.

LANGUAGE AND PLAY EVERYDAY: PROMOTING EARLY LANGUAGE DEVELOPMENT THROUGH CROSS-DISCIPLINARY PERSONNEL PREPARATION

by

CHRISTINA E. TUFFORD

A THESIS

Presented to the Department of Special Education and Clinical Sciences
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Master of Science

June 2017

THESIS APPROVAL PAGE

Student: Christina E. Tufford

Title: Language and Play Everyday: Promoting Early Language Development Through Cross-Disciplinary Personnel Preparation

This thesis has been accepted and approved in partial fulfillment of the requirements for the Doctor of Philosophy degree in the Department of Special Education and Clinical Sciences by:

Dr. Heather Moore	Chairperson
Dr. Jane Squires	Member
Dr. Lauren Cycyk	Member

and

Scott L. Pratt	Dean of the Graduate School

Original approval signatures are on file with the University of Oregon Graduate School.

Degree awarded June 2017.

THESIS ABSTRACT

Christina E. Tufford

Master of Science

Department of Special Education and Clinical Sciences

June 2017

Title: Language and Play Everyday: Promoting Early Language Development Through Cross-Disciplinary Personnel Preparation

Graduate students across IDEA related disciplines need more instruction and supervised experiences in collaborative service delivery and evidenced-based social-communication interventions. As such, the primary objective of this study was to examine the effectiveness of the Language and Play Everyday (LAPE) program as a model of cross-disciplinary training for graduate students in the Communication Disorders and Sciences (CDS) and Early Intervention (EIP) programs at the University of Oregon. Participants included four first-term students enrolled in LAPE during Fall 2016. Pre-post competency/self-efficacy questionnaires and student-child interaction videos were used to evaluate students' knowledge and use of child language development principles, language-enhancing strategies, and overall confidence.

Analysis of student-child interaction videos revealed that all students increased their use of language-enhancing strategies directly following an initial LAPE training workshop and again after an individualized coaching session. Pre-post questionnaires indicated students made growth in overall confidence and knowledge of child language development and language-enhancing strategies.

CURRICULUM VITAE

NAME OF AUTHOR: Christina E. Tufford

GRADUATE AND UNDERGRADUATE SCHOOLS ATTENDED:

University of Oregon, Eugene, OR
Utah State University, Logan, UT
Seattle University, Seattle, WA

DEGREES AWARDED:

Master of Science, Communication Disorders and Sciences, 2017, University of Oregon
Bachelor of Science, Communicative Disorders, 2014, Utah State University
Bachelor of Social Work, 2011, Seattle University

AREAS OF SPECIAL INTEREST:

Interdisciplinary Professional Education
Language Learning and Education

PROFESSIONAL EXPERIENCE:

Graduate Student Intern, Salem Health, 2017

Graduate Student Intern, Edgewood Community Elementary School, 2017

Graduate Student Clinician, South Hills Nursing and Rehabilitation Center, 2016

Graduate Student Clinician, Riverpark Skilled Nursing Facility, 2016

Graduate Student Clinician, University of Oregon Speech-Language Hearing Center, 2015-2016

Social Groups Facilitator and Tutor, Bridgeway House, 2015

Therapy Aide, Spot Kids Therapy, 2013-2014

GRANTS, AWARDS, AND HONORS:

Kasey Elizabeth Lindeleaf Memorial Scholarship, University of Oregon, 2016

Evelyn Bullock Research Grant, University of Oregon, 2016

General University Scholarship, University of Oregon, 2016

AmeriCorps Students-in-Service Education Award, AmeriCorps, 2011

Associated Students of Seattle University Service Award, Seattle University, 2011

ACKNOWLEDGMENTS

I wish to express sincere appreciation to my advisor, Dr. Heather Moore, for her unwavering support, encouragement, and patience. Her mentorship was paramount not only in the production of this thesis but in my professional development and education over the past two years. I am incredibly grateful for her confidence in me; for her high expectations and an equally high rate of reinforcement, for reminding me to relax whenever I felt overwhelmed, and for generosity with her time and feedback.

Special thanks to Dr. McKay Moore Sohlberg, who was instrumental in initially supporting and directing the research ideas explored in this study. Her valuable guidance and willingness to accommodate my research interests made this project possible. I would also like to thank my committee members, Dr. Jane Squires, and Dr. Lauren Cycyk for sharing their expertise and insightful feedback.

This thesis was funded by the Evelyn Bullock Research Award; thank you to the University of Oregon College of Education and the scholarship donors for supporting my research.

Lastly, this study would not have been possible without the collaboration and participation of the EI/ECSE Program and Communication Disorders and Sciences graduate students and clinical supervisors. I want to extend a big thank you for their time and help, as well as enthusiasm and willingness to go the extra mile to support this study.

For my loving parents, who taught me to never give up.

TABLE OF CONTENTS

Chapter Page

Chapter Page

LIST OF FIGURES

Figure Page

LIST OF TABLES

CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

Over the past decade, legislators and researchers have widely acknowledged that collaboration across disciplines is fundamental to effective early intervention/ early childhood Special Education (EI/ECSE) service delivery. EI services are provided for children from birth to age three, while ECSE services cover children between the ages of three to five years. Federal mandates established by the reauthorization of Part C, Individuals with Disabilities Education Act (IDEA) (2004) emphasize family-centered, interdisciplinary services provided within a child's natural environment over traditional, clinician-directed treatment. Furthermore, numerous research studies have indicated that the complex needs of children and their families are best met through collaborative teaming of highly-qualified professionals from a variety of disciplines (Hong & Shaffer, 2015; Bruder, 2010; Lillas & Turnbull, 2009; Chen, Klein, & Minor, 2009; Horn & Jones, 2004; Rapport, McWilliam, & Smith, 2004).

Despite expert consensus that EI/ECSE service delivery be multi-disciplinary and collaborative, personnel preparation programs do not appear to be focusing their efforts to prepare future professionals in these necessary skills. To date, only a small number of government-funded projects targeting interdisciplinary personnel preparation in EI/ECSE have been described in the literature (Barton, Moore, and Squires, 2012; Smith, 2010; Crais et al., 2004; Hains et al., 2005). The Center to Inform Personnel Preparation Policy and Practice in EI/ECSE and Preschool Education (2005) conducted a recent nationwide survey of 1,139 administrators and faculty across all disciplines required under IDEA. Data from the survey indicated that only 39% of program's courses were jointly offered/listed and only 32% reported that students across

disciplines complete field experiences together. Similar surveys of university faculty members have also reported minimal emphasis or opportunity for interdisciplinary collaboration and instruction (Bruder & Dunst, 2005; Mellin & Winton, 2003). Moreover, many of the disciplines typically included on EI/ECSE teams (e.g., psychology, nursing, special education, physical therapy, occupational therapy, and speech-language pathology) receive minimal to no specialized training or coursework in EI/ECSE (Campbell, Chiarello, Wilcox, & Milbourne, 2009).

In order to ensure the greatest possible outcomes for young children and their families, EI/ECSE professionals must be prepared to collaboratively and effectively prevent, identify, and treat a variety of communication disorders. The lack of professionals prepared to work in EI/ECSE settings is a nationwide issue, and a recent $20-million-dollar increase in IDEA Part C funding for the 2016 fiscal year is only likely to expand the need for highly qualified professionals with specialized training in EI/ECSE (Budget of the United States Government, Fiscal Year 2016). Building a workforce of competent EI/ECSE service providers is incumbent upon the development of effective interdisciplinary personnel preparation programs and experiences.

EI/ECSE Speech-language Pathology Preservice Preparation

Given their specialized knowledge of the complex processes of communication development, hearing, feeding, and swallowing, speech-language pathologists (SLPs) are uniquely qualified to deliver communication services to children with a variety of congenital and acquired diagnoses. According to the American Speech-Language-Hearing Association (ASHA), SLPs working in EI/ECSE assume a variety of roles and responsibilities:

> (a) prevention; (b) screening, evaluation, and assessment; (c) planning, implementing, and monitoring intervention; (d) consultation with and education for team members,

including families and other professionals; (e) service coordination; (f) transition planning; (g) advocacy; and (h) advancing the knowledge base in EI/ECSE (ASHA, 2008a, p .9)

Indeed, this wide range of activities renders SLPs integral members of an EI/ECSE team. Thousands of young children and their families rely on SLPs to deliver quality, collaborative services. However, issues in preservice preparation of SLPs persist. Academic SLP programs across the country must balance extensive certification/licensure requirements with scope of practice expansion and already-packed curricula.

Despite the critical role of SLPs in EI/ECSE, only six of over 250 graduate programs in speech-language pathology offer specialty tracks in EI/ECSE (Prelock & Deppe, 2015). Nationwide, SLPs frequently do not receive adequate EI/ECSE preparation; similar to other related professions, SLPs lack exposure to interdisciplinary experiences and course offerings tailored to EI/ECSE service delivery (Bruder & Dunst, 2005; Campbell et al., 2009). As most graduate training programs prepare SLPs to work as generalists, it is not surprising that SLPs often self-report low levels of competency in regard to working in EI/ECSE settings (Campbell et al., 2009). Clearly, more needs to be done across SLP training programs nationwide to make comprehensive EI/ECSE preparation a priority.

EI/ECSE Teacher Personnel Preparation

Similar to SLPs, EI/ECSE teachers play a crucial role in a child's development by providing a variety for comprehensive services for young children with specials needs. According to the National Association for the Education of Young Children (NAEYC), EI/ECSE teachers directly apply specialized knowledge of child development, families, pedagogy, and academic disciplines in order to plan and implement culturally relevant curricula that help build

young children's competence in language, literacy, mathematics, and other academic disciplines (NAEYC, 2009). EI/ECSE teachers deliver a variety of interventions to young children within families' homes, daycares, and preschools. Preparation standards for EI/ECSE teachers indicate that candidates for early-childhood licensure should know and be able to:

(a) promote child development and learning, (b) build family and community relationships, (c) observe, document, and assess young children, (d) use developmentally effective approaches, (e) use content knowledge to build meaningful curriculum, (f) become a professional, and (g) complete early childhood field experiences. (NAEYC, 2012).

EI/ECSE teachers are responsible for providing a large portion of early learning opportunities, and fostering a child's social and academic development (Phajane, 2014). In addition to SLPs, they too are responsible for supporting communication development in young children. As such, EI/ECSE teachers need adequate knowledge of early language development and evidenced-based, communication interventions to be successful service providers. Yet, despite established standards for EI/ECSE educators, there is limited research describing programs' adherence to national standards, and only a small number of studies documenting interdisciplinary preparation programs for EI/ECSE teachers and speech-language pathologists (Stayton, 2015). EI/ECSE educators need training in childhood language development, coaching, and collaboration with other IDEA related disciplines.

Naturalistic Communication Interventions: An Evidence-Based EI/ECSE Practice

As language deficits in the early, formative years of life can have long term impacts on academic achievement, early identification and provision of evidence-based treatment is key to ensure the best developmental outcomes possible. Though many toddlers with expressive communication delays do catch up to peers, a sizable group do not and are at considerable risk

for language disorders and persistent learning disabilities (Rescorla, 2013; Girolametto, Wiigs, Smyth, Weitzman, & Pearce, 2001). As such, preservice SLPs and EI/ECSE teachers need specialized instruction and supervised learning experiences in order to learn to implement effective communication interventions.

Federal mandates established by the reauthorization of IDEA Part C, ASHA (2008a) task force initiatives, and the DEC's recommended practices (2014) highlight several guiding principles for effective EI/ECSE service delivery. According to ASHA, EI/ECSE services should be (1) family-centered, culturally and linguistically responsive; (2) developmentally supportive and aimed at fostering children's participation in daily routines within natural environments; (3) comprehensive, coordinated, and team based and (4) based upon the highest quality of evidence available. EI/ECSE interventions should be designed with these 4 principles in mind. In addition, the DEC recommends that EI/ECSE practitioners work directly with families to support children's communication development through systematic instructional strategies delivered within natural, inclusive environments.

Based directly on these guiding principles and recommendations, Naturalistic Communication Interventions (NCIs) are considered "best practice" in EI/ECSE because they have been shown to significantly improve communication skills in young children (e.g., Cable & Domsch; 2015; Mancil, 2009; Weismer & Robertson, 2006). NCIs are loosely defined as a collection of interactive activities that are carefully arranged to necessitate social communication and provide a natural consequence (Paul & Norbury, 2011). All NCIs share four common features:

> (1) the contexts for instruction are the child's typically occurring routines, activities and experiences; (2) the content and goals of instruction target the skills that are necessary to

meet demands of naturally occurring, age-appropriate environments; (3) teaching episodes are brief in nature, distributed over time, and based around a child's interest or attention in the moment; and (4) instructional interactions are implemented by the caregivers with whom the child regularly interacts (Horn & Banerjee, 2009).

At their core, NCIs make use of the process of *embedding,* or providing systematic, individualized learning opportunities within and across everyday activities, in order to help young children develop foundational social-communication skills (Snyder, et al., 2015). Many empirically-validated and published intervention programs are classified as NCIs, including enhanced milieu teaching (Hancock & Kaiser, 2006); responsive education-prelinguistic milieu teaching (Warren et al., 2006); and focused stimulation (Girolametto, Pearce, & Weitzman, 1996). During treatment, these intervention programs may be used together or in isolation to stimulate language acquisition across all stages of early language development.

A large literature base exists on the effectiveness of NCI for young children with a variety of diagnoses. Extensive experimental studies and randomized control trials have found that NCI is beneficial for children with Down syndrome, cleft lip and palate, late language emergence, autism spectrum disorder, and other intellectual disabilities (e.g., Kasari, et al., 2014; Wright, Kaiser, Reikowsky & Roberts, 2013; Scherer & Kaiser, 2010; Kaiser & Wright, 2013). Furthermore, multiple literature reviews and meta-analyses have highlighted the large body of evidence for NCIs (e.g., Cable & Domsch; 2015; Mancil, 2009; Weismer & Robertson, 2006). The evidence for specific naturalistic strategies and techniques is also well-established. For example, research has shown that enhanced milieu teaching (EMT) is useful for addressing a variety of language targets (Camarata & Nelson, 2006), and that it leads to better generalization of skills when compared to traditional, clinician directed approaches for autism (Delprato, 2001).

