

COMMUNICATION AND LEARNING IN NATURAL ENVIRONMENTS:  
GENERALIZATION AND COLLABORATION BETWEEN SPEECH-LANGUAGE  
PATHOLOGISTS, EDUCATORS, AND FAMILIES

by

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### **Abstract**

This study focuses on school-based speech language pathology and practicing SLPs perceptions of the current collaboration efforts between themselves, other professionals, and families. The purpose of this study is to understand the current generalization methods and collaborative practices used by SLPs who provide services to school-age children with speech and language impairments. This study involves the analysis of qualitative data through interviews, questions, and analysis of responses. The participants are speech-language pathologists who are currently employed by schools, were employed by schools within the last ten years, or working in schools, but are employed by private practices. The results of this study found that SLPs are engaging in collaboration activities to enhance generalization of speech and language abilities, especially with special education teachers, and that additional collaboration with educators and families would positively impact the generalization ability of students. Also, SLPs said that collaboration is a key factor in their practice, relating to initial and continuing assessment and intervention of students with speech and language impairments. Challenges to collaboration between SLPs and other professionals and ultimate generalization of communication abilities were noted as related to lack of time, a lack of awareness of the nature and role of an SLP, understanding the differences between speech impairments (articulation vs. fluency and voice) and language impairments, and large school populations, which results in less collaboration than in small school populations.

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## **Communication and Learning in Natural Environments: Generalization and Collaboration between Speech-Language Pathologists, Educators, and Families**

In the field of speech-language pathology, generalization and collaboration methods can impact the intervention outcomes of school-age children. Many children who exhibit speech and language disorders receive speech and language therapy services from a speech-language pathologist (SLP) in various settings, including schools, private practices, and outpatient and university clinics. The ultimate goal of speech and language therapy is to develop and facilitate speech and language abilities that allow the child to communicate and function well in all settings. According to a study conducted by Gallagher et al. (2019), optimal intervention outcomes result from the ideal service of speech-language pathology through collaboration. There are many benefits of equal partnerships and the sharing of responsibility among educators, families, and SLPs who all share clear, common goals for a child. The main goal of this thesis was to learn about practicing SLPs perceptions of the current collaboration efforts between themselves, other professionals, and families as well as the effect this has on a child's generalization.

### **Defining Collaboration**

The roles of an SLP can vary greatly depending upon their work setting. Speech language pathologists can work in preschools, K-12 schools, private practices, university clinics, hospitals, or other health care facilities. The focus of my thesis is school-based SLPs and those who work in private practices. Typically, school-based SLPs choose and teach specific language and literacy skills to students, work interprofessionally with school personnel, and aim to relate the skills learned in therapy to a student's academic material (Mitchell et al., 2020). Private practice SLPs can still offer services to children in schools while remaining employed with their practice.

No matter their employer or work setting, SLPs work closely with a child's family and teacher in order to learn more about the child and what interventions would best suit them. The work of a school-based SLP is slightly different from that of an SLP working employed by a private practice because school-based SLPs have closer proximity to teachers, allowing for further opportunities for consultation, collaboration, or co-teaching. The American Speech and Hearing Association (ASHA, 2010) clearly defines collaboration as SLPs working together with other professionals to meet the needs of a student. An important aspect of collaboration is consultation with others, in which collaborators actively share information relative to a child's skill mastery during their intervention. The hope is that each individual will learn more about a child as a result of this process (Woods et al., 2011). Families play a critical role in initiating consultation as they relay information regarding their child's strengths and weaknesses, daily routine, interests, and the practices of the family (Woods et al., 2011). Collaboration is not just limited to teachers and SLPs; collaborators can also include reading specialists, literacy coaches, special educators, occupational and physical therapists, school psychologists, audiologists, guidance counselors, and social workers (ASHA, 2010). The term collaboration can have different meanings for different professionals. Thus, it is important to define the roles of each collaborator and the main goals that need to be accomplished. The goal of an SLP is for their students to be able to move forward and generalize the skills they learn into everyday settings such as the classroom or at home.

### **Methods of Classroom Collaboration**

According the Individuals with Disabilities Act (IDEA, 2004), a team of professionals and parents is required when creating a student's individualized education plan (IEP) and making decisions about a child's special education services. According to a school survey conducted by

ASHA (2020), 92% of SLPs serve students with autism-spectrum disorder, 90% serve students with language disorders related to semantics, morphology, and syntax, 89% serve students with speech sound disorders, 87% serve students with language disorders related to pragmatics and social communication, and 63% serve students who are nonverbal or use augmentative and alternative communication (AAC). About 13% of all K-12 students in the United States receive special education services; thus, collaborative teams can make an impact on many children and families (Pfeiffer et al., 2019). When beginning assessment, it is important to consider who would serve best on a collaborative team based on the child's disorder or specific needs.

