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Investigating Program Evaluation Implemented by Rural Education Systems to Determine the Efficacy of Speech-Language Telepractice Services

Allyson Doreen Montgomery

UNIVERISTY OF NORTHERN COLORADO

Greeley, Colorado

The Graduate School

INVESTIGATING PROGRAM EVALUATION IMPLEMENTED BY RURAL EDUCATION SYSTEMS TO DETERMINE THE EFFICACY OF SPEECH-LANGUAGE TELEPRACTICE SERVICES

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Allyson Doreen Montgomery

The College of Natural and Health Sciences
School of Human Sciences
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Accepted by the Thesis Committee:

_____

Robyn Ziolkowski, PhD, CCC-SLP, Chair

_____

Donald Finan, PhD, Committee Member

Accepted by the Graduate School

_____

Linda L. Black, Ed.D.
Associate Provost and Dean
Graduate School and International Admission

ABSTRACT

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Given the importance of providing speech-language services to students in rural areas, school districts have begun adopting telepractice as a primary service delivery model (American Speech-Language and Hearing Association [ASHA], n.d.b; Forducey, 2006; & Polovoy, 2008). However, as the demand for telepractice grows, so does the need for a strong method of program evaluation (ASHA, 2005a). The purpose of this study was to investigate the methodologies district level administrators use to evaluate effectiveness and ensure the validity of telepractice services. Two district level administrators from distinct rural educational cooperatives participated in this study. Both were from two distinctive Midwestern states and partook in semi-structured interviews. Four global themes emerged following data analysis: qualitative measures for evaluating effectiveness, quantitative measures for evaluating effectiveness, professional qualifications impact validity, and analyzing service validity. The participant identified themes revealed a strong need for a consistent, systematic approach to program evaluation that integrates quantitative and qualitative measures. The results may be considered by district administrators currently using or hoping to implement telepractice programs to evaluate services.

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CHAPTER I

INTRODUCTION

Given the importance of providing speech-language services to students in rural areas, school districts have begun adopting telepractice as a primary service delivery model to address numerous access barriers such as distance and a shortage of speech-language pathologists (ASHA, n.d.b, Forducey, 2006, & Polovoy, 2008). Indeed, this is a promising service delivery model with the potential to mitigate many obstacles rural and remote school districts face (Tucker, 2012). Yet little is known about how district administrators and special-education directors can successfully evaluate the effectiveness and validity of these services (Houston, 2014). To date, the literature has focused mainly on comparing the outcomes of face-to-face intervention with services delivered through telepractice (Forducey, 2006; Grogan-Johnson, Alvares, Rowan, & Creaghead, 2010; Grogan-Johnson et al. 2011; Polovoy, 2008) and barriers to successful telepractice implementation (Gabel, Grogan-Johnson, Alvares, Bechstein, & Taylor, 2013). The American Speech-Language-Hearing Association (ASHA) states that in order to implement telepractice, a key consideration school districts and clinicians need to address is "develop[ing] a system of program evaluation to measure the effectiveness of the service and satisfaction of stakeholders" (ASHA, n.d.a). While many research studies have touched on stakeholder satisfaction (Crutchley, & Campbell, 2010; Tucker, 2012), little emphasis has been placed on program evaluation. As telepractice begins to expand

and gain viability within school districts, a strong model for program evaluation needs to be developed.

Research Questions

The purpose of this prospective, qualitative study is to investigate the current protocol administrators of rural service educational programs use to determine the effectiveness of their speech-language telepractice programs by answering the following questions:

Q1 What specific methodologies are rural service education program using to measure the effectiveness of services delivered via telepractice?

Q2 What specific protocols and methodologies are rural service education cooperative programs currently using to ensure the validity of speech-language pathology services delivered via telepractice as compared to traditionally delivered (face-to-face) services?

CHAPTER II

REVIEW OF THE LITERATURE

Background and History

The field of speech-language pathology is one of the most rapidly growing health-care professions. Perhaps the most salient evidence of this being the Scope of Practice has been revised four times since the American Speech-Language Hearing Association (ASHA) first published it in 1990. As the Scope of Practice continues to grow and evolve, the population of individuals requiring speech and language services has also increased and diversified. According to the National Institute on Deafness and Other Communication Disorders (NIDCD), approximately 1 out of every 12 children has a disorder related to speech, language, swallowing, or voice (NIDCD, 2016). However, there are several impedances to the delivery of services for this population. Some of the more notable obstacles include distance, mobility of the individual, and access to funding. Additionally, there is a significant lack of qualified professionals available to administer services. Each year, an estimated 40% of speech-language pathology (SLP) positions go unfilled across professional settings (Mashima & Doarn, 2008).

Telepractice in Medicine

These barriers to services are not new to the field of speech-language pathology, neither is the use of telemedicine to alleviate them. Evidence of this dates back nearly four decades. As early as 1976, the Birmingham Department of Veterans Affairs (VA) in Alabama began pioneering the use of telemedicine to help veterans in rural areas access

appropriate speech-language services (Houston, 2014). At that time, VA Chief of Audiology and Speech Pathology Services developed tele-communicology, a form of telemedicine where supplementary interventions and assessments were administered via telephone for rural veterans who otherwise had limited or no access services (Vaughn, 1976).

Nearly a decade later, Wertz et al.(1987) began investigating the reliability of conducting diagnostic assessments via telemedicine. To do so, the researchers compared the reliability of traditional diagnostic methods, computer-controlled video laserdisc telephone, and closed-circuit television methods. Wertz and colleagues (1987) determined the reliability of these telemedicine methods to be high with 93% agreement between traditional and telepractice delivered services. Based on this data, the researchers concluded that telemedicine was a viable substitute for traditional assessment for individuals with difficulty obtaining services.

Similar to Wertz et al. (1987), clinicians at the Mayo Clinic began to investigate and conduct speech and language evaluations via telemedicine. The Mayo Clinic had been using telemedicine technology for consulting and diagnosis of speech and language disorders through their Telemedicine Consultants (TMC) program since 1987 (Duffy, Werven, & Aronson, 1997).

The TMC program allowed clinicians to administer various speech, language, and oral mechanism exams over a closed computerized system with the help of an on-site assistant to help adults with suspected neurogenic motor speech disorders (Duffy et al., 1997). In a prospective and retrospective review of their telemedicine assessments, the

researchers found the diagnoses and recommendations derived from telemedicine assessments to be reliable (Duffy et al., 1997).

Telemedicine gradually began to gain credibility and popularity as a service delivery model between the publication of the Wertz et al., (1987) and Duffy et al., (1997) studies. At that time, the American Speech-Language and Hearing Association (ASHA) began examining the possible impacts of using videoconferencing and distance learning technologies within telemedicine as a service delivery model (Houston, 2014). By 1998, ASHA released its first document regarding telemedicine titled *Telehealth Issues Brief*. This documented described what ASHA determined to be the feasible applications of telehealth (or telemedicine) to the field of speech-language pathology at the time. A few years later ASHA conducted a survey of the membership, asking both speech-language pathologists (SLPs) and audiologists to comment on their knowledge and current experiences regarding telemedicine (ASHA, 2002). While the research to date (Wertz et al., 1987; Duffy et al., 1997) implied that this service delivery model was only viable for medical settings, the results of the 2002 ASHA survey suggested that nearly as many speech pathologists were using telemedicine in the school system (38%) as were using it in the medical settings (47%). At that time, ASHA adopted the term "telepractice" to eliminate the misconception that using teleconferencing and telecommunication was only an acceptable service delivery model for the medical settings (ASHA, n.d.a).

Telepractice in Other Populations

As early as 2000, research concerning telepractice and the pediatric population began to emerge. Researchers in Ireland began exploring the validity and effectiveness of

using telepractice for preschoolers with special needs in the early 21st century (McCullough, 2001). The researchers conducted a feasibility study consisting of four preschool children with Down syndrome, and one with Cornelia de Lange syndrome. All children received articulation and language services designed to improve their receptive language (i.e. picture selection), expressive language (picture naming), and verbal imitation of syllable structure skills. Data concerning the participant's speech-language improvements were not studied despite stakeholder satisfaction being assessed. To evaluate stakeholder satisfaction, the researchers administered a parent and therapist questionnaire at three points throughout the study, before, during, and following intervention. Each questionnaire consisted of five-point Likert scale questions and yes/no questions. Approximately 89% of both parents and clinicians reacted positively to the program on the survey. Parents reported that the telepractice system was easy to use, beneficial, and helped improve their knowledge of their child's language disorder. Clinicians also reported that improvements in language were made based on other informal test measures. Based upon the results of these surveys, the researchers concluded that telepractice was a viable and effective method for improving the communication skills of children with special needs. However, the aforementioned results should be interpreted with caution as no statistically measured outcomes were used.

Separate researchers began evaluating the use of telepractice for other speech-language disorders such as fluency (Sicotte, Lehoux, Fortier-Blanc, & Leblanc, 2003). A total of six adult and children who stuttered were included in the study. The researchers aimed to evaluate the practicality and validity of telepractice services for this population

by conducting speech analysis comparing percent syllables stuttered (PSS) before intervention to PSS scores taken immediately following intervention and during a maintenance period. The researchers found that the participants improved their overall fluency (as measured by PSS) by 52%. Based upon participant improvement, the researchers proposed telepractice is an effective service delivery model to use with disorders of fluency. Perhaps the most supporting piece of evidence for this being that the telepractice services were significantly shorter in duration than other studies where face-to-face services were delivered (Sicotte et al., 2003). One limitation manifested from the research (Sicotte et al., 2003) was that therapy via telepractice placed a high demand on the therapist, as fluency intervention, particularly that involving young children, requires high amounts of parental contribution and counseling.

In 2005, ASHA released a formal position statement and technical report on the use of telepractice wherein telepractice was formally defined as "the application of telecommunication technology to deliver services at a distance by linking clinician to client, or clinician to clinician for assessment, intervention, and/or consultation" (ASHA, 2005a, 2005b). Additionally, these reports bound clinicians using telepractice to the same Code of Ethics and Scope of Practice clinicians delivering services via traditional therapy in order to maintain the quality and consistency of services delivered. Therefore, in order to deliver services via telepractice, the clinician must first provide sufficient evidence that the individual assessment and treatment needs of the patient can be met with the same quality and consistency as face-to-face services. According to Brown (as cited by Houston, 2014):

> The enduring contribution of these documents for the past decade has been to establish the use of the term telepractice and provide guidance for evaluating

> quality of service without specifying the types of technology, thus allow for continued growth in the rapidly expanding areas of connectivity and equipment.

Indeed, following the publication of these documents the use of telepractice began to expand. School districts particularly began exploring the use of telepractice as a service delivery model (Forducey, 2006; Grogan-Johnson, Alvares, Rowan, & Creaghead, 2010). Another factor impacting the expansion of telepractice was the enactment and reauthorization of the Individuals with Disabilities Education Act (IDEA). This legislation had many implications for speech-language pathologists working in school districts (ASHA, n.d.b). Specifically, the Zero Reject 300.125, Child Find of 1999 Final IDEA Regulations Subpart B required that schools educate all children with a disability, no matter the severity. This legislation greatly increased the SLPs caseload as school districts needed to identify, evaluate, and provide services to all children with a speech and/or language disability that would impede their access to free, appropriate public education (FAPE) (ASHA, n.d.b). This legislation and increased caseload for school-based SLPs, required that more students in rural districts receive SLP services, further impacting the expansion of telepractice.

