to determine if there was a significant difference in self-efficacy ratings of master's level SLPs among the three practice categories identified by the EPIC scale in each setting (i.e., medical, educational, other). The three practice categories of the EPIC scale were identified as: (a) ability to identify knowledge gaps and locate information related to that gap, (b) ability to critically appraise research and standardized assessment measures and statistical analyses, (c) the ability to develop treatment plans based on evidence, clinical judgment and patient preference and evaluate treatment effects on outcomes. The alternative hypothesis was supported, for all three employment settings, as significant differences were present among the three practice categories. In the medical setting, there was a significant difference between all practice categories (one and two; two and three; one and three). Significant differences were noted in educational and other settings between groups one and two and two and three, with no significant differences between groups one and three.

This finding is consistent with numerous other studies evaluating EBP use in SLPs and other professionals, with the lowest self-efficacy ratings in category two (i.e., ability to critically appraise research and standardized assessment measures and statistical analyses). The same difficulty with understanding statistical analyses has been documented in several other studies (Doble et al., 2019; Elliott, 2004; Metcalfe et al., 2001; Reilly, 2004). A study by Doble et al., (2019) revealed significant improvements in the self-efficacy of undergraduate speech pathology students for critically evaluating research, which emphasizes the importance of training in EBP for speech pathology students. Findings from the same study found similar trends among undergraduate students, with higher self-efficacy in identifying knowledge gaps and developing a

treatment plan and reduced self-efficacy interpreting statistical analyses, suggesting lack of these skills stems back to early experiences in academic programs. Responses from participants in the current study reiterated interpretation of statistical analyses as a limitation. One participant said, “I do not remember some of the t-test, linear regression, etc. terminology frankly so not confident there”; another mentioned the same by reporting that “my confidence level with statistics is lower due to my infrequent use” while another admitted that “I have long since forgotten statistical analysis and realize I need a simple refresher.” Numerous participants reported relying on others to determine whether research was valuable and applicable to their own practice. One participant indicated this by commenting that “ability to read and apply literature, but I acknowledge I am lacking in ability to interpret on my own & rely heavily on the authors’ conclusions for 50% of my conclusions.” One other participant noted:

Because I am not educated in study design strength, I rely on the opinions of those who DO know design strength for recommendations ... I look to our various organizations to help in analyzing the strength. If these individuals discuss relative strengths and applicability, I add it to my toolbox.

Another participant stated:

The areas I’m not confident in are the ones specific to statistics. I was actually a research assistant in grad school, so I used to know this stuff like the back of my hand. Honestly, I haven’t prioritized re-learning it and instead rely on others to analyze the studies for me. There are lots of resources to help determine the quality of the research, including use of ASHA’s portals.

These results provide support for increased exposure and instruction to these skills in academic programs. Although certification standards for SLPs began requiring a standalone statistics course in 2014, less rigorous courses were accepted prior to that time (Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2013). That means that SLPs applying for certification prior to 2014 may not have had a course teaching skills necessary to critically appraise research design, statistical analyses and other details of literature. This explains why a large number of study participants reported this as a deficit area, as many graduated prior to this change in requirements.

A positive result of these findings speaks to the higher ratings for categories one and two of the EPIC scale. These responses indicate that self-efficacy for identifying knowledge gaps and locating relevant information and developing treatment plans based on evidence, clinical judgment, and patient preferences is at least, to some extent, positive. This either speaks to academic preparation, experience with these, or both. Bandura (1977) indicated that individuals with low self-efficacy avoid tasks. It seems relevant to consider that SLPs may avoid tasks from category two (critically appraising research and standardized assessment measures and statistical analyses) but are unable to avoid the other two categories. Treatment plans are a required part of assessment and treatment. As Bandura (1997) stated, self-efficacy for these tasks is reinforced by repeated completion. SLPs are required to complete these tasks on a daily basis. As undesirable as it may be, however, in most cases, they are not required to appraise research further precipitating the cycle.

Research Question 4

The purpose of this question was to determine if there was a significant difference in self-efficacy ratings among SLPs in the four experience groups (i.e., 1-5 years, 6-10 years, 11-20 years, 21+ years). Results revealed a statistically significant difference in self-efficacy ratings among groups. A post hoc analysis revealed statistically significant differences between Groups 1 (1-5 years) and 4 (21+ years) as well as Groups 2 (6-10 years) and 4 (21+ years). These findings are consistent with other studies supporting the idea that self-efficacy or confidence increased with experience (DeCleene Huber et al., 2015; Muncy et al., 2019; Ward et al., 2012).

These findings contradict those by Davis and Murza (2019), which indicated that as years of experience increased, confidence levels decreased. Although a statistically significant difference was not noted, there was a reduction in average self-efficacy ratings between Groups 1 (1-5 years) and 2 (6-10 years), consistent with Davis & Murza (2019) and O'Donoghue and Dean-Claytor (2008) findings (see Figure 1). However, the increase in self-efficacy ratings in the current study beginning in Group 3 (11-20 years) was not consistent with these results.

Although there was a slight decrease in average confidence ratings from Group 1 (1-5 years) to Group 2 (6-10 years), there was an increase with every other experience group when compared to the group before (see Figure 1). Higher confidence ratings of the least experienced group (Group 1) may be attributed to the Dunning-Kruger effect (Kruger & Dunning, 1999) in which those with the most skill underestimate their knowledge leading to lower self-efficacy ratings and those with the least skill overestimate their ability resulting in greater self-efficacy ratings. This finding was also

consistent with those of Riedeman and Turkstra (2018). However, overall statistically significant findings and the drop after year five with upward trend after the tenth year of practice dispute the idea that SLPs who participated in the current study overestimated their ability leading to higher self-efficacy ratings. Another interesting justification for higher self-efficacy ratings for experience Group 1 (1-5 years) than 2 (6-10 years) was provided by Vallino-Napoli and Reilly (2004), which found that practitioners with less than 10 years of experience were more likely to use research than those practicing more than ten years. Although both experience Groups 1 and 2 were within this range, perhaps the shift occurred during the years 6-10 (within Group 2) of practice.

Therefore, these findings support the idea that the more experience an SLP has, the higher his or her self-efficacy ratings will be. However, limitations are present with this assumption. Self-efficacy ratings in the current study did not account for previous experience and SLPs were only asked to rate their confidence implementing EBP in their current work settings. For example, if an SLP in Year 12 of practice spent the first 10 years of his or her career in an educational setting, but was practicing in a medical setting at the time of participation, self-efficacy ratings may not truly be reflective of someone practicing for 12 years in the same setting. The same is true about those practicing in multiple settings or part-time in any setting.

Research Question 5

The purpose of this question was to further investigate self-efficacy ratings to determine factors that affect self-efficacy providing EBP in participants' current settings. Responses from both qualitative survey and interview questions were grouped into the categories of graduate program factors and post-graduate factors affecting self-efficacy

implementing EBP. Overall, more positive factors were reported by interviewees and survey respondents than negative factors influencing self-efficacy for EBP implementation.

Most responses from interviews when asked the question “What part of your graduate program do you think contributed most to your confidence providing services in your current setting?” related to clinical experiences. The most common responses reflected benefits of having “real world” experience as well as a wide variety of experiences which included different settings, populations, and supervisors. One respondent commented that, “in general, that you had a realistic understanding of what the day-to-day operations were,” while one said, “I’m grateful that I was able to have placements in so many different schools.” Numerous interview respondents also commented on specific components of their clinical placements which were helpful, including documentation experiences or supervisory style. Those reporting graduate program factors negatively impacting self-efficacy such as inadequacy of coursework and clinical education were consistent with results of some studies (Blood et al., 2010; Finch et al., 2013; Hammer et al., 2004; Krueger & Conlon, 2006; Livingston & DiLollo, 2010; Wilson et al., 2020) that show that, despite academic programs’ efforts to add or modify coursework to better prepare students, there is still more work to be done.

Post-graduate factors influencing self-efficacy also reveal several areas in which graduate programs may make improvements to enhance self-efficacy even after graduation. Because many respondents both in interviews and surveys indicated that time and experience, including: exposure to different types of clients, treatment methods and settings, improved self-efficacy, graduate programs may attempt to expand the variety of

settings and client populations within programs to which all students are exposed. This may be accomplished by shortening clinical assignments to provide greater exposure to a wider variety rather than more extensive exposure in only one or two settings, which results reveals as not as helpful when graduates do not pursue employment within those settings.

Of all other response themes in both survey and interview participants, reading research was the second most dominant theme. Although many reported that reading current literature had a positive impact on self-efficacy, many also reported they did not feel confident in this area. This was also apparent based on self-efficacy ratings identifying Category 2 (i.e., critically appraise research and standardized assessment measures and statistical analyses) as an area in which SLPs were not confident. This is consistent with previous research by Metcalfe et al. (2001) which revealed that although most of those studied felt research was important to practice, most participants reported that they were unable to evaluate studies. Academic programs are poised to address this inadequacy by infusing instruction in EBP into all academic and clinical coursework. In addition, responses indicate students would benefit from a stand-alone course addressing EBP to teach them how to read and appraise research and standardized assessment measures and interpret study results. This recommendation is supported by studies which have shown positive increases in use of EBP following training for both students and health care professionals (Doble et al., 2019; Mickan et al., 2019).

Because insufficient skill to read and appraise research was not the only barrier to implementation of EBP in participants, it is important to address the lack of access to scientific research by most practitioners. Reilly (2004) identified the scope of the field

and the fact that studies are published in a wide variety of journals. Therefore, it is likely that SLPs may have to subscribe to a variety of journals to access research pertaining to all areas in which they practice. Although ASHA members have access to select ASHA publications, they do not have access to Perspectives journals of the SIGs which focus on a specific population without a paid membership. Some participants cited this as a limitation. Several participants expressed frustration with ASHA's call for use of EBP despite limited availability to literature. However, access to literature without increasing knowledge about research and EBP, is not likely to have significant effects. Findings from Vallino-Napoli and Reilly (2004) indicated that even though SLPs had access to databases for research, some still reported never integrating the research into practice. Findings from Reidemann and Turkstra (2018) indicated that many SLPs reported high levels of confidence even though they did use evidence-based resources. Ward et al. (2008) and Ward et al. (2011) found that most SLPs participating in their studies felt confidence managing patients with tracheostomy even though fewer than half were current with the contemporary evidence available. Therefore, a multifaceted approach is crucial. This study provides more insight into some of the reasons SLPs may not implement research even when they are able to access it.