### **Assessment**

Educators play a role in referring students for speech-language services so they can be assessed and treated, if necessary. SLPs only need nine pieces of information to start the process: the child's name, date of birth, grade, teacher, vision and hearing screenings, parent history, parent and teacher concerns, and language examples from when the teacher became concerned (Prath, 2017). When teachers and SLPs communicate properly, the process is more efficient and intervention can begin sooner.

### **Intervention**

There are several methods SLPs use to serve children in schools. The three main types of services are multidisciplinary, interdisciplinary, and transdisciplinary, with some consultation methods occurring (Suleman, 2014). Services that occur outside of the classroom fall under multidisciplinary and are referred to as pull out. They can be held in group or one-on-one settings (Suleman, 2014). Services that occur in a naturalistic environment such as the classroom are referred to as push-in. Modeling and coaching are two consultation methods that occur outside of the classroom and involve indirect learning and application of classroom material

through support from an SLP (Suleman, 2014). In the interdisciplinary model, team members complete their intervention with a child separately, but plan some strategies together and attempt to communicate with other team members (Pfeiffer et al., 2019). The transdisciplinary model is the most collaborative, as individuals from different disciplines work together throughout many phases of their work and understand the interrelatedness of their students' needs (Pfeiffer et al., 2019). Concerns about students' generalization abilities has led to a recent increase in classroom-based, transdisciplinary intervention, as it is a more natural environment for a student (Archibald, 2017). Providing therapy in a naturalistic environment such as in the classroom or push-in model, "was found to be effective in promoting a number of different types of generalization, including generalization across settings and activities, across persons, and across language skills" (Peterson, 2009, p. 107). Speech language pathologists can provide services through the multi-tiered system of supports (MTSS), or the North Carolina integrated academic behavior systems (IABS), which has recently gained traction in the U.S. school system (Sylvan, 2018). In MTSS, students receive large group services and transition into more individualized settings as they move up in tiers. In Tier 1, intervention is provided in a classroom setting, whereas Tier 2 services are held in small groups. Tier 3 provides students with one-on-one services and support. Beginning with intervention in a classroom environment creates a safe and comfortable space for a student (Sylvan, 2018).

### **Collaboration between Educators and SLPs**

Classroom-based services also allow educators and SLPs to work closely together and co-teach. When educators and SLPs work together in the classroom, there are great benefits for students. In a study conducted by Hadley et al. (2000), one kindergarten teacher and one first grade teacher began collaboratively teaching with an SLP. The SLP taught two-and-a-half days



per week for six months, incorporating vocabulary and phonological awareness in each classroom through songs and drama, small group activities and centers, as well as applying vocabulary to other subjects such as math or science. At the end of the six-month period, vocabulary and phonetic awareness drastically improved in these classrooms. Students with a variety of language abilities benefitted from English language enhancement in the experimental classrooms (Hadley et al., 2000). According to a study conducted by Beck and Dennis (1997), at least 75% of the SLPs and teachers surveyed agreed that students receiving intervention learn social skills from their peers and turn-taking is enhanced. Collaboration is not only a key component for teachers and SLPs, but also for students as they learn from one another. Small group and classroom intervention methods such as MTSS have been known to have improved outcomes for students with language disorders. MTSS provides opportunities for increased collaboration, improved generalization, and a community and purpose for students within their school (Sylvan, 2018). While collaboration among educators and SLPs is beneficial, parent involvement enhances a child's intervention services and is necessary for optimal outcomes.

### **Methods of Collaboration for School-age Children**

Interprofessional collaborative practice (IPCP) is defined as the collaborative efforts of varied professionals with patients, families, caregivers, and communities in the delivery of high-quality care (World Health Organization, 2010). There are six components of IPCP among families and SLPs. These include goal setting, roles and responsibilities, effective and efficient process, communication and interpersonal relationships, collaborative problem solving, and evaluation (Cooper-Duffy & Eaker, 2017). It is important to make sure a child is included in the discussions about their intervention, rather than just the SLP and the parents. In a qualitative study, Gallagher et al. (2019) interviewed SLPs, teachers, parents, and children from ages 10 to

13 about how services in schools should be. Children spoke most about wanting a sentient, safe, inclusive, and emancipatory setting (Gallagher et al., 2019). Parents of children with language disorders needed support and guidance as they navigated the special education services their child received. However, there are still improvements that need to be made in familial-SLP relationships. A study conducted by Mandak and Light (2018) found that 43% of parents said their SLP helped them feel competent in their role as parents, 56% felt they were treated as individuals, and 48% felt they had enough time to talk to their child's SLP. Interventions must be specially accommodated to work best for each family and child, so decisions must include families (Mandak & Light, 2018). In another study, parents reported feeling misunderstood by school personnel. Some parents reported acting as a warrior going to battle with some professionals to get the needs of their children met, because of communication barriers. Parents reported bringing an advocate to school meetings to speak on their behalf (Cooper-Duffy & Eaker, 2017). Key factors in strengthening this relationship begin with both parties making improvements. The contexts, mechanisms, and outcomes method in which positive contexts and mechanisms lead to optimal outcomes, is used to measure how effectively parents and SLPs are collaborating (Klatte et al., 2020). These steps help parents and SLPs take steps in the right direction.