Telepractice in School Settings

Direct intervention applications. One of the earliest dated school-based trials of telepractice occurred in the United Kingdom when Rose et al. (2000) evaluated the treatment of preschool-aged children using telepractice, as there was an increasing demand for speech and language services. In their longitudinal study, Rose et al. (2000), followed the participants for three years, considering two models of therapy, face-to-face intervention, and telepractice. Parent satisfaction was measured and overall, found to be high. Although, no concrete conclusions could be drawn from this study due to lack of

formal measures, it provided a framework for other school-based trials of telepractice as parent satisfaction was found to be very high.

Similarly, Grogan-Johnson et al. (2010) conducted a study comparing the outcomes of conventional face-to-face articulation services and those delivered via telepractice for a school district in Ohio. A total of 34 students with documented articulation disorders were randomly assigned into the two treatment conditions, face-to-face therapy and teletherapy. In order to compare the service delivery models, all participants were given the *Goldman-Fristoe Test of Articulation, Second- Edition* (GFTA-2) prior to treatment, received treatment for four months, and were readministered the GFTA-2 to assess progress. The researchers found no compelling differences between the final GFTA-2 scores of either group and determined that both groups made similar progress (Grogan-Johnson et al., 2010). Additionally, the researchers examined stakeholder satisfaction by administering surveys to both students and their parents as well as gathered information from participating speech-language pathologists (SLPs). Grogan-Johnson and colleagues (2010) determined that both parents and students supported telepractice as an appropriate and effective service delivery model. However, participating SLPs were concerned that the telepractice model made collaboration with classroom teachers more difficult thus aligning therapy materials with classroom curriculum more challenging. Additionally, SLPs drew attention to a limitation of the study in that the children in the telepractice treatment group received all therapy in a group setting, whereas those assigned to the face-to-face condition received individual therapy.

Forducey (2006) published an article in the ASHA Leader investigating the use telepractice in schools, specifically evaluating stakeholder satisfaction. The author stated that in 1999, a school-based telepractice program was established in order to serve students in rural areas of Oklahoma. By 2006, 11,000 therapy sessions were administered by five part-time SLPs to 99 students. These students resided in seven different school districts where speech and language services were previously inaccessible. Additional services provided via telepractice included speech and language screenings, group and individual therapy, standardized testing to document qualification for services, and documentation for Individualized Education Plans (Forducey, 2006). The program was recognized by the Oklahoma Board of Education as being a viable and effective alternative for delivering speech-language services to students and received high levels of stakeholder support. Administrators in the various school districts also praised the program for providing consistent services to students who typically received inconsistent services. The superintendent of a rural school district reported that since the initiation of the telepractice program, many students have ceased to need speech and language services when very few have graduate from the program before (Forducey, 2006). The superintendent stated that this was likely due to the fact that the longest an SLP had remained in the rural district was six months, which resulted in provision of inconsistent services. Additionally, SLPs participating in the program expressed a desire to continue using the program as "it [was] a great way to provide SLP services to rural communities" (Forducey, 2006). However, various clinicians highlighted the need for SLP mentoring and the importance of conducting on-site evaluations, which include the student, teacher,

and parents before beginning the program. Furthermore, a need for the presence of a consistent and trained paraprofessional during telepractice sessions was highlighted.

Indirect intervention applications. Telepractice has also been adopted to provide consultative services within school districts. Gibson, Pennington, Stenhoff, and Hopper (2010) conducted an ABAB case study to analyze the effectiveness of functional communication training (FCT) on reducing elopement for a preschooler with autism and limited vocal skills. The SLP developed the intervention plan, trained and provided consultation services, and collected data remotely. Preschool staff provided direct implementation of FCT within the classroom. Data indicated a 91% reduction in elopement after the second phase of intervention. In addition to quantitative data, the researchers gathered qualitative data to assess the effectiveness of the consultation services. Preschool staff expressed approval of the consultation services and stated "[the staff was] able to receive more support, feedback, and recommendations because they were available to observe the student many times and collect more data than once or twice as compared to a face-to-face consultation." Based upon the quantitative and qualitative data collected, researchers concluded telepractice to be a viable service delivery method for providing consultative SLP services. However, the researchers also highlighted the need to develop a protocol for technological breakdowns and provide software training for school professionals.

Comparably, Hall, Boisvert, Jellison, and Andianopoulos, (2014) used a telepractice model to train parents to navigate their children's AAC devices and facilitate language in the home setting. Four parent-child dyads with children recently fitted with speech generating devices were selected for participation in the study. The parents

participated in six self-direct DVD training modules where they were taught to navigate the device, understand core vocabulary (i.e. pronouns, adjectives, nouns, etc.) and shown practice strategies for facilitating language in the home. In addition to this training, the parents participated in a videoconferencing practice session to discuss questions, problem solve device difficulties, and receiving direct feedback from SLPs. At the end of the program, all parents participated in semi-structured interviews to evaluate their satisfaction with telepractice consultative services. Themes noted among interviews included that telepractice had as many benefits such as convenient service access and flexible learning opportunities. Several challenges were also noted including technological limitations and difficulties, as well as increased pressure for parents to organize home practice sessions. Overall, parents expressed that telepractice offered a more flexible and accessible way to access consultation from SLP professionals. The results also indicated further research to examine and avoid implementation problems is warranted.

Telepractice Implementation Challenges

Although researchers have substantiated the use of telepractice as a services delivery model, there are any challenges SLPs encounter when attempting to implement telepractice.

Grogan-Johnson et al. (2013) highlighted several challenges to successful implementation in their randomized study. Fourteen students between the ages of 6 and 10 with speech sound disorders were selected for participation the study. Students were randomly assigned to either face-to-face services or telepractice services and completed identical, five-week traditional speech sound intervention programs. Data revealed no

significant difference in outcomes between the two groups, supporting the use of telepractice as a service delivery model for SLPs. However, the authors noted significant accommodations needed to be made in order to appropriately deliver services. Namely, the researchers required previously trained technology assistant to attend all sessions with the participants. These assistants aided in troubleshooting technological breakdowns, but also were needed to help students maintain attention during the session. Increased difficulty attending to the SLP was noted during telepractice sessions.

In addition to the need for trained personnel, the SLPs noted increased difficulty prompting students. More cueing was required during the telepractice sessions as the SLPs were unable to directly manipulate the environment or the child's articulators during therapy.

Anderson, Balandin, Stancliffe, and Layfield, (2014) and Hall et al. (2014) reported similar challenges in their studies regarding the use of telepractice. Anderson et al. (2014) conducted a qualitative study to investigate family and SLP perspectives on using telepractice to train families of children with new SGDs. The researchers noted that while parents found telepractice provided increased access to services there were many challenges and shortcoming of this alternative service delivery model. One challenge was that the therapist was unable to move throughout the environment with the child, inhibiting more natural language facilitating opportunities and problem solving. Additionally, given that the therapist was not with the child, a prominent challenge across therapists was difficulty effectively prompting and maintaining the child's attention throughout sessions. Hall et al. (2014) reported the same challenge in their study investigating serving children and their parents with new SGDs.

Keck and Doarn (2014) conducted a systematic review to investigate the infrastructure required for implementation and innate challenges facing speech-language pathologists employing telepractice. The researchers reported that the technology itself provided a great economic and procedural challenge. In many of the studies they reviewed, Internet connectivity and access to advanced technology presented a challenge to implementation. Thus, the researchers propose that the price of the technology needed for both the SLP and the clients be explored prior to implementation. Another common theme seen across studies was that some children required adaptive equipment to access the technology (i.e. headphones, switches) or had an adverse response to the technology, and this aversion was exaggerated for some children and adults with complex communication needs. Therefore, in order to successfully implement intervention via telepractice, therapists will likely need to adapt service delivery methods on an individual case basis.

The aforementioned studies have provided critical information to the literature regarding the use of telepractice in schools, especially regarding the importance of measuring and evaluating stakeholder satisfaction. However, the focus has been concentrated on challenges SLPs face, comparing the use of telepractice to face-to-face services, and examining stakeholder satisfaction while not providing a protocol for how program evaluations (Forducey, 2006; Grogan-Johnson et al., 2010; Grogan-Johnson et al., 2013 & Rose et al., 2000). According to ASHA (n.d.a) in order to implement telepractice, a key consideration school districts and clinicians need to address is "develop[ing] a system of program evaluation to measure the effectiveness of the service

and satisfaction of stakeholders." Therefore, as telepractice begins to expand, the need for a strong program evaluation model rises proportionately.

Program Evaluation

Program evaluation is the application of social research methods to systematically investigate the effectiveness of social intervention programs (Rossi, Lipsey, & Freeman, 2004). The ultimate goal of program evaluation is to guide actions and improve conditions for stakeholders. Therefore, is important is to evaluate the quality of a program's performance as it related to effectiveness while considering the specific political and organizational context the program operates under. Rossi et al. (2004) delineate that program evaluation should include assessment of one or more of the following domains: (1) need for the program, (2) program design, (3) program implementation and service delivery, (4) measurement of impact or outcomes, and (5) overall efficiency. Additionally, the authors state that the form and scope of evaluation must be tailored to the purpose of the evaluation, nature of the particular program, as well as the primary stakeholders and audience.

In alignment with Rossi et al. (2004), Houston (2014) highlighted two key elements that must be specifically considered when evaluating any speech-language telepractice program. The first element described is the measurement of therapeutic outcomes. Houston states it is critical administrators and therapists are able to validly and reliably measure outcomes for students receiving therapy via telepractice as materials often need to be adapted, which may skew results. This is of particular importance because clinicians are still required to deliver services of the same effectiveness and

validity as traditional services as the ASHA Code Ethics and Scope of Practice mandates (ASHA, 2016a, 2016b).

Measuring outcomes is of equal importance for assessment and intervention, as the materials are easily manipulated during traditional face-to-face sessions and not all are appropriate to deliver via telepractice. Waite, Cahill, Theodoros, Busuttin, and Russell (2006) conducted a study to establish the validity of videoconferencing for speech measures including single word articulation test (SWAT), intelligibility rating of connected speech, and oromotor examinations. Their pilot study demonstrated satisfactory levels of agreement between face-to-face services and telepractice services could be achieved for the SWAT, but agreement between oromotor examinations and intelligibility of fricatives were difficult to establish. In 2010, Waite and colleagues conducted a follow-up study to evaluate the efficaciousness of the *Clinical Evaluation of Language Functioning, Fourth Edition* (CELF-4). The researchers again compared the face-to-face administration to telepractice delivery and found the CELF-4 assessment was easily adapted and high levels of agreement were seen across delivery methods.

While several studies support the use of telepractice for administering standardized assessments (Waite et al.2006; Waite et al., 2010), a study conducted by Hill et al. (2006) established that not all assessments could be effectively administered via telepractice. Hill and colleagues (2006) used videoconferencing to administer a perceptual dysarthria assessment battery to adults. The researchers discovered that some subtests, particularly those that required the clinician to view internal oral structures and make perceptual judgments, were not appropriate to conduct via telepractice. Therefore,

it should never be assumed that all assessments, even those with support from the literature, are being effectively and appropriately administered.

Additionally, Houston (2014) highlighted the importance of determining the cost-benefit ratio of a telepractice program stating, “information regarding cost can be a determining factor for facilities and clients with respect to the overall efficiency of treatment.” While there are costs to both telepractice and traditional face-to-face service, there are many initial and recurring costs associated with the implementation of telepractice services for school districts. Therefore, it is important to determine the cost-benefit ratio and continually compare it to the traditional face-to-face program.