Participants frequently reported if they did not understand the research or did not have sufficient time to research, they relied on other "reputable sources". Reputable sources cited included social media groups for SLPs, research services, and networking with researchers. It is reasonable that services that provide summaries of research are appealing to practitioners given cited knowledge and time deficits. Independent evaluation of subscription research services that were cited by participants, such as the

Informed SLP and others, is warranted to determine the accuracy and relevance of the information that is offered to practicing SLPs.

Time constraints reported to interfere with EBP were consistent with those noted in previous studies (Fulcher-Rood, et al., 2020; Metcalfe et al., 2001; Vallino-Napoli & Reilly, 2004). Perhaps one way in which employers may assist SLPs in implementing EBP is by allocating time within the workday to complete research to ensure that knowledge and practices are consistent with the current literature. Another way employers might assist employees is by either subscribing to journals or reimbursing employees for these expenses. Local university library access or alumni access may be a good option for practitioners.

It is well documented that insufficient scientific evidence exists in some areas of the field (Apel & Scudder, 2005; Fulcher-Rood, 2020; Elliott, 2004; Metcalfe et al., 2001; Reilly, 2004). This was reported as a barrier to self-efficacy for use of EBP by several participants in the study. One participant stated, "Voice subspecialty lacks evidence on many approaches and disorders." There were also complaints about other SLPs' insufficient or lack of use of EBP. For example, one participant said, "not all therapists follow it unfortunately and there is a lot of information out there that it can sometimes be difficult to discern what is and what isn't." Vallino-Napoli (2004) called on researchers and those in academia to conduct more systematic reviews to allow practitioners more access to EBP.

Even when research exists pertaining to a specific treatment approach, for example, there may still be barriers to implementation into clinical practice. Some participants reported that they were unsure of how to apply evidence into clinical practice

due to discrepancies between studies and real clinical practice. For example, a study about a specific approach which was shown to be efficacious for children with apraxia may exist. However, a practicing clinician may not be able to apply results directly to the client due to co-occurring diagnoses or other factors which differ from the population which was studied. One participant explained:

I learned how to find and understand the evidence in graduate school, but where my confidence lacks is the application of the evidence to practice. It is very difficult for me to replicate a study's protocol and results when some factors are outside of my control (such as treatment length), or when my particular case is not the exact same as the study (such as a treatment for the same weakness but at a different age).

Enderby (2004) identified this as a significant concern when bridging the gap between research and clinical practice. Metcalfe et al. (2001) also cited this as problematic for SLPs as well as those in other related fields including dietitians, occupational, and physiotherapists.

Participants identified collaboration with SLPs and other professionals within their settings (e.g., occupational therapist, physical therapist, teachers, physicians) and mentorship as positive influencers of self-efficacy while some, who indicated they did not have enough opportunity to collaborate with other professionals or without mentors reported negative impacts on self-efficacy. Metcalfe et al. (2001) also found that isolation from colleagues was a barrier to implementation of EBP. In many medical facilities and school districts, especially in rural areas, SLPs are faced with this challenge. Employers should strive to determine ways in which SLPs may have access to other professionals

with which to collaborate. Participants often indicated they mitigated this problem by joining social media groups in which well-known SLPs communicate with others to provide expert opinion and feedback regarding difficult cases.

Limitations of the Study

There were several limitations to the current study. First, selection bias in participants was present in the current study, as the researcher was unable to recruit a random sample of SLPs given ASHA's policies preventing the release of members' email addresses. Additionally, the sample size was relatively small which resulted in limited ability to generalize results.

Although comparing settings is valuable given the differences in the nature of each broad setting (i.e., medical and educational), vast differences were present within each of those settings. For example, the types of patients served in a skilled nursing facility likely differed greatly from those served in an outpatient facility. Likewise, SLPs in a high school setting are very different than those providing early intervention services. Despite this variability, these were placed in the same broad categories and compared for the current study. An analysis focusing on more similar settings may yield different results. The "other" setting was a category in which all SLPs in settings other than medical or educational as defined by the setting. Participants in *other* settings may have been employed only part time in one setting or employed in multiple settings. Likewise, factors such as experience were not controlled. For example, an SLP working in an educational setting was asked to answer questions about self-efficacy implementing EBP in that setting only. However, this did not control for influences of experience from previous settings. If the same SLP had previous experience in a medical setting, it is

possible that self-efficacy ratings would differ from SLPs who had experience only in one setting.

Because there is likely less reliance on formal academic preparation as one advances in his or her career, numerous factors likely influenced self-efficacy of participants. The original focus of the study, before expansion of inclusion criteria for COVID-19, aimed to determine factors regarding academic preparation that impacted self-efficacy. This focus was not maintained when SLPs with more experience were included in the study.

Recommendations

The initial focus of this study was to determine self-efficacy of master's level SLPs using EBP within the first five years of professional practice within medical or educational settings. This focus was identified to determine factors related to academic preparation for SLPs. However, because data collection occurred during the COVID-19 global pandemic, the scope of the study was expanded to include SLPs in all settings, with master's or doctoral degrees. The inclusion of SLPs from a wide variety of educational backgrounds, settings, and experience levels provided a more expansive picture of the current situation from which to base recommendations to reduce and possibly eliminate the barriers to implementation of EBP. This combined with enhancements to facilitators (e.g., EBP knowledge, experience, and collaboration) provide insight for ASHA, employers and academic programs as well as providing directions for future research.

The following recommendations were established for ASHA:

- provide access to all publications including Perspectives journals with a yearly paid ASHA membership,
- provide more specific and clear guidance to academic programs to ensure consistency among programs regarding how much time is dedicated to all standards for which students must be prepared before graduation,
- provide continuing education focusing on skills necessary to critically appraise the quality and usefulness of research,
- provide resources for academic programs to guide decisions about curricula,
- provide avenues through which researchers can conduct studies and recruit adequate numbers of participants to enable greater generalization of results.

The following recommendations were established for employers:

- provide funds for or reimbursement for subscriptions to journal articles or databases from which SLPs can readily access recent literature related to the field,
- provide opportunities and time within the workday of SLPs to access current literature to enhance the quality of services provided,
- establish mentorship programs and facilitate collaboration opportunities for SLPs (e.g., journal clubs, meetings, direct observation).

The following recommendations were established for academic programs:

- complete follow-up surveys of graduates in addition to at the time of graduation,
- provide training to both internal (i.e., university-employed) and external (i.e., supervisors employed as SLPs in local medical or educational facilities) clinical educators to ensure an open line of communication between the academic program and practitioners in the area (and beyond, when applicable) regarding expectations and student preparation,
- external supervisors may provide valuable feedback to one another to improve the level of education which they provide,
- attempt to broad exposure to settings, client populations, and supervisors throughout the graduate program,

- infuse an emphasis of EBP into all academic coursework in addition to providing a specific course which addresses skills related to appraisal of research.

Implications for Future Research

Although this study provided some guidance for improving self-efficacy for use of EBP specific to employment settings, future studies should be conducted to further inform this area. Future studies should place more emphasis on the structure of academic programs, perhaps examining specific components of graduate programs and comparing to self-efficacy to determine if those who graduate from programs with a specific focus or more emphasis placed on certain practices (e.g., EBP, critical thinking) have higher self-efficacy ratings. Further research should be conducted to determine how self-efficacy ratings translate into competence with SLPs. This may be accomplished by comparing self-efficacy ratings of CFs to competency ratings by CF mentors.

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SECTION FIVE

Contribution to Scholarship

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Contribution to Scholarship

As the purpose of the MU Statewide Cooperative Doctoral Program in Educational Leadership (EdD) is designed to produce scholarly practitioners, the dissertation has been redesigned from that of the tradition five-chapter dissertation. The purpose of this redesign was to provide a product that was ready for dissemination. In this section, I will describe my plans for dissemination of my research including a state convention presentation and target journal along with reasoning for my choice. I will conclude with a finalized, publication-ready journal article.

Target Presentation

When I first began the process of my dissertation and considered plans for dissemination, I felt a presentation at a national convention would be appropriate. My plan was to present at the annual convention for the 2020 American Speech-Language-Hearing Association (ASHA) in San Diego, California. Due to changes in my timeline for completion, the April Deadline for Calls for Papers for this event passed before completion of my project. Therefore, I hope to submit a proposal for the 2021 ASHA Convention in Washington, D.C. The ASHA convention typically hosts approximately 15,000 attendees with more than 2,500 continuing education courses (ASHA, 2020).

In addition to presenting at a national convention, I plan to present my research at the 2021 annual convention of the Missouri State Speech-Language-Hearing Association in Osage Beach, Missouri. This convention occurs in April of each year and is attended by undergraduate and graduate students from academic programs throughout Missouri as well as professionals. These professionals include SLPs and audiologists who are employed in universities throughout the state as well as in clinical practice in various

settings. Presentation of these results will be useful to practitioners and those from academic programs alike, as valuable information was found which will fill a gap in the literature. I plan to submit my proposal in December 2020 when the Call for Papers deadline typically occurs.

Target Journal

My target journal for publication is *Communication Disorders Quarterly*. Material published in this journal covers topics related to communication across the lifespan. The publication accepts both quantitative and qualitative research reports related to these topics. Some of the work cited throughout this dissertation related to confidence of practitioners was published in this journal. In fact, an article titled, “Speech-Language Pathologists’ Perceptions of Pre-Service Knowledge and Skill Training in Early Intervention” was published in the most recent issue of the journal. In the most recently reported calendar year, a total for nearly 65,000 downloads occurred from the journal platform with an impact factor of .720 (SAGE Journals, n.d.).

Submission Ready Article**Evidence-Based Practice Self-Efficacy of Speech-Language Pathologists****Across Settings****Abstract**

The purpose of this mixed-methods sequential explanatory study was to explore self-efficacy of speech-language pathologists (SLPs) employed in various settings. Self-efficacy of master's level SLPs was compared across to determine if differences existed in each of four experience groups. Self-efficacy ratings were also compared based on degree held, area of practice, and years of experience. Participants (n = 342) completed a survey containing 10 demographic questions, 11 items from Salbach and Jaglal's (2010) Evidence-Based Practice Confidence (EPIC) scale, and 2 open-ended questions regarding factors impacting self-efficacy. Participants (n=34) completed semistructured interviews to further explore factors influencing self-efficacy. No significant difference was noted in self-efficacy of master's level SLPs among settings. There was a significant difference between self-efficacy ratings based on degree held and years of experience. A significant difference in self-efficacy was found based on practice category (i.e., identification of knowledge gap, critical appraisal of research, development of treatment plans based on evidence, clinical judgment and client preferences). Qualitative analysis revealed graduate program and post-graduate factors which impacted self-efficacy ratings both positively and negatively.