### **Collaboration between Families and SLPs**

Active communication between a parent and an SLP is essential in creating a safe space for the student receiving intervention services. The ASHA defines active communication as the way SLPs work with families to plan, make decisions, and implement programs (2010).

Although there are many different methods of communication including phone call, e-mail, home visit, school visit, homework folder, or classroom visit to name a few, Tambyraja et al.

(2017) found that parent-SLP communication through homework logs best improved a student's grammar and overall language ability. There were 73 school-based SLPs who participated in this study, along with 293 students who had language disorders. The SLPs kept logs of what they practiced in a therapy session and if/how they communicated with a parent. The results indicate that children whose SLPs communicated with caregivers more than average gained one raw score point more on grammar than children whose SLPs contacted caregivers less than average (Tambyraja et al., 2017). According to Farber and Goldstein (1998), parent participation typically decreases as the child advances through school. Parent involvement in their child's intervention process combined with the school atmosphere is critical, and the best chance of a smooth transition comes from strong home-school connections (Farber & Goldstein, 1998). Farber and Goldstein (1998) measured parent involvement through the Maximizing Academic Growth by Improving Communication Project, in which a five-hour workshop was planned and held by SLPs. Topics ranged from language development to ways language can be practiced in everyday settings. Eighty percent of the parents who attended said they learned valuable information and parents were glad to be called to the school because of positive reasons (Farber & Goldstein, 1998). When families and SLPs communicate effectively, a student's intervention outcomes greatly improve.

### **Generalization Outcomes**

Collaboration works hand-in-hand with generalization. To see a child's generalization improve, collaboration must be present, since further steps can only be taken when key stakeholders communicate and work with the child to achieve their goals. "SLPs cannot support the caregiver-child relationship if they do not share relevant information with the adult caregiver in formats that promote the adult's learning within everyday routines and activities" (Woods et

al., 2011, p. 380). It is critical that SLPs share information with parents and the teacher about therapy sessions, that parents share information about home-life with the SLP and the teacher, and that the teacher shares classroom information with parents and SLPs. For example, the SLP teaches and provides therapy to a child with a language disorder, while also learning about their home-life and strengths from their parents. It is important for a family to inform the SLP regarding the child's daily routine, strategies they think would and would not work, and the family's cultural or religious practices and how they play a role in intervention (Woods et al., 2011). Each person in this team takes on the role of teacher and learner. "Supporting caregivers to embed evidence-based communication interventions within their daily routines/activities requires SLPs to integrate their knowledge and skill of child-focused intervention with adult education principles to guide caregivers in the content and process of caregiver-implemented intervention" (Woods et al., 2011, p. 380). It takes each person in the team doing their part in order for skills learned to be generalized in a child's everyday life.

### **Potential Challenges**

There are some potential challenges SLPs face relating to services and generalization of communication to the natural environments. It can be hard to balance a caseload or the number of students an SLP serves with a workload, which is the number of activities that occur such as appointments or meetings (ASHA, n.d.). Determining a manageable number of students on an SLP's caseload can be tricky because the severity of the disorder can impact the managability. For example, a large caseload of students with mild disorders can be manageable for an SLP, but a smaller caseload of students with more severe disorders can be difficult to manage. Sometimes, SLPs are given large caseloads. With each student added to their caseload, they have an even larger workload, which can be difficult to manage. Students benefit from intervention sessions

and classroom methods that involve both the SLP and their teacher's input; however, when a caseload becomes too large, there is less time for these professionals to collaborate and create the best learning strategy for a student (ASHA, n.d.).

Differences in collaboration methods can also be a challenge. School-based SLPs tend to use clinical collaboration or interprofessional collaborative practice (IPCP), which was previously defined as the collaborative efforts of varied professionals with patients, families, caregivers, and communities in the delivery of high-quality care (World Health Organization, 2010). Teachers typically use educational collaboration or interprofessional education (IPE), which is when two or more professionals learn from one another (Green & Johnson, 2015). Potential conflicts can occur as SLPs look at issues with a clinical lens, and teachers look at issues with an educational lens. Each profession is unique, and conflict can occur due to coming from different cultures, having to share authority, or sharing resources (Green & Johnson, 2015).

### **Purpose of the Study**

The purpose of this study is to understand the current generalization methods and collaborative practices used by SLPs who provide services to school-age children with speech and language impairments. Understanding these current practices will help determine what future options and opportunities could be considered by SLPs to promote better collaboration among SLPs, families, and educators. The purpose is also to learn more about the current practices of school based SLPs relating to interprofessional collaboration and how generalization of communication abilities to everyday environments is determined in natural settings both in school and at home, for children with speech and language disorders. The main outcome of the study is to determine how an increase in collaboration methods influences generalization. Generalization is critical for students who are receiving speech and language intervention. Even

if a skill or ability is perfected in a therapy setting, it needs to be readily practiced and applied with others at home, school, and other environments.