Although there is limited research in regards to the establishment of the cost-benefit for speech-language telepractice programs in school districts, two distinct studies were conducted to examine the cost of implementation in schools and its associated benefits (Doolittle, Williams, & Cook, 2003; Young & Ireson, 2003.) Doolittle, Williams and Cook (2003) compared the cost per consult of services delivered via telepractice during a school year to traditional services, as “costs per consult are a vital consideration determining the viability of a telemedicine practice.” Ten school clinics and 286 children were retrospectively included in the study. The researchers analyzed the cost of consults across the 10 different school clinics and compared them to a university medical center using standard analysis procedures to determine the estimated total, average, and marginal cost curves. After analyzing a total of 386 consultations, the average cost per consult ranged from $173.13 (when more than 129 were completed on site) to $7328.17 when only one consultation was conducted suggesting that the cost per consult decreases as the amount of consultation increases. The data also proposed that the cost of

telemedicine outweighs the benefits like as time and convenience unless a significant number of consultations are conducted at the same site. Williams and Cook (2003) determined that at 165 consultations, the average cost of telemedicine services and the cost of face-to-face services were approximately equal at $153 each. By 200 consultations, the cost of telemedicine was deemed to be less than that of face-to-face services by 9.5%. Based off the data collected, the researchers argued telemedicine can be competitively priced against traditional services when more than 200 consultations are provided. It is, however, important to note that this study only included data from 10 clinical sites and did not take into consideration the initial startup costs of the telemedicine program. While this study did not include a comprehensive sample or specifically examine the cost of speech-language services, it provides strong evidence that administrators need to evaluate the cost-benefit ratio of telepractice programs. As indicated by the data, a telepractice program may be convenient, but may not be as effective or viable as opposed to a face-to-face program if clinicians do not provide a significant number of consults for any particular school district.

Results of Young and Ireson's (2003) two-year, longitudinal study supported the findings of William and Cook (2003). The researchers determined that telepractice in school-based settings can be as cost effective as face-to-face service delivery by comparing the total cost of receiving medical services at two separate elementary schools to the cost of attending a hospital. The researchers included one rural and one urban school-based telepractice center in the study. The school-based telepractice setting resulted in connecting a full-time school nurse, mental-health consultant, pediatric practice and child psychiatrist through an operational telephone system.

Total cost of the school-based telepractice delivery was calculated by factoring the time of each consultation with the combined cost of equipment, personnel training, and personnel salary. The cost of the face-to-face hospital services were determined by factoring in estimated amount of work time parents lost by attending face-to-face services, estimated physician salary, and parents' reported cost of travel. A total of 3,461 consults were evaluated and researchers concluded the telepractice model could save parents approximately $101 to $224 per visit in addition to the amount of time and money saved traveling. At the end of the study, professionals and parents were asked to comment on their experiences with the telepractice service delivery model. Both parents and professionals reported the model was an acceptable alternative to traditional services, and many parents commented that it saved them time. Some practitioners were initially hesitant about the program due to concerns with the lack of physically examining the client; however, notably the same practitioners reported that the program was a viable alternative to traditional service delivery. Similar to the Williams and Cook (2003) study, this study did not specifically evaluate a speech-language telepractice program, yet provided critical information regarding telepractice program evaluation. The authors' findings suggest that communication between professionals and parents can easily be achieved with relatively low-tech telepractice equipment, yet prove to still be cost effective and beneficial for parents and professionals. Additionally, the results highlight the importance of considering expenses such as professional training costs and time when determining cost-benefit ratio and evaluating a telepractice program.

Summary

Since its establishment, the field of speech-language pathology has continued to grow and evolve rapidly. Additionally, the need to provide services to an increasing population base has risen. In an attempt to address this need, telepractice was trialed. Telepractice first emerged as a service delivery model in the field of speech-language pathology to address the unmet needs of the rural veteran population (Vaughn, 1976). Following this, telepractice was primarily implemented in medical settings as a viable alternative to traditional services (Wertz et al., 1987).

Most recently, telepractice has been used within school districts, particularly rural ones, where there are significant shortages of qualified professionals and numerous barriers to services for students. Given the importance of addressing these needs both legally and ethically, telepractice models have been used to deliver speech-language pathology services for a little over a decade (Forducey, 2006; Grogan-Johnson et al., 2010; Grogan-Johnson et al., 2013, Polovoy, 2008; & Rose et al., 2000). While these studies provide strong evidence for the use of telepractice service delivery models within school districts, they do not address how to effectively evaluate a telepractice program. ASHA (n.d.a) highlights the importance of developing a strong system of program evaluation in order to ensure that the highest quality services are being provided to clients as clinicians who use telepractice as ethically bound to the same Code of Ethics and Scope of Practice as clinicians utilizing traditional service delivery. Therefore, the purpose of this prospective, qualitative study was to investigate the current protocol administrators of rural service educational programs use to determine the effectiveness of their speech-language telepractice programs.

CHAPTER III

METHODOLOGY AND PROCEDURES

Methods

The purpose of this study was to the investigate speech-language telepractice program evaluation methodologies and protocols of two rural educational cooperative service organizations. This information may provide important insight into the development of a strong program evaluation model school districts and cooperatives may adopt to ensure the provision of high-quality, effective services for their students.

Study Design

This qualitative study explored the conceptual theory and method of program evaluation two rural school districts use to evaluate telepractice service through semi-structured interviews with district professionals. To do so, the researcher applied principles of systems theory (Patton, 1990) and program evaluation (Rossi et al., 2004) to determine if and how the telepractice programs function effectively. It was important to include use these principles due to the purpose of the study. Patton (1990), states that systems theory aims to answer the question “how and why does a system function as it does?” This will be used to explore the methodologies and protocols rural educational cooperative service organizations are using to evaluate telepractice programs.

The Researcher's Stance

In order to demonstrate reflexivity, the following are the researcher's disclosed opinions and stance regarding program evaluation for speech-language telepractice programs. While the researcher has no direct experience, the expressed opinions and position stem from directly from the ASHA Code of Ethics (ASHA, 2016a) and official position statement (ASHA, n.d.c). In the practice portal, ASHA (n.d.a) highlights specific, unique factors that school districts need to consider when implementing telepractice, including "develop[ing] a system of program evaluation to measure the effectiveness of the service and satisfaction of stakeholders." As the field continues to expand and adopt telepractice, a strong method for program evaluation must be developed in order to ensure that students receiving services via telepractice are receiving the same effective, high quality services traditionally served students are. The ASHA (2016a) Code of Ethics ethically binds clinicians to the same standards as clinicians utilizing traditional service delivery methods. As the field continues to grow and evolve with technology, it is critical that clinicians do not compromise the quality and effectiveness of services rendered. It is this researcher's belief that telepractice is a highly promising service delivery model that can truly be used to serve those who had no prior access to services. However, in order to do so a strong method of program evaluations must be developed and implemented by districts and stakeholders. Without this, it is unethical to continue to deliver services despite the convenience telepractice may provide. The clinician's top priority must be the consistent delivery of high quality services, and use of evidence-based methods to confirm its effectiveness and reliability.

Participants

The participants for this study included district level administrators from two rural cooperative educational service organizations. Prior to the start of the study, each participant was asked to provide basic demographic information related to their occupation, years of experience evaluating telepractice, and their rural education service delivery organization including the number of districts served and the number of SLPs overseen. The cooperative organizations were located in two separate Midwestern states and were responsible for providing services to 14 rural school districts. Each cooperative administrator had at least two years of direct experience evaluating speech-language services delivered via telepractice and oversaw at least 6 SLPs. In addition to having experience evaluating telepractice services, Jane has experience in program development as she was responsible for piloting the telepractice program for her cooperative. Additionally, it should be noted that both cooperative organizations contract with prominent telepractice companies rather than using independent SLPs certified to use telepractice. Table I represents the basic demographic information of the participants and their rural cooperative educational service organization.

Table 1

Demographic Information of Participants and Sites

Pseudonym	Occupation	Years of Experience Evaluating Telepractice	State	Number of Districts Served	Number of SLPs overseen
Jane	Assistant Director; Speech-Language Team Director	4	Kansas	14	7
John	Assistant Director of Special Education; Speech-Language Team Director	2	Colorado	14	6

Recruitment procedures. To recruit participants for this study, criterion sampling was used (Creswell, 2007). The researcher contacted administrators of rural school districts in various Midwestern states including Colorado, Ohio, Kansas, Iowa, Nebraska, and Wyoming. Potential participants were initially contacted via phone calls, email, and social media. If the district administrator indicated interest in the study, a formal email was sent out. The email (Appendix A) explained the purpose of the study and included a participant consent form (Appendix B), as well as a questionnaire designed to provide demographic information for potential participants (Appendix C). The questionnaire asked potential participants to indicate their occupation, years of experiences, years of leadership experience, and experiences with telepractice. While this questionnaire was designed to provide information for means of purposeful sampling and inclusion, it was not used to as a source of data collection.

Inclusion and exclusion criteria. Due to the nature of the study and the use of criterion sampling, a set of inclusion and exclusion criteria were established to ensure potential participants were qualified for the study. Inclusion criteria included serving a rural school district and current use of telepractice to serve students with speech-language needs. Potential participants were excluded from the study if they did not have direct experience with telepractice or were not located rurally. Potential participants that indicated a desire to complete the study were selected based upon their answers to the demographic questionnaire (Appendix C).

Procedures

Prior to the start of the study, the researcher received approval from the Institutional Review Board (IRB) to conduct this exempt qualitative study (Appendix F). Once this approval was received, the researcher began to recruit participants. After the participants were selected, the researcher drafted an impact theory (Appendix D) outlining the proximal and distal outcomes of district speech-language telepractice programs. Impact theory consists of the casual relationships between program outcomes which instigate social benefits in order to guide program evaluation (Rossi, Lipsey, & Freeman, 2004). Impact theory has historically been used to formulate and prioritize evaluation questions, design evaluation research, and interpret evaluation findings (Bickman, 1987; Rossi et al. 2004). For the purpose of this study, the researcher elected to draft an impact theory specifically to aid in the development of evaluation questions and interpretation of evaluation findings. This impact theory identified district specific challenges to implementing a telepractice program. These included the resources available, the actions taken to address the issue (i.e. speech-language telepractice

program), as well as short-term and long-term outcomes of the program and how they are measured. The theory was used to generate the following question route for the semi-structured interviews (Figure 1).