Keywords: speech-language pathologist, self-efficacy, confidence, evidence-based practice

Evidence-based practice (EBP) has roots in the field of medicine, but has since been applied to other fields, including speech-language pathology (Brackenbury et al., 2008; Dollaghan, 2004; Vallino-Napoli, 2004; Vallino-Napoli & Reilly, 2004). Sackett et al. (1996) identified evidence-based medicine as “the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” (p. 71). ASHA (2005a) released a position statement regarding use of EBP, requiring that all SLPs integrate external evidence, clinical experience, and patient preferences into clinical decision making to provide the best care. Still, some SLPs do not use EBP (Fulcher-Rood et al., 2020; Riedeman & Turkstra, 2018; Vallino-Napoli & Reilly, 2004; Ward et al., 2008; Ward et al., 2012) and studies support the notion that neither practitioners nor students are confident in their ability to implement EBP (Blood et al., 2010; Muncy et al., 2019; O’Donoghue & Dean-Claytor, 2008; Pasupathy & Bogenschutz, 2013). Although challenges to implementation of EBP within the field have been documented by numerous authors (Elliott, 2004; Enderby, 2004; Fulcher-Rood et al., 2020; Reilly, 2004; Vallino-Napoli, 2004; Vallino-Napoli & Reilly, 2004), few studies have explored confidence using EBP specifically within workplace settings to determine areas in which practitioners struggle to implement.

Purpose of the Study

The purpose of this study was to examine self-efficacy for implementation of EBP and to determine factors that influence ratings. The study also sought to determine if differences exist in self-efficacy for EBP implementation based on setting, education level, practice area, and years of experience.

Self-Efficacy

Bandura's Self Efficacy Theory (1977) guided this study. Bandura (1982) defined self-efficacy as one's perception of how well he or she can execute a task, regardless of knowledge or skill related to the task. A person with high self-efficacy ratings is more likely to attempt a task, resulting in corrective feedback. This feedback reinforces the individual's self-efficacy. In contrast, those with low self-efficacy for a task may avoid that task. Therefore, it is likely that SLPs who possess higher self-efficacy for a task (i.e., EBP) are more likely to implement it into patient care. As they gain experience doing so, feedback from the situation reinforces that self-efficacy. For the purpose of this study, self-efficacy referred to the confidence of an individual to implement EBP within one's current employment settings.

Some literature exists exploring confidence of SLPs, but most have focused on a single population and most examined school-based SLPs (Bailey et al., 2008; Blood et al., 2010; Brisk et al., 1997; Compton et al., 2009; Davis & Murza, 2019; Hutchins et al., 2011; Kelly et al., 1997; Kurjan, 2000; Muncy et al., 2019; O'Donoghue & Dean-Claytor, 2008; Plumb & Plexico, 2013). Little data exist regarding confidence of SLPs in medical settings (Ward et al., 2008; Ward et al., 2012) and only one study (Teten et al., 2016) compared self-efficacy between medical and school based SLPs. This information is crucial for the development and modification of academic preparation programs.

Some studies have identified that confidence levels of SLPs vary significantly based on several factors. For example, O'Donoghue and Dean-Claytor (2008) found SLPs receiving the least continuing education related to swallowing disorders and those who did not take a graduate course on the subject rated confidence higher than those with

more training. If SLPs do not attempt to maintain current knowledge, they may overestimate knowledge which is likely to be reflected in inflated confidence levels. Other studies, however, have identified a clear positive relationship between confidence and training of professionals and students (Blood et al., 2010; Clyde et al., 2016; DeCleene Huber et al., 2015; Doble et al., 2019; Mickan et al., 2019; Salbach et al., 2013).

Methods

This study used a mixed methods design. Study approval was obtained from the Institutional Review Board at the University of Missouri-Columbia. Prior to distributing the survey, a pilot survey was sent to a convenience sample comprised of 11 SLPs (5 educational, 3 medical, 3 university clinic) to ensure questions were easily understood by those with a variety of backgrounds and that no questions would be misinterpreted. Demographic questions were modified based on feedback. After modification, the survey was distributed to SLPs in a variety of settings. Participants in the study included those who had completed a clinical fellowship (CF), obtained a Certificate of Clinical Competence (CCC), and graduated from a master's program in the United States. The survey was disseminated using an anonymous link and was posted on various ASHA Community sites, Special Interest Groups, and Facebook groups for SLPs. In addition, several academic programs with which the researcher had some connection agreed to distribute the link to alumni.

At the end of the survey, participants were asked if they were willing to participate in an interview. If they agreed, the researcher sent an email to schedule the interview. The consent document was attached in the scheduling email. All interviews

were conducted via Zoom web conferencing software and participants were given the choice to turn the camera on or off. Participants were given the opportunity to enter a drawing for a gift card for survey participation and all interview participants were entered into a different drawing for another gift card.

Participants

A total of 342 SLPs completed the survey. All participants had a minimum of a master's degree in communication sciences and disorders and graduated from a program in the United States. All had completed a CF and had a CCC. A total of 310 participants had a master's degree and 31 had a doctoral degree. Years of experience following CF completion ranged from 1-50 years ($M = 12.78$, $SD = 11.11$). Out of all participants, 166 were employed at least 80% of the time in medical settings (inpatient hospital, outpatient hospital or clinic, skilled nursing facility, long term acute care, home health) and 107 were employed at least 80% of the time in educational settings (early intervention, preschool, K-12). The remaining 67 participants were classified as employed in other settings (i.e., private practice, part-time in any setting, multiple settings, university clinic, day programs). A total of 34 SLPs completed interviews. All interview participants were master's level. Years of experience ranged from 1-20 years ($M = 5.3$ years).

Instruments

To answer the research questions, quantitative data were obtained using a Qualtrics survey containing 10 demographic questions, 11-items from the Evidence-Based Practice Confidence (EPIC) scale (Salbach & Jaglal, 2010) and 2, open-ended questions regarding factors impacting confidence. Follow-up semistructured interviews containing eight pre-determined questions were conducted with participants who agreed.

The EPIC scale (Salbach & Jaglal, 2010) contained 11-items which allowed participants to rate their confidence completing a variety of practice activities on a scale of 0% (“No Confidence”) to 100% (“Completely Confident”).

Data Analysis

Survey responses were analyzed using IBM SPSS (Version 26) to answer research questions about differences among self-efficacy levels of SLPs employed across settings. Self-efficacy ratings for all 11 items of the EPIC scale were averaged to obtain an overall self-efficacy score. Averages were also obtained to determine an overall score for each category in the EPIC scale. Ratings on questions 1-3 were averaged to obtain self-efficacy score for Practice Category 1 (i.e., ability to identify a knowledge gap and locate information related to the gap); ratings on questions 4-7 were averaged to obtain a self-efficacy score for Practice Category 2 (i.e., critical appraisal of research and standardized assessment measures and statistical analyses); and ratings on questions 8-11 were averaged to obtain a self-efficacy score for Practice Category 3 (i.e., develop treatment plans based on evidence, clinical judgment, and patient preference and evaluate treatment effects on outcomes). Nonparametric statistical analyses were completed to answer all quantitative research questions.

Responses from each qualitative interview were transcribed and assigned a unique identifier to protect participants’ identities. Coding was completed by the primary researcher. Responses were assigned to multiple themes if they included information from numerous themes (e.g., “I think having real world experience really helped. That, and my professors were so supportive and knowledgeable”). Themes emerging from the coding process were provided for a second researcher to assign all responses to themes.

The second researcher was another SLP with knowledge in the field as well as a PhD. Check-coding was completed to ensure interrater reliability (Miles & Huberman, 1994). Initial agreement was 77.8%, but the two researchers met to discuss themes and responses, eventually reaching 100% agreement on all responses and themes. Following coding of interview responses, qualitative survey responses was completed. Survey response themes were merged into interview themes. Qualitative survey responses were also assigned to multiple themes if the information provided fit multiple themes. The second researcher was then provided with the themes and responses and agreed to all the primary researcher's assignments.

Results

Setting

A Kruskal-Wallis H was conducted to compare self-efficacy levels of SLPs across settings in each experience group. For SLPs in years 1-5 following CF completion, no significant difference was found ($H(2) = 1.584, p = 0.453$), which indicates that ratings did not differ across groups. Setting did not affect self-efficacy ratings for those with 1-5 years of experience. For those with 6-10 years of experience following CF completion, no significant difference was found ($H(2) = .098, p = .952$), which indicates that setting did not affect self-efficacy ratings. Those in years 11-20 of their careers also did not demonstrate significant differences in self-efficacy ratings across settings ($H(2) = .647, p = .724$). This indicates that no significant differences were present among any of the groups and setting did not impact self-efficacy ratings for those with 11-20 years of experience. No significant difference was found for those with greater than 20 years of experience in any setting ($H(2) = 3.727, p = 0.154$). This indicates that setting did not affect self-efficacy for those with greater than 20 years of experience in the field.

Education

A Mann Whitney U was completed to determine whether there was a significant difference in self-efficacy ratings based on degree held. A significant difference was noted between those with master's degrees and doctorates ($U = 1849.5, p < .01$), which indicates level of degree significantly impacts self-efficacy ratings. SLPs with doctoral degrees had significantly higher self-efficacy ratings than those with master's degrees.

Practice Activities

A Friedman's two-way ANOVA was conducted to determine if practice categories identified by the EPIC scale had a significant impact on self-efficacy ratings for SLPs in each setting. In medical settings a significant difference ($\chi^2(2) = 234.349, p = < .001$) was noted between practice areas. A post hoc Dunn's test with Bonferroni correction was completed to determine the categories in which significant differences existed. In medical settings, a pairwise comparison indicated significant differences between Practice Category 1 (identify knowledge gaps and locate information related to that gap) and Practice Category 2 (critically appraise research and standardized assessment measures and statistical analyses; $p < .01$); Practice Category 2 and Practice Category 3 (develop treatment plans based on evidence, clinical judgment and patient preference and evaluate treatment effects on outcomes; $p < .01$); and between Practice Category 1 and Practice Category 3 ($p < .05$). This indicates that significant differences were noted in self-efficacy ratings of all EPIC practice categories for SLPs employed in medical settings.