### **Research Questions**

Some of the main goals of this study are to find out how SLPs, educators, and families promoted collaboration, how often and how effectively they communicated, and the effect this had on the child's ability to apply newly acquired skills in their natural environment. The main research question is "how does collaboration among a child's SLP, educator, and family impact the student's generalization, or their ability to apply new skills in a natural environment?" One hypothesis is that the better collaboration within a student's support system, the better their ability to adapt and apply new skills in their everyday life. Through this study, the extent of how well educators and speech-language pathologists are currently collaborating with students on these topics and promote further collaboration in the future will be examined. One of the main goals is to determine how often collaboration and communication occurred, as well as the common methods used. Another question that will be addressed in this study is "how can SLPs and educators improve their collaboration to promote more generalized outcomes of intervention?" This thesis was undertaken due to determine the nature of collaboration of SLPs not only who are employed by a school(s), but also to determine if SLPs who contract in schools (e.g. private practices) are also engaging in collaborative practices relating to their caseload with school personnel.

### **Method**

#### **Participants**

Participants consisted of seven SLPs currently employed or previously employed in schools within the last ten years, or SLPs working in schools who are employed by private

practices. To keep the interviews specific and personal, the goal was to keep the number of participants between eight and ten. Prior to interviews, the consent process was initiated via email. Potential participants received the consent email and responded via email if they decided to participate in the study. Then, they received a consent letter, seen in Table 3. There were seven SLPs that participated, with four being employed in multiple schools. See Table 2 for a demographic breakdown.

### **Participant Interviews**

Each participant was virtually interviewed on Microsoft Teams. Participants were asked a series of interview questions about their experiences in the school system related to their interactions with students, families, and educators. The interview consisted of a total of 27 interview questions, which were grouped into four categories: Background Information, Assessment, Intervention, and Generalization. See Table 1 for the complete list of interview questions. The interview method was chosen in order to obtain qualitative results and to hear about some specific experiences of the SLPs. The researcher recorded these interviews on Microsoft™ Teams, a virtual meeting platform with recording capabilities. These recordings were deleted after transcription. However, the digital interview transcriptions will be privately stored on the researcher's Pirate Drive for three years. Participant names or places of work were not identified in this study.

### ***Background Information Questions***

In the background information category, the researcher obtained demographic data on the participants. Questions were asked regarding what setting the SLP works in, how long they have been practicing, and if they have ever worked in another setting. There were also several questions regarding how this SLP defines collaboration and interprofessional practice, how they

work in teams in their school, and if these teams create challenges or positive outcomes. The purpose of this section is to determine the settings each SLP has worked in and how these topics play a role in their place of work.

### ***Assessment Questions***

In the assessment category, the main goal was to determine how SLPs coordinate with members of a child's IEP team when evaluating a child who has been referred for a potential speech or language impairment/disorder. Some questions were about how children are referred to SLPs, what discussion methods are used when making a child's diagnosis, and how often the SLP meets with other members of a child's IEP team. In this section, there was emphasis on an SLP's connection and collaboration with other school professionals during the process of assessment.

### ***Intervention Questions***

In the intervention category, how the SLP communicates with the educators and families during intervention for children with speech and language impairments was explored. There were also some questions about an SLP's workload versus caseload and how these roles affect and/or promote collaboration with school personnel. This section also explored the relationship between an SLP and a child's family. This communication is critical, and these questions addressed what best practices and methods ensure the strong connections relating to the overall goal of enhanced communication for children with speech and language disorders.

### ***Generalization Questions***

The last section of interview questions was related to generalization, specifically, how the SLP defines generalization; the methods used to determine if a child is using and generalizing their newly acquired speech and language skills; and how collaboration between the SLP, the



child's teacher, and their family play a role in a child's generalization. This section tied together all the methods previously discussed and aimed to determine how a child could best generalize learned speech and language strategies.

## **Results**

### **Background Information**

There was a total of seven participants in this study. Six of the participants were employed by the school system, and one was contracted into the schools by a private practice. Six of the participants worked in the same county, and all seven participants worked in the same state. Participants were asked about their years of experience as an SLP, the previous settings they worked in, and whether they worked in elementary, middle, and high schools currently. A breakdown of setting demographics: elementary, middle, and/or high school can be seen in Table 2.