Numerus studies have found focused stimulation to be useful for teaching specific vocabulary, grammatical structures, and functional comprehension to mono- and bilingual children (e.g., Wolfe & Heilmann, 2010; Grela & McLaughlin, 2006; Cleave & Fey, 1997). Lastly, Kong and Carta's 2013 research synthesis of 26 experimental and quasi-experimental studies on responsive interaction strategies found that these interventions led to significant improvements in children's communication and emotional skills and adult responsivity.

There is also a growing body of evidence for caregiver-implemented Naturalistic Communication Interventions CI-NCIs as an effective treatment model for infants/toddlers with language delays (Brown & Woods, 2015; Moore, Barton, & Chironis, 2014; Wright, Kaiser, Reikowsky, & Roberts, 2013; Carter, et al., 2011; Peterson, Carta, & Greenwood, 2005; Lederer, 2001). A recent meta-analysis of 18 studies found that parents and other caregivers could learn NCI strategies and use them effectively with children to build lexical forms, improve pragmatic skills, and increase spontaneous language expression in children ages 18-60 months with and without intellectual disabilities (Roberts and Kaiser, 2011).

CI-NCI Preservice Preparation

Though the evidence for CI-NCIs as a subset of traditional NCIs is great, their implementation is largely contingent on the knowledge and experience of the EI/ECSE professionals. EI/ECSE professionals not only need to be well-versed in CI-NCIs, but they also need to understand adult learning principles and have experience coaching caregivers to use it (Coufal, 1993). It is clear that neither EI/ECSE teachers nor SLPs get clear CI-NCI training in graduate school. To date, only a small number of case studies describing models of interdisciplinary training for EI/ECSE teachers exist (e.g., Stayton, Whittaker, Jones, & Kersting, 2001; Surbeck & Brown, 2000; Eaton, Gangluff, & Deere, 2004). Similarly speech-pathology

programs do not appear to be training SLPs in CI-NCI. According to a nationwide survey of 109 ASHA accredited programs conducted by Francois, Coufal, and Subramanian (2015), most of the knowledge and skills needed for EI/ECSE practice was covered in coursework, and students lacked opportunities for clinical practica experiences in EI/ECSE. Among the programs that provided opportunities for direct practice within coursework, most indicated that the interventions were "individual child-based" and only a small number delivered services in natural environments (Francois, et al., 2015). Clearly, a major gap remains between training programs and what is both expected and required of SLPs and teachers working in EI/ECSE settings.

A comprehensive search of the literature published over the last two decades yielded two qualitative studies and one final report describing various models of EI/ECSE preparation in NCIs for students of speech-language pathology. A case study conducted by Boyer (2014) evaluated students' experiences of a voluntary, semester-long practicum completed by two graduate clinicians in a speech-language pathology program at a Midwestern university. For their training, the students were assigned to work with one 22-month child with expressive language delay and his family. A total of 30 treatment sessions split between clinician delivered NCIs and parent training in responsivity strategies were provided at a university clinic. After each session, the student clinicians completed a daily progress note and individual reflection about their experiences implementing strategies and integrating caregivers in treatment. At the end of the placement, both students participated in a joint interview with the clinical supervisor. The supervisor then analyzed the interview transcript, progress notes, and reflections for themes related to knowledge/skill development and collaboration with caregivers. Results indicated that students demonstrated increased confidence in collaboration and parent-training, as well as

improved knowledge and use of CI-NCI/NCI techniques. Though the findings were positive, results must be viewed as preliminary given the lack of objective measure and small sample size.

Another model of preservice preparation in EI/ECSE for speech-language pathologists was outlined in a final grant report completed by the Communication Disorders and Sciences (CDS) program at San Jose State University (SJSU) in California (2000). Though the report does not include any empirical data, descriptions of coursework and practica activities may be useful for other ASHA accredited programs looking to offer similar learning experiences. Through funding from a federal grant, three cohorts of students received specialized academic and hands-on training in EI/ECSE service delivery. Across a span of three years, the students enrolled in the SJSU program: (a) completed two courses in EI/ECSE, including assessment and intervention opportunities with young children with autism; (b) were provided opportunities to complete semester-long student teaching practica at a university clinic or community-based EI/ECSE agency; (c) attended the California ASHA convention as well as an annual multidisciplinary workshop put on by a guest expert to supplement academic and field learning, and (d) participated in a video sampling to document change amongst clients. Overall positive feedback from students was included, however some students reported that more coursework, guest speakers, and practica experiences would have been beneficial.

To date, the most collaborative, comprehensive model of preservice preparation for SLPs was described by Barton, Moore, and Squires (2012). The Teaching Early Advanced Master's Specialists (TEAMS) project was jointly developed by CDS and EI/ECSE Program (EIP) faculty at the University of Oregon. Through funding from a federal grant, the program used an interdisciplinary approach to provide 20 CDS graduate students across a span of five years with a continuum of specialized interdisciplinary coursework and field experiences based upon

evidenced-based intervention and supervision practices. Coursework emphasized collaborative service delivery, principles of child development, as well as EI/ECSE assessment and treatment. In addition to the coursework, a variety of practica experiences provided students with hands on, applied opportunities to learn interdisciplinary teaming methods and evidence-based intervention strategies. Opportunities within the university clinic setting included one-on-child intervention, toddler and parent support groups, caregiver training in CI-NCI techniques, speech and early literacy training for preschoolers, and intervention for young children with moderate-severe hearing impairments. Child evaluations were provided within natural environments, and supervision of students incorporated direct, performance-based feedback, coaching strategies, and video/in-person modeling of evidence-based skills and practices (Barton, et al., 2012).

The impact of the TEAMs project was determined by course grades, student practicum competencies, caregiver satisfaction, parent and child outcomes, and job placement after graduation (Barton, et al., 2012). Unlike other personnel preparation experiences in the literature, project TEAMs included specific competencies related to NCIs, including focused stimulation, responsive interaction, enhanced milieu teaching, and parent coaching. Overall, positive results for caregiver satisfaction, child and parent outcomes, and students' use of NCIs were reported. Implications and recommendations for future programs emphasized the importance of collaboration across disciplines, home visiting and family-centered, naturalistic interventions, continued opportunities for evaluation of competencies post-graduation, and adequate funding to ensure sustainability of programs.

CI-NCI Professional Development Training

Given the dearth of literature describing models for preparing SLP and EI/ECSE graduate students to effectively implement CI-NCI, professional CI-NCI training programs were

reviewed. The most well-known and documented CI-NCI professional training program is the Hanen Centre's "Learning Language and Loving It" (LLLI) certification workshop (Girolametto & Weitzman, 2006). The LLLI training program consists of 5-8 group sessions (totaling approximately 15-20 hours) and 4-6 individual video feedback sessions. During these group workshops, EI/ECSE professionals are trained to coach parents/caregivers in CI-NCI strategies. After participating in the training, professionals are allowed to purchase materials (such as handouts and video) that they can use for parent-training/support. Despite the popularity of this program, costs that range anywhere between $700-1000 dollars often prohibit EI/ECSE practitioners from participating.

Outside of the Hanen Centre workshops, the efficacy of training early childhood educators to utilize CI-NCIs within their daycare and preschool classrooms is well-documented in the literature (e.g., Dyer & Karp, 2013; Girolametto, Weitzman, & Greenberg, 2003; Scarinci, Rose, Pee, & Webb, 2014; Piasta, et al., 2012). In fact, a recent meta-analysis of 18 randomized control trials indicated that interventions aimed at improving caregiver-child interactions within preschool, daycare, and home-based settings were moderately effective for improving classroom quality, caregiver interaction skills, and to a lesser degree, child behavior (Werner, Linting, Vermeer, and Van IJzendoorn, 2016).

Though effective projects varied greatly in terms of size, scope, and design, in-services and workshops were common modes of training across studies. Numerous elements were incorporated to facilitate learning within trainings, including video feedback (e.g., Fukkink, & Tavecchio, 2010), role-playing (e.g., Kaiser, Ostrosky, & Alpert, 1993), direct modeling of behaviors (e.g., Ahrens, 2009); and instructional coaching (e.g., Friedman & Woods, 2015). No consensus exists on the "best" method for training practicing professionals to increase their use

of evidence-based, language-enhancing strategies. However, it is clear that professional development opportunities that are aimed at increasing knowledge and use of CI-NCIs are effective.

Elements of Evidence-Based Training

A variety of evidence-based training elements should be incorporated in the development of effective CI-NCI preservice preparation and professional development activities. Garet, Porter, Desimone, Birman, & Yoon (2001) used a national probability sample of over 1000 math and science teachers to determine core characteristic of effective professional development activities. Largely aligned with adult learning principles, the findings indicated that successful professional development should (a) be relevant and deeply connected to the subject matter; (b) include opportunities for active learning and problem solving; and (c) connect to the teacher's own practice (Garet, et al., 2001). Additionally, adult learning research has indicated that collaboration and reflection are central to facilitate real change in adult skills (Bransford, Brown, & Cocking, 2000).

In addition, coaching is an adult learning strategy that has been used within EI/ECSE and beyond to encourage growth in a collaborative, non-directive way (Hanft, Rush, Sheldon, 2004). Characteristics of professional coaching typically involve (a) joint-planning; (b) observation; (c) action/planning; (d) reflection; and (e) feedback (Rush & Sheldon, 2011). Furthermore, research has shown that professional development without coaching/feedback is largely ineffective at changing adult behaviors (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005). Lastly, video feedback has been shown to be effective for facilitating adult learning (Fukkink, & Tavecchio, 2010). Not only does this approach allow for detailed review of a variety of behaviors, it allows

the individual to reflect upon their own self-image and develop a realistic understanding of their skills at the time of recording (Fuller & Manning, 1973).

Summary and Research Questions

The current national recommendations and evidenced-based best practices for EI/ECSE outlined by DEC (2014) and ASHA (2008a) emphasize the importance of family-centered, interdisciplinary services provided within a child's natural environment. However, many graduate training programs for IDEA Part C professionals do not provide adequate opportunities to develop the specialized knowledge and skills needed for collaborative, EI/ECSE practice (Hebbeler, Spiker, and Kahn, 2012). Speech-language pathologists fulfill crucial roles on EI/ECSE teams, and must be prepared to deliver evidenced-based communication interventions. Similarly, EI/ECSE teachers work closely with children and their families; possessing adequate knowledge of child language development and language-enhancing strategies is essential to optimal service delivery. CI-NCIs align with ASHA and DEC standards for service delivery, and given their large literature base, are effective for developing language in young children with a variety of diagnoses. As such, these interventions should be a core component of both speech-language pathology and EI/ECSE coursework and practica experiences. To date, only a small number of studies have described such preparation programs; a gap between preservice training and what is both expected and required of professionals working in EI/ECSE exists.

Graduate students across IDEA related disciplines need specific instruction and supervised experiences in collaborative service delivery, and evidenced-based communication interventions. Incorporating elements of effective adult training described in the literature, this current study was designed to evaluate the effectiveness of a cross-disciplinary personnel preparation program for Early Intervention Program (EIP) and Communication Disorders and Sciences (CDS) students at the University of Oregon. Specifically, this study addressed the following research questions:

1) Does an 11-week cross-disciplinary early language training program improve students' knowledge of child language development, language-enhancing strategies and overall confidence in strategy implementation?
2) Does students' use of language-enhancing strategies increase after one group training?
3) Does students' use of language enhancing strategies further increase when group training is paired with individualized coaching/video feedback?

CHAPTER II

METHODS

First developed in 2010 by Drs. Heather Moore and Erin Barton, Language and Play Everyday (LAPE) is a community-based CI-NCI program whose primary goal is to teach parents of young children with communication delays to use evidence-based, language-enhancing strategies in order to increase child rate of communication and emergent vocabulary (Moore, et al., 2014). The families who participated in LAPE during fall 2016 received the following services over a 11-week period: pre- and post-assessment (3 hours total); four, 2-hour parent support/training group sessions; four, 2-hour toddler playgroup sessions; and two, 1-hour in-home coaching sessions. All toddler playgroup sessions were conducted during the parent support/training group sessions. NCI strategies and techniques incorporated in the LAPE curriculum include positive behavior supports; environmental arrangement; responsive interaction; milieu teaching; and focused stimulation (e.g., Hancock & Kaiser, 2006; Warren et al., 2006; Girolametto, et al., 1996). For more detailed descriptions of the LAPE program strategies, refer to Appendix A as well as Moore, et al. (2014).

The LAPE program additionally serves as a training model for EIP and CDS graduate programs at the University of Oregon. This study examined the outcomes of four graduate students following their participation in the LAPE practicum fall term 2016.

Participants

Graduate Student Clinicians. The participants in this study included four, first-term University of Oregon graduate students. During Fall term 2016, two CDS students (henceforth referred to as CDS 1 and CDS 2) and EIP students (henceforth referred to as EIP 1 and EIP 2) were assigned to the "Language and Play Everyday" (LAPE) practicum. CDS students received

1-credit hour of practicum (graded pass/no pass) with LAPE serving as their only practicum experience. They were also enrolled in a graduate level course on evidence-based assessments and interventions for children birth-five years of age during this term. Two EIP graduate students received 3-credit hours of practicum (graded pass/no pass) during fall and were placed in the LAPE program, the LAPE+ program (an ongoing open-enrollment program for children and families at risk for autism spectrum disorders), and in 3-hours of community placement with an EI/ECSE teacher.

First-term CDS and EIP students were responsible for planning and conducting all toddler playgroup sessions. Second-year CDS students were responsible for planning and conducting parent-coaching and home visit sessions and were not included in this study. All enrolled students were supervised throughout the 10-week practicum by the LAPE coordinator (a speech-language pathologist), and a board-certified behavior analyst/Special Education (SPED) doctoral student. EIP students received additional supervision from an occupational therapist/doctoral student in the EIP program.

The graduate student clinicians varied in age, education, and relevant experience (see Table 1), however there were no significant differences between students in regards to sex and years of education, and all had prior experience with infant-toddler aged children at the start of the practicum placement. EIP 1 and CDS 2 had the most prior experience of all students, and EIP 2 had significantly less hours of work experience with both typically developing children and those with developmental disabilities. All but CDS 2 reported having previous coursework/training related to child language development.

Table 1

Graduate Student Clinician Demographic Characteristics.