For those employed in educational settings, a significant difference ($\chi^2(2) = 118.751, p = < .001$). A pairwise comparison revealed significant differences between

Practice Category 1 and Practice Category 2 ($p < .01$); Practice Category 2 and Practice Category 3 ($p < .01$). Ratings for those employed in other settings revealed a significant difference ($\chi^2(2) = 61.318, p = < .001$) was observed among practice categories on the EPIC scale. A pairwise comparison revealed significant differences between Practice Category 1 and Practice Category 2 ($p < .01$) as well as Practice Category 2 and Practice Category 3 ($p < .01$).

Experience

A significant difference was found in self-efficacy ratings among speech-language among the four experience groups ($H = 16.081, p = .001$). A Dunn's post hoc analysis with Bonferroni correct was completed, revealing significant differences between Group 1 (1-5 years) and Group 4 (21+ years) as well as Groups 2 (6-10 years) and Group 4 (21+ years). This indicates that self-efficacy ratings are not significantly different until individuals had been practicing for more than 20 years in the field.

Facilitators and Challenges for Implementation of EBP

Results of qualitative questions were divided into two broad categories: graduate program and post-graduate factors (see Tables 1 and 2). Post-graduate factors from survey responses were merged into specific themes identified from interview responses. Graduate program factors identified from survey responses are reported generally below and separate from interview responses due to significant variability of responses.

Six dominant graduate program themes and 13 subthemes emerged from participant responses to interview questions (see Table 2). See Tables 3 and 4 for example quotes from graduate program and post-graduate response themes. Interview participants ($n = 14$) most frequently responded with "real world" experience and variety of experiences (settings, populations, supervisors). The second most reported graduate

program factors were clinical supervisors (n = 12) and placements (n = 12). Several other clinical experiences were reported as influential to self-efficacy. The most general graduate program factor reported as impactful to self-efficacy was coursework or program emphasis (n = 11) followed by professors (n = 7). The most common negative influencer of self-efficacy related to graduate programs was inadequacy of coursework or inappropriateness of program focus (n = 7).

Survey responses related to undergraduate or graduate program factors included both positive and negative influencers as well. Of 342 survey participants, approximately 12% (n = 40) reported that components of their undergraduate or graduate programs had a positive impact on self-efficacy, while 2% (n = 8) reported these had a negative impact.

Twenty-three post graduate themes emerged from survey and interview responses (see Table 2). Greater than half of interview participants (61%; n = 21) and just under 30% (n = 100) of survey respondents felt that time and experience were factors influencing self-efficacy. Reading research was reported as a factor impacting self-efficacy positively by 26% of interview participants (n = 9) and 22% of survey participants (n = 74). Another frequently reported theme was continuing education with 56% of interview participants (n = 19) and 18% of survey participants (n = 62) reporting. Collaboration with others (non-SLPs) and collaboration with SLPs were the next most commonly reported themes followed by mentor and supervisor models. The remainder of themes reported related to advanced coursework, feedback from others, resources, personal or environmental (employer related) themes.

Those who reported negative impacts to self-efficacy most frequently cited the inability to access research or materials or to understand research (11%; n = 37 interview

participants). Time was the next most frequently reported barrier to EBP implementation followed by complaints that not enough SLPs use EBP or that not enough EBP exists within the field.

Discussion

Previous studies have explored confidence levels of SLPs in a variety of settings in regard to a variety of disorder areas or patient populations including dysphagia (Hutchins et al., 2001; O'Donoghue & Dean-Claytor, 2008), fluency (Brisk et al, 1997), autism spectrum disorders (Plumb & Plexico, 2013), hearing loss (Muncy et al., 2019), language and literacy disorders (Blood et al., 2010; Davis & Murza, 2019), Spanish-English speaking bilingual children (Hammer et al., 2004), traumatic brain injury (Riedeman & Turkstra, 2018), and tracheostomy (Ward et al., 2008; Ward et al., 2012). This study sought to expand to explore self-efficacy of SLPs across employment settings rather than solely focusing on disorders or populations. To do so, the study consisted of an electronic survey and semistructured interviews to determine self-efficacy of SLPs across settings using EBP as well as factors contributing to these ratings.

Setting

This study sought to determine if significant differences existed in self-efficacy ratings of master's level SLPs across settings within each experience group of SLPs participating in the study. No significant differences were found in self-efficacy ratings for EBP implementation across settings for SLPs in any of the experience groups (i.e., 1-5 years, 6-10 years, 11-20 years, 21+ years). This suggested that facilitators to implementation of EBP were consistent across settings (e.g., time/experience, reading research, collaboration) and barriers to implementation of EBP were not isolated to

setting or patient population, but rather were issues related to either graduate preparation or issues that span SLP practice across settings (e.g., access to resources, time constraints, inability to understand research), which had been identified in numerous studies (Dollaghan, 2004; Elliott, 2004; Enderby, 2004; Fulcher-Rood et al., 2020; Reilly, 2004; Vallino-Napoli & Reilly, 2004).

Education

Another aim of the study was to determine if significant differences existed in self-efficacy ratings of SLPs based on degree held. There was a significant difference between self-efficacy ratings for implementation of EBP when master's and doctoral level SLPs were compared. This finding was consistent with some other studies, which found that confidence ratings for EBP on the EPIC scale were related to more education or degree held (Clyde et al., 2016; DeCleene Huber et al., 2015; Salbach et al., 2013) and others which had shown positive relationships between SLPs', SLP students', and others' confidence and education or training (DeCleene Huber et al., 2015; Doble et al., 2019; Hutchins et al., 2011; Mickan et al., 2019). These results emphasized the importance of not only continuing education, but education in EBP. However, these findings conflicted with those of Blood et al. (2010) which found no relationship between confidence and academic or clinical training.

Practice Activities

The EPIC scale was divided into three practice categories to determine if there was a significant difference in self-efficacy ratings among the three practice categories in each setting. Only master's level SLPs were included in this analysis. The three practice categories of the EPIC scale were identified as: (a) ability to identify knowledge gaps and

locate information related to that gap, (b) ability to critically appraise research and standardized assessment measures and statistical analyses, and (c) the ability to develop treatment plans based on evidence, clinical judgment and patient preference and evaluate treatment effects on outcomes. Significant differences were present among the three practice categories in all settings. In the medical setting, there was a significant difference between all practice categories (Practice Categories 1 and 2; 2 and 4; 1 and 3). Significant differences were noted in educational and other settings between Practice Category 1 and 2 and 2 and 3, with no significant differences between Practice Category 1 and 3.

The lowest self-efficacy ratings for all settings were in Practice Category 2 (i.e., ability to critically appraise research and standardized assessment measures and statistical analyses). The same difficulty understanding statistical analyses has been documented in several other studies (Doble et al., 2019; Elliott, 2004; Metcalfe et al., 2001; Reilly, 2004). A study by Doble et al., (2019) revealed significant improvements in the self-efficacy of undergraduate speech pathology students for critically evaluating research, which underscores the importance of education in EBP. Findings from the same study revealed similar trends among undergraduate students, with higher self-efficacy in identifying knowledge gaps and developing a treatment plan and reduced self-efficacy interpreting statistical analyses, suggesting lack of these skills originates from early experiences in academic programs. These results provided support for increased exposure and instruction to these skills in academic programs. A standalone statistics course was not required until changes were made to certification standards in 2014 and less rigorous courses were accepted prior to that time (Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing

Association, 2013). That means that SLPs applying for certification prior to 2014 may not have had a course that taught skills necessary to critically appraise research design, statistical analyses and other details of literature. This explains why many study participants reported this as an area of deficit, as many graduated prior to this change in requirements. A positive revealed from these findings speaks to the higher ratings for Practice Categories 1 and 2 of the EPIC scale. These responses indicate that self-efficacy for identifying knowledge gaps and locating relevant information and for developing treatment plans based on evidence, clinical judgment, and patient preferences is at least, to some extent, positive. This either provides evidence of the effects of academic preparation, experience with these, or both.

Bandura (1977) indicated that individuals with low self-efficacy are likely to avoid tasks. It seems relevant to consider that SLPs may avoid tasks from Practice Category 2 (critically appraising research and standardized assessment measures and statistical analyses) but are unable to avoid the other two categories. Treatment plans are a required part of assessment and treatment. As Bandura (1997) stated, self-efficacy for these tasks is reinforced by repeated completion. SLPs are required to complete these tasks daily. In most cases, they are not required to appraise research further perpetuating the cycle.

Experience

Self-efficacy ratings among SLPs in the four experience groups (i.e., 1-5 years, 6-10 years, 11-20 years, 21+ years) were analyzed. Statistically significant differences in self-efficacy ratings were noted among groups. A post hoc analysis revealed statistically significant differences between Groups 1 (1-5 years) and 4 (21+ years) as well as Groups

2 (6-10 years) and 4 (21+ years). These findings were consistent with other studies supporting the idea that self-efficacy increases with experience (DeCleene Huber et al., 2015; Muncy et al., 2019; Ward et al., 2012).

These findings contradicted those by Davis and Murza (2019), which indicated that as years of experience increased, confidence levels decreased. Although a statistically significant difference was not noted, there was a reduction in average self-efficacy ratings between Groups 1 (1-5 years) and 2 (6-10 years), consistent with Davis & Murza (2019) and O'Donoghue and Dean-Claytor (2008) findings. However, the increase in self-efficacy ratings in the current study beginning in Group 3 (11-20 years) disputed these results.

Although there was a slight decrease in average confidence ratings from Group 1 (1-5 years) to group 2 (6-10 years), there was an increase with every other experience group when compared to the group before (see Figure 1). Higher confidence ratings of the least experienced group (group 1) may be attributed to the Dunning-Kruger effect (Kruger & Dunning, 1999) in which those with the most skill underestimate their knowledge leading to lower self-efficacy ratings and those with the least skill overestimate their ability resulting in greater self-efficacy ratings. This finding was also consistent with those of Riedeman and Turkstra (2018). However, overall statistically significant findings and the drop after year five with upward trend after the tenth year of practice disputed the idea that SLPs who participated in the current study overestimated their ability leading to higher self-efficacy ratings. Another interesting justification for higher self-efficacy ratings for experience group one (1-5 years) than two (6-10 years) was provided by Vallino-Napoli and Reilly (2004), which found that practitioners with

less than 10 years of experience were more likely to use research than those practicing more than ten years. Although both experience groups one and two were within this range, perhaps the shift occurred during the years 6-10 (within group two) of practice. Therefore, these findings support the idea that the more experience an SLP has, the higher self-efficacy ratings will be. However, limitations were present with this assumption. Self-efficacy ratings in the current study did not account for previous experience and SLPs were only asked to rate their confidence implementing EBP in their current settings. For example, if an SLP in year 12 of practice spent the first 10 years of his or her career in an educational setting, but was practicing in a medical setting at the time of participation, self-efficacy ratings may not have reflected someone practicing for 12 years in the same setting. The same was true about those practicing in multiple settings or part-time in any setting.