### **Assessment**

Participants discussed two main types of collaboration that occur relating to collaboration with teachers: formal and informal. Formal collaboration is documented on a child's IEP. The majority of SLPs discussed informal collaboration. This type of collaboration can include many occurrences, such conversations in the school hallway or through email. Collaboration between SLPs and educators is critical for initial assessments. Teacher input is necessary in order to understand a child's classroom behavior and know what steps to take. In fact, many teachers reach out and refer students to SLPs for evaluation. Participants who worked in the elementary school setting cited that collaboration occurred frequently between SLPs and teachers for a child's initial speech and language evaluation. SLPs said most collaboration occurs at a child's initial evaluations, as SLPs and teachers must work together to identify a child's needs for the

first time. Thus, SLPs said less collaboration occurs for subsequent evaluations because collaborators already know the child well. SLPs can collaborate with more school personnel than just regular education teachers. For example, one SLP described co-planning and co-teaching a social skills lesson with an Autism teacher. In addition to collaboration during the school day, communication and collaboration occurs during student IEP meetings with teachers, SLPs and parents. These individuals are part of a child's IEP team, where they work together to improve the child's outcomes. All participants said that collaboration had many benefits in the schools, but these SLPs all noted that there has not been much training or continuing education regarding interprofessional practice or collaboration. These are practices that SLPs had to pick up on as they entered the profession. The main benefit of collaboration identified by participants was the ability for differing perspectives to come together and look at the whole child, all aiming to improve their outcomes. In general, the majority of SLPs reported that collaboration was important, and they wanted to see an increase. There were many factors identified that play a role on the extent of collaboration that occurs.

Depending on the family, SLPs reported collaboration with parents is a range, occurring often or not at all. It truly depends on how involved a parent wants to be. Parents are invited to be a part of their child's IEP team, where most of the communication between them and the SLP occurs. In general, SLPs said they sent home progress updates to parents, but methods of communication such as phone calls or emails would only be utilized if the parents had concerns. One participant noted that collaboration with families depends on the school demographics, such as socioeconomic status. Lower income families tend to have access to less resources and may not be able to be as involved in their child's therapy services. SLPs said at some schools, parent email addresses and phone numbers frequently change, and this can make it difficult to update a

family on how intervention is going. One participant said “I'm at a school where phone numbers don't tend to stay the same, so it's sometimes hard to have the most current phone number. If you're wanting to make a phone call or send a text, it doesn't always work. That just kind of shifts from your different schools, I would say, and, just different circumstances.”

Most participants said parents tend to communicate via text or email when they have concerns.

### **Intervention**

If a family has concerns about their child's intervention, they may email the classroom teacher, who will connect them with the SLP. A child's teacher tends to serve as the liaison between families and the SLP, as the family is more familiar of who the teacher is and how to contact them. In regards to work sent home by an SLP, several SLPs said they make sure to wait until a child has mastered a skill before sending practice materials home to families. One participant said “once that child has reached a certain level of success, I would say at least at least 80-90% consistently, then you can send something home. Then you can tell that parent, this is what we've been working on.” This allows the family to see sufficient progress has been made in therapy.

School size and population are significant factors in collaboration. Participants who worked in smaller schools cited that more school personnel were aware of their role in the school and knew how to get in contact with them to collaborate. One participant said “one school I'm at a very small school, so I feel like there's a lot more collaboration, all the teachers know who I am. I know who they are, and they feel comfortable to just come find me. At my other school. I'm the secondary SLP, so I'm more of a helper. There's definitely not as much collaboration that goes on there cause it's a huge school. I don't even know all the teachers and they don't know who I am probably walking down the hallway.”

Collaboration can also be impacted by the type of professional who an SLP is trying to get into contact with. For example, special education teachers often work with many of the same students that SLPs do. As a result, they are able to communicate and collaborate regularly. Some participants reported that they communicated with special education teachers more often than regular education teachers. One participant said “I talk to my special Ed teachers every single day. There's a lot more collaboration with Special Ed. There are just a little bit more familiar with what we're doing.” Regular education teachers typically have more students in their classroom and do not have as much time for a full conversation during the school day, whereas SLPs reported special education teachers have more availability during the day for updates on a child's progress.

One of the main collaboration barriers identified by SLPs is that there is a lack of awareness of the nature and role of an SLP. Some school personnel do not fully understand the roles of school-based SLPs and are not aware they can collaborate with them. Several participants said that they wanted people to know that they work with children on more than just articulation; they work on language, stuttering, voice, and many more skills. Some SLPs reported that teachers who are more aware of the practices of an SLP were more likely to collaborate with them. SLPs reported that typically special education teachers were more aware of what the roles of the SLP were, and therefore, collaborated with them more. In general, SLPs reported that special education teachers were more open to communicate regarding their students.

Another challenge of collaboration identified was a lack of time. As the effects of the COVID-19 pandemic continue, several SLPs reported being even busier than they have been in past years. School teachers are extremely busy as well. One participant said “the main issue is finding the time to talk to the teachers, especially regular Ed teachers. There's nothing built into

our schedule where we regularly see these people. So we have to carve out, especially in middle school settings where everyone has different schedules and things. It's hard to find time to actually talk to them thoroughly. One SLP reported that although some teachers have free time for a planning period, it can be difficult to coordinate their schedule with teachers of each student on their caseload. According to ASHA guidelines, an SLP's maximum caseload in the state of North Carolina should be 50. However, four of the seven SLPs interviewed had caseloads over 50. This can make it difficult to coordinate with each student's teacher and family. In general, SLPs said their schedules were measured by their caseloads. An interesting note is that the SLP that contracted into the schools had a much more manageable caseload than those SLPs working directly for the schools.