	EIP 1	EIP 2	CDS 1	CDS 2
Age	26	22	22	21
Education	bachelor's degree	bachelor's degree	some graduate school	some graduate school
Training/Coursework on CLD[a]	yes	yes	yes	no
Prior Experience[b]				
CDD	yes	yes	yes	yes
TDC	yes	yes	yes	yes
Hours of CDD Work Experience	<1000	20-100	< 500	<20
Hours of CDD Volunteer Experience	<20	no response	<20	<500
Hours of TDC Work Experience	<1000	20-100	<1000	20-100
Hours of TDC Volunteer Experience	<20	no response	<20	<500

[a]CLD = child language development; [b]CDD = children with developmental disabilities; TDC = typically developing children

Children. Each graduate student clinician was videotaped during interaction with children in the LAPE program. Pre- and post-test student-child video samples of 1-1 play routines and group activities were obtained. Each child was given a code name, and assigned to one of the four participating graduate student clinicians for the entirety of this project. As such, the same child was involved in all of the student clinicians' pre- and posttest 1-1 play routine

video samples. Two of the five participating children were twins, and were subsequently assigned to one clinician (CDS 2). Descriptive data on child characteristics at the start of the LAPE, as well as corresponding graduate clinicians are summarized in Table 2.

Table 2

Child Demographic Characteristics.

Clinician	Target Child	Age	Disability Status[a]	Number of Words on CDI[b]
EIP 1	Sasha	23 mos.	PB; DD	2
EIP 2	Beth	20 mos.	SD; DD	24
CDS 1	Oliver	19 mos.	DD	4
CDS 2	Nate	27 mos.	HI; PB	78
	Ethan	27 mos.	PB; DD	76

[a]PB = preterm birth; DD = developmental delay; SD = seizure disorder; HI = hearing impairment

[b]CDI = MacArthur-Bates Communication Development Inventory-2nd Edition (Words and Sentences form; Fenson, et al, 2007).

LAPE Practicum Training

To ensure that all participating students learned and then appropriately used the LAPE strategies, students (1) attended an 8-hour group-training workshop, (2) participated in 1.5-hour weekly group meetings, (3) completed weekly written reflections on their interactions with children, (4) were observed by a trained supervisor (live or through video) and received written feedback at least three times per term, and (5) met individually with a trained supervisor at least one time to discuss progress.

Group-Training Workshop. As previously mentioned, all graduate students and faculty supervisors involved in the LAPE program attended an 8-hour pre-training workshop delivered by the principal investigator. The principal investigator had completed previous coursework in

child language development and NCIs, as well as participated in the LAPE program for two consecutive terms. Workshop activities included interactive lectures, observation and analysis of video samples illustrating child communicative behaviors and program techniques, large and small group discussions, team-building exercises, and applied practice. See Appendices B-C for examples of team-building and applied group practice activities included in the workshop. In accordance with ASHA's outlined core knowledge and skills for EI/ECSE speech-language pathology practice (2008), the workshop covered a variety of content, including (a) an overview of NCIs (i.e., definitions; supporting literature); (b) terms and definitions related to communication skills; (c) typical development of the first 500 words in young children; (d) evidence-based coaching practices in EI/ECSE; (e) descriptions of daily routines; and (f) LAPE strategies. To supplement the information provided during the training, all attendees received a packet of handouts and interactive worksheets that were also provided to families enrolled in the LAPE program. See Appendix D for examples of relevant packet materials developed by the LAPE coordinator.

Weekly Meetings. In addition to the group-training workshop, LAPE students attended weekly meetings, approximately 1.5 hours in length. These meetings included all enrolled students and supervisors, and included the following elements and activities to support continued learning: LAPE strategy practice, adult-child interaction video analysis, group discussion/session debriefing, lesson planning, and feedback from supervisors.

Written Reflections. After each 1-1 play and group session, students completed a LAPE reflection form (see Appendix E) identify what she had done well, and would like to do differently the next time. In addition, students qualitatively rated their frequency of use for each category of LAPE strategies (i.e., positive behavior supports, environmental arrangement, and

responsive interaction) described in subsequent sections. For each LAPE strategy type, students selected one of the following options: a) never, b) sometimes (1-3 instances), frequently (4-5 instances), and consistently (5+ instances) to describe usage. Students were also asked to describe which specific strategies within a category were used. All LAPE reflection forms were submitted to the LAPE coordinator and reviewed by the PI.

Supervisor Feedback. Supervisor feedback was provided regularly throughout the 10-week training program. Feedback was delivered weekly through the written reflection forms, as well as during weekly meetings. Feedback during the weekly meetings was group oriented, as the written reflections provided streamlined and frequent individualized feedback/support. The LAPE coordinator, supervisor, and PI also completed the LAPE reflection forms each time they observed the students for each student throughout the practicum placement.

Individual Coaching. Generalized coaching on strategy use and activity planning were provided during the initial group-training workshop, weekly meetings, as well as during the individualized feedback sessions. Students received two individualized coaching sessions—one at midterm, and one towards the end of the program. During these sessions, the LAPE coordinator and PI met individually with each student to discuss performance, concerns, and provide direct coaching tailored to students' needs. The format for these sessions included a discussion of what the student felt he/she was doing well, would like more support in, and a review of previous written reflections. Students were additionally asked to provide feedback/suggestions regarding the program structure and cross-disciplinary experience.

Design and Procedure

This study used a pre / post quasi-experimental design to examine the effectiveness of the LAPE program as a model of cross-disciplinary graduate student training in naturalistic

communication interventions (NCIs). Outcome measures included pre-post competency and self-efficacy questionnaires and analysis of student-child interaction videos collected at three time points during the Fall 2016 term: prior to the start of practicum, directly following the 8-hour in-service training (i.e., weeks 2-3), and directly following the individual coaching/feedback session (i.e., weeks 7-8). Videos were reviewed and coded for use of language-enhancing strategies emphasized during the group training workshop.

Questionnaires. Questionnaires are both a time and cost-effective method for collecting a variety of qualitative and quantitative data (Bryman, 2015; Cohen, Manion, & Morrison, 2013). Numerous studies have used this method to analyze the effectiveness of in-service training on promoting language development for professionals working in EI/ECSE (e.g., Scarinci, et al., 2014; McDonald, et al., 2015; Girolametto, et al., 2003). As such, the principal investigator designed pre-post competency and self-efficacy questionnaires (see Appendix F) to assess students' knowledge of child language development, language-enhancing strategies and overall confidence in strategy implementation (i.e., research question #1). All students completed the pre-questionnaire on paper in the presence of the principal investigator just prior to the start of the LAPE in-service workshop. The post-questionnaire was also completed in the same fashion during the final LAPE team meeting during week ten of Fall term.

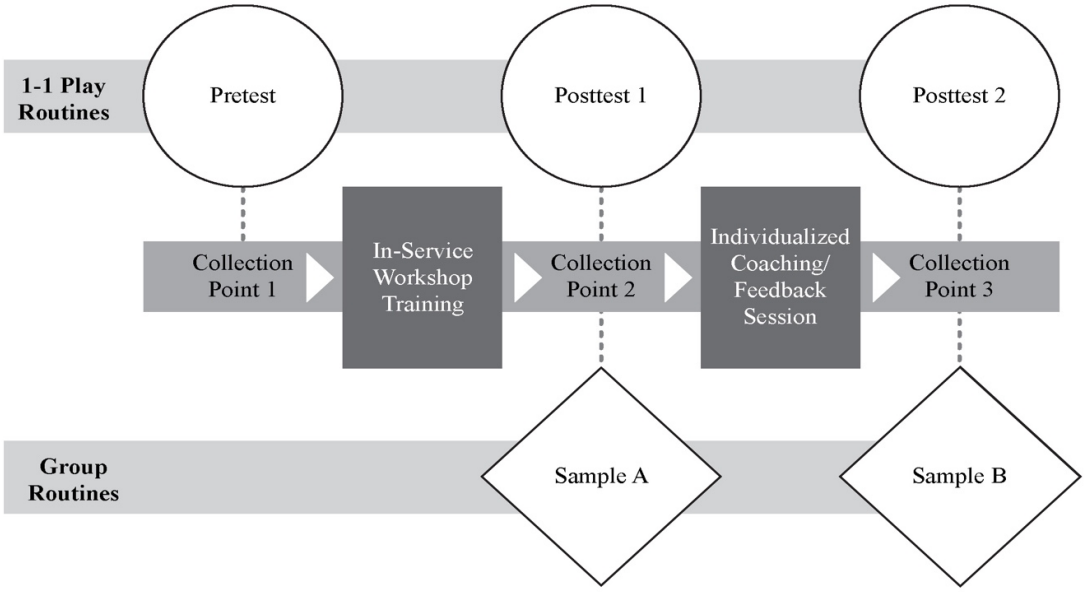
The competency and self-efficacy questionnaires were comprised of a mix of response formats, including open-ended, multiple choice, and scaling questions involving a 1-10 Likert style scale. Content related to the topics covered during the LAPE in-service training workshop (e.g., child language development; LAPE strategies) as well as self-confidence and the practicum experience as a whole. The post-questionnaire included additional questions related to the students' overall satisfaction with the placement.

Questionnaire Analysis. Quantitative and qualitative analysis was used to evaluate all pre- and post-questionnaires. All open-ended questions were reviewed using qualitative content analysis (Graneheim & Lundman, 2004). Prior to reviewing the open-ended responses, specific criteria were established for each competency-related question, and subsequently assigned a numerical value indicating whether or not the response met the criteria completely, partially, or not at all. All multiple-choice questions contained one correct response that also corresponded to a numerical score. Descriptions of the numerical scoring system used for the questionnaires can be found in Appendix H. All numerical data obtained from open-ended, multiple choice and scaling questions were then analyzed by the principal investigator using Microsoft Excel for Mac Version 15.3.

Student-Child Interaction Videos. Video recordings of adult-child interactions are an effective method for measuring adults' overall responsivity and use of language-enhancing strategies (e.g., Kaiser & Hancock, 2003; McDonald, et al., 2015; Piasta, et al., 2012). For this study, student-child interaction videos were collected at three time points in order to answer research questions #2 and #3. See figure 1 for a complete description of the student-child interaction video collection process.

Figure 1.

Student-Child Interaction Video Collection Process.



Each participating graduate student clinician was first videotaped interacting with their assigned child during a home visit prior to the start of the LAPE training program. During the 1-1 play routine sample, the student clinicians played with their assigned children using a standard set of toys provided by the principal investigator. A variety of age-appropriate toys, including blocks, puzzles, books, bubbles, and dolls were used. For the pre-samples, student clinicians were instructed to use any strategies or techniques they typically use with young children to encourage communication. These same 1-1 play routines were videotaped again directly following the 8-hour in-service training (posttest 1), and after their individual coaching/feedback session with the LAPE program coordinator towards the end of the term (posttest 2).

In addition to the 1-1 play samples, the students were videotaped while leading a group routine activity during two LAPE toddler playgroups. Each clinician was assigned a different age-appropriate, interactive routine to plan and implement throughout the course of the term. See Table 3 for descriptions of the routines analyzed for this study.

Table 3

Playgroup Routines for Student-Child Interaction Videos.

Participant	Sample A Routine	Sample B Routine
EIP 1	Music/Movement	Music/Movement
EIP 2	Literacy/Story-time	Literacy/Story-time
CDS 1	Snack-time	Science/Sensory
CDS 2	Cars/Group Play	Art/Sensory

Note. CDS 1 and CDS 2 completed different routines during Sample A and Sample B due to technical issues related to camera.

Clinicians were instructed to utilize LAPE strategies during planning and implementation of their assigned routine. Two group routine video samples were collected per student clinician. The first group routine was videotaped directly after the 8-hour in-service training (sample A), and the second was videotaped after the individual coaching/feedback sessions with the LAPE program coordinator towards the end of the term (sample B).

Student-Child Interaction Analysis and Reliability. Five-minute samples of each 1-1 play and group routine video recording were analyzed and coded by the principal investigator and/or a research assistant. For all but two of the video samples, a standard procedure was used to select the start and end points of the coded segments. Each start point was determined by subtracting two minutes and 30 seconds from the absolute midpoint of the video recording. Five continuous minutes from this time point were then reviewed. Due to technical difficulties and/or challenging child behaviors, two of the coded 5-minute samples were comprised of two video recordings of the same routine that were each shorter than five minutes. In these instances, the

video recordings were combined to yield a 5-minute sample. The longer of the two recordings was coded in full, and the remaining time needed was taken from the shorter video. Before coding the study video samples, inter-observer agreement (IOA) between the PI and a research assistant was established on non-study videos to a level of 90%.

Three overall categories of LAPE strategies addressed during the in-service workshop were coded: positive behavior supports (PBS); environmental arrangement (EA) techniques; and responsive interaction (RI). Each overall category was sub-divided into specific strategies/techniques or behaviors (see Table 4 for descriptions and their operational definitions). In the 1-1 play routines, two adult behaviors were coded for PBS (A-B in Table 4). Across all samples, five strategies were coded for EA and three techniques/behaviors were analyzed for RI. Additionally, information on child behaviors (e.g., compliance, presence of challenging behaviors; attention/interest) likely to affect student clinician performance was included on the video coding protocol.

Given inherent differences across strategies, the video coding protocol included various methods for evaluating strategy use (e.g., tally systems; discrete questions) to allow for effective and streamlined analysis (see Appendix I for complete protocol). For all raw data collected, a corresponding numerical score was assigned to reflect the various LAPE competencies. Each of the three overall categories (i.e., PBS, EA, and RI) had a total possible score, which combined to yield a total score. Descriptions of the numerical scoring system used for the video protocol can be found in Appendix J. All numerical data obtained from the video protocols were analyzed by the principal investigator using Microsoft Excel for Mac Version 15.3.

Table 4

LAPE Strategies and Operational Definitions.

LAPE Strategy	Operational Definition
Positive Behavior Supports	A variety of strategies to promote favorable interactions: (a) designing the activity to be fun, interactive, and age-appropriate; (b) following the child's interest
Environmental Arrangement (EA) Techniques	
In View But Out of Reach (INVOOR)/Assistance	Placing a desirable object where the child can see it but cannot reach for it or open it, so the child must ask for the item or assistance (request).
Piece by Piece	Giving small portions of preferred objects or actions so that the child needs to ask for more (request).
Choices	Giving the child a choice between two or more objects or activities (request).
Introduce Something New or Wrong	Adding something new or unexpected to a favorite activity so that the adult and child can talk about it (comment or protest).
Silliness	Doing something that is unexpected, so that the adult and child can talk about it (comment or protest)
Responsive Interaction	
Gesture Expansion	The adult expands the child's communicative gesture by repeating or responding to the gesture and adding no more than 1-2 word or signs.
Verbal Expansion	The adult expands the child's utterance by adding no more than 1-2 words or signs. Utterances carrying little semantic meaning or are ambiguous (e.g., "wow"; "oops") are not included.