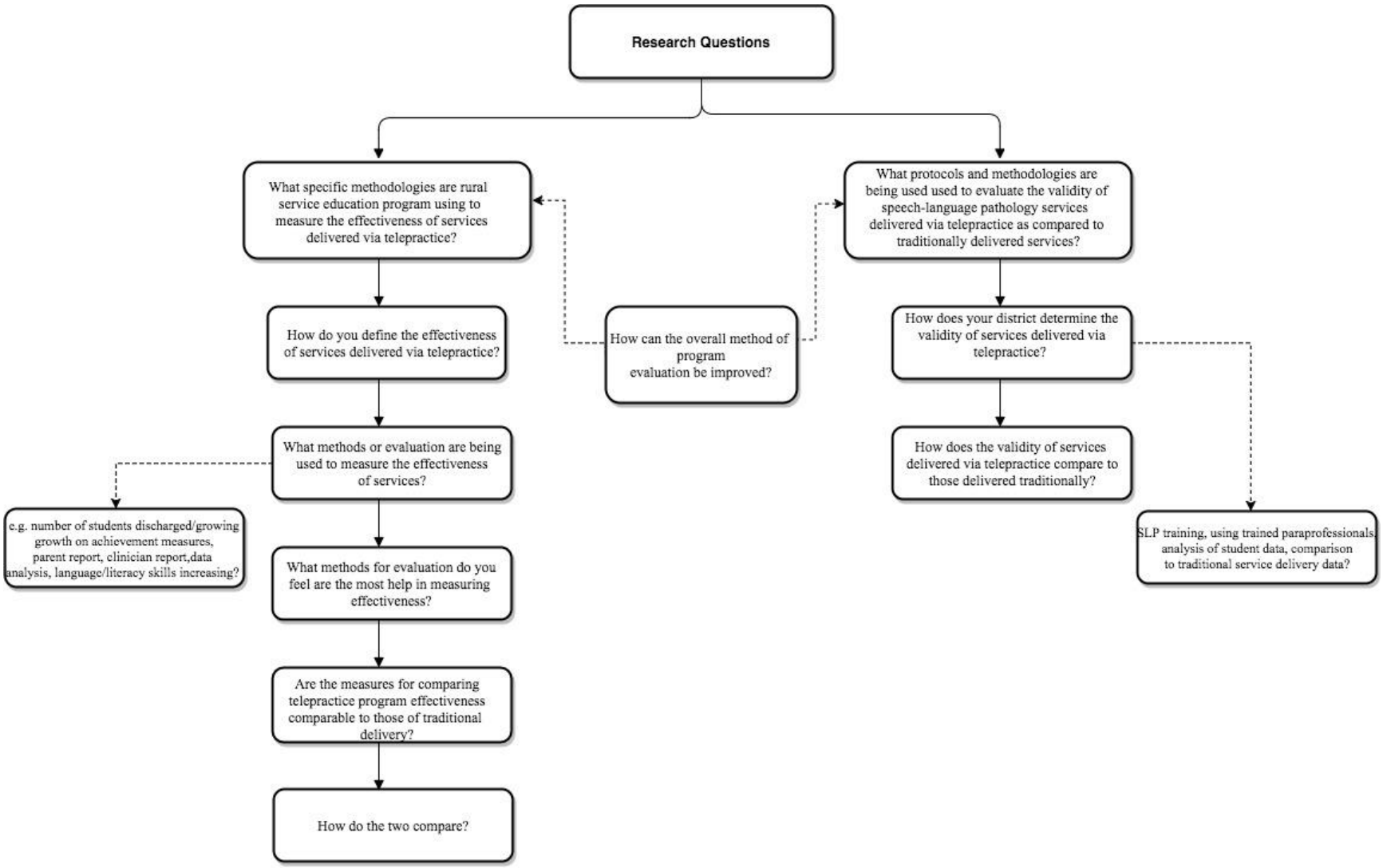

Figure 1. *Semi-Structured Interview Questioning Route*

Data Collection

Data for this study was primarily collected in the form of semi-structured interviews and field notes. The participants were contacted via email to arrange a tape-recorded interview. All interviews either took place via telephone or, if the participants were located in Colorado and it was convenient, in a face-to-face format. Each interview lasted approximately 30 minutes and was arranged according to the participant's schedule and convenience. All interview questions were open-ended and addressed the methods and protocols the district used for program evaluation, the effectiveness and reliability of the program evaluation, and suggestions for improving program evaluation (Appendix E). Given the nature of semi-structured interviews and the research questions, participants were asked to expound on themes that arose related to these subjects. Therefore, while both participants received the same core set of questions, specific questions that were asked varied from participants to participants, yet consistently related to the overarching research questions. Prior to the start of each interview, pseudonyms were assigned to all participants in order to protect the confidentiality of the research findings; these pseudonyms were used throughout the discussion of the results of this study.

Additionally, the researcher took field notes throughout the data-collections process. These observations were purely intended to assist the researcher in recording and understanding data gathered in the interviews. According to Wolfinger (2002) field notes may be able to provide the researcher with information that was not made apparent via direct transcription of interview data. In order to record researcher observations, a salience hierarchy field note method was used so that the observations made were the most noteworthy (Wolfinger, 2002). Observations included a summary of remarks made

by participants regarding the research topic that may have been vague, and the presence of other behaviors factors such as length of pause time and overuse of interjections.

Data Analysis

Transcription and member checking. All semi-structured interviews were manually transcribed into word documents by the researcher. Then, in order to analyze the results with reliability and validity, the researcher utilized member checking. Creswell (2007), stresses the importance of member checking to ensure that the data is a true representation of the participants' views of the research topic. Therefore, a copy of the transcription was made available to the participants in order to confirm the accuracy of the transcription. This provided the participants with the opportunity to redact or clarify information. Necessary changes were made by the researcher prior to analysis and coding of the data.

Analysis and coding. Following any necessary amendments to the original transcription, the researcher completed an initial examination to determine the presence of themes. In this study, a thematic analysis approach was used to analyze the data. Braun and Clarke (2006) described the thematic analysis approach as an accessible and flexible method for identifying, analyzing, and reporting patterns (themes) within a qualitative research data. Coded meanings were organized into themes that naturally emerged. The identified themes were incorporated into an in-depth description of the case.

Throughout the coding process, a detailed description of the participants' experiences emerged. The coding process focused on identifying a few key issues and themes identified through the interviews with district administrators. In order to identify the significant issues and themes, the researcher applied the analytic strategy from Yin

(2014) in order to find patterns in semantic content, namely, identifying issues within each participant's responses and then constructed common themes that transcend the general situations in addition to the originally identified issues. Finally, the researcher further analyzed the semantic content of the data and the underlying ideas, assumptions, conceptualizations, and ideologies that stemmed from inductive description and meanings. Once thematic analysis and coding were complete, the researcher constructed a report describing and exploring the results of thematic network, and was returned to the stakeholders. Finally, an exemplar protocol was developed concerning program evaluation for telepractice programs.

Intercoder reliability. As an additional measure of reliability, the researcher recruited a peer graduate student in the master's program with no prior involvement in the project to analyze the transcripts. The student had previously taken a qualitative research course and demonstrated experience in thematic analysis. Following the initial analysis and coding, the researcher identified themes and gave 50% of the transcripts to the student to independently code. The student was instructed to read the transcripts and interpretation and ensure the researcher's findings were reliable by providing an independent coding following the researcher's identified themes. In order to establish intercoder reliability, the expected agreement needed to be between a Kappa level of .81-.99 to be considered statistically significant (Viera & Garrett, 2005). The data yielded a Kappa level of .89 suggesting strong levels of intercoder reliability.

CHAPTER IV

RESULTS

Global Themes

Throughout the interviews, participants were asked a number of questions concerning the current methodologies and procedures used to evaluate effectiveness and validity of their rural educational cooperative's telepractice program. Both were asked to discuss methods used for evaluating effectiveness and validity, define effectiveness of telepractice services, discuss the validity of telepractice as compared to face-to-face services, and consider ways to improve program evaluation. The line of questioning was largely responsible for determining global themes, whereas participant responses were used to derive organizing and basic themes. The identified themes were then used as a framework from which methods for evaluating effectiveness and validity of speech-language telepractice services were deduced. Figure 2 illustrates the emergent themes inferred from the interview.

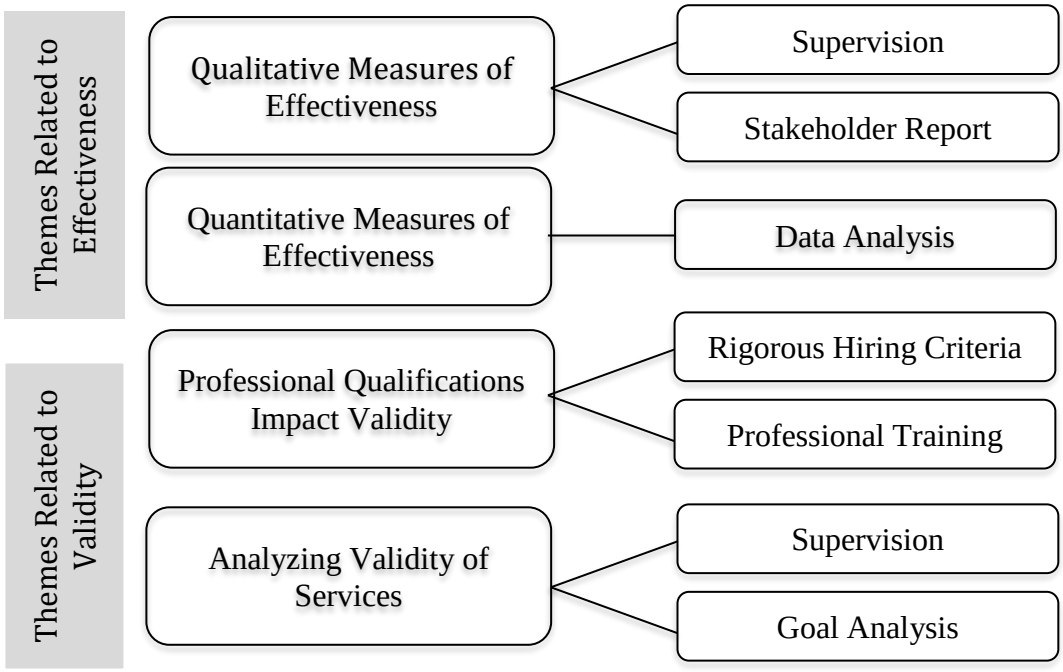

Figure 2. *Global and Organizing Emergent Themes*

Themes Related to Evaluating Effectiveness

The crux of program evaluation is to determine the effectiveness of intervention services (Rossi et al., 2004). However, in order to analyze trends in the data related to evaluating effectiveness, it was necessary both participants have comparable definitions of effectiveness. Therefore, each participant was asked to define effectiveness at the start of each interview. Both participants equated effectiveness of telepractice services to student achievement and progress towards goals. John defined effectiveness as "… if the services are being provided and if students are reaching, achieving, and maintaining their goals." Jane had a similar definition stating, "I think effectiveness has to do with the things that we're measuring… they have real time data that they're keeping and at any

point in time we can look at that to see whether the kids are improving and progressing." Given the nearly identical definitions, the researcher was able to justifiably analyze the data for organizing and basic themes related to effectiveness. All organizing and basic themes fell under two global themes: qualitative measures of effectiveness and quantitative measures of effectiveness.

Theme one: qualitative measures of effectiveness. In the literature, qualitative measures such as stakeholder satisfaction surveys have often been used to evaluate the effectiveness of telepractice programs (Forducey, 2006; Grogan-Johnson et al., 2010; & Grogan-Johnson et al., 2013). Thus, it was important to explore if and how rural cooperative educational service organizations employ qualitative measures when evaluating the effectiveness of telepractice services. Two interview questions were intended to examine this topic: *What methods for evaluation are being used to measure effectiveness* and *What methods for evaluation do you feel are most help in measuring effectiveness?* Figure 3 illustrates the organizing and basic themes inferred from the participant's responses concerning evaluation of effectiveness.