Facilitators and Challenges for Implementation of EBP

Qualitative aspects of the study sought to determine factors that affected self-efficacy for providing EBP. Overall, more positive factors were reported by interviewees and survey respondents than negative factors influencing self-efficacy for EBP implementation.

Most responses related to clinical experience when participants were asked “What part of your graduate program do you think contributed most to your confidence providing services in your current setting?” The most common responses reflected benefits of having “real world” experience as well as a wide variety of experiences which included different settings, populations, and supervisors. One respondent commented that, “in general, that you had a realistic understanding of what the day-to-day operations were,” while one said, “I’m grateful that I was able to have placements in so many

different schools.” Numerous interview respondents also commented on specific components of their clinical placements which were helpful, including documentation experiences or supervisory style. Those reporting graduate program factors negatively impacting self-efficacy such as inadequacy of coursework and clinical education were consistent with results of some studies (Blood et al., 2010; Finch et al., 2013; Hammer et al., 2004; Krueger & Conlon, 2006; Livingston & DiLollo, 2010; Wilson et al., 2020) that found that, despite academic programs’ efforts to add or modify coursework to better prepare students, there is still more work to be done.

Post-graduate factors influencing self-efficacy also revealed several areas in which graduate programs may make improvements to enhance self-efficacy even after graduation. Because many respondents both in interviews and surveys indicated that time and experience, including exposure to different types of clients, treatment methods and settings, improved self-efficacy, graduate programs may attempt to expand the variety of settings and client populations within programs to which all students are exposed. This may be accomplished by shortening clinical assignments to provide greater exposure to a wider variety rather than more extensive exposure in only one or two settings, which results revealed was not as helpful when graduates do not pursue employment within those settings.

Of all other response themes in both survey and interview participants, reading research was the second most dominant theme. Although many reported that reading current literature had a positive impact on self-efficacy, many also reported they did not feel confident in this area. This was also evidenced by self-efficacy ratings identifying Practice Category 2 (i.e., critically appraise research and standardized assessment

measures and statistical analyses) as an area in which SLPs were not confident. This was consistent with previous research by Metcalfe et al. (2001) which revealed that although most of those studied felt research was important to practice, most of their participants reported that they were unable to evaluate studies. Academic programs are poised to address this inadequacy by infusing instruction in EBP into all academic and clinical coursework. In addition, responses indicated students would benefit from a stand-alone course addressing EBP to teach them how to read and appraise research and standardized assessment measures and interpret study results. This recommendation is supported by studies which have shown positive increases in use of EBP following training for both students and health care professionals (Doble et al., 2019; Mickan et al., 2019).

Because insufficient skill to read and appraise research was not the only barrier to implementation of EBP in participants, it is important to address the lack of access to scientific research by most practitioners. Reilly (2004) identified the scope of the field and the fact that studies are published in a wide variety of journals. Therefore, it is likely that SLPs may have to subscribe to a variety of journals to access research pertaining to all areas in which they practice. Although ASHA members have access to select ASHA publications, they do not have access to Perspectives journals of the SIGs which focus on a specific population without a paid membership. Some participants cited this as a limitation. Several participants expressed frustration with ASHA's call for use of EBP despite limited accessibility of literature. However, access to literature without increasing knowledge about research and EBP, is not likely to have significant effects on implementation of EBP. Findings from Vallino-Napoli and Reilly (2004) indicated that even though SLPs had access to databases for research, some still reported never

integrating the research into practice. Findings from Reidemann and Turkstra (2018) indicated that many SLPs reported high levels of confidence even though they did use evidence-based resources. Ward et al. (2008) and Ward et al. (2011) found that most SLPs participating in their studies felt confidence managing patients with tracheostomy even though fewer than half were current with reading contemporary evidence available. Therefore, a multifaceted approach is crucial. This study provided more insight into some of the reasons SLPs may not implement research even when they are able to access it.

Participants frequently reported if they did not understand the research or did not have sufficient time to research, they relied on other “reputable sources”. Reputable sources cited included social media groups for SLPs, research services, and networking with researchers. It is reasonable that services that provide summaries of research are appealing to practitioners given cited knowledge and time deficits. Independent evaluation of subscription research services that were cited by participants, such as the Informed SLP and others, is warranted to determine the accuracy and relevance of the information that is offered to practicing SLPs.

Time constraints reported were consistent with those noted in previous studies (Fulcher-Rood, et al., 2020; Metcalfe et al., 2001; Vallino-Napoli & Reilly, 2004). Perhaps this is one way in which employers may assist SLPs by allocating time within the workday to complete research to ensure that knowledge and practices are consistent with the current literature. Another way employers might assist employees is by either subscribing to journals or reimbursing employees for these expenses. Local university library access or alumni access may be a good option for practitioners.

It is well documented that insufficient scientific evidence exists in some areas of the field (Apel & Scudder, 2005; Fulcher-Rood, 2020; Elliott, 2004; Metcalfe et al., 2001; Reilly, 2004). This was reported as a barrier to self-efficacy for use of EBP by several participants in the study. One participant stated, "Voice subspecialty lacks evidence on many approaches and disorders." There were also complaints about other SLPs' insufficient or lack of use of EBP. For example, one participant said, "not all therapists follow it unfortunately and there is a lot of information out there that it can sometimes be difficult to discern what is and what isn't." Vallino-Napoli (2004) called on researchers and those in academia to conduct more systematic reviews to allow practitioners more access to EBP.

Even when research exists pertaining to a specific treatment approach, for example, there may still be barriers to implementation into clinical practice. Some participants reported that they were unsure of how to apply evidence into clinical practice due to discrepancies between studies and real clinical practice. For example, a study about a specific approach which was shown to be efficacious for children with apraxia may exist. However, a practicing clinician may not be able to apply results directly to his or her client due to co-occurring diagnoses or other factors which differ from the population which was studied. One participant explained:

I learned how to find and understand the evidence in graduate school, but where my confidence lacks is the application of the evidence to practice. It is very difficult for me to replicate a study's protocol and results when some factors are outside of my control (such as treatment length), or when my particular case is not

the exact same as the study (such as a treatment for the same weakness but at a different age).

Enderby (2004) identified this as a significant concern when bridging the gap between research and clinical practice. Metcalfe et al. (2001) also cited this as problematic for SLPs as well as those in other related fields including dietitians, occupational, and physiotherapists.

Participants identified collaboration with SLPs and other professionals within their settings (e.g., occupational therapist, physical therapist, teachers, physicians) and mentorship as positive influencers of self-efficacy while some, who indicated they did not have enough opportunity to collaborate with other professionals or without mentors reported negative impacts on self-efficacy. Metcalfe et al. (2001) also found that isolation from colleagues was a barrier to implementation of EBP. In many medical facilities and school districts, especially in rural areas, SLPs are faced with this challenge. Employers should strive to determine ways in which SLPs may have access to other professionals with which to collaborate. Participants often indicated they mitigated this problem by joining social media groups in which well-known SLPs communicate with others to provide expert opinion and feedback regarding difficult cases.

Limitations and Implications

Selection bias was present in the sample, as ASHA's policies prevent distribution of members' email addresses. Since participants were recruited using ASHA Community sites, Special Interest Groups, social media, and graduate program alumni databases a representative sample cannot be guaranteed. Although comparisons among settings are valuable and were the purpose of the study, it is important to recognize that significant

variability was present within each setting group. For example, SLPs in acute care likely do not have the same experiences as those in home health situations even though they were assigned to the same setting group for the study. Analysis focusing on more homogeneous groups may yield different results. Although participants were asked to respond based on current setting, some were employed simultaneously in multiple settings or had previous experience in other settings, which may have affected responses. Additionally, many participants with more experience in the field had a greater variety of experience regarding setting and populations, which likely affected responses.

Results from this study provide evidence to support recommendations for ASHA, employers, and academic programs. Recommendations to ASHA include: (a) removing barriers to access of all publications (i.e., Perspectives journals), (b) providing more specific guidance to academic programs regarding the amount of time dedicated to each certification standard students must meet before graduation, and (c) providing continuing education focusing on skills necessary to critically appraise research quality for those actively practicing in the field.

Recommendations for employers include: (a) providing funds for or reimbursing employees for subscriptions to databases or journals that allow for access to current literature, (b) provide time within the workday for SLPs to conduct literature searches to enhance the quality of services provided, and (b) establish mentorship programs and facilitate collaboration opportunities for SLPs.

Recommendations for academic programs include: (a) conduct follow-up surveys of graduates after they have been practicing rather than at the time of graduation to gather feedback to assist with refining programs, (b) provide training for internal and external

clinical supervisors to facilitate open lines of communication across academic and clinical faculty, (c) broaden exposure to settings, client populations, and supervisors during clinical practicum experiences, and (d) integrate EBP into all academic coursework in addition to providing coursework specifically focusing on skills related to evaluation of research.

Although this study provided guidance for improving self-efficacy for use of EBP across employment setting, future studies should be conducted to investigate the structure of academic programs. An examination of graduate program components related to self-efficacy would be helpful to inform program design. Future research should be conducted to determine the relationship between self-efficacy ratings and competence (e.g., self-efficacy ratings of CFs compared to competence ratings by CF mentors).

Conclusion

The current study provides more support to literature that already exists regarding self-efficacy for use of EBP as well as barriers and facilitators to implementation. It is necessary that research continue to explore other areas to determine how self-efficacy relates to competence and steps academic preparation programs can take to better equip students for entry into the field. It is apparent that ASHA and employers also have a role in remediating the barriers to implementation of EBP.