Waiting	After using an EA technique to create an opportunity for the child to communicate, the adult waits ≥ 3 seconds for the child to display a clear request for the object/action, or a comment.

Source. Operational Definitions of LAPE strategies are adapted from Moore, et al. (2014) and Kaiser, A.P. (2016) ACE EMT Code. Unpublished coding protocol. Vanderbilt University.

The principal investigator coded all 20 of the video samples. Thirteen (65%) were additionally coded by a research assistant for reliability. All reliability was calculated using the following formula, as described by Kaiser and Hester (1994) and Girolametto et al., (2003): number of agreements / the number agreements + disagreements x 100. Whenever 90% IOA on a video sample was not achieved, the principal investigator and research assistant met to discuss the disagreement and reach a consensus. Four of the thirteen videos coded by the research assistant required consensus. Overall reliability averages were as follows: pre-video samples (86% initially; 98% with consensus); post 1 group samples (100%); post 1 play samples (81% initially; 100% with consensus); post 2 group samples (93%); post 2 play samples (95%).

CHAPTER III

RESULTS

The purpose of this study was to examine the effectiveness of the LAPE program as a model of cross-disciplinary graduate student training. Multiple outcome measures, including a pre-post competency/self-efficacy questionnaire as well as analysis of student-child interaction videos, were used to evaluate the degree to which students' knowledge and use of child language development principles, language-enhancing strategies, and overall confidence changed throughout the 11-week practicum experience. Results will be addressed in relation to each of the three research questions using descriptive statistics. First, data from the pre-post competency/self-efficacy questionnaire will be presented. Next, given the small number of participants in this study (n=4), results from the student-child interaction videos will be presented as individual case studies. Individual data for all individual play samples will be compared, followed by results from the group samples. Finally, whole group averages across all student-child interaction videos (i.e., individual play and group samples) will be presented.

Overall Confidence and Knowledge Outcomes

Research Question 1 examined students' knowledge of child language development, language-enhancing strategies, and overall confidence in strategy implementation using a pre-post competency/self-efficacy questionnaire. Summary data from the confidence/self-efficacy related portions and knowledge-based portions of the questionnaires are found in Table 5. Data for the confidence variable represents average scores across all 11-items contained within that section of the questionnaire. As previously mentioned, each of the confidence-related questions asked students to rate their confidence using a 1-10 Likert style scale. Items within the section included a range of EI/ECSE related roles and responsibilities, including overall confidence with

planning and implementing age-appropriate activities (pre *M* = 6; post *M* = 9), helping young children develop communication skills (pre *M* = 6; post *M* = 8.25), and working on an interdisciplinary team (pre *M* = 8; post *M* = 9.25). Knowledge variable scores reflect the total score earned by the students on the numerical scoring system created by the principal investigator to quantitatively evaluate multiple choice and open-ended questions (see Appendix F). The 12 items within this section included a range of knowledge and skill areas necessary to incorporate NCIs in EI/ECSE practice. Content included providing examples of communication enhancing strategies (pre *M* = 3; post *M* = 5), defining various terms related to speech-language development (e.g., *fast mapping* pre *M* = 0.25; post *M* = 1.75) as well as demonstrating an understanding of the various stages of early language development. For complete group mean scores per item, see Appendix G.

Table 5

Pre-Post Competency/Self-Efficacy Questionnaire Outcomes by Variable.

	EIP 1	EIP 2	CDS 1	CDS 2	Group
Variable					*M*
Confidence[a]					
Pre	6.36	6.45	7	3.73	5.89
Post	7.45	7.55	9.09	8.18	8.07
Knowledge[b]					
Pre	6	6	10	5	6.75
Post	14	14	16	17	15.25

Note. Pre = pretest; Post = posttest

[a]Mean scores across Likert-style scale responses (out of 10 possible)

[b]Total scores on numerical scoring system (out of 20 possible)

Results of analyses completed for the pre-post competency/self-efficacy questionnaires indicate variability amongst students. Of note, CDS students scored slightly higher than the EIP students across both variables at posttest. CDS 2 demonstrated the greatest gains in both

confidence and knowledge related measures, scoring lower than all other students at pretest within each section. Overall, results indicate that all of the graduate student clinicians made growth in both their overall confidence and knowledge of child language development and language-enhancing strategies across the 11-week practicum placement. Increased scores occurred across all students on all of the 23 items of the questionnaire. At posttest, all students were able to provide and explain at least 5 language-enhancing strategies, as well as write about how to appropriately teach language to children of varying abilities across different scenarios. In addition, the highest reported levels of confidence included being able to help young children develop language skills, work on an interdisciplinary team, as well as plan, implement, and lead age-appropriate play and language-based activities for young children.

Student-Child Interaction Video Outcomes

Student-child interaction videos were collected at three time points during the Fall 2016 term: prior to the start of practicum (pretest), directly following the 8-hour in-service training (posttest 1/sample A), and directly following an individual coaching/feedback session (posttest 2/sample B). Due to programmatic constraints, the individual play routines were collected at three time points, and the group routines were collected at two time points only. As such, results from the two group samples (i.e., samples A and B) will be presented separate from the individual play samples. *Research Question 2* examined the students use of language-enhancing strategies directly after the 8-hour group training workshop. *Research Question 3* examined any further increases in language-enhancing strategy use since posttest 1 when provided with an individualized coaching/video feedback session towards the end of the practicum experience.

All student-child interaction videos were coded and analyzed for use of PBS, EA, and RI strategies. The video coding protocol was divided into these three categories, and a numerical

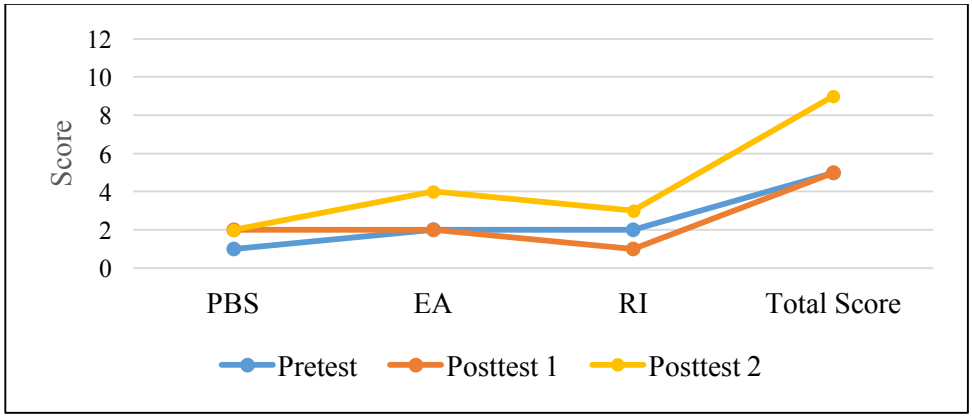
score was given based upon performance. Students could receive a total possible score of 12 for each video sample—two possible points for PBS, six possible points for EA, and four possible points for the RI categories. The scoring system used for the video samples can be found in Appendix J. Corresponding data from the individual play and group video samples will be addressed per participant in the sections below.

EIP 1.

Individual Play Samples. Directly following the 8-hour in-service workshop, EIP 1 increased her use of PBS strategies (see Figure 2 on next page), receiving the maximum possible score for the PBS category and indicating mastery of the trained strategies. Her EA strategy use remained the same and her RI strategy use decreased slightly. As such, there were no changes in her total score at posttest 1 since the pretest sample. Once provided with an individualized coaching/video feedback session with the principal investigator and LAPE coordinator, EIP 1 further increased her use of EA and RI strategies, and maintained mastery of PBS strategies in the posttest 2 sample. Overall, EIP 1 demonstrated a total score increase of four points, indicating growth in trained skills within the 1-1 play context.

Figure 2.

EIP 1 Individual Play Outcomes by Variable.

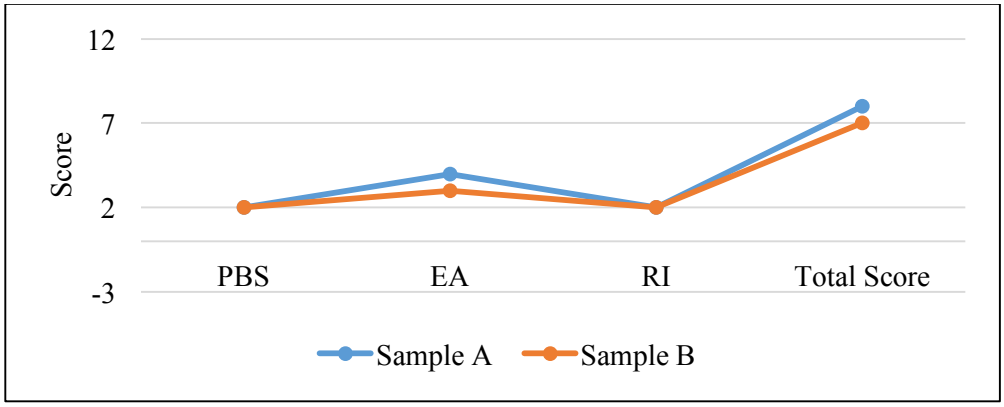


Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; total score—12.

Group Samples. Overall, EIP 1 did not increase her use of language-enhancing strategies across the group samples (see Figure 3 on next page). PBS scores indicated mastery of these strategies prior to the initial LAPE workshop training, and they were maintained during both samples. Low level RI strategy use was maintained across the samples, however EA use decreased during sample B. Overall, EIP 1 demonstrated a total score decrease of one point following an individualized coaching/video feedback session, indicating no change in skills within the group context.

Figure 3.

EIP 1 Group Outcomes by Variable.



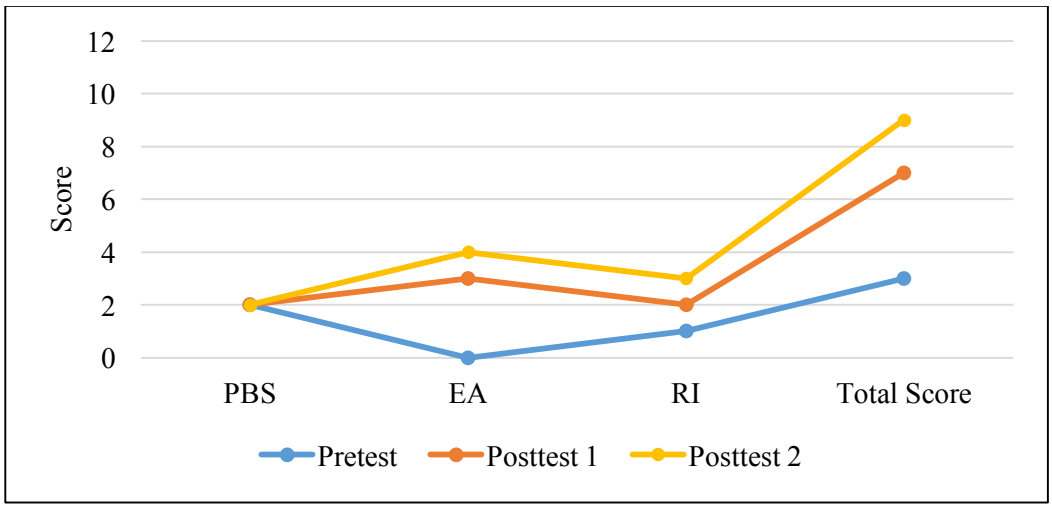
Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; total score—12.

EIP 2.

Individual Play Samples. At pretest, EIP 2 received the maximum possible score for the PBS category, indicating mastery of these strategies prior to the initial LAPE workshop training (see Figure 4 on next page). She maintained these skills at both of the other time points. Directly following the 8-hour in-service workshop, EIP 2 demonstrated an increase in EA and RI strategies as compared to the pretest sample. Of note, she demonstrated a three-point increase in EA strategy use during the posttest 1 sample, as well as a total score increase of four. Following the individualized coaching/video feedback session with the principal investigator and LAPE coordinator, EIP 2 further increased her use of EA and RI strategies and demonstrated a total score increase of six points indicating improvement in use of trained skills within the 1-1 play context.

Figure 4.

EIP 2 Individual Play Outcomes by Variable.

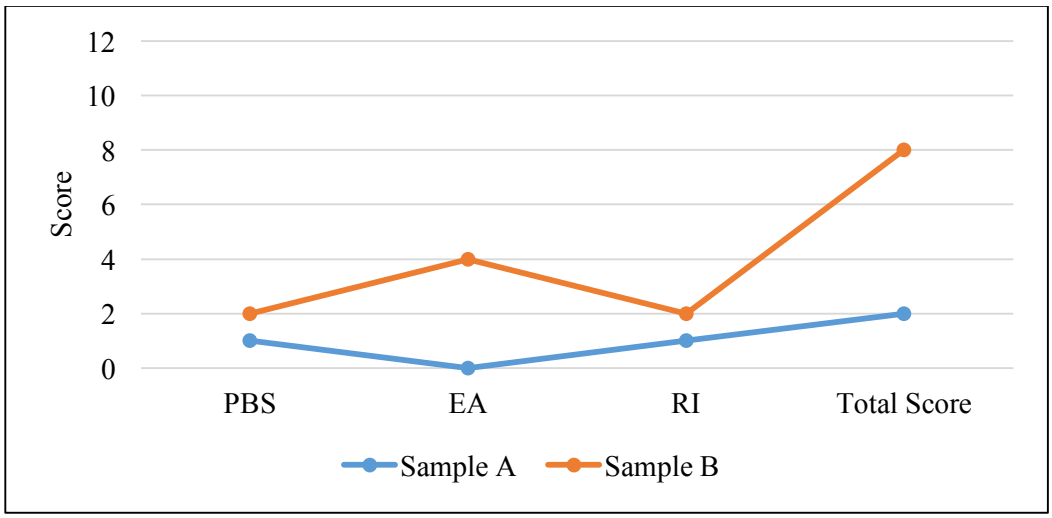


Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; total score—12.

Group Samples. Overall, EIP 2 increased her use of all language-enhancing strategies across the group samples (see Figure 5 on next page). Following the individualized coaching/video feedback session, she demonstrated a four-point increase in EA strategy, mastery of trained PBS skills, and a total score increase of six points indicating improvement in use of trained skills within the group context.