### **Generalization**

All participants generally defined generalization about the same way: when a child can carry over the skill targeted in therapy into their everyday setting, whether that be at home with their parents, in the classroom, or on the playground with friends. One SLP noted that when the COVID-19 pandemic began and therapy was held virtually, they felt there was increased collaboration and generalization. The SLP said "I found during COVID when we had teletherapy, I had these kids participating in therapy at home. Kids who had parents that either sat at the table with them or was right there near them and could hear what was going on, those kids made so much progress because the parents were able to hear the prompting, the cues and were using them at home." These parents were able to better understand the skills being practiced. As a result, generalization improvements were seen at home. Parent involvement is critical for generalization outcomes. Improvements in classroom generalization are typically measured through observations. Several participants noted that observing a child in their

classroom, on the playground, or in any natural setting allows them to tell if a child has mastered the skills practiced in therapy. One participant said “observations within the classroom setting are important, and that teacher input in those observations are a huge piece of placement or what drives my assessment, even you know if the teacher has specific concerns. It’ll help drive what assessment tools that I would use.” One SLP said if SLPs are able to help out on field trips, that is a great way to naturally see a child interact with other kids and determine if generalization is occurring. One SLP said they will schedule observation days in which they observe a child in the classroom; however, they must be careful to ensure that the child does not alter their classroom behavior once they see the SLP. For example, it is often better to observe a child when they are naturally working in small groups with classmates. Children tend to utilize their speech and language strategies and behaviors when they see the SLP observing them in the classroom. This may not be detrimental, because it reminds the child to utilize good speech and language patterns, but is important to note the generalized behaviors and observe the child in other settings as well.

There are some other methods that are used to determine if a child is using and generalizing their newly acquired speech and language skills according to participants. One SLP said they use teacher questionnaires to see if a child is making speech errors in the classroom. Lastly, another SLP noted that for older kids, using released standardized test questions can help students practice the skills they learn in therapy, such as decoding or semantics.

There are several areas to examine regarding generalization of communication and learning abilities. Some examples of this include receptive and expressive language, as well as speech vs. language. One participant said “I will talk to the teacher about receptive and expressive language skills like? Are they able to follow directions? What is their their reading and writing like? What are some strengths and weaknesses? Are they social? Do they volunteer?”

Do you know to answer questions or they do they have peer groups?” For speech and fluency, SLPs said generalization of skills can be easier to identify because they can be observed in the classroom. One participant said “language is really hard to tell if the skills are generalizing. You really have to get feedback from the teachers to see, OK, how are they doing with analogies in your classroom? Are they understanding word relationships, or we're working on noun verb agreement, how are they doing with that?”

The researcher found that the interviews conducted supported previous background research. In a previously mentioned study conducted by Hadley et al. (2000), one kindergarten teacher and one first grade teacher began collaboratively teaching with an SLP. At the end of the six-month period, vocabulary and phonetic awareness drastically improved in these classrooms. Overall, collaboration was found to strengthen skill acquisition. In my research interviews, one participant described co-planning and co-teaching a social skills lesson with a fellow teacher. This was found to be very effective at increasing these skills. In addition, participants emphasized the importance of ensuring the generalization of skills. For example, participants gave examples of their observations, teacher questionnaires and discussions, as well as other various methods. The literature cites that it is important for an SLP to learn a child’s daily routines and measure how they are applying learned skills in their natural environments (Woods et al., 2011). The information learned from my interviews adds to the literature by highlighting the significance of these practices, while also acknowledging that there needs to be an increase in their occurrence.

### **Limitations**

The limitations of this study include some participant logistics. Six of the seven participants of this study worked in the same county, and all seven participants resided in the

same state. This inhibits the generalization of the results. Another limitation was that there was not a more diverse pool of participants, as in the nature of schools (elementary, middle school and high school). The majority of participants were employed by elementary schools, or if they worked at multiple school levels, chose to primarily discuss the elementary setting. Also, only one participant was employed by a private practice and contracted into the schools, while the other six worked directly for schools.

Other limitations are the validity and the self-reported nature of open-ended interview questions; results could be biased as there is no way to verify the information that participants discussed. There is also no way to determine if the interview questions were an accurate method of measuring collaboration and generalization outcomes. Future research could include more diverse participants as well as a quantifiable method.

### **Implications for Practice**

As a result of this project, I learned that there is a strong correlation between collaboration and improved generalization outcomes. All participants said they feel there is increased generalization that comes from collaboration. The participants addressed some common challenges that prevented collaboration: large caseloads, limited time for teachers and SLPs, and a lack of understanding of who the SLP is and what their role is. Although there is no easy way to promote better collaboration, some SLPs provided suggestions for how to best improve it in the school setting. One participant discussed that SLPs in schools are given many tasks outside of providing therapy, such as helping with carpool line. If SLP assistants (SLPAs) were utilized more in schools, some of the tasks could be taken on by them. SLPAs are able to help plan sessions, do screenings, and assist the SLP in many more ways. With more of the work divided, there could be more time for collaboration and communication with teachers.