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Table 1*Graduate Program Factors Affecting EBP Self-Efficacy*

Response theme	<i>n</i>	%
Clinical placements		
“Real world” experience	14	41.18
Variety of experiences (setting, populations, supervisors)	14	41.18
Clinical supervisors	12	35.29
Placements	12	35.29
Documentation experience	8	23.53
Supervisory style	5	14.71
Learned to ask questions/seek knowledge	3	8.82
Inadequate supervision/guidance in external placements	3	8.82
Collaboration with other students in cohort	2	5.88
Setting/population not for me	2	5.88
Placement was not in setting I did not seek employment	1	2.94
Did not learn enough about billing	1	2.94
Collaborating with other professionals	1	2.94
Coursework/program emphasis (e.g., EBP, thorough nature, research)	11	32.35
Coursework not adequate or current/focus of program not appropriate	7	20.59
Professors	7	20.59
Not confident in first job/clinical placement	3	8.82
Not taught to apply knowledge	2	5.88

Table 2*Post-Graduate Factors Affecting EBP Self-Efficacy*

Response theme	Interview		Survey		Total
	participants		participants		participants
	<i>n</i>	%	<i>n</i>	%	<i>n</i>
Positive					
Time/experience (exposure to clients/Tx methods/settings)	21	61.76	100	29.24	121
Reading research	9	26.47	74	21.64	83
Continuing education	19	55.88	62	18.13	81
Collaboration with others in my Setting (OT, PT, school/medical staff)	14	41.18	43	12.57	57
Collaboration with other SLPs	20	58.82	18	5.26	38
Mentor/supervisor model	13	38.24	15	4.39	28
Advanced degree/coursework			23	6.73	23
Positive tx outcomes/pt or family feedback	6	17.65	17	4.97	23
Access to resources (e.g., ASHA Practice Portal, SIGs, literature)	2	5.88	22	6.43	22

	Interview		Survey		Total
	participants		participants		participants
	<i>n</i>	%	<i>n</i>	%	<i>n</i>
Personal desire to learn/provide					
the best care	2	5.88	20	5.85	22
Self-reflection			20	5.85	20
Support from employer/other					
Professionals (non-SLPs)	4	11.76	14	4.09	18
Supervising students, SLPAs,					
teaching, leadership	2	5.88	14	4.09	16
Relying on others who					
understand research/researchers					
I trust			14	4.09	14
Conducting research			11	3.22	11
Field is too expansive	2	5.88	8	2.34	10
Clinical decision-					
making/critical Thinking skills	6	17.65			6
Learning to problem solve/be					
independent	3	8.82		0.00	3

	Interview		Survey		Total
	participants		participants		participants
	<i>n</i>	%	<i>n</i>	%	<i>N</i>
<hr/>					
Negative					
Unable to access research or materials/unable to understand research					
			37	10.82	37
Time constraints					
			23	6.73	23
Not enough use EBP/not enough EBP in the field					
			21	6.14	21
Unsure how to apply evidence to clinical practice					
			11	3.22	11
Lack of mentorship or others to collaborate with/employer challenges					
	3	8.82	7	2.05	7
Not confident					
	2	5.88	2	0.58	2

Note. OT = occupational therapist; PT = physical therapist; pt = patient; tx = treatment;

ASHA = American Speech-Language Hearing Association; SIG = special interest group;

SLPA = speech-language pathology assistant; EBP = evidence-based practice

Table 3*Example Quotes for Graduate Program Response Themes*

Response theme	Example quote
"Real world" experience	<p>"Just seeing the variance between how things are taught and how things are actually done in the real world."</p> <p>"The most helpful thing to me was having that hands-on experience."</p>
Variety of experiences (setting, populations, supervisors)	<p>"I think my experiences visiting different cleft teams with my supervisors. Now, I've seen and worked with four different cleft teams. I like that I've seen all the different ways it can go. It gives me the perspectives that, just because we're doing it this way, doesn't mean it has to be done that way all the time."</p> <p>"Then, obviously, just like exposure to all of the different kinds of clients that you can have. I really got a pretty broad experience across very different settings."</p>
Clinical supervisors	<p>"My clinical supervisors were everything to me."</p> <p>"I think it was really helpful for ours, we have two-way mirrors in the clinic so our supervisors would watch what we were doing on our own. Then we could meet with them and kind of talk about what we did and what was working and what wasn't."</p>
Placements	<p>"I think the part where I learned the most was definitely internships and externships. I felt like on campus clinic is too it's almost too structured and it's not realistic when looking at what I do every day in a "real world" clinic. It's just not the same."</p> <p>"I think that by far and away, the experience that impacted where I wound up professionally was the last extern I had for the half semester in an inpatient rehab hospital, which is actually where I did my CFY."</p>

Response theme	Example quote
Documentation experience	<p>“My school-based one I felt like it was probably the most helpful overall because I learned a lot more of the ins and outs of not just therapy, but all the IEP requirements.”</p> <p>“Because within our coursework, I mean maybe we would do like one evaluation based off a case history and maybe do like very generic SOAP notes. So, to be actually in and with different documentation systems is that I think that was the most valuable thing for me.”</p>
Supervisory style	<p>“If I had any issues even, you know, even in the middle of a session they would come around from the other side or from their office where they were observing and come into the session and provide the support right there.”</p> <p>“That supervisor also sometimes would tell us to prepare for a therapy session, then 10 minutes before take away all our materials. You get paper and crayons or something, figure it out. That was helpful because I had to learn quickly even though it was frustrating.”</p>
Learned to ask questions or seek knowledge	<p>“So it was a lot of like self-teaching and carrying around a notebook all day long and writing down terms I didn’t know. Taught me I have to take ownership of things I don’t know. Asking questions.”</p>
Inadequate supervision or guidance in external placements	<p>“It gave me confidence and I was scared, the fact that I had such free reign to do what I wanted to do in clinic. But I was also, part of me was hoping that someone would correct me if I was completely off the wall.”</p>
Coursework/program emphasis (e.g., EBP, thorough nature, research)	<p>“Also, I like how our classes we did a lot of labs and I feel like those labs are really the hands-on things that helped us to apply the knowledge we learned. So, I feel like our graduate program was really good about actually letting us use and try the skills out in labs or in the clinical setting.”</p> <p>“Well, the classes were great.”</p>
Coursework not adequate or current/focus of program not Appropriate	<p>“I feel like what I had learned about swallowing was not anything that was current. So, that was frustrating.”</p>

	“I felt like just the coursework focused a lot on kids with typical artic, language disorders.”
Professors	“The mentorship from [professor].”
Not confident in first job/clinical placement	“I felt like I had the interpersonal skills necessary to do well and I felt like I could catch on quickly, but entering my externship, I was very unsure of myself because just because of my prior training.”

Table 4*Example Quotes for Post-Graduate Response Themes*

Response theme	Example quote
Time/experience (exposure to clients/tx methods/settings)	“So, I was hired on as a CF starting that summer and I got so many clinical experiences across the continuum of care that I think made me feel confident for whatever was going to come after.”
	“I feel like I left with the confidence to work in any of those settings like outpatient acute rehab or acute care.”
Reading research	“Time to continually read and research ever changing EBP for assessment and treatment strategies.”
	“I also make sure to look at literature every once in a while to see if any changes or enhancements have been made.”
Continuing education	“Our required continuing education units are valuable to continue the learning aspect of our profession.”
	“Continuing education. I did a ton. Even before I graduated. I did a ton in my CF year. I would say that’s probably a big factor.”
Collaboration with others in my Setting (OT, PT, school/medical staff)	“And then getting to work with OTs and PTs for sure I think helped out.”

Response theme	Example quote
Collaboration with other SLPs	“And really collaborating with my colleagues who either had worked in high school for years or had been an SLP for years.”
Advanced degree/coursework	“I am a Ph.D. candidate in Speech and Hearing Science so I have gained significant research, statistics, and study design experience which I can apply to my clinical practice.”
	“Experience/years reviewing literature in a PhD program.”
Mentor/supervisor model	“Examples from previous supervisors”
	“Having a mentor in a particular workplace makes a big difference.”
Positive tx outcomes/pt or family feedback	“You could see progress with kids, but now I know I wouldn’t necessarily have something to gauge that progress against, but I think being able to see one kid for three years straight. I think you could really see the progression of treatment and intervention.”
	“I think just having success with students.”
Access to resources (e.g., ASHA Practice Portal, SIGs, literature)	“I am a member of multiple helpful sites and utilize the SIGs in ASHA.”
	“Readily available resources in my setting that integrate best practices.”
Personal desire to learn/provide the best care	“Striving to help the individuals I service reach their highest potential.”
	“My sense of responsibility to my patients in providing the best care possible.”
Self-reflection	“Having the time to sit and think for extended periods of time.”
	“I constantly analyze my weaknesses and strengths as I work with my clients.”

Response theme	Example quote
Support from employer/other Professionals (non-SLPs)	<p>“I work with a company that is very strong with using evidence-based practice and supporting us.”</p> <p>“And it was a small enough hospital that I felt supported, not just by her, but also by my director, by PTs, Ots, by the physiatrist that I worked with and it helped me gain confidence and competence.”</p>
Supervising students, SLPAs, teaching, leadership	<p>“By teaching it to students under my supervision as a clinical supervisor.”</p> <p>“Serving as a clinical instructor to CDS graduate studies students.”</p> <p>“I also do supervision of SLPAs on a very limited basis on the side.”</p>
Relying on others who understand research/researchers I trust	<p>“My weakness in statistics is a stumbling block and I often have to trust the authors interpretation of the statistical analysis.</p> <p>“I’m not as confident as I’d like to be, but I have found that I tend to follow researchers I trust or who’s opinion mirrors my own thoughts about a particular treatment option.”</p>
Conducting research	<p>“Having done research has been essential for me to understand, appraise, and apply literature.”</p> <p>“I also perform research.”</p>
Field is too expansive	<p>“You can’t be an expert at everything in this field. You will always have some weak spots whether it’s an age range or a specific competency area.”</p>
Clinical decision-making/critical Thinking skills	<p>“Pairing my personal anecdotal experiences with EBP along with historical outcomes. Always basing this on the specifics of each patient individually, using comprehensive chart review, patient and caregiver interview etc.”</p>