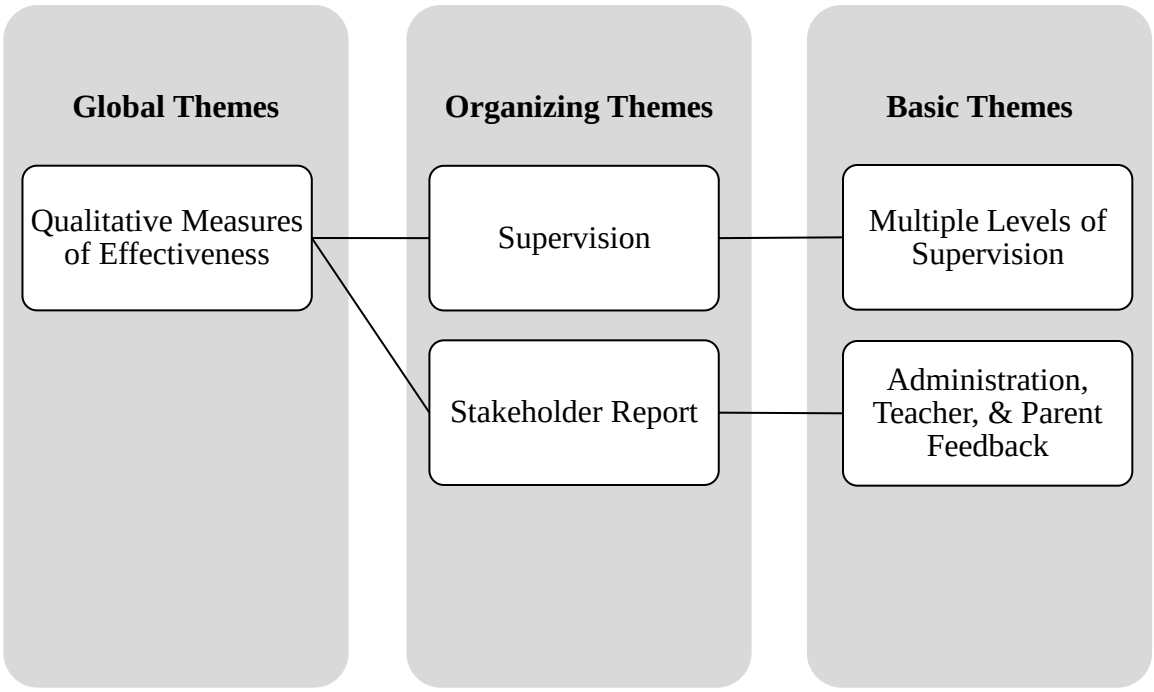

Figure 3. *Themes Related to Qualitative Measures of Effectiveness*

Supervision is habitually used as a method for evaluating the effectiveness of speech-language intervention services. Speech-Language Pathology graduate students are required to complete a minimum of 375 clinical hours wherein 25% of intervention and assessment must be supervised. Supervision continues after graduate school as clinical fellows are required to have 35% of their clinical hours supervised by an ASHA certified SLP in order to achieve certification (ASHA, n.d.c). This supervision of services allows stakeholders to directly analyze the effectiveness of services rendered in real time and can be applied in the educational setting. A salient theme brought up by participants within the interviews was the key role supervision plays in determining effectiveness of services in rural educational services cooperatives.

When asked to identify general methodologies and procedures used to determine the effectiveness of telepractice services, all administrators discussed the importance of consistent supervision. Both expressed that they as administrators play a key role in supervising telepractice services, but that there are many other levels of supervision that occur to ensure effectiveness of services. For John's rural educational cooperative, the telepractice company they contract with provides an SLP whose entire job is to supervise services in addition to internal administration supervision:

> The telepractice [SLPs], do a lot of observation of the telepractice services directly through the company itself. With an individual we have through the company itself, her role is only supervision. That SLP supervises [telepractice] services, and then hold any sort of meetings beyond that point. So what I do, is I supervise the SLPAs in conjunction with my SLPs and we give feedback to the company itself concerning how things are going, any needs or concerns we have.

Similarly, Jane discussed the importance of supervision within the evaluation process, "the sessions are able to be recorded and parents can take a look at that later or any other interested party that has permission to do so. We also look at that as well. It is ongoing in that way as far as looking at the actual delivery of services." To further illustrate this point, she described the essential factor supervision played in developing their telepractice program:

> Rather than having a para-facilitator there in the school building to help them, I had our speech pathologists act as the paraprofessionals. We were evaluating the online practice as it worked. And also, both of those platforms have a portal where I can as an administrator—I can be in my office, which is far away, and I can observe them as well.

While both participants noted the importance of conducting administrative supervision to ensure effectiveness, they also reported multiple other parties are involved in supervision including telepractice company professionals, parents, and other stakeholders.

In congruence with the literature (Forducey, 2006; Grogan-Johnson et al., 2010; & Grogan-Johnson et al., 2013), participants agreed stakeholder report plays a sizeable role in evaluating the effectiveness of telepractice services. Particularly, the interviews revealed administrators rely heavily on feedback from school staff such as teachers and principal. For John, feedback from administrators seemed to be the most valuable tool in evaluating overall effectiveness: "We rely heavily on feedback that we get from districts that we work for, actually just feedback from administration and the schools that utilize [telepractice] are huge. We rely on them as a key resource in determining things. They'll be the first to tell us, this is not working."

Jane further expounded upon this theme by highlighting the function of parent and teacher feedback "We also, are in constant contact with the school staff and parents as well about if they feel things are going well, if they feel like there is a good rapport and communication to and from the [telepractice SLP]." While she recognized the significance of stakeholder report, Jane went on to express that effectiveness of services cannot be determined by stakeholder feedback alone.

Theme two: quantitative measures of effectiveness. Measurement of therapeutic outcomes is a pivotal piece of program evaluation (Rossi et al., 2004; Houston 2014). Specifically, Houston (2014) explains how critical it is for administrators to validly and reliably measure outcomes for students receiving therapy via telepractice when determining overall effectiveness. However, seemingly absent from the research is any systematic protocol for quantitatively analyzing data gathered from telepractice therapy sessions. Therefore, it was of high priority for the researcher to explore whether or not administrators use quantitative measures for determining effectiveness, and if so,

how. Participants were asked one broad question regarding methods for determining effectiveness of services: *What methods for evaluation are being used to measure effectiveness?* If the participants did not initially discuss quantitative measures for determining effectiveness the researcher asked a follow-up question intended to explore this topic: *Do you use any of the following to determine effectiveness: number of students discharged, growth on achievement measures, other forms of data analysis?* Participants all commented that quantitative measures were used when evaluating effectiveness, but the significance placed on quantitative data differed between participants. Figure 4 illustrates the themes that emerged from participant responses.

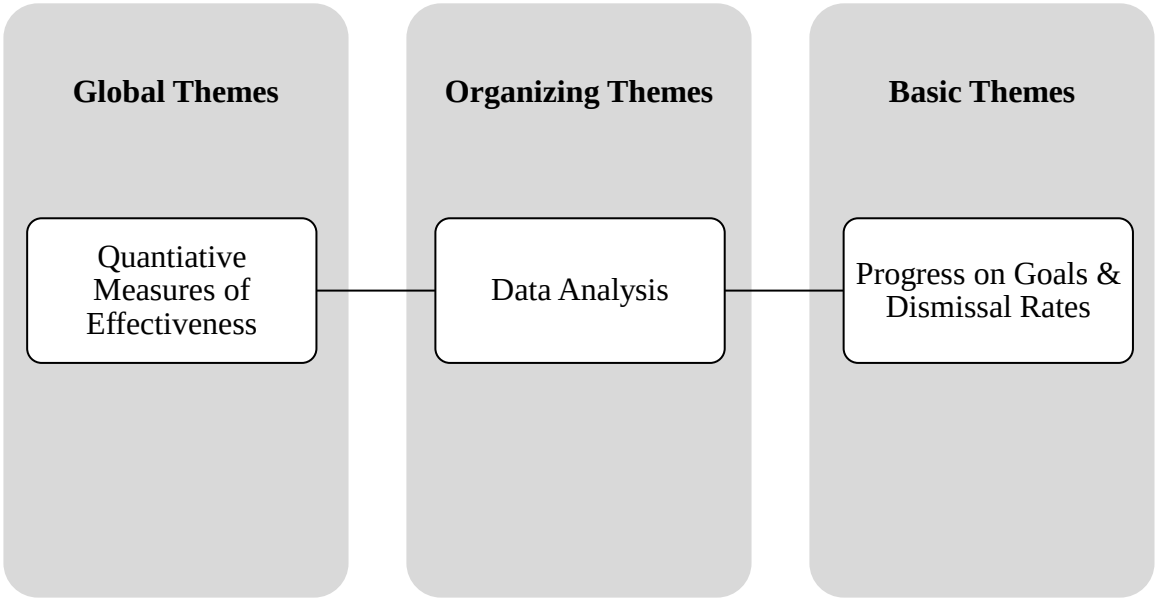

Figure 4. *Themes Related to Quantitative Measures of Effectiveness*

Traditionally, effectiveness of speech-language services within the educational setting is measured by documenting progress and achievement of annual IEP goals (ASHA, n.d.d). While little information exists in the research body concerning data

analysis of telepractice services, participants expressed they do use data analysis to determine effectiveness. The basic theme related to data analysis identified by participants was student progress on IEP goals and dismissal rates.

As is the case with traditionally delivered services, progress on IEP goals and dismissal rates provide two quantitative measures of data analysis for administrators to determine effectiveness of telepractice services. When asked to describe the most successful measure for evaluating effectiveness, Jane stated "of course the bottom line is looking at the data, if they're making progress, if they're having dismissal rates we feel are comparable to our face-to-face services." Although, she further stated that no official comparisons are made between student data of traditionally served students versus students served via telepractice: "but in reality, we haven't done any comparison like that as far as to the face-to-face and telepractice data are concerned."

While Jane expressed a heavy reliance on quantitative data analysis when determining effectiveness, John did not place the same emphasis on analytical findings. When asked to state the best methods for measuring effectiveness, John initially reported his cooperative places a high emphasis on stakeholder feedback and other qualitative measures. The researcher then probed to see if quantitative measures were used to establish effectiveness, and John explained "I don't officially evaluate them like I do my SLPs through RANDA, but we do hold them to accountability just as if they were here on site."

Based upon participant responses, the role of quantitative data analysis in measuring effectiveness appears to vary in use and significance. The implications of this observation will be explored in detail in the next chapter.

Themes Related to Ensuring Validity

Under the ASHA Code of Ethics (ASHA, 2016a) and Scope of Practice (2016b), all services delivered via telepractice are held to the same standards of effectiveness and validity as those delivered traditionally, which, by definition includes the implementation of evidence-based practice as this is ASHA's requirement for all services. Therefore, in order to holistically investigate methodologies and procedures rural educational cooperatives are using to ensure validity of their telepractice interventions, it was critical the researcher explore if and how validity is established. Two specific questions were designed to explore how administrators develop validity: *How does your district determine the validity of services delivered via telepractice* and *How does the validity of services delivered via telepractice compare to those delivered traditionally (face-to-face)?* Two global themes emerged from the participant responses: Professional Qualifications Impact Validity and Analyzing Service Validity. All organizing and basic themes derived from the participants responses fell under the aforementioned global themes.

Theme three: professional qualifications impact validity. This theme may better be described by the second prong of evidence-based practice—the role of clinical expertise and experience. Dollaghan (2007) defines evidence-based practice as the integration of individual clinical expertise, the best external evidence, and individual patient situations to develop the most efficacious interventions. Thus, the expertise of the SLP and furthermore the SLPA or parafacilitator are extremely influential on the valid development and implementation of intervention. This point was validated by participant responses and further organizing and basic themes emerged (Figure 5).