Figure 5.

EIP 2 Group Outcomes by Variable.



Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; Total score—12.

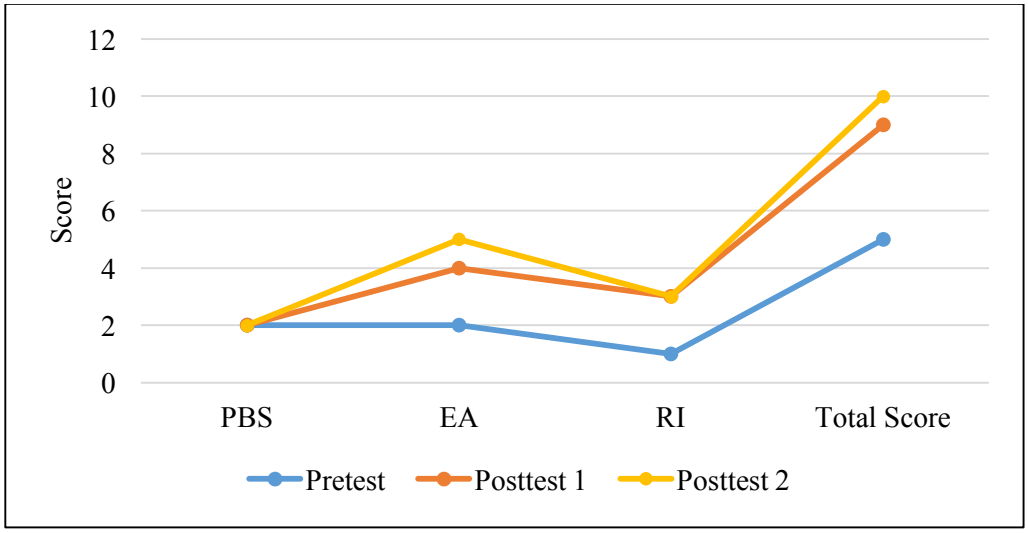
CDS 1.

Individual Play Samples. CDS 1 demonstrated mastery of PBS strategies prior to the initial LAPE workshop training (see Figure 6 on next page). These skills were maintained at posttest 1 and posttest 2. Directly following the 8-hour in-service workshop, CDS 2 demonstrated a two-point increase in both EA and RI strategy use. Following the individualized coaching/video feedback session, CDS 2 further increased her use of EA and RI strategies, achieving the highest usage/mastery of all students. Overall, she demonstrated a total score increase of five points between pretest and posttest2, with greatest improvements observed during at posttest 1 indicating improvement in use of trained skills within the 1-1 play context.

.

Figure 6.

CDS 1 Individual Play Outcomes by Variable.

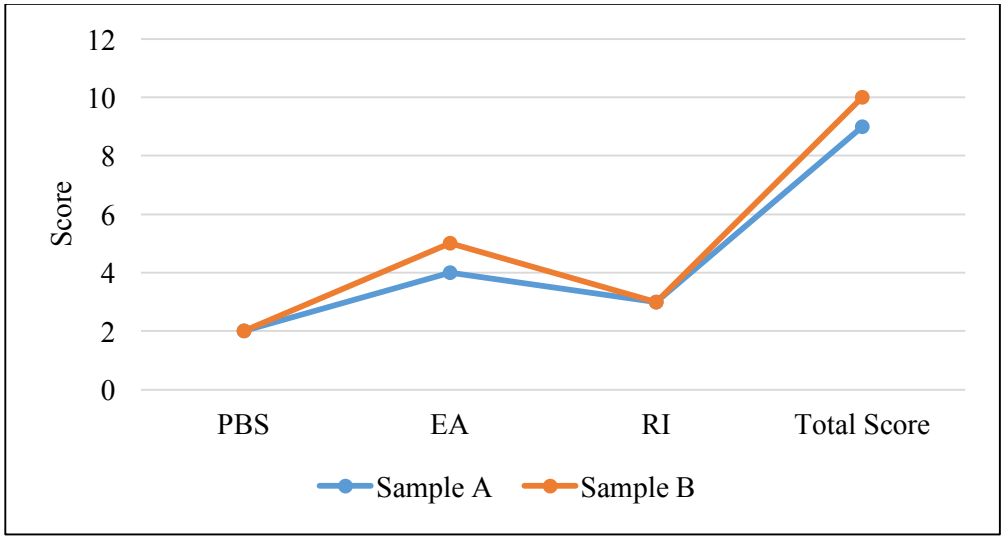


Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; total score—12.

Group Samples. Overall, CDS 1 demonstrated a minimal increase in her use EA strategies after the individualized coaching/video feedback session (see Figure 7 on next page). Her RI strategy use was maintained across the group samples. Similar to the individual play samples, she demonstrated mastery of PBS skills at sample A, which continued at sample B. Overall, CDS 1's scores were high at sample A and her total scores only increased by one point following individualized coaching/video feedback (sample B) indicating improvement in use of trained skills within the group context.

Figure 7.

CDS 1 Group Outcomes by Variable.



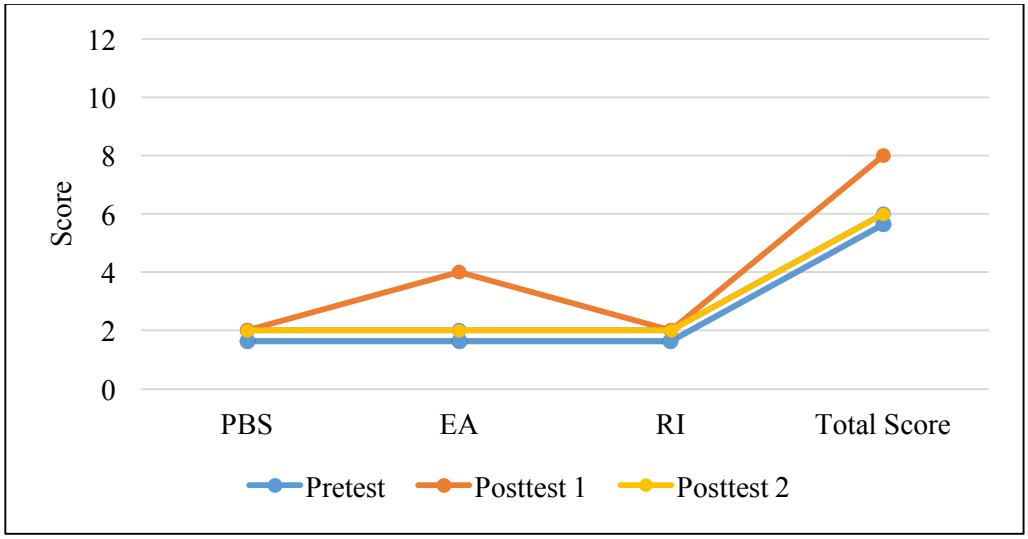
Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; total score—12.

CDS 2.

Individual Play Samples. At pretest, CDS 2 received the maximum possible score for the PBS category, and this was maintained across all play samples (see Figure 8 on next page). After the in-service workshop, her use of EA strategies increased while her RI score remained the same. Her total score at posttest 1 indicated an overall increase of two points. However, following the individualized coaching/video feedback session with the principal investigator and LAPE coordinator, CDS 2's RI strategies remained the same and her use of EA strategies returned to pretest levels indicating growth in use of trained skills within the 1-1 play context.

Figure 8.

CDS 2 Individual Play Outcomes by Variable.

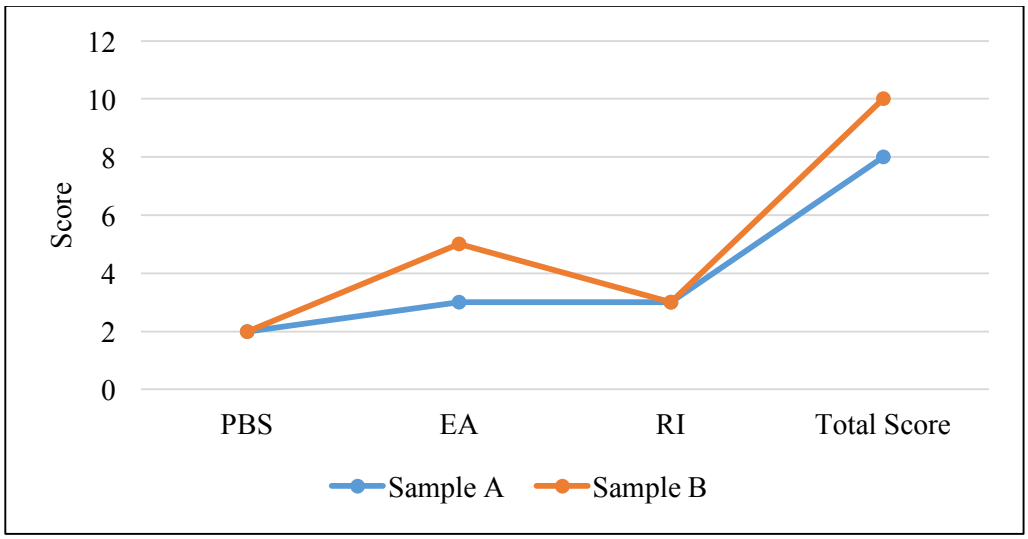


Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; total score—12.

Group Samples. Scores across samples revealed improvements in EA strategy use, as well as mastery of PBS strategies (see Figure 9 on next page). Similar to the individual play samples, her RI score remained unchanged since sample A, though it reflects near mastery of the strategies (3 of 4 possible). Additionally, her score of 5 (of 6 possible) within the EA category suggests near mastery of the skills. As such, her total scores across both samples were amongst the highest of the four students.

Figure 9.

CDS 2 Group Outcomes by Variable.



Note. Maximum possible scores for each variable are as follows: PBS—2; EA—6; RI—4; total score—12.

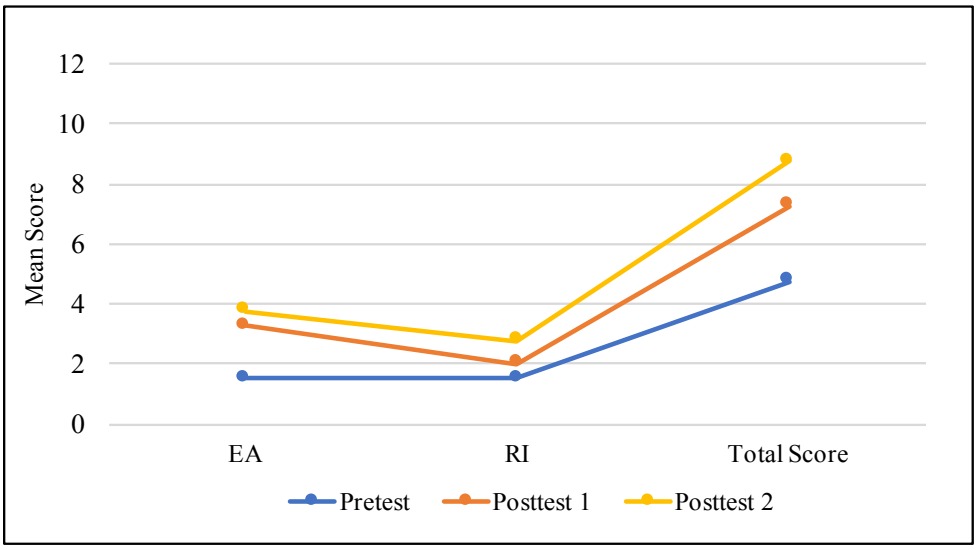
Whole Group.

Individual Play Samples. Mean scores indicate that students, on average, increased use of EA and RI strategies directly following the 8-hour in-service workshop (posttest 1), as well as after the individualized coaching/video feedback session (posttest 2). Students demonstrated an average 1.75-point increase in EA strategy use, as well as an average 0.5-point increase in RI strategy use and an average 2.5-point increase in their total score between pretest and posttest samples (see Figure 10 on next page). In addition, group mean scores indicate further improvements in strategy use between the posttest 1 and posttest 2 samples. Following an individualized coaching/video feedback session, students further increased their EA use by an average of 0.5 points. In addition, students demonstrated an average 0.75-point increase in RI strategy use and an average 1.5-point increase in total score between the posttest 1 and posttest 2 samples. As such, participation in the LAPE program led to an average 2.25-point increase in EA

strategy use, a 1.25-point increase in RI strategy use, and a 4-point increase in total score across students.

Figure 10.

Individual Play Mean Outcomes by Variable.



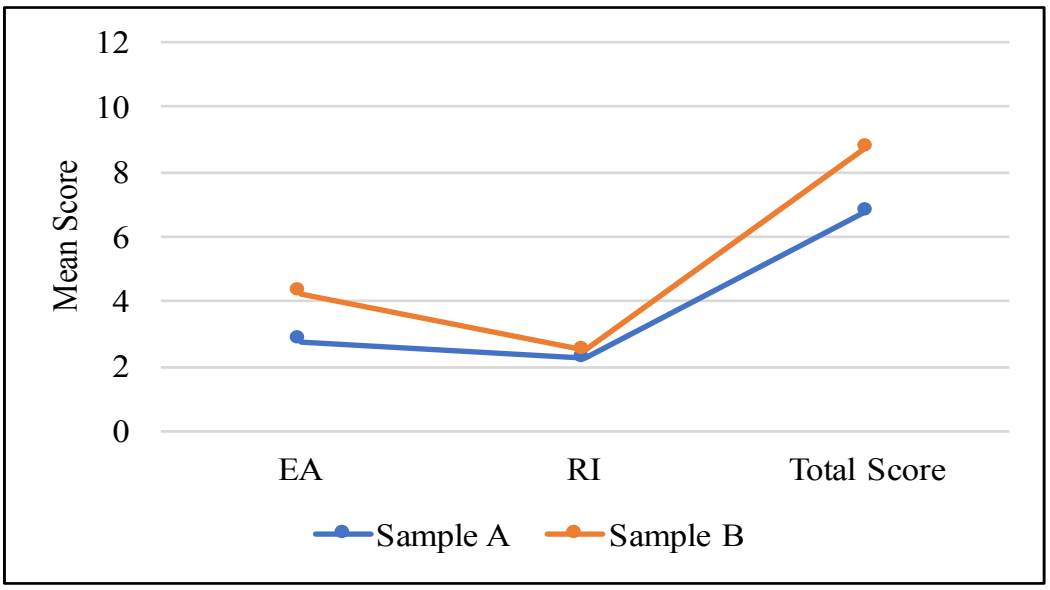
Note. All graduate clinicians (except EIP 1 at pretest) achieved the maximum possible score for the PBS category across all individual play samples, indicating early mastery of these strategies. As such, PBS scores are not presented.