One SLP said because many SLPs work at multiple schools, it can be hard to collaborate and form strong relationships with teachers when SLPs are not at a school every day of the week. Four of the seven SLPs interviewed spent their week working at multiple schools. If SLPs were able to remain at one school and work there for the entirety of the week, this may allow for more collaboration. Another SLP said that people are more willing to collaborate if they know the SLP better. They suggested trying to create relationships with teachers and parents in order to promote more collaboration.

None of the participants in this study reported that there was any interprofessional practice or collaboration training at their school of employment. While SLPs do have access to professional continuing education through organizations such as ASHA, if collaboration was more encouraged and promoted in the workplace, school personnel may find it easier and more natural to collaborate with one another. It is important for there to be support from administration on topics like collaboration for changes to be made.

Lastly, another future implication of this research is virtual observations. Many SLPs reported that they would observe students to determine if generalization was occurring. Observations are a great tool for measuring generalization. However, many participants found that students would turn on their speech cues when they saw the SLP observing, therefore making the observations not as natural and authentic. Since a child is not aware they are being observed during virtual observations, these could be a potential alternative.

## **Conclusion**

This project greatly benefitted me as I study to become an SLP. I learned that there is indeed a correlation between collaboration in the schools and generalization outcomes in children. I have always been interested in working in the school system, and this project only

made me more interested in that setting. It was an amazing opportunity to be able to meet and make connections with seven school-based SLPs. I learned so much about how to make collaboration a priority in the workplace, regardless of the work setting. Teachers and parents are some the greatest resources an SLP has because they know the child so well. An SLP has limited time with a student, as they only see them for therapy sessions once or twice a week. Utilizing these people and communicating often is key to positive therapy outcomes. I also learned about many of the challenges school-based SLPs face every day. It can be difficult to balance a large caseload, limited time, and lack of understanding of their role. I feel I am now more aware of these challenges as I enter the field and know how to tackle them as best as I can.

Prior to this project, I was not aware of how important generalization is. Even if a skill is perfected in therapy, students should be able to master it in their natural environment as well. It was interesting to me to hear about the methods SLPs use to determine if generalization is occurring. I had previously learned about observation as the primary method, but it was beneficial to learn about some other options as well. I also liked hearing about their suggestions to improve collaboration. I believe interviewing these participants and learning about their methods and experiences will greatly benefit me as I study to become an SLP someday.

I learned more than I ever expected through this project. I want to thank my amazing faculty mentors, Dr. Marianna Walker and Dr. Melissa Hudson, who have been incredibly supportive of me and this thesis. None of this could have been possible without them. From day one, my mentors were there to help me navigate my first research project and answer all the questions I had. I am so grateful for their kindness, expertise, and willingness to go above and beyond to make this project a reality. They have been such an inspiration to me in my studies to become an SLP. I also want to express many thanks to all the SLPs who took part in this study. I

truly appreciate their time and contribution to my research. I learned so much from them about collaboration and generalization. I loved hearing everyone's experiences about their time as a school-based SLP. Completing this research really encouraged me and makes me look forward to the future.

**Table 1***Interview Questions*

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**Section 1 – Background Information**

1. What setting do you work in? How long have you worked in this setting?
2. How many years have you been employed as a speech-language pathologist?
3. Have you ever worked in any other settings besides the one you currently work in? If so, where?
4. How would you define collaboration in the setting you currently work in?
5. Have you received any training regarding interprofessional practice (IPP), interprofessional education (IPE), or collaboration with other professionals?
6. Do you serve on any teams, boards, or other groups that are interprofessional in your workplace?
7. Describe any challenges, opportunities, or positive outcomes from this interprofessional work related to your profession.

**Section 2 - Assessment**

8. As an SLP, can you describe the collaboration methods that you utilize prior to an evaluation/assessment and after the evaluation/assessment is completed?
9. Do you meet with any members of the school-based team prior to a child's evaluation/assessment? If so, describe.
10. How often are children referred to you for speech/language evaluations each year?
11. Do you meet with the teacher(s), psychologists, or any other member of the school-based team following your assessment?

12. If you contract with the school as an SLP, are you involved with IEP meetings and if so, how often do you meet with the team before and after the IEP meeting relating to children on your caseload?
13. Describe any challenges, opportunities, or positive outcomes related to the assessment/evaluation process as an SLP with children in your setting(s).