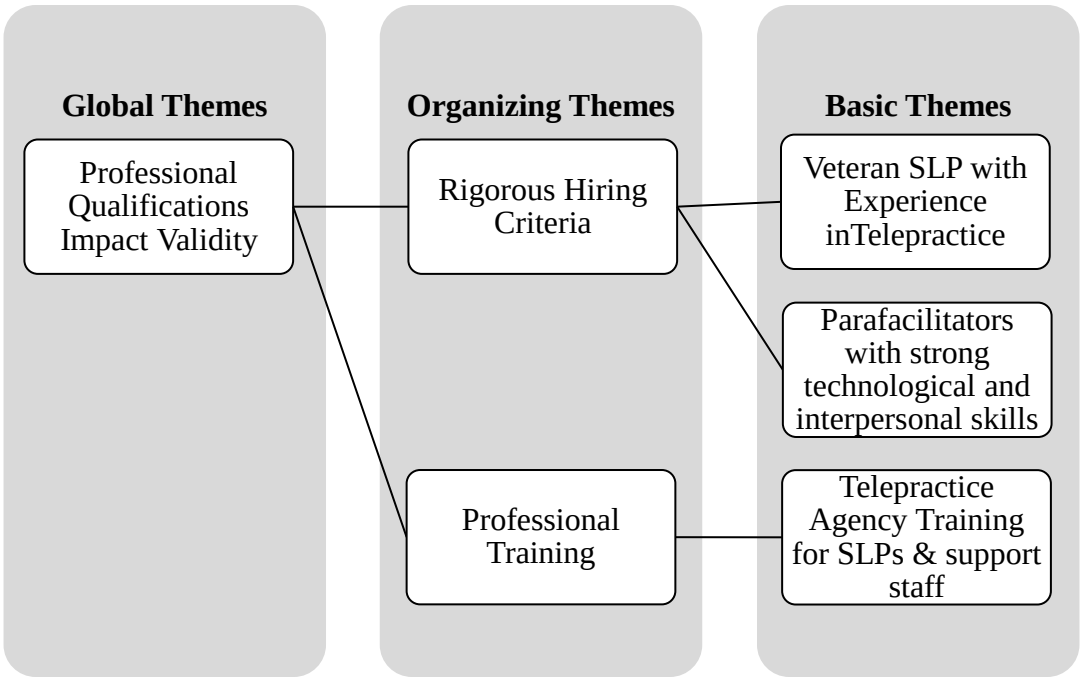

Figure 5. *Themes Related to Professional Qualifications Impact Validity*

Regardless of the setting, speech-language pathologists must demonstrate strong clinical skills and experience when applying for positions. This is perhaps even truer in the case of services delivered via telepractice. All participants stressed the importance of hiring SLPs and supporting staff (i.e. SLPAs, parafacilitators) with experience in telepractice, with technology, and strong interpersonal skills. Lengthy experience and expertise in these areas was identified by participants as strongly impacting the fidelity of services.

Participants were asked to describe the methods they use to assess the validity of speech-language services delivered via telepractice. Interestingly, both John and Jane expressed that the SLPs and their qualifications highly impacted the fidelity of services. Consequently, both placed a strong emphasis on hiring SLPs with years of clinical

experience and experience with telepractice in an attempt to assure future fidelity of services. John expressed the following in relation to SLP qualifications:

> To be honest I think [fidelity] depends on the staff, the individual itself you have running the telepractice. I think it all depends on the expertise and skills that the SLP is coming with. In our case with the telepractice, the individual that we have, does just as good of job even though she's remote. I have had, the opposite true as well where we had somebody on the telepractice end that struggled. And I think it was because of the individual itself.

He then went on to express that this method for ensuring the validity of services was "also the case with on-site professionals as well." Indicating that the method for ensuring fidelity of services does not drastically differ between telepractice and face-to-face services. Jane echoed those thoughts stating:

> When we did the interviews one of the criteria we were looking at in a way to maybe set this program up not to fail from the beginning—was to make sure that first of, it was really important to me that this was a veteran SLP who has been on the ground doing public school work who got the gist of what all that means and the background stories of what working in public schools means. Then also, if possible, also somebody who also had some kind of telepractice experience, and we happened to find one who had both.

Afterwards, Jane continued to discuss the importance of hiring experience parafacilitators.

Parafacilitators are essential to the implementation of successful telepractice services. However, only one participant brought up the idea of carefully selecting parafaciliators with strong technological and interpersonal skills when assess overall validity of services. Jane, who had the most experience evaluating telepractice practice programs (four years) as well as experience pioneering the Kansas cooperative telepractice program then stated the following:

> We took a really good look at who we would be using for a para-facilitator. We wanted to get some good people there, and then also some that have a little bit of skills technology wise, cause that was a huge issue when we first began. And then

> also some with a little bit step up on professionalism because a lot of the work with our parafacilitators with our online practice, they're doing a lot of work with those teachers and parents.

Based upon participant responses, the qualifications and expertise of the SLP and the supporting staff is an important component of assessing and supporting validity for rural education cooperative telepractice programs.

Continued education and professional development are required of speech-language pathologists in any setting, the educational realm providing no exception. The purpose of such training is to develop or refine the skillset of professionals to help them better complete their jobs. In the literature, Forducey (2006) and William et al., (2003) emphasize the necessity of providing training for professionals delivering services via telepractice in order to promote validity. Additionally, Gibson et al. (2010), stressed the importance of providing software training to parafacilitators and SLPs, they must often troubleshoot quickly. Consequently, if participants did not directly state that provision of training for SLPs and support staff is used ensure validity of their telepractice programs, the researcher posed the following question: *Do you provide training for staff in order to support validity of services?* Both participants indicated that training for SLPs and support staff is implemented by administrators to promote validity of services. However participant responses also revealed most direct training for how to appropriate implement telepractice was provided by the telepractice agency the cooperative contracts with.

John stated that "The SLPs we have now do a training session through the company. They're able to go through and there's a lot of communication between the company and the SLPA too." He further reported that the SLPAs "have a training that they go through with the company virtually" to help acquaint them with the technology.

Analogously, Jane reported that her cooperative is "working with a really great agency that that has great SLPs, they do their own trainings. They also provide training for our other SLPs if we want it. So that, is really strong in promoting fidelity." Although, she further explained that her cooperative fosters validity of service by providing training for the company SLPs regarding the specific IEP and documentation paperwork necessary for their cooperative.

In summary, a prominent theme that participants recognized regarding establishment of validity of services was the importance of adequate training in the area of telepractice and documentation.

Theme four: analyzing service validity. Given the purpose of this qualitative study was to investigate both the effectiveness and validity of services rendered via telepractice, participants were asked the following questions: *How does your cooperative determine the validity of services delivered via telepractice* and *How does the validity of services delivered via telepractice compare to those delivered traditionally (face-to-face)?* These questions were aimed at investigating if and how district level administrators are investigating the fidelity of services compared to traditional services. The final theme that emerged from the interviews involved the approaches administrators currently use to evaluate the validity of telepractice, Figure 6 illustrates the organizing and basic themes brought forth by participants.

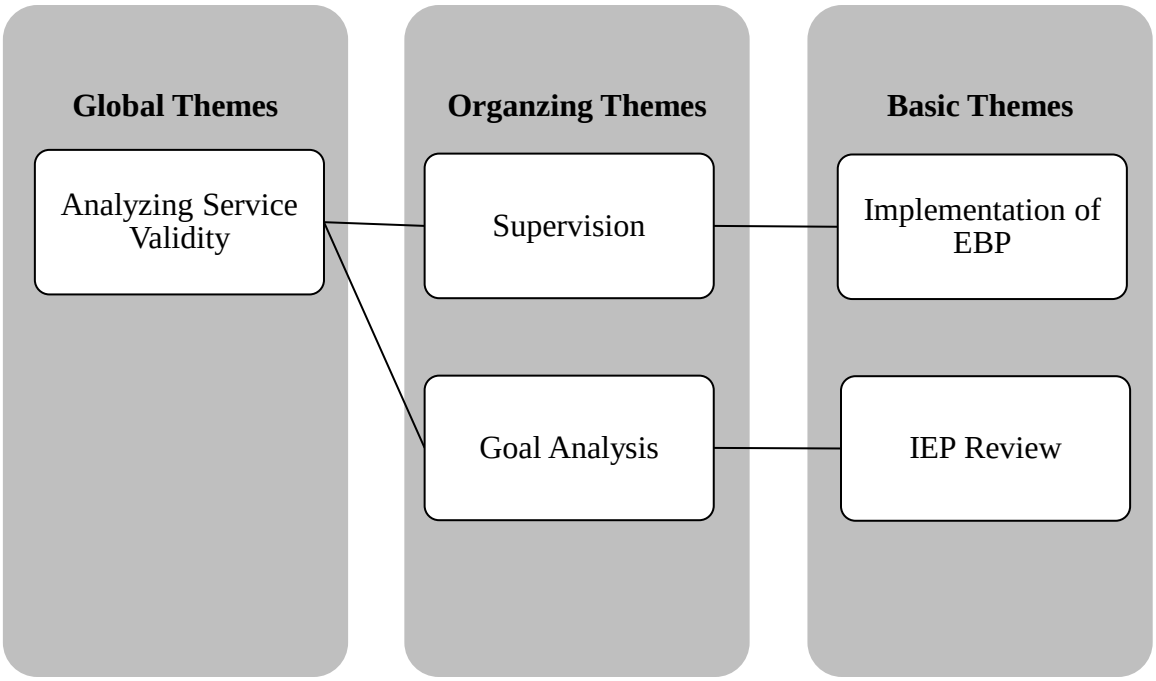

Figure 6. *Themes Related to Analyzing Validity of Services*

Similar to the methodologies used to determine the effectiveness of telepractice services, participants indicated that supervision plays an essential role in assessing the validity of services. In regard to this indicated dual role of supervision, John stated, "Supervision has been tremendous [for evaluation]. With feedback given to our SLPs and SLPAs from the company and also administrators, both fidelity and effectiveness of services are able to be examined." He further expressed that the felt methods for evaluating and promoting validity "are comparable to the way we evaluate face-to-face services." Jane expressed similar thoughts, but brought up the notion of supervising services for the presence of evidence-based practice.

In alignment with evidence-based practice (Dollaghan, 2007), strong external evidence must be put in place in order to develop valid and appropriate services. When

asked about how her cooperative investigates validity and whether or not it compares with face-to-face services Jane responded:

> Well, again, at this point the only way I can look at [validity] is the way that I look at my SLPs face-to-face as well. And that is if they're able to do the IEPs, complete the paperwork, if they're using evidence-based practice of what we believe as far as what ASHA is supporting—those kinds of practices.

Interestingly, Jane was the only participant to discuss the role of evidence-based practice in evaluating the validity of services. She further expounded upon this theme to discuss how goals should be evaluated for validity as well.

Again, quite similarly to the methods of measuring effectiveness, the notion of progress monitoring was brought up by participants when discussing evaluation of validity. However, Jane further expounded upon this theme to include evaluating the goals herself when conducting progress monitoring. In order to quantitatively measure the validity of telepractice services, Jane discussed the importance of continually assessing and reviewing goals set for students.

> We have a person who does our IEP reviews, and so every 9 weeks they take a look at those goals and if these are not measureable or if the students are not making progress we do not allow the goals to continue as is.

She later discussed that monitoring of goals was a collaborative effort and was comparable to methods used to assess validity of services rendered traditionally as well:

> We have the SLP and all of our teachers go back and take a look and see what they're doing, but we do that with all of our staff whether they are telepractice or not. So I can't say that there's anything much different that we are doing.

In summary, a mix of quantitative (i.e. progress monitoring, goal review) and qualitative (i.e. supervision, presence of EBP) methods is used to measure validity of services. Both participants also agree that methods for determining and ensuring validity are comparable to those being used for traditional (face-to-face) services.

Summary

Chapter IV describes global, organizing, and basic themes originated from this qualitative study. The four global themes emerged during the interviews included qualitative measures of effectiveness, quantitative measures of effectiveness, professional qualifications impact validity, and analyzing services validity. The results indicated that both qualitative and quantitative methods play a role in evaluating the effectiveness of telepractice services, although there is a disparity between the reliance on qualitative and quantitative data for evaluating effectiveness. Additionally, the interviews highlighted the significance of professional qualifications and using multiple modalities for determining validity of services. Further exploration of these results will be discussed in Chapter V.

CHAPTER V

DISCUSSION AND CONCLUSION

Discussion of the Results

The purpose of this study was two-fold. First, the researcher aimed to determine how district level administrators evaluate the effectiveness of telepractice services. Second, this study was designed to examine how the validity of speech-language telepractice services are ensured as compared to face-to-face services. All participants were in consensus that multiple methods of evaluation are necessary to determine effectiveness, although there is no exact formula for implementation of these methods. Additionally, the results revealed that elements of evidence-based practice along with other informal measures are used to ensure validity of services.