[a] Maximum possible scores for each variable are as follows: EA—6; RI—4; total score—12.

Group Samples. Similar to the group mean results for the individual play samples, students demonstrated, on average, an increased use of EA and RI strategy use after their individualized coaching/video feedback sessions. Though no pre-LAPE practicum samples were collected for the group routines, students demonstrated an average 1.5-point increase in EA strategy use, a 0.25-point increase in RI strategy use, and a 2-point increase in their total score between the two collection points (see Figure 11 on next page).

Figure 11.

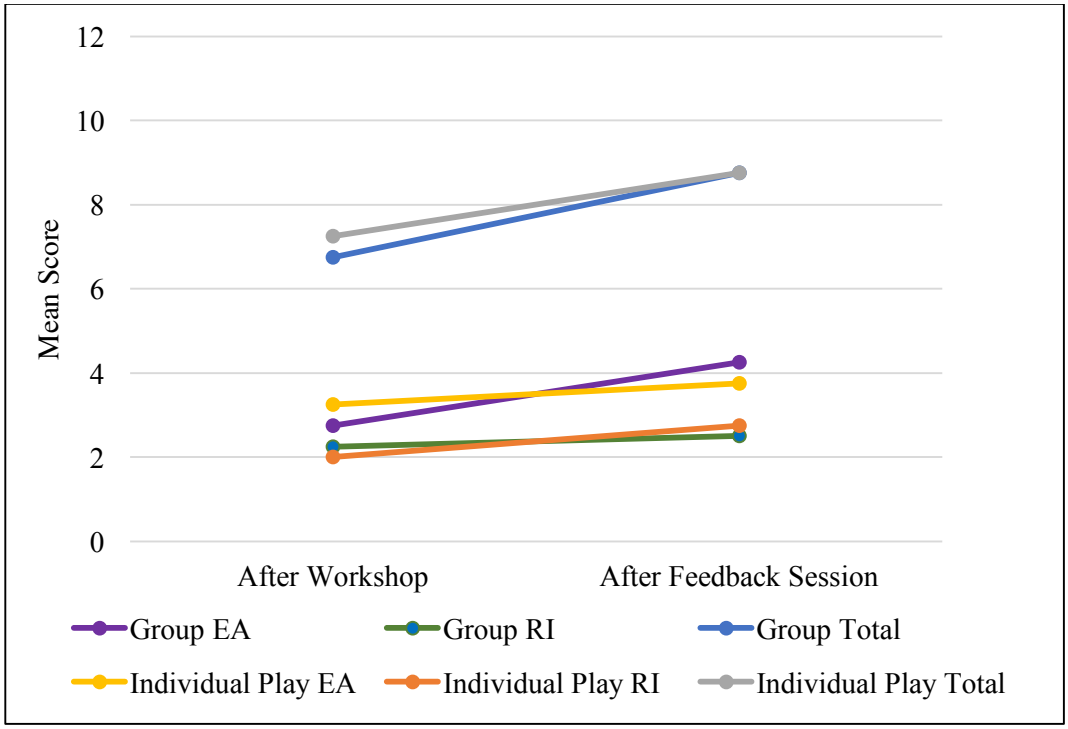
Group Mean Outcomes by Variable.



Comparison of Group Averages for Individual and Group Samples. Group average scores from the group and individual play samples collected after the 8-hour in-service workshop (i.e., posttest 1; sample A), as well as those following the individualized coaching/video feedback sessions (i.e., posttest 2; sample B) were analyzed. Mean scores across the individual play and group samples indicate students' use of EA and RI strategies varied with context. After the workshop, average scores indicate that use of EA strategies as well as total scores were greater within the context of individual play (see Figure 12 on next page). Nonetheless, average RI scores were 0.25-points higher within the group context directly following the workshop. Following the individualized feedback/coaching sessions, average EA use was greatest in the group context. These scores demonstrate that students, on average, improved EA use most across the group routines throughout the LAPE practicum. RI use after the feedback sessions again differed minimally across contexts, with average RI use greater within the individual play context by .25-points.

Figure 12

Comparison of Group and Individual Play Mean Outcomes



Note. "After Workshop" data reflect mean scores from the posttest 1 and sample A videos. "After Feedback Session" data reflect mean scores from the posttest 2 and Sample B videos.

CHAPTER IV

DISCUSSION

This project was designed to evaluate the effectiveness of a cross-disciplinary personnel preparation program for CDS and EIP students at the University of Oregon. The LAPE program incorporates a variety of evidenced-based training elements to provide students with specific instruction and supervised experiences in collaborative service delivery and empirically validated NCI (e.g., environmental arrangement, responsive interaction). During the 10-week placement, students attended an 8-hour pre-training workshop as well as 2-hour weekly group meetings. In order to ensure use of the LAPE strategies, students also completed written reflections and received individualized feedback and coaching from trained supervisors.

The effectiveness of the LAPE program was evaluated with multiple outcome measures. Several important findings were identified. First, the results of the current study indicate that LAPE is a promising model of cross-disciplinary preservice preparation in NCI. As indicated by Campbell et al (2009), graduate students in IDEA related disciplines need more specialized experiences in EI/ECSE service delivery, and the LAPE program is an effective example of how to facilitate this kind of training. All students improved their knowledge of child language development, language-enhancing strategies and overall confidence in strategy implementation after participating in LAPE (research question #1). Following the initial in-service training, all participating students increased their use of language-enhancing strategies from baseline, as indicated by improved total scores on the posttest 1 individual play samples (research question #2). Moreover, all but CDS 2 further improved their individual play total scores after receiving an individualized coaching/feedback session with the LAPE coordinator and principal investigator (research question #3). CDS 2's lack of further improvement in strategy

implementation during the posttest 2 sample may have been related to child behaviors during the collection of the sample. As previously mentioned, CDS 2 was assigned two toddlers for the study. Qualitative child data collected during the coding of the posttest 2 sample indicated that the children appeared upset, required multiple redirections and displayed several challenging behaviors including crying and reaching out for parents on multiple occasions.

In addition to the individual play sample results, group sample total scores also improved after the feedback session in three of four students (research question #3). EIP 1's total score for the group routine dropped by one point between sample A and sample B, though she acquired more than half of all possible points in the final group video sample. Changes in her total scores across the group samples reflect a decrease in EA strategy use, suggesting that she may have benefitted from further coaching in this area. Qualitative comparisons of the structure and content of her two planned group activities, however, indicate improvements in selection of materials and pacing following the feedback session.

Second, participant gains varied by strategy type and context, a finding also documented in previous studies of adult training on language-enhancing strategies for young children (Moore, et al., 2014; Girolametto, 2003). The four students in this study did not learn and utilize the LAPE strategies equally. PBS techniques were either used before training or mastered rather quickly after the initial in-service training, while EA and RI strategy use required additional training and more opportunities for practice within the individual play and group routine contexts. It is possible that PBS strategies are more familiar to those who have previous experience with children, or that they might be easier to understand and implement overall. In addition, final whole group mean scores indicate that EA strategy use was higher amongst students within the group routine context, while RI strategy use was minimally more prevalent

during individual play. A possible explanation for this finding is that EA strategies may be easier to implement when simultaneously working with multiple children at varying stages of language development. While EA strategies simply create the opportunity for an adult-child interaction, effective RI use requires an adult to be able to recognize a child's communicative attempt and respond contingently in the moment. As such, RI may be easier to implement within the individual play context given the increased time to become familiar with a child's unique communication style and the ability to focus on just one child at a time. Furthermore, it is possible that EA strategies, like PBS, are more concrete in nature than RI, requiring less time and practice to implement effectively. Students might need more guidance, direct modeling, and practice opportunities to utilize RI strategies while interacting with multiple young children with varying language abilities and temperaments.

Third, CDS students reported higher levels of confidence and demonstrated greater knowledge than the EIP students after completing the LAPE program. Though all students received the same amount of in-service training and direct feedback/coaching, it is possible that the child language disorders course that the CDS students were enrolled in may have impacted their gains in these areas. It may be useful to control for this during future trainings by administering the pre-post questionnaires to other students enrolled in the course. Furthermore, EIP students conveyed a desire for more opportunities to share their discipline-specific knowledge and perspectives with other LAPE students during their coaching/feedback sessions. Though efforts were made to establish a collaborative atmosphere and foster positive relationships amongst all students, initial team-building activities centered more upon social aspects. It may have been beneficial for the EIP students to explain more about their discipline at the start of the program, as this may have allowed them to feel more confidence as well as

improve all students' learning throughout the placement.

Clinical Training Implications

LAPE is an example of a cross-disciplinary graduate student training program developed through recommended practice guidelines from ASHA and DEC, as well as current research. The program was designed to provide students with direct training in caregiver coaching, child-language development, clinical assessment, and use of evidenced-based communication strategies. The following clinical recommendations are based upon outcomes of the present study.

First, student training that combines group training/workshop, practice, self-reflection, and feedback appears to effectively train graduate students in NCI. Group training/workshops may be effective for providing information to students from multiple disciplines in a short period of time. Providing adequate exposure to and training in collaborative EI/ECSE service delivery can be difficult given differing curricula and licensing requirements across IDEA part C related graduate programs. Workshops and group training can be time and cost effective, as well as encourage interaction across disciplines. Fostering positive social interactions amongst students should be emphasized through team-based activities that allow students to work directly with those from outside their discipline. Brief, group training/ workshops can provide experience with evidenced-based interventions and collaboration, as well as offer resources that can be used in the future. Given the existing lack of opportunity for interdisciplinary collaboration and instruction across IDEA Part C related programs (Bruder & Dunst, 2005), group trainings/workshops may be a feasible yet effective starting point.

Presentation of material should be sensitive to different learning styles, and include ample opportunities for discussion and application of learned materials. Providing several

models of strategy implementation is essential when initially training students in NCIs. Throughout the 10-week training, the students were provided with numerous models of appropriate language-enhancing strategy implementation for toddlers with a variety of abilities. In turn, several participating students reported that "seeing" the strategies and routines assisted with understanding and made it easier to incorporate them within activities. As such, the present results support previous research documenting the use of video feedback (Fukkink, & Tavecchio, 2010), coaching (Hanft, et al., 2004), and direct modeling (Ahrens, 2009) as evidence-based training elements to facilitate adult learning. Models of strategy use can be provided through a variety of methods, including in-person and video. Several models of strategy use involving children at varying stages of language development should be provided initially, with ongoing modelling of strategy use provided as needed.

However, it is evident that pairing individualized support, practice, and self-reflection with group training/workshops is more effective than group training alone. In LAPE, students typically improved their use of language-enhancing strategies over time. Students benefitted from ample opportunities for continued practice and reflection, as well as individualized feedback from the LAPE coordinator and primary investigator. As such, the current findings enhance the small body of existing research on preservice preparation in NCI (Boyer, 2014; Barton, et al., 2012). The purpose of the feedback sessions was to help the students identify which specific strategies they used well, which strategies they wanted to use more, and how to better implement them in individual play and group based contexts. Moreover, the feedback sessions were a time for the enrolled students to share their opinions about LAPE as a whole and discuss ways that the program could continue to improve. Incorporating the students' feedback ensured the program continued to meet and respond to the students' needs. By applying many of

the same coaching techniques that were used with the families in LAPE, students developed in relation to their own unique needs.

Second, personnel preparation for EI/ECSE service providers should take place within a child's natural environment to the greatest extent possible. Federal mandates and recommendations from the DEC (2014) and ASHA (2008) indicate that IDEA Part C services be family-centered, incorporating daily routines and naturalistic settings. Furthermore, the LAPE program teamed with a community-based EI/ECSE agency in order to best simulate "real-world" practice. Families were referred by agency providers for participation in the LAPE program, and students participated in multiple home visits, during which the video samples for this study were collected. Training students to deliver evidence-based interventions in settings that reflect the best-practice recommendations builds students' competency and confidence, leading to a better prepared workforce.

Third, as more personnel preparation programs involving NCI are developed, additional assessment measures that are more sensitive to these strategies will be necessary. There is only a small number of evaluation measures that objectively analyze adults' ability to wait and expand upon a child's language. For this study, the PI extensively searched the literature for an objective measure that could be used to evaluate the participating students' use of NCI strategies. The search yielded a small number of researcher-developed measures that did not satisfy the specific purposes of this study. Possible explanations may include the small number of studies that address these specific strategies, as well as challenges that are inherent to the strategies themselves. As such, the PI designed a video coding protocol and scoring system with operational definitions established by Moore, et al. (2014) and Kaiser (2016). However, several

adaptations to these definitions were necessary to establish fidelity with the LAPE training model.

In LAPE, the PI and research assistant initially encountered difficultly achieving inter-rater reliability with students' use of waiting, as it must follow the use of an EA strategy to be considered an RI technique. As such, issues may arise if the EA strategy is first incorrectly observed or missed altogether. Moreover, expansions can be coded in variety of ways, as evidenced by Kaiser (2016), who has developed the most comprehensive coding system to date. Establishing reliability with strategy observation is challenging, and time intervals or score ranges may be the most effective methods. Altogether, as more personnel preparation programs are implemented, evaluative measures should allow for detailed, yet time-efficient analysis of adult NCI strategy use.

Limitations and Future Research

There are several important limitations to consider, as well as opportunities for research in the future. First, only a small number of graduate student clinicians with varied years of experience with children were evaluated over the course of one term of LAPE practicum. Additional research involving more students across multiple terms would yield a more comprehensive picture of the potential effects of the LAPE program on student learning. Second, various design improvements, including the addition of control participants, transcription of student-child interaction videos, and collection of maintenance data would allow for more in-depth analysis of strategy use and increase the confidence of future findings. Transcription of videos may have allowed for better identification and objectivity of strategy use. In addition, collecting video of the students leading a group activity prior to the start of the LAPE placement would allow for better comparison across time and context.