Response theme	Example quote
Negative	
Unable to access research or materials/unable to understand research	<p>“Limited access to academic journals is the biggest hindrance to my ability to research effectively.”</p> <p>“I feel like I don't know where to look for treatment ideas that are evidence based/there are not a ton of easily accessible options.”</p> <p>“I have long since forgotten statistical analysis and realize I need a simple refresher!”</p>
Time constraints	<p>“I don't feel I have enough time to complete adequate research at this point in my life.”</p> <p>“In the past, devoting appropriate time to keep up to date with current research within specific areas has been difficult due to increased workload demands within my setting.”</p>
Not enough use EBP/not enough EBP in the field	<p>“In my experience, I have come across only a few speech pathologists who exercise clinical judgment in an evidence-based manner.”</p> <p>“With the amount of research that is conducted, it is difficult at times to specifically find what I am looking for in regards to my students.”</p>
Unsure how to apply evidence to clinical practice	<p>“I learned how to find and understand the evidence in graduate school, but where my confidence lacks is the application of the evidence to practice.”</p> <p>“Translating the statistical findings to practical implementation.”</p>
Lack of mentorship or others to collaborate with/employer challenges	<p>“There was a lack of collaboration with SLPs from hospital setting with the home-based setting.”</p> <p>“I just felt like our PTs and OTs, they always had mentors with more experience and I just felt like I didn't have a mentor who had more experience than me until my third job probably.”</p>

SECTION SIX

Scholarly Practitioner Reflection

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Scholarly Practitioner Reflection

As I reflect upon my time in the EdD program, I think about where it all began. If I am being honest, my story is unlike the one of most other educators. As a speech-language pathologist (SLP), I wanted to do what an SLP does. To me, this meant practicing clinically while providing the best services possible to those in need. After being contacted by a previous professor turned department chairperson at the program where I am now employed, I realized that maybe I did aspire to teach after all. Admittedly, I had no real concept of what my position would entail at the time I accepted it. Because I knew I would apply to the EdD program and began coursework shortly after I entered higher education, my path has been greatly influenced by experiences in the program. I have grown through both personal and professional experience as well as through my coursework and completion of this dissertation. I have learned that even though I never considered myself a leader because I lack a formal leadership position with the department, I am a leader in many ways.

Northouse (2016) explains that individuals may become leaders either because they are in a position or because of the way others respond to them. Although I do not occupy a formal leadership position, most faculty in my department have significant input in the decision-making process. This is primarily due to the size of the department. Therefore, I find myself contributing to decisions regarding academic and clinical preparation of our students on a regular basis. Additionally, I serve as a leader and mentor to students daily. This is a duty that cannot be taken lightly and my experiences in the past several years have been invaluable in teaching me how to effectively serve others in my role.

In this reflection, I will describe how the dissertation process has impacted me as a scholarly practitioner. I will examine the impact on me as both an educational leader and influence as a scholar. In this section, I will describe the impact of the scholarly practitioner model around which this dissertation and the EdD program were designed (MacGregor & Fellabaum, 2016).

Influence as an Educational Leader

As I began my journey in the EdD program by completing the StrengthsQuest assessment, my top five strengths were identified as restorative, learning, input, and analytical (Gallup, 2012). I recognize restorative traits in my leadership style, as I easily recognize and place strong attention on my weaknesses to improve myself. While this is certainly beneficial at times, it often becomes discouraging. Since I am always striving to better myself, being a learner, Gallup (2012) means that I will, “. . . always be drawn to the process of learning.” Gill (2010) identifies learning as crucial to constant improvement within organizations as well as attainment of goals and expansion to new capacities. Houle (as cited in Merriam & Bierema, 2014) identified different types of learning including “learning-oriented learners” and “goal-oriented learners” (p. 151). “Learning-oriented learners” (Merriam & Bierema, 2014, p. 151) enjoy learning just to learn, whereas “goal-oriented learners” (p. 151) learn as a means of accomplishing a goal. The process of my dissertation has allowed me to be both *goal oriented* as well as *learning-oriented*, as I have discovered how much I truly am interested in the process of discovering more about my initial problem of practice. This should be no surprise given my desire to learn (Gallup, 2012).

As an educational leader and practitioner, I “. . . have an obligation to resolve problems of practice . . .” (The Carnegie Project on the Education Doctorate, n. d.).

Completion of this dissertation, by design, has allowed me to influence the profession of speech-language pathology as well as contribute to the growth of the academic program in which I am employed. Throughout the data collection and analysis process of my dissertation, I have gained critical feedback and input from my colleagues who are on the front lines each day. Together, I hope to contribute to change based on the findings of my study. During data analysis, characteristics of the input theme (Gallup, 2012), resonate with me. This theme explains that “The world is exciting precisely because of its infinite variety and complexity,” which has proven true as I have sifted through study after study and continue to find new and exciting avenues to pursue.

Because I was able to complete my dissertation focusing on a topic of interest to me as a problem of practice I face daily, I found its effect to be far more profound than any I have pursued up until this point. I have been embraced by those with more experience in my field, both in and out of academia who collaborated with me throughout this process. I have learned to be open to the ideas of others and have experienced this same openness from others who have provided countless ideas and incredible wisdom as I completed my journey. Preskill and Brookfield (2009), define the openness I experienced and learned to demonstrate as “the willingness to entertain a variety of alternative perspectives, be receptive to contributions from everyone regardless of previous attainment or current status. . .” (p. 21). I also experienced this type of openness from other colleagues and advisors outside of my field.

As a final thought regarding the impact of my dissertation process on my role as an educational leader, I will provide insight I gained from serving in numerous roles. While completing my doctorate and dissertation, I had the unique perspective of serving

as a student *and* instructor. This provided me with a greater understanding of how my own students feel. It made me recognize to a greater extent, the value of their time, effort, and work. I am undoubtedly a better instructor because of it. I also had the privilege of serving as an advisee (both academic and research) *and* advisor (both academic and research). This has been a very valuable experience. I now have the perspective of a student, as someone conducting research and relying solely on others whether it be advisors, committee members, or participants. As an academic advisor, I know now more than ever, how to empathize with the unique situations which my students face affecting their course work and progression through our program. I understand the importance of my job as an advisor in advocating for them and providing support as needed to help them succeed. In my role as a research advisor, I have a greater appreciation for the *process* rather than solely the *outcome*. I appreciate students' efforts and understand that I need to more frequently acknowledge them, as I appreciated these words of encouragement and acknowledgement from my committee throughout the process more than words could ever express.

Influence as a Scholar

Merriam and Bierema (2014) emphasized the point that was discussed in the previous section: that learning must be a process *and* an outcome. I believe completion of this dissertation has taught me the value of both. If not for the integration into my own practice, I cannot be sure this would have occurred. As a master's student, I was unquestionably focused on the output. The emphasis on grades often detracted from the process and I question how much knowledge I missed because of my inability to focus on the process.

As I reflect on my time as an undergraduate student in communication disorders, I remember very little. Interestingly, I also do not remember much from my master's program either. Because of my focus on weaknesses, I do, however, remember all the areas in which I felt inadequately prepared when I entered the field of speech-language pathology. This lived experience helped guide my research, but also helped me to relate to others including those participating in my research, as many put into words the thoughts I had. I was satisfied when my hypotheses, which were heavily based on my experiences, were supported by this study.

My experience in the EdD program helped me gain both foundational theoretical knowledge regarding education, but also how to integrate these principles into practice. I learned that as small as my contribution may be, I can still contribute to the field. I hope to encourage my students to be lifelong learners and “reflective practitioners” (Meriam & Bierema, p. 115) who strive to always incorporate all three pillars of evidence-based practice in all they do. I have a hope that through this research and my future research endeavors, I can make even a small impact on the way academic programs prepare their students for the field of speech-language pathology.

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Appendix A

Evidence-Based Practice Confidence Scale

Instructions to Participants

For each of the following activities, please indicate how **confident** you are in your **current** level of ability by choosing the corresponding number on the following rating scale:

	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
	No Confidence											Completely Confident
How confident are you in your ability to:												
1. ... identify a gap in your knowledge related to a patient or client situation (e.g., history, assessment, treatment)?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
2. ... formulate a question to guide a literature search based on a gap in your knowledge?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
3. ... effectively conduct an online literature search to address the question?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
4. ... critically appraise the strengths and weaknesses of study methods (e.g., appropriateness of study design, recruitment, data collection and analysis)?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
5. ... critically appraise the measurement properties (e.g., reliability and validity, sensitivity and specificity) of standardized tests or assessment tools you are considering using in your practice?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
6. ... interpret study results obtained using statistical tests such as t-tests or chi-square tests?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
7. ... interpret study results obtained using statistical procedures such as linear or logistic regression?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
8. ... determine if evidence from the research literature applies to your patient's or client's situation?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
9. ... ask your patient or client about his/her needs, values and treatment preferences?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
10. ... decide on an appropriate course of action based on integrating the research evidence, clinical judgment and patient or client preferences?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	
11. ... continually evaluate the effect of your course of action on your patient's or client's outcomes?	<input type="radio"/> 0%	<input type="radio"/> 10	<input type="radio"/> 20	<input type="radio"/> 30	<input type="radio"/> 40	<input type="radio"/> 50	<input type="radio"/> 60	<input type="radio"/> 70	<input type="radio"/> 80	<input type="radio"/> 90	<input type="radio"/> 100%	

Appendix B

Survey Consent

Self-Efficacy of Speech-Language Pathologists in Medical and Educational Settings

You are being invited to participate in a research study. Participation is completely voluntary and you may refuse participation or withdraw at any time without consequence.

I am a doctoral student at the University of Missouri-Columbia and am conducting this research for my dissertation.

Detailed Study Description:

If you choose to participate in this study, you will be asked to complete an electronic survey to rate your self-efficacy providing evidence-based practice as a speech-language pathologist in your current setting. You will be given the option to participate in an interview or focus group. During the survey, you will be asked to respond to several demographic questions regarding your academic preparation and employment setting. The survey will take approximately 10 minutes to complete. Data will be reported with no identifiers and no direct identifiers will be collected as a part of this survey unless you provide your email address to enter the gift card drawing. If you choose to enter the drawing and provide your email address, your information will be stored in a password protected electronic file only accessible to the researcher.

Risks and Benefits of Participation:

The risks of this study are minimal and are not expected to be any greater than those you would experience in your daily life. While there are no direct benefits to participation in the study, others may benefit in the future as a result of the findings of this study.

Compensation:

One participant will be selected at random for a \$25 egift card.

If you have questions:

If you have questions, concerns, or comments, please contact:

Misty Tilmon: mtilmon@semo.edu

Dr. Bret Cormier: bcormier@semo.edu

If you have questions about your rights as a research participant, please contact the University of Missouri – Columbia Institutional Review Board (IRB). The IRB can be reached at 573-882-3181 or irb@missouri.edu

If you wish to talk privately about your rights or any issues related to your participation in this study, you can contact University of Missouri Research Participant Advocacy by calling (888)280-5002 (a free call) or emailing MUResearchRPA@missouri.edu

During the electronic survey, by clicking “I agree” I voluntarily agree to take part in this research study.