Qualitative and Quantitative Measures of Effectiveness

There is an abundance of evidence within the research suggesting qualitative measures such as stakeholder satisfaction are essential to evaluate the effectiveness of speech-language telepractice services (Crutchley & Campbell, 2010; Grogan-Johnson et al., 2010; Grogan-Johnson et al., 2013). The participants of this study agreed that they rely heavily on the testimony of stakeholders such as parents and teachers to determine whether or not the services rendered are effective, thus confirming the integral role of stakeholder feedback. However, the participant responses also revealed that supervision of services is significant when determining effectiveness. Both administrators supervise

the delivery of telepractice services to monitor effectiveness, and in one case, a rural cooperative has an SLP solely dedicated to supervising telepractice services. This supervision of services can be done remotely and since the sessions are able to be recorded, can be conducted after the fact if there are any concerns on the part of the stakeholders. This suggests that supervision and feedback on stakeholder satisfaction are two vital qualitative elements administrators use when evaluating the effectiveness of their telepractice programs.

Seemingly lacking in literature, but highlighted by Houston (2014) as being a fundamental piece of telepractice program evaluation, is the need to objectively measure student outcome data. Both participants stated they use quantitative data such as progress on goals, goal achievement, and dismissal rates to determine effectiveness. Interestingly, each participant expressed a differing level of reliance on quantitative data when determining effectiveness. John expressed that he used quantitative data such as progress monitoring student achievement on goals, but further expounded that he felt qualitative data were the most effective method for determining effectiveness. Jane conversely identified quantitative measures as the crux of her evaluative process.

While participants differed in responses regarding the roles of quantitative and qualitative measures, the need for a systematic approach to the evaluation of effectiveness was universal. Thus, in the absence of a strong, systematic approach to program evaluation, the use of qualitative and quantitative measures varies from administrator to administrators.

Elements of Evidence-Based Practice Ensure Validity

The participants were not given any questions regarding the use evidence-based practice in ensuring the validity of services. Yet, participant responses indicated elements of evidence-based practice are expedient in developing validity.

Namely, in alignment with the second prong of evidence-based practice (Dollaghan, 2007), all participants discussed that the expertise of SLP can make or break a telepractice program. Josh stated that hiring an SLP with experience in telepractice was crucial and consequently, his rural cooperative implements a rigorous hiring process. He further explained that when hiring, it is important to look for SLPs with strong clinical skills, preferably years of experience in both the school setting and with telepractice. Jane echoed this opinion and further explained that she also closely evaluates any parafacilitator hired.

Forducey (2006) and Gibson et al. (2010), stressed the importance of having a consistent and trained parafacilitator present for telepractice session in order to promote program success. Similarly, when hiring parafaciliators Jane examines candidates for skills with technology as well as high levels of professionalism who will be "well vested in the program" because her cooperative "does lots of training." Her stated reason for this being that the parafacilitators must often troubleshoot quickly during sessions and that they are often in the most direct contact with parents, school administrators, and teachers.

Finally, both participants stated this method for ensuring validity was comparable to that used for traditionally delivered services. The aforementioned results indicate that the second prong of evidence-based practice has a strong influence on validity of telepractice services.

Qualitative and Quantitative Measures of Effectiveness

The participants also discussed the importance of using qualitative and quantitative data in order to confirm validity of telepractice services. The participants were in consensus that in order to truly guarantee the validity of telepractice services as compared to traditional services, both needed to be in place. Again, a disparity among the reliance on one category over the other became apparent. Josh again stated that he uses data analysis in order to ensure validity of telepractice services, but that he ultimately relies on stakeholder report and clinician judgment. Inversely, Jane discussed that data analysis is pivotal in monitoring validity, especially for telepractice services. In Jane's cooperative, several quantitative data measurements were used to ensure validity. First, Jane discussed the importance of developing measurable, objective goals to ensure validity. Second, she discussed that in her cooperative professionals such as teachers, the SLP, and administration get together every nine weeks to review IEP goals and progress made by students. This collaboration allows for the team to decide whether the goal itself is valid and whether or not it should continue as is. Jane stated that this method of evaluation is identical to the method for evaluating the validity of traditional services.

Finally, the participants discussed the role of supervision in determining the validity of telepractice services. Supervision was used to evaluate the validity of service implementation as well as the validity of the services themselves. Jane stated that when she supervises—whether it be traditional or telepractice services—she specifically looks for the presence of evidence-based practice, and for interventions that align with ASHA's standards. This is critical as ASHA's Code of Ethics (2016a) and Scope of Practice (2016b) demand such equity among service deliveries. Josh also expressed that he

evaluates the validity of services via supervision of both the SLP and the SLPA or parafacilitator. When asked if this method of evaluation was used to evaluate traditional services, he stated that the methods are nearly identical. Given the unanimity between participants, it can be concluded that supervision plays a key role in the establishment and maintenance of telepractice services as compared to traditional services.

Implications of the Results

Given the participant responses and identified themes, one prominent implication arose upon analysis of the data—the need for a systematic approach to telepractice program evaluation.

ASHA (2005b) has long maintained the need to develop a strong method of telepractice program evaluation. In 2005, ASHA released a formal position statement mandating that students obtaining services via telepractice receive services of the same quality and validity as those receiving traditional services. Later, this was added to the Code of Ethics (2016b). The results of this study strongly corroborate this position. In the interviews, participant identified methodologies regarding program evaluation were nearly identical and the participants agreed these methods are comparable to those used to evaluate traditional service delivery. Yet, notably implementation of these organizing principals varied greatly between participants. In both the evaluation of effectiveness and the methods used to ensure validity of telepractice services, all participants agreed they use employ quantitative and qualitative procedures along with rigorous hiring processes to assess telepractice services. However, one administrator expressed a preference and reliance on stakeholder satisfaction and supervision where the other felt quantifiable data

ultimately determines effectiveness and validity. Additionally, one participant directly stated there is a need for a more systemic approach to program evaluation:

> If you find a systematic approach to do those things, please let me know. Because right now it's informal, it's anecdotal, it's all those things, but there is no particular rubric. And sometimes people that are making some of those guidelines and things are often times who maybe are coming from a clinical base, which is great, but it's a whole different scenario when you're working in a public school it just is.

Until a formal, systematic approach to the evaluation of speech-language telepractice services emerges, administrators will continue to informally and anecdotally evaluate effectiveness and validity on a case-by-case basis. This informal approach to program evaluation makes it difficult to determine whether all services rendered, even in the same rural cooperative, are of the same caliber of effectiveness and validity in comparison to both other telepractice and traditional services. In order to ensure that the Code of Ethics (2016a) is upheld and that all students, regardless of location, receive the same quality of services, a systematic approach to program evaluation must be developed.

Limitations

The purpose of this study was to provide information from district level administrators regarding the current methodologies and procedures used to evaluate effectiveness and promote validity for rural educational telepractice programs; however, limitations do exist. First, there were only two participants for this study. While both participants were appropriately diverse in location, but still had demographically similar rural educational cooperative's (i.e. same number of districts served, number of SLPs overseen), it is a limiting sample size in terms of scope. And while member checking was used to allow clarification of responses, no participants chose to expound upon their

answers. Therefore, it may not have allowed for complete saturation of the interview data.

Second, as this study was qualitative in nature, it was impossible to completely avoid bias of the researcher's point of view. While the researcher endeavored to demonstrate reflexivity and impartiality, absolute subjectivity is challenging to obtain. Given the aforementioned limitations, the results of this study should be interpreted with caution.

Recommendations for Future Research

The purpose of this qualitative study was to investigate how district administrators in rural educational cooperatives evaluate their speech-language telepractice programs and ensure validity of those services as compared to face-to-face services. However, only two administrators from the Midwest participated in this study. Further research including administrators from different regions of the country is warranted to outline a more complete framework regarding the methods used for program evaluation.

Finally, one participant discussed the need for more a more systematic approach to overall program evaluation, as current methods are "anecdotal and informal." This need was made evident upon review of the interview data as the participants gave differing responses regarding the role quantitative measures in determining effectiveness of services. Future research should aim to define an efficacious approach to using quantifiable and qualitative data in program evaluation.

Conclusion

The dual purpose of this thesis was to discover what methods district level administrators of rural educational cooperatives use to evaluate the effectiveness and ensure the validity of their speech-language telepractice services. Through semi-structured interviews, it was discovered that both qualitative and quantitative measures are used to evaluate effectiveness of telepractice services. As is the case in the literature, qualitative measures such as supervision of services and stakeholder feedback are fundamental in determining effectiveness. Additionally, participants also discussed how pivotal it is to hire experienced SLPs and parafacilitators in order to ensure the effectiveness and validity of services is upheld to ASHA (2016b) standards. Quantitative measures such as dismissal rates and progress monitoring also play a key role in the evaluation of effectiveness. However, the data revealed there is inconsistency in how quantifiable data is being used to determine effectiveness. This variability in the program evaluation highlights the need for a strong, more systematic approach to program evaluation. Even the participants expressed a demand for a more systematic approach to data analysis and program evaluation.

Additionally, the participants expressed that elements of evidence-based practice, such as clinician expertise and the implementation of evidence-based interventions, are used to ensure the validity of services. The participants unanimously reported that hiring professionals with strong clinical and interpersonal skills was important to ensure validity of services. Furthermore, these professionals—both the SLP and parafacilitator—should have experience with telepractice in order to ensure that the services rendered via telepractice are comparable to those delivered traditionally. Finally, the participants

discussed that methods such as supervision of services, presence of evidence-based interventions, data analysis, and IEP goal review are used to ensure the validity of telepractice services. These methods are similar to those used to determine effectiveness. It should be noted that again, there is no systematic approach to doing so at this time, and one participant expressed a strong demand for this as use of telepractice begins to grow in both demand and popularity.

Going forward, there is much research to be done concerning a systematic approach to program evaluation. Perhaps the most striking evidence of this being the vast disparity between the participants' evaluation methods. Although this study only included two participants, both held opposite opinions on the best method for program evaluation. One suggested stakeholder feedback was enough to ensure validity and effectiveness, the other proposed that quantitative data such as progress monitoring and dismissal rates were necessary to appropriately evaluate a telepractice program. However, both agreed that a more systematic approach to evaluation is needed.

In order to ensure that telepractice services uphold the standards set by ASHA in the Formal Position Statement (2005a) and the Code of Ethics (2016b), administrators must have a rubric or guide that includes qualitative measures such as stakeholder feedback and supervision and places a strong emphasis on examining quantifiable data. When evaluating traditional services, clinicians and administrators rely heavily on the presence of strong quantifiable data such as progress towards goals and dismissal rates to ensure services are effective and valid. Telepractice services should not be exempted from this standard. As telepractice begins to expand, more research regarding a

consistent, systematic, and quantifiable approach to program evaluation is imperative to ensure the quality and validity of services is not compromised.

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APPENDIX A

RECRUITMENT EMAIL

Hello! I am an Assistant Professor at the University of Northern Colorado. I am working with Allyson Montgomery, a graduate student in speech-language pathology, who is investigating the current protocol administrators of special educational programs use to determine the effectiveness of their speech-language telepractice programs. The reason we are contacting you is because it is our understanding you use the method of telepractice to provide speech-language services in your school district. We would love for you to participate in this research!

Through this investigation, Allyson hopes to determine the specific methodologies used to determine the efficacy and reliability of speech-language services delivered via telepractice in order to provide critical information to the research base and assist administrators in developing strong program evaluation methods. This is a critical need in the field.

If you agree to participate, you will be asked to share your experiences, opinions, and perceptions. via a question/answer format. The questions will be sent to you beforehand. Your answers will be recorded, transcribed, and analyzed by the researchers. It is estimated that the interview will take approximately 1 hour to complete. You may be contacted as a follow-up to confirm the accuracy of interview transcripts.