Finally, the video coding protocol and scoring system designed for this study were not particularly sensitive to the various types of EA strategies and adult expansions observed. Though the video coding protocol designed for this study adds to the small body of evaluative measures for NCIs, coding problems were encountered early on and a scoring system that relied on the use of ranges per item was ultimately necessary to establish reliability between coders. The coding system designed for this study allotted an unequal amount of total possible points per general strategy domain (i.e., EA and RI). As such, comparisons of improvements across the domains was difficult to achieve, and future studies might consider using a percentage score or time interval system for comparison. With such adjustments, it is possible that a more nuanced analysis of students' use of language enhancing strategies may reveal further differences within and across the students. Future research is needed into designing a measure that could be effectively used to assess students' use of NCI strategies.

Future research should further examine effective models of preservice preparation that provide specific instruction and supervised experiences in collaborative service delivery and evidenced-based communication interventions. Given the gap between preservice training and what is both expected and required of professionals working in EI/ECSE, future studies could investigate students' abilities to provide parent education and coaching within natural environments. Furthermore, the impact of students' use of NCI on child vocabulary, mean length of utterance (MLU) and overall rate of communication would also add to the literature base.

Conclusion

The purpose of this study was to examine the effectiveness of the LAPE program as a model of cross-disciplinary graduate student training in NCIs. LAPE incorporated a group-training workshop, student-child interaction videos, as well as written reflections, weekly

meetings, and ongoing feedback/coaching to support student learning. Analysis of student-child interaction samples revealed that all students increased their use of language-enhancing strategies in group and/or individual play contexts directly following the workshop, and again after an individualized coaching sessions. Pre-post competency and self-efficacy questionnaires indicated students made growth in both their overall confidence and knowledge of child language development and language-enhancing strategies across the 11-week practicum placement. These findings suggest LAPE is a promising cross-disciplinary personnel preparation program, though further refinements are needed.

APPENDIX A

LAPE STRATEGIES

Language and Play Every Day

Daily Opportunities to Communicate

Communication Opportunities = Communication Practice

- Every time you and your child "talk" together, your child gets to practice their current communication skills and be shown new skills they can use in the future.
- With some small changes, you can increase the number of opportunities you create for your child to "talk" with you during daily routines and activities.
- The number of times you and your child "talk" with each other throughout the day will impact the rate in which your child learns new communication skills.

How Often Does your Child Currently Communicate?

- How many times did your child communicate with you during your recorded routines/activities? Is this typical? Does your child need to increase the number of times they communicate with you during an activity? Creating opportunities is more important in the early phases of vocabulary development (under 200 words) and becomes less important as children independently talk and initiate.
- Your child's personality may influence their rate of communication (adapted from "Learning Language and Loving it" by Elaine Weitzman and Janice Greenberg):
  - **Sociable children** enjoy communicating with everyone all the time and typically have a very high rate of communication. Their parents don't usually need to create opportunities for them to communicate. They are always "talking" about what they see and asking for what they want and need. They talk even if no one understands.
  - **Reluctant** children need extra time to warm up to people. They may enjoy spending more time with adults than with other children. If communicating is difficult for them, they might be reluctant to try. They are more likely to respond than initiate and so have have lower rates of communication. Parents may need to create more opportunities for their reluctant children to communicate during daily routines.
  - **Children with their own agendas** tend to be more independent and show little interest in sharing their thoughts, ideas, or observations with other people. They may have a much lower rate of communication and less practice communicating. Parents may need to create more opportunities for their children to communicate during daily routines.
  - **Passive** children rarely ever repond or initiate communication and tend to have a lower rate of communication. They are not very active and are not as interested in play. Parents have to work harder to create new opportunities for their children to communicate during daily routines.

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

CREATING NEW OPPORTUNITIES FOR YOUR CHILD TO COMMUNICATE

Give Your Child A Choice

Give your child a choice between two or more objects or activities (request)

- Food choices
- Clothing choices
- Choices of what to do or what to do next
- Choices of where to go or sit

In View But Out of Reach

Place a desirable object where your child can see it but cannot reach for it, so your child needs to ask for it (request)

- Put favorite toys on a high shelf
- Put bath toys on the bathroom counter not in the bathtub
- Put food on the table not on the highchair
- Stand up when you give toy choices so child can't reach

Assistance

Create situations in which your child needs to "ask" for your help (request)

- Give your child hard to operate toys
- Move the stool away from the sink
- Close bottles, jars, faucets very tightly

Piece by Piece

Give small portions of preferred objects so that your child needs to ask for more (request)

- Give one block/puzzle piece at a time
- Give small amounts of food
- Tickle, bounce, swing your child for small amounts of time

Do Something Silly

Do something that is unexpected, so you and your child can talk about it (comment or protest)

- Put clothes on the wrong way
- Change the words of a favorite song
- Say the wrong word
- March or walk in a funny way

Add Something New or Wrong

Add something new or unexpected to a favorite activity so you and your child can talk about it (comment or protest)

- Give dolls or trucks a "bath"
- Have a dinosaur ride a train
- Hang a new picture over the changing table or in front of car seat
- Give the wrong food

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

Language and Play Every Day

Choosing and Teaching Focus Words

Selecting and teaching focus words can help you ensure that you are a teaching a variety of new words to your child. Children need a variety of types of words (nouns, verbs, adjectives, etc.) to form early sentences.

How do we Pick Focus Words?

Consider choosing focus words that meet most of the following criteria:

- ✓ Words that are said **frequently**, that you can **model many times** during the day. Especially when children are just starting to talk they tend say words they hear most often.
- ✓ Words that are **functional** and have **meaning** to your child. Words, that if your child could talk, they would likely say.
- ✓ Words from a **variety** of word classes, such as labels for objects and people (nouns), action words (verbs), descriptive words (adjectives), etc.
- ✓ Words that are **easy** for your child to say. When children begin saying words, they tend to pick words that begin with an easy sound (early developing) and don't have too many consonant sounds together ("nana" is easier than "grandma").

How do we Teach Focus Words?

- ✓ Set up communication opportunities for your child to "say" the focus word.
- ✓ Respond to teach the focus word.
- ✓ Model the focus word as often as you can. Say it when you are giving directions, talking about what you are doing, or talking about what your child is doing.

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

Examples

Target word: help

Set up opportunities	Respond to teach "help"
You give Lydia an unpeeled banana	Lydia initiates by handing you the banana to request "help", you say "help" and peel banana
You give Oskar a bubble container with a tightly screwed lid	Oskar hands you the bubble container and says "open" and you reply "help open", open it and take out bubble wand and give to the him.
You give Lucia a tupperware container full of cookies with a lid she can't open	Lucia struggles to open the cookies, whines, and looks at you. You say "help" and help her open the cookies.
You lock the sliding door, so Kaiden needs "help" to unlock it and go outside	Kaiden pulls on the door, takes your hand to the door and says "open". You respond with "help me open" and then open the door.
You give Madison a sock to put on and wait until she asks for help	Madison struggles with the sock for awhile and you wait patiently. Finally, she hands you the sock and looks at you. You say, "help" and then put the sock on.

Target word: big

Set up opportunities	Respond to teach "big"
You put a plate of different sized cut-up bananas out of reach	Lydia reaches for the plate and says "banana" and you reply "big banana"
You give Oskar a choice of big socks or little socks.	Oskar points at the big socks and says "sock" and you reply "big socks"
You hang a picture of different sized animals on the back of your seat in the car.	Lucia says "brown bear" and you say "big brown bear"
You go for a walk and a big dog walks by.	Kaiden says "doggie!" and you say "big doggie"
You give Madison a choice of a "big block" or "little block" when stacking blocks.	Madison says "bok" and points to the little block. You say "little block--- I will use the big block"

Language and Play Every Day

Respond to Teach Something New

Set the Stage and Wait!

1. Do everything you can to limit distractions (such as turn off the TV, invite siblings to join the play, put away your phone.
2. Create an opportunity for your child to communicate.
3. Wait! Remember not to anticipate your child's needs and not to ask a question to get them to talk. Just wait.

Identify When your Child Initiates Communication

- Your child's communication may be subtle and you might need to look and listen closely.
- Remember, children communicate in lots of ways: eye contact, pointing, reaching, smiling, pushing, pulling, sounds, words, sentences. If it feels like your child is trying to tell you something, then they are.
- Accept and immediately respond to your child's attempt to communicate with you. Don't wait for them to do something else (or something preferred, such as wait for them to say "please"). At that moment, they are communicating in the best way they can- don't try to "make" them do something better.

Now Respond to Teach Something New

- As soon as your child communicates, respond immediately by:
  1. Looking directly at them (and if your child is requesting an object, hold the object in view).
  2. Say what you'd like your child to say the next time. **Repeat what they said/did and add something new.**
  3. Immediately do what your child was requesting. Don't wait. Let your child know that when they communicated, they got what they wanted. If you can't do what they requested, clearly explain why.

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

Examples

Opportunity Created: A see-through jar is put on the kitchen table.

Wait! Identify Communication Attempts	How you could Respond to Teach Something New
Waited… Jacob walked up to the table saw the cookies, looked at you and then sank to the floor and cried.	Get down on your Jacob's level, reach towards the cookies, say "cookie" (model both gesturing and saying a word). Get one small cookie and immediately give it to Jacob.
Waited… Margot took your hand and pulled you to the table and looked at the cookies.	Get down on your Margot's level, point at the cookies and say "cookie" (model a better gesture and saying a word). Get one small cookie and immediately give it to Margot.
Waited… Jose pointed at the cooke jar and whined.	Get down on Jose's level, point at the cookies and say "cookie" (imitate what Jose did and add a word). Say, "I'm sorry. No more cookies".
Waited… Maya said "taty" and pointed at the cookies	Take out one small cookie, hold it close to your face (so Maya sees the cookie and you) and say "want cookie". Give her the cookie.
Waited… Aran said "want tooty!"	Take out one small cookie, hold it close to your face (so Aran sees the cookie and you) and say "I want cookie" (model the pronoun they would say). Give him the cookie.

Opportunity Created: A new picture of a dog is hung over the diaper table.

Wait! Identify Communication Attempts	How you could Respond to Teach Something New
Waited… Jacob looked up at the dog picture and smiled	Smile, look and point towards the picture, say "doggie" (model both gesturing and saying a word).
Waited… Margot looked at the picture and vocalized "gooo"	Look and point towards the picture, say "doggie" (model both gesturing and saying a word).
Waited… Jose pointed at the pictures and grunted.	Look and point towards the picture, say "doggie" (imitate his gesture and add a word).
Waited… Maya said "doddie" and pointed	Look and point towards the picture, say "Big doggie" (imitate her gesture and word and add a new word).
Waited… Aran said "bown dog!"	Look at the picture and say "Brown doggie is jumping" (imitate his words and add 1-2 new words- make sure it it grammatically correct).

Language and Play Every Day

Wait!
For your Child to **Initiate** Communication

Initiating is better than Responding

- Conversations are a two-way street- someone needs to initiate and someone needs to respond. Ultimately, you want your child to both initiate communication and respond when you communicate.
- Initiating communication is better than responding for learning new communication skills. When children initiate communication with you they:
  - want to communicate with you.
  - are attending to you and therefore are more capable of learning a new communication skill.
- Think of conversations with your child as tennis matches, you want your child to serve and you want to hit back.
- Children with language delay are less liklly to initiate communication and this often causes parents to use strategies that try to "pull" out their child's words, such as directing them to say something ("say ball") or asking "test" questions, "what color is this?". Unfortunatley, these strategies encourage responding instead of initiating.

How do I get my Child to Initiate Communication?

- First, make sure there are **opportunitites** for your child to communicate. If favorite toys are out of reach or if your child needs assistance opening a door your child will be motivated to communicate with you.
- **Wait!** Set up the opportunity (e.g., put food out of reach) and then wait for your child to communicate with you. Children with langauge delay often take longer to communicate, so you might have to wait longer than you think. Try counting to twenty in your head.
- Don't anticipate your child's needs. Wait for your child to come to you.
- Try to **avoid asking questions** in an effort to encourage your child to communicate. Again, this makes them a responder instead of an initiator.
- If your child doesn't initiate, try giving them a choice between two objects or activities. You will be teaching them words they can use next time to initiate.

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

APPENDIX B

TEAM-BUILDING WORKSHEET

2016 LAPE Team-Building: Get to Know Your Peers!

You have 10 minutes to find someone who fits the description and write their name on the sheet. Your goal is to be the first to finish with as many different names as possible. Good luck ☺

1. Wears a size 6 shoe or below _____
2. Travelled to a foreign country this summer _____
3. Can *fluently* speak more than one language _____
4. Has met a famous person _____
5. Prefers Rihanna over Beyonce _____
6. Has climbed 2 (or more) mountains _____
7. Bikes to school _____
8. Was born *or* has lived on the east coast _____
9. Is *not* registered to vote _____
10. Likes mushrooms on their pizza _____
11. Has a tattoo _____
12. Knows how to do the electric slide _____
13. Can run 2 (or more) miles _____
14. Has moved more than 5 times _____
15. Prefers beer over wine _____
16. Can sing well _____
17. Worked out yesterday _____
18. Has gotten stitches or broken a bone _____
19. Is good with computers/technology _____
20. Believes in ghosts _____

2016 LAPE Team-Building: All About Me!

Take a few minutes to answer the questions below. When everyone has finished, we will go around and share responses with the whole group ☺

1. What experience do you have working with children?

2. What do you feel you will be able to contribute to your LAPE team this term?

3. What (if any) are some fears you have about participating LAPE this term?

4. What are you most excited to learn/do in LAPE this term?

APPPENDIX C

ROUTINE PLANNING WORKSHEET

DAILY ROUTINE WITH STRATEGY PRACTICE

With your group, plan an activity for your assigned child using the LAPE strategies you learned today.