Appendix C

Qualitative Survey Items

1. What factors most influenced your confidence implementing evidence-based practice in your current setting?
2. Is there anything else you would like to add related to your confidence level regarding evidence-based practice in your setting?

Appendix D
Recruitment Documents

Dear Colleagues,

My name is Misty Tilmon and I am a doctoral candidate at the University of Missouri-Columbia. I would like to invite you to participate in my research study about confidence levels of speech-language pathologists. You are eligible to participate in this study if you are a speech-language pathologist employed in either a medical or educational setting and are practicing in the first five years following your clinical fellowship.

If you decide to participate in this study, you will complete a short survey, which will take approximately 10 minutes to complete. You may also be asked to participate in an interview or focus group which will take approximately 20 minutes. In return for your time, you can enter for the chance to win a \$25 gift card.

Remember, this is completely voluntary. Your decision to not participate or withdraw from participation at any time will not result in any consequences. If you would like to participate in this study, please respond to the survey using the link attached. If you have any questions about the study, please email or contact me at mtilmon@semo.edu.

Please click the link below to participate in the survey:

https://missouri.qualtrics.com/jfe/form/SV_7aInTkkkkW54VgN

Thank you very much.

Sincerely,

Misty Tilmon

Appendix E

IRB Approval



Institutional Review Board
University of Missouri-Columbia
 FWA Number: 00002876
 IRB Registration Numbers: 00000731, 00009014

482 McReynolds Hall
 Columbia, MO 65211
 573-882-3181
 irb@missouri.edu

April 30, 2020

Principal Investigator: mtcowv
 Department:

Your IRB Application to project entitled Self-Efficacy of Speech-Language Pathologists in Medical and Educational Settings was reviewed and approved by the MU Institutional Review Board according to the terms and conditions described below:

IRB Project Number	2022721
IRB Review Number	264203
Initial Application Approval Date	April 30, 2020
IRB Expiration Date	April 30, 2021
Level of Review	Exempt
Project Status	Active - Exempt
Exempt Categories (Revised Common Rule)	45 CFR 46.104d(2)(i) 45 CFR 46.104d(2)(ii)
Risk Level	Minimal Risk

The principal investigator (PI) is responsible for all aspects and conduct of this study. The PI must comply with the following conditions of the approval:

1. Enrollment and study related procedures must remain in compliance with the University of Missouri regulations related to interaction with human participants following guidance at <https://research.missouri.edu/about/covid-19-info.php>.
2. No subjects may be involved in any study procedure prior to the IRB approval date or after the expiration date.
3. All changes must be IRB approved prior to implementation utilizing the Exempt Amendment Form.
4. The Annual Exempt Form must be submitted to the IRB for review and approval at least 30 days prior to the project expiration date to keep the study active or to close it.
5. Maintain all research records for a period of seven years from the project completion date.

If you are offering subject payments and would like more information about research participant payments, please click here to view the MU Business Policy and Procedure: http://bppm.missouri.edu/chapter2/2_250.html

If you have any questions or concerns, please contact the MU IRB Office at 573-882-3181 or email to muresearchirb@missouri.edu.

Appendix F

Demographic Survey Items

1. Did you graduate from a master's program for speech pathology in the United States?
 - a. Yes
 - b. No
2. Have you completed a degree or other certification beyond
 - a. Doctorate
 - b. ASHA Clinical Specialty Certification
 - c. N/A
 - d. Have you completed a Clinical Fellowship
3. Have you obtained a Certificate of Clinical Competence from the American Speech-Language Hearing Association?
 - a. Yes
 - b. No
4. As of today's date, in which year of practice are you following receipt of the Certificate of Clinical Competence (e.g., if certification was obtained on August 30, 2019, I would be in year 1 of practice following receipt of the CCC).
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
 - f. Other (please specify)
5. Identify the percentage of time you are currently employed in the following:
 - a. Medical setting(s) (e.g., inpatient hospital outpatient hospital skilled nursing facility)
 - b. Educational setting(s) (e.g., early intervention, pre-k, elementary, middle/junior high, high school)
 - c. Other (please specify)
6. Regarding previous experience (professional NOT student), identify the percentage of time you have been employed in the following:
 - a. Medical setting(s) (e.g., inpatient hospital outpatient hospital skilled nursing facility)
 - b. Educational setting(s) (e.g., early intervention, pre-k, elementary, middle/junior high, high school)
 - c. Other (please specify)
7. Please identify your employment status based on all settings in which you are currently employed.
 - a. 1-34 hours per week

- b. 35 hours per week or more
8. Provide the type of medical or educational setting in which you are currently employed. Select all that apply.
- a. Inpatient hospital
 - b. Outpatient hospital
 - c. Skilled nursing facility
 - d. Early intervention
 - e. Pre-k
 - f. Elementary
 - g. Middle/Junior high school
 - h. High school
 - i. Other (please specify)
9. Please indicate ages you serve in your current position. Select all that apply.
- a. 0-2 years
 - b. 3-5 years
 - c. 6-11 years
 - d. 12-17 years
 - e. 18-62 years
 - f. 65-74 years
 - g. 75 years and older

Appendix G

Interview Consent

Self-Efficacy of Speech-Language Pathologists in Medical and Educational Settings

You are being invited to participate in a research study. Participation is completely voluntary and you may refuse participation or withdraw at any time without consequence.

I am a doctoral student at the University of Missouri-Columbia and am conducting this research for my dissertation.

Detailed Study Description:

If you choose to participate in this study, you will be asked to complete an electronic survey to rate your self-efficacy providing evidence-based practice as a speech-language pathologist in your current setting. You will be given the option to participate in an interview or focus group. During the survey, you will be asked to respond to several demographic questions regarding your academic preparation and employment setting. The survey will take approximately 10 minutes to complete. Data will be reported with no identifiers and no direct identifiers will be collected as a part of this survey unless you provide your email address to enter the gift card drawing. If you choose to enter the drawing and provide your email address, your information will be stored in a password protected electronic file only accessible to the researcher.

Risks and Benefits of Participation:

The risks of this study are minimal and are not expected to be any greater than those you would experience in your daily life. While there are no direct benefits to participation in the study, others may benefit in the future as a result of the findings of this study.

Compensation:

One participant will be selected at random for a \$25 egift card.

If you have questions:

If you have questions, concerns, or comments, please contact:

Misty Tilmon: mtilmon@semo.edu

Dr. Bret Cormier: bcormier@semo.edu

If you have questions about your rights as a research participant, please contact the University of Missouri – Columbia Institutional Review Board (IRB). The IRB can be reached at 573-882-3181 or irb@missouri.edu

If you wish to talk privately about your rights or any issues related to your participation in this study, you can contact University of Missouri Research Participant Advocacy by calling (888)280-5002 (a free call) or emailing MUResearchRPA@missouri.edu

During the electronic survey, by clicking “I agree” I voluntarily agree to take part in this research study.

Appendix H

Interview Protocol

Interview/Focus Group Protocol

Thank you for agreeing to participate in my interview/focus group. Before we begin, please provide consent for the study. You received a copy of the statement of informed consent via email when we scheduled this meeting. Please respond with “I agree” if you agree to participate and acknowledge the conditions of the informed consent statement.

1. From what university did you graduate with your master’s degree in speech-language pathology?

2. Did your university have a hospital affiliation?

3. Please describe your clinical experiences in your graduate program.

4. If not answered in the previous question, did you complete a clinical placement in a medical setting, educational setting, or both?

5. What do you think was the most valuable part of your clinical experiences? You may provide specific examples or general experiences that were helpful.

6. What part of your graduate program do you think contributed most to your confidence providing services in your current setting?

7. What factors following graduation do you feel contributed most to your confidence providing services in your current setting?

8. Is there anything else you would like to add that may provide insight into your confidence level providing services in your current setting?

Appendix I

Permission to Use EPIC Scale

Tilmon, Misty

Subject: FW: Follow-Up Re: Epic Scale Permissions
Attachments: 2010 Devt EPIC scale J Eval Clin Pract FINAL.pdf; 2013 Reliab Valid EPIC scale JCEHP.pdf; 2013 Reply to Bland JCEHP.pdf; 2016 Clyde et al AJOT Validation of EPIC scale in OTs.pdf; EPIC_scale Word version.doc

From: Nancy Salbach < >
Sent: Wednesday, April 29, 2020 9:55 AM
To: Tilmon, Misty < >
Subject: RE: Follow-Up Re: Epic Scale Permissions

Hi Misty, sorry for the delay. Yes you have my permission to use the EPIC scale. I've attached all related publications and a Word document of the scale for your research.

Best of luck,
 Nancy

Nancy M. Salbach, PT, PhD (she/her)
 Heart and Stroke Foundation Mid-Career Investigator
 Associate Professor, Department of Physical Therapy, University of Toronto
nancy.salbach@utoronto.ca
 Adjunct Scientist, KITE Toronto Rehabilitation Institute-University Health Network
 Physical Therapy Journal, Editorial Board Member
 Knowledge to Action Lab: <http://www.physicaltherapy.utoronto.ca/research/ktalab/>
 Faculty Profile: <http://www.physicaltherapy.utoronto.ca/faculty/nancy-salbach/>
@nancysalbach@Uoft_PT

KTA Lab Highlights:

*Canadian Stroke Best Practice Recommendations: Rehabilitation, Recovery, and Community Participation following Stroke. 6th Edition Update 2019

Part One: Rehabilitation and Recovery Following Stroke, available at: <https://doi.org/10.1177/1747493019897843>

Part Two: Transitions and Community Participation Following Stroke, available at:
<https://doi.org/10.1177/1747493019897847>

*Looking for the iWalkAssess app and iWalk Toolkit? Go to www.iwalkassess.com

*See our recent publication entitled: Validation of stroke-specific protocols for the 10-meter walk test and 6-minute walk test conducted using 15-meter and 30-meter walkways, available at:
<https://doi.org/10.1080/10749357.2019.1691815>.

VITA

Misty Tilmon was born in Georgia, but moved to Missouri in middle school and graduated high school in Southeast Missouri. After high school, she earned a Bachelor of Science and Master of Arts in Communication Disorders from Southeast Missouri State University. She provided services as a speech-language pathologist in skilled nursing facilities as well as a pediatric outpatient facility prior to pursuing a career in higher education. She currently teaches in the Department of Communication Disorders at Southeast Missouri State University.