Thank you for your time. If you are interested in participating, simply make contact with me either by phone and we can provide more details about the project. Alternatively, you can respond to this email and we will email the consent to participate. Once we receive it, we can set up a date and time that is most convenient for you.

Again, thank you for your consideration to participate in this project.

Best,
Robyn A. Ziolkowski, Ph.D., CCC-SLP
Assistant Professor
Audiology and Speech-Language Sciences
University of Northern Colorado
Gunter Hall 1430

APPENDIX B

CONSENT FORM

College of Education and Behavioral Sciences
Educational Leadership and Policy Studies

CONSENT FORM FOR HUMAN PARTICIPANTS IN RESEARCH

Project Title: Investigating Program Evaluation Implemented by Rural Education Systems to Determine the Efficacy of Speech-Language Telepractice Services

Researchers:
Allyson Montgomery; B.S., Masters Student; mont2176@bears.unco.edu

Research Advisor: Robyn Ziolkowski, Ph.D., CCC-SLP, Speech-Language Pathology Program
Phone: 970-351-1201
Email: robyn.ziolkowski@unco.edu

Purpose and Description: The purpose of this study is to investigate the current protocol administrators of a rural service educational program use to determine the effectiveness of their speech-language telepractice programs. The researcher hopes to identify the specific methodologies used to determine the efficacy and reliability of speech-language services delivered via telepractice in order to provide critical information to the research base and assist other administrators in developing strong program evaluation methods.

You will be asked to share your experiences, opinions, and perceptions for about two hours in a focus group format. Your answers will be recorded, transcribed, and analyzed by the researchers. It is estimated that the focus group interview will take approximately two hours or less. You may be contacted as a follow-up to confirm the accuracy of interview transcripts. I will assign you a pseudonym to protect your identity, and only the researcher and researcher's advisor will know that your name is connected with a pseudonym.

Any data collected and analyzed for this study will be kept in a locked file in the investigator's office, which is only accessible by the researcher and her advisor. Again, only your pseudonym will be used to report data.

The cost for participating in this study is the time you invested to participate in the focus group interview and fill out the demographic information. No compensation will be provided to you in this study. Foreseeable risks are not greater than those that might be encountered in a professional environment or a conversation with a colleague about one's program evaluation methods. Benefits of participation include the opportunity to help build awareness about the efficacy and reliability of your telepractice program and develop a protocol for other institutions to follow.

Participation is voluntary. You may decide not to participate in this study and if you begin participation you may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Sherry May, IRB Administrator, Office of Sponsored Programs, 25 Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910

Participant's Signature_____Date_____

Researcher's Signature _____Date_____

APPENDIX C

POTENTIAL DEMOGRAPHIC DATA FORM

Demographic Questionnaire:

School District:

State:

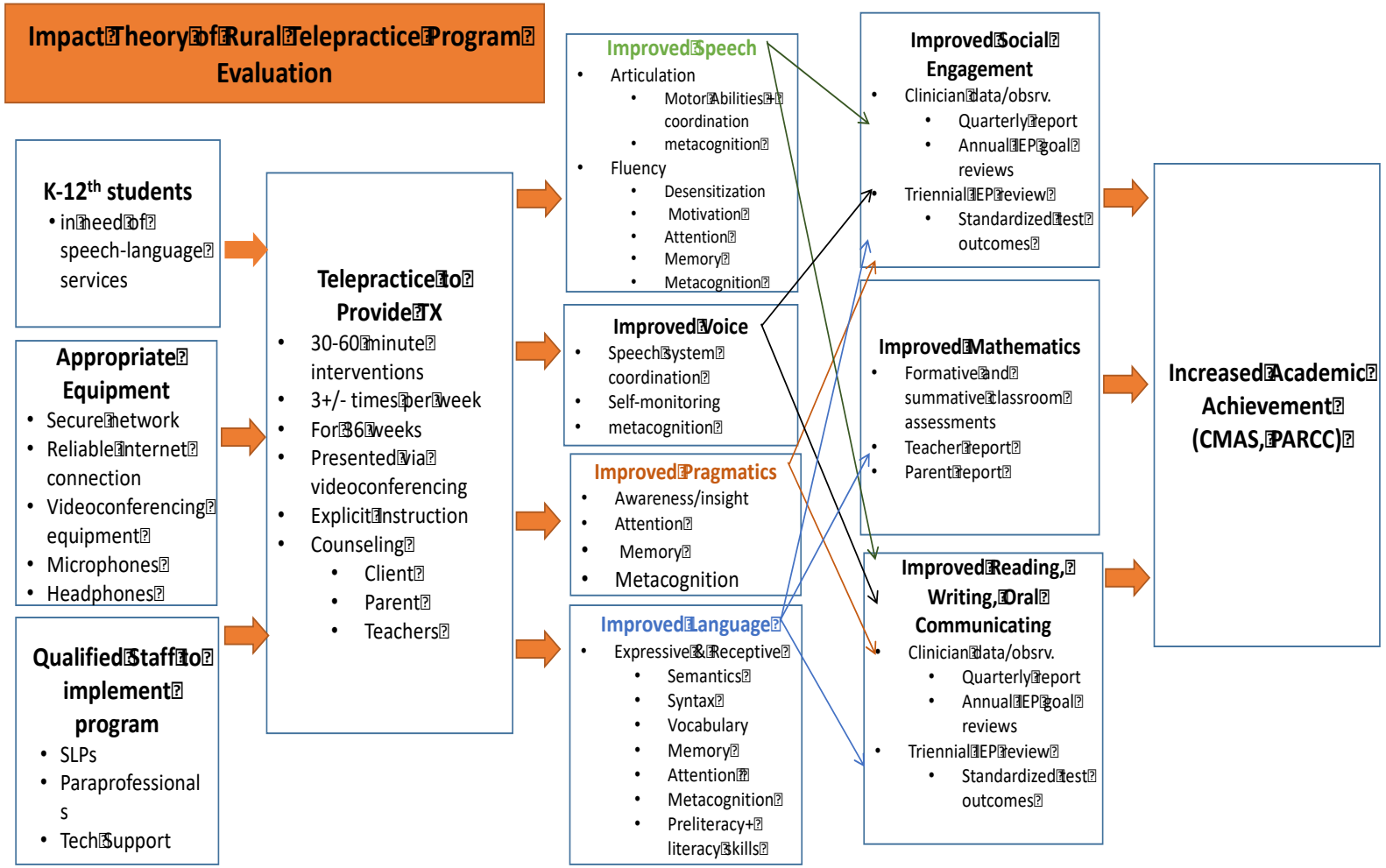
Occupation:

How long have you worked in this position?

How long have you been working with/evaluating telepractice?

APPENDIX D

IMPACT THEORY


Impact Theory of Rural Telepractice Program Evaluation
K-12th students
• in need of speech-language services
Appropriate Equipment
• Secure network
• Reliable internet connection
• Videoconferencing equipment
• Microphones
• Headphones
Qualified Staff to implement program
• SLPs
• Paraprofessionals
• Tech Support
Telepractice to Provide TX
• 30-60 minute interventions
• 3+/- times per week
• For 36 weeks
• Presented via videoconferencing
• Explicit Instruction
• Counseling
• Client
• Parent
• Teachers
Improved Speech
• Articulation
• Motor Abilities + coordination
• metacognition
• Fluency
• Desensitization
• Motivation
• Attention
• Memory
• Metacognition
Improved Voice
• Speech system coordination
• Self-monitoring
• metacognition
Improved Pragmatics
• Awareness/insight
• Attention
• Memory
• Metacognition
Improved Language
• Expressive & Receptive
• Semantics
• Syntax
• Vocabulary
• Memory
• Attention
• Metacognition
• Preliteracy + literacy skills
Improved Social Engagement
• Clinician data/obsrv.
• Quarterly report
• Annual IEP goal reviews
• Triennial IEP review
• Standardized test outcomes
Improved Mathematics
• Formative and summative classroom assessments
• Teacher report
• Parent report
Improved Reading, Writing, Oral Communicating
• Clinician data/obsrv.
• Quarterly report
• Annual IEP goal reviews
• Triennial IEP review
• Standardized test outcomes
Increased Academic Achievement (CMAS, PARCC)

APPENDIX E

INTERVIEW QUESTIONING ROUTE

INTRODUCTION

- Thank you for agreeing to meet with me today. My name is Allyson Montgomery I am the primary researcher for this project.
- The purpose of this interview is to gather information regarding how your district evaluates the telepractice program for speech-language services and its effect on the academic achievement of your students. Your perceptions and views will assist us in evaluating the evaluation method and effectiveness and the impact of telepractice intervention. There are no right or wrong answers, but rather different points of view. Feel free to share your point of view, even if it differs from someone else's.
- We will be on a first name basis today, and later in our reports there will not be any names associated with the comments. The evaluators will keep your names confidential. We also ask that you keep the comments made in this interview confidential.

OPENING QUESTION (ROUND ROBIN)

To begin, I would like to ask each of you to introduce yourself and tell us your job title. Additionally, tell us what experience you have with telepractice.

GENERAL QUESTIONS

The next set of questions are related to your perceptions about your district's program evaluation methods. Everyone will have a chance to share if they want to.
Research Questions: the ultimate goal of this interview is to gather information in order to answer the following research questions, please share your initial reactions.

- What specific methodologies are rural service education program using to measure the effectiveness of services delivered via telepractice?
- What specific protocols and methodologies are rural service education programs currently using to evaluate the validity of speech-language pathology services delivered via telepractice as compared to traditionally delivered (face-to-face) services?

SPECIFIC QUESTIONS

- How do you define the "effectiveness" of services delivered via telepractice?
- What methods for evaluation are being used to measure effectiveness?
    - e.g. number of students discharged/growing, growth on achievement measures, parent report, clinician report, data analysis, language/literacy skills increasing
    - What methods for evaluation do you feel are most help in measuring effectiveness?
- Are the measures for comparing the telepractice program effectiveness comparable to the methods for evaluating face-to-face delivery?
    - How do the two compare?
- How does your district determine the validity of services delivered via telepractice?
    - Training for SLPs? Use of trained paraprofessionals? Analysis of student data? Comparison to data of students seen face-to-face?

- How does the validity of services delivered via telepractice compare to those delivered traditionally (face-to-face)?
- How can the method of program evaluation be more effective?

CONCLUSION

Let me see if I can summarize what I've heard you say. Did I summarize your thoughts very well? Did I misunderstand anything? What else would need to be included in a summary?

I want to thank you for sharing your thoughts and feelings with us. This has been valuable information for us.

APPENDIX F

INSTITUTIONAL REVIEW BOARD VERIFICATION

UNIVERSITY OF
NORTHERN COLORADO

DATE:	January 25, 2017
TO:	Allyson Montgomery, B.S.
FROM:	University of Northern Colorado (UNCO) IRB
PROJECT TITLE:	[980502-3] Investigating Program Evaluation Implemented by Rural Education Systems to Determine the Efficacy of Speech-Language Telepractice Services
SUBMISSION TYPE:	Amendment/Modification
ACTION:	APPROVAL/VERIFICATION OF EXEMPT STATUS
DECISION DATE:	January 24, 2017
EXPIRATION DATE:	January 24, 2021

Thank you for your submission of Amendment/Modification materials for this project. The University of Northern Colorado (UNCO) IRB approves this project and verifies its status as EXEMPT according to federal IRB regulations.

We will retain a copy of this correspondence within our records for a duration of 4 years.

If you have any questions, please contact Sherry May at 970-351-1910 or Sherry.May@unco.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Northern Colorado (UNCO) IRB's records.