Name of Routine/Activity: _____ People participating in this activity: _____

General description of the activity (include how it starts, who does what and how it ends):

Things I can do beforehand to make sure this activity is successful	**Opportunities for the Child to Communicate with me** My goal is for the child to initiate communication with me ____ times during ~5 minutes of this activity. Opportunities I can create:	**Wait!!!** Waiting for the child to initiate communication is important. This child is likely to communicate by: I will try not to "pull" out new skills by asking questions.	**Respond to Teach Something New** Gestures, words, and/or sentences that I can do or say in response to the child's communication:	**Teach Focus Words** Focus words that can be taught during this routine/ activity: How I can create new opportunities to teach this word: New ways I can respond to teach these words:

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

Heather's Group: *Sam and Susan (mother)*

- 23 months
- At-risk for ASD
- Verbal vocabulary = 27 words, including 10 signs
- Low rate of communication (under 2x/min) only for BR

Katie's Group: *Isabel, Kaiden, and Alex*

- All ~36 months
- Verbal vocabulary = 300+ words
- High rate of communication for variety of purposes
- Consistently speak in 2-3 word utterances; primarily nouns, verbs, adjectives
- Mild-to-moderate hearing impairments
- Families recently started using sign language

Megan and Christina's Group: *Toddler Playgroup*

- 20-27 months
- Verbal vocabulary = preverbal - 30 words
- Communicate through gestures and occasional words
- Varying rate of communication

Jessica & Michelynah Group: *Gaby*

- 40 months
- Verbal vocabulary = 260
- Consistently speaks in 2-3 word utterances
- Imitates regularly
- ASD
- Low rate of communication (under 2x/min) only for BR

	Stage 1: Gestures and Vocalizations	Stage 2: The first 50 words	Stage 3: 51-100 words	Stage 4: 100-200 words	Stage 5: 200-500+ words
Positive Behavior Support (PBS)	✓	✓	✓	✓	✓
Environmental Arrangement Strategies (EA)	✓	✓			
Responsive Interaction Strategies (RI)	✓	✓			
Milieu Teaching Strategies (MT)				✓	✓
Focused Stimulation (FS)-Choosing Targeted Vocabulary		✓	✓		

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

APPENDIX D

GROUP TRAINING PACKET

Language and Play Every Day

Communication Skills: Terms, Definitions, and Development

TERMS AND DEFINITIONS

- **Communication**: Any exchange between two or more people. Can be intentional or unintentional.
- **Language**: An intentional act that is meant to symbolically communicate with another person. Language always follows agreed upon rules and can be expressed in different ways (spoken, written, signed, through the use of pictures symbols).
- **Speech (Vocalizations):** Any sound made by our lips, tongue, voice, nasal cavity, and teeth.
- **Spoken Language (Verbalizations):** Intentionally, symbolically communicating with speech.
- **Sign Language:** Intentionally, symbolically communicating with your hands and body movements.
- **Gestures:** Hand and body movements that communicate something to someone. Gestures can be natural (such as reaching for something or pushing something away) or learned (such as waving bye-bye or putting a finger to your mouth to "shh") .
- **Social-Communication (Pragmatics)**: The social rules we follow when communicating with others, such as using eye contact to demonstrate interest, smiling to show enjoyment, talking in turns, and asking questions during conversations.
- **Grammar (Syntax)**: The rules about how we construct adult sentences.
- **Speech Sound Production (Phonology)**: The rules about how to include sounds in words.

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

FACTS ABOUT HOW CHILDREN DEVELOP COMMUNICATION SKILLS

- Babies communicate from birth. At first communication is unintentional, such as cooing and crying.
- Initially, babies vocalize sounds because they like the way they feel and sound.
- Babies learn to intentionally communicate because parents and other caregivers respond to their unintentional communication.
- Gestures also start unintentionally, such as pushing/shoving in protest and reaching towards an object. Gestures become intentional because they work- babies learn they can get parents and caregivers to do what they want them to do.
- Gestures AND vocalizations AND directed eye contact work the best to get others attention and clearly communicate wants and needs (before children learn to talk).
- Young children typically to learn to communicate for lots of reasons before they start talking: to request objects and activities, attract attention to themselves, comment about things they see or have, show dislike, and greet others.
- Learning to communicate symbolically is a very important step. Young children typically learn more complex gestures or sign language to communicate symbolically before they use spoken words. Learning to sign can help children to intentionally, symbolically communicate. Learing signs will not stop or delay kids from talking.
- Children will continue to use gestures, vocalizations, and eye contact to communicate after they start talking. Initially, rate of communication is more important than how children communicate.
- When children first start forming words, they simplify the sounds they put into the words to make them easier to say. Usually they do this in predictable ways, such as *dropping sounds at the end of words* (such as "da" instead of "dog") or *simplifying complex words* by saying just one consonant sound instead of 2- or 3- consonants together (such as "gamma" instead of "grandma"). All children do this no matter what age they start talking. Parents and caregivers should always model the correct adult-version of words, but not expect their children to say adult-productions until they have LOTS of practice talking (a verbal vocabulary of at least 500 words AND at least 2-3 years after they say their first word).

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

Language and Play Every Day

Daily Routines and Activities

You don't need to put aside special time to teach new communication skills to your child. Your child can learn new skills from you during all the activities you do together during the week. Learning new skills through daily routines works because daily routines/activities are:

- **Predictable**: Since these activities occur often, your child learns to predict what happens first, next, last. This predictability is comforting and allows them to be attentive, engaged learners.
- **Frequent**: We know that children's first words are likely to be words they hear their parents and other caregivers say frequently. Parents and caregivers tend to use the same set of words and sentences during daily routines and activities, such as "time to eat", "let's clean up", "let's go", "push!", "hold my hand".
- **Flexible**: With some small changes, you can increase the number of opportunities you create for your child to communicate with you during daily routines and activities. These opportunities allow time for your child to practice their current skills and be shown new skills throughout their day.

There are lots of different types of routines and activities that you may do with your child every week, including:

- **Personal Care Routines**

  Dressing Mealtime Diapering Bathing Bedtime

- **Play Activities**

  Playdough Scribbling Puzzles Blocks Ball Play Reading Books

- **Social Games**

  Peek-a-boo So Big! Hide and Seek Chase KaBoom!

- **Household Chores**

  Walking/ feeding/ giving special treats to your family pet Washing the dishes Folding the laundry

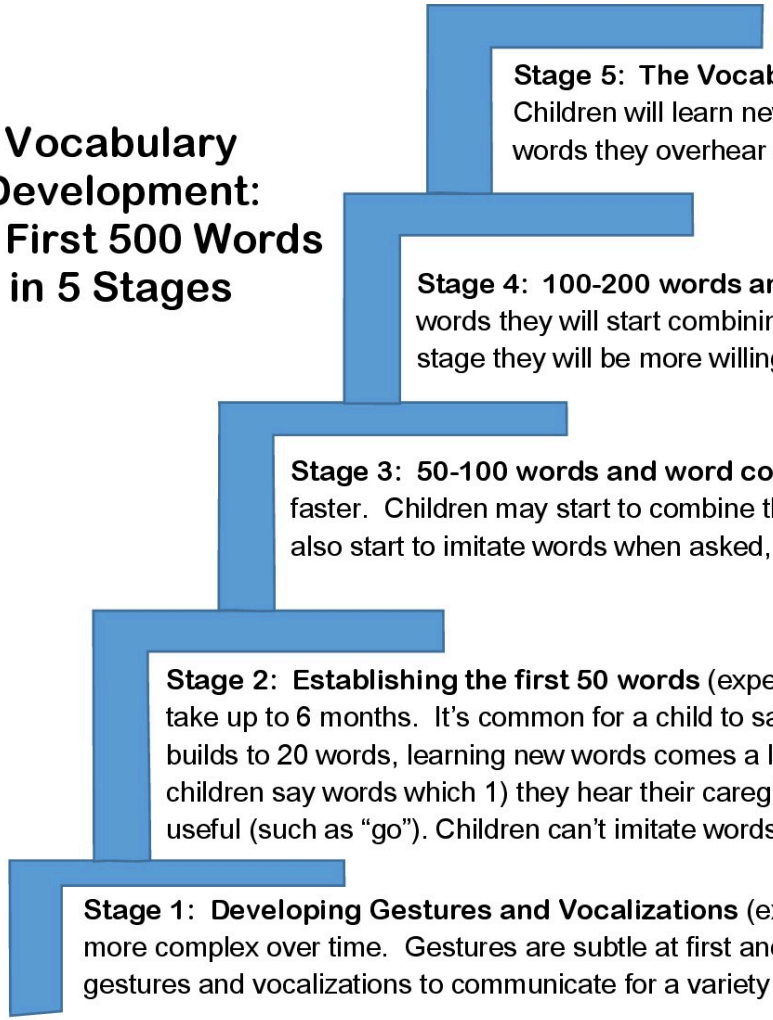
  Setting the table Getting the mail Taking out the trash

- **Outings**

  Grocery shopping Going for a walk Playing at the park Getting in/out of the car

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Everyday (LAPE) Program. University of Oregon Communication Disorders and Sciences Program (updated August, 2016).

Vocabulary Development: The First 500 Words in 5 Stages



Stage 5: The Vocabulary Explosion 200-500 words (expect 3-6 months) Children will learn new words every day during this stage. They are likely to imitate words they overhear others say and construct more complex 3-4 word sentences.

Stage 4: 100-200 words and small sentences (expect 3 months) Once children get 100 words they will start combining words into 2- and 3-word sentences. As they move through this stage they will be more willing and excited to imitate new and familiar words when asked.

Stage 3: 50-100 words and word combinations (expect 3 months) Word learning becomes a little faster. Children may start to combine the words they say most often into 2-word sentences. They may also start to imitate words when asked, but this will not be consistent yet.

Stage 2: Establishing the first 50 words (expect 9 months) The first 20 words are the hardest to learn and can take up to 6 months. It's common for a child to say a word and then not say it again for weeks. Once vocabulary builds to 20 words, learning new words comes a little faster and all words are said more consistently. In this stage, children say words which 1) they hear their caregivers say often, 2) are meaningful (such as "dada") and 3) are useful (such as "go"). Children can't imitate words yet. Words are simplified to make them easier to say.

Stage 1: Developing Gestures and Vocalizations (expect 1 year+) Babies vocalize at birth and vocalizations become more complex over time. Gestures are subtle at first and then become more recognizable. Before children talk, they use gestures and vocalizations to communicate for a variety of reasons (e.g., requesting, commenting, social interactions).

Developed by Heather Moore, Ph.D. CCC-SLP for the Language and Play Every Day Program. University of Oregon Communication Disorders and Sciences Program (updated September, 2016).

APPENDIX E

WRITTEN REFLECTION FORM

LAPE Reflection Form

Student: _____ Form Completed by: _____

Routine: _____ Date: _____

LAPE Strategy Use

Positive Behavior Supports (PBS): broad strategies/procedures designed to improve behavioral success

- Was the activity designed to be fun, interactive, and age-appropriate? ☐ Yes ☐ No
- Was the location/set-up designed to limit distractions during the routine? ☐ Yes ☐ No
- The child's interest/attention was followed…

  ☐ Never ☐ Sometimes (≤50%) ☐ Frequently (≤75%) ☐ Consistently (>75%)

Environmental Arrangement (EA): strategies that focus on selecting, arranging, and managing materials in *order to create opportunities for the child to communicate*

- Instances of EA use:

  ☐ Never (0) ☐ Sometimes (1-3) ☐ Frequently (4-5) ☐ Consistently (5+)
- EA strategies used:

  ☐ In View But Out of Reach/ Assistance ☐ Piece by Piece ☐ Choices

  ☐ Introduce Something New ☐ Silliness

Responsive Interaction (RI): being responsive to the child's communication initiations

- Instances of RI use:

  ☐ Never (0) ☐ Sometimes (1-3) ☐ Frequently (4-5) ☐ Consistently (5+)
- RI strategies used:

  ☐ Waiting (≥3 seconds after creating an EA opportunity)

  ☐ Repeat and Respond to Teach Something New

  ☐ Linguistic Mapping (expanding a gesture)

  ☐ Expansion (expanding a child's utterance, e.g., more → "want more")

Based on the ratings above, what went well/ should continue to be targeted? *(give specific examples)*

Based on the ratings above, what could be targeted next time? (*give specific examples)*

Overall Rating of LAPE Strategy Use in Routine

☐ never ☐ sometimes (≤50%) ☐ frequently (≤75%) ☐ consistently (>75%)

APPENDIX F

RE-POST COMPETENCY/SELF-EFFICACY QUESTIONNAIRES

Language and Play Everyday (LAPE) Pre-Questionnaire

In order to plan future trainings and ensure the LAPE program is a meaningful learning experience, please complete this questionnaire and return to Christina Tufford ***prior*** *the end of training on Saturday, October 1st 2016. Your information will be kept confidential.*

Student Code: _____ Age: _____

Highest level of education completed (circle one):

bachelor's degree *post-baccalaureate degree* *some graduate school* *graduate degree*

Relevant Experience (circle most appropriate responses)

1. Have you worked and/or volunteered with infants/toddlers with ***developmental delays or disabilities***?
   Yes No

   If yes, please describe your experience below:

   Hours of *Working* Experience

   Less than 20 *20-100* *Less than 500* *Less than 1000* *Less than 3000* *3000+*

   Position(s) held

   Part-time job *Full-time position* *Entry level (e.g. aide)* *Management position*

   Hours of *Volunteer* Experience

   Less than 20 *20-100* *Less than 500* *Less than 1000* *Less than 3000* *3000+*

2. Have you worked and/or volunteered with ***typically developing*** infants/toddlers?
   Yes No

   If yes, please describe your experience below:

   Hours of *Working* Experience

   Less than 20 *20-100* *Less than 500* *Less than 1000* *Less than 3000* *3000+*

   Position(s) held

   Part-time job *Full-time position* *Entry level (e.g. aide)* *Management position*

   Hours of *Volunteer* Experience

   Less than 20 *20-100* *Less than 500* *Less than 1000* *Less than 3000* *3000+*

3. Have you taken a class or attended a training in childhood language development?

Yes No

If yes, please describe your training (e.g., coursework; in-services)

_____
_____
_____
_____

How confident do you feel in your ability to play with young children?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to recognize when a child with a disability is communicating?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to plan and implement developmentally appropriate activities for infants/toddlers (e.g., choosing age-appropriate toys, books, games)?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to help young children develop new language skills?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to lead group activities that promote language development?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to lead group activities that promote play skills?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to lead group activities that educate parents on child language development?

Not at all confident *Very confident*

1 2 3 4 5 6 7 8 9 10

How confident do you feel in your ability to assess speech and language skills in young children?

Not at all confident *Very confident*

1 2 3 4 5 6 7 8 9 10

How confident do you feel in your ability to assess parent-child interactions?

Not at all confident *Very confident*

1 2 3 4 5 6 7 8 9 10

How confident do you feel in your ability to collect data on child communication?

Not at all confident *Very confident*

1 2 3 4 5 6 7 8 9 10

How confident do you feel in your ability to work on an interdisciplinary team?

Not at all confident *Very confident*

1 2 3 4 5 6 7 8 9 10

Relevant Knowledge

Please try your best to answer the following. If you are unsure, it is okay to write