#### Section 3 - Intervention

14. How often do you, the SLP, communicate with a family regarding their child's speech-language intervention and overall progress? Can you provide some examples?
15. Which methods do you, the SLP, use to communicate with a child's family? What works best?
16. How often does a family communicate with you, the SLP?
17. How often does a child's teacher(s) communicate with you?
18. Do you feel that you would like to an increase in the communication between you and the teachers? If needed, how?
19. What is your current caseload?
20. Can you describe your caseload?
21. Is your schedule measured by your caseload or an overall workload?

#### Section 4 - Generalization

22. How would you define speech and language generalization? How do you describe it when talking to teachers or parents?
23. Do you have an opportunity to observe a child in his/her natural setting and to determine whether the child is using newly acquired speech/language skills & strategies?

24. What other ways do you determine if the child is generalizing and retaining language and speech abilities that are targeted in intervention?
  25. Would you say that collaboration between you, the SLP, and the child's teacher play a role in a child's generalization?
  26. What are examples of typical materials and strategies might you employ to promote generalization with children who are speech impaired vs. language impaired?
  27. Is there anything else you would like to share with me regarding your role as an SLP and how to promote generalization of newly acquired speech and language abilities with children who are served in schools? Do you have any questions for me?
-

**Table 2***Breakdown of SLP Participant Work Settings*

| Participant Number | Elementary School                   | Middle School                       | High School                         |
|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1                  | <input checked="" type="checkbox"/> |                                     |                                     |
| 2                  |                                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3                  |                                     | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |                                     |
| 5                  | <input checked="" type="checkbox"/> |                                     |                                     |
| 6                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7                  | <input checked="" type="checkbox"/> |                                     |                                     |

## Table 3

## Consent Letter

Dear Participant,

I am an undergraduate Honors College student at East Carolina in the Department of Communication Sciences and Disorders. I am asking you to take part in my research study entitled, Communication and Learning in Natural Environments: Generalization and Collaboration between Speech-Language Pathologists, Educators and Families.

The purpose of this research is to understand the current generalization methods and collaborative practices used by speech-language pathologists (SLPs) who provide services to school-age children with speech and language impairments, as well as learn more about the current practices of SLPs relating to interprofessional collaboration. By doing this research, I hope to learn how collaboration among a child's SLP, educator and family impact the student's generalization, or their ability to apply new skills in a natural environment as well as how SLPs and educators can improve their collaboration to promote more generalized outcomes of intervention. Your participation is completely voluntary. We will provide you with a \$50 Greenphire debit card for the time you volunteer while being in this study.

You are being invited to take part in this research because you have communicated with my faculty advisor, Dr. Marianna Walker, that you would like to participate in this study relating to your work as a fellow Speech-Language Pathologist. It will take you approximately 30 minutes to complete the interview.

If you agree to take part in this audio/video recorded interview, you will be asked questions that relate to how SLPs, educators and families promote collaboration, how often and how effectively they communicate, and the effect this has on a child's ability to apply newly acquired skills in their natural environment.

This research is overseen by the University and Medical Center Institutional Review Board (UMCIRB) at ECU. Therefore, some of the UMCIRB members or the UMCIRB staff may need to review your research data. However, the information you provide will not be linked to you. Your identity will be evident to those individuals who see this information. However, I will take precautions to ensure that anyone not authorized to see your identity will not be given that information.

Please call Sarah Porter at 252-717-7878 or my faculty advisor, Dr. Marianna Walker (252-744-6093) for any research related questions. If you have questions about your rights when taking part in this research, call the University and Medical Center Institutional Review Board (UMCIRB) at 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, call the Director of Human Research Protections, at 252-744-2914.

You do not have to take part in this research, and you can stop at any time. If you decide you are willing to take part in this study, please respond to this email and I will contact you to set up an interview time, which will be completed virtually.

Thank you for taking the time to participate in my research.

Sincerely, Sarah Porter, Principal Investigator





**EAST CAROLINA UNIVERSITY**  
**University & Medical Center Institutional Review Board**  
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 2284 · [rede.ecu.edu/umcirb/](http://rede.ecu.edu/umcirb/)

### Notification of Exempt Certification

From: Social/Behavioral IRB  
 To: [Sarah Porter](#)  
 CC: [Marianna Walker](#)  
 Date: 4/10/2022  
 Re: [UMCIRB 22-000119](#)  
 Communication and Learning in Natural Environments: Generalization and Collaboration  
 between Speech-Language Pathologists, Educators, and Families

I am pleased to inform you that your research submission has been certified as exempt on 4/9/2022. This study is eligible for Exempt Certification under category # 2c.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

| Document  | Description                                |
|---|--|
| Porter - 2022 - Survey-Research-Consent-Letter-Template-for-Expedited-Research Final.docx(0.02) | Consent Forms                              |
| Porter 2022 - Research Interview Format.docx(0.01)  | Interview/Focus Group<br>Scripts/Questions |
| Porter Research Protocol - 2022.pdf(0.01)   | Study Protocol or Grant Application        |
| Porter Study Research Participants Email Request - Interview.docx(0.02)                         | Recruitment Documents/Scripts              |

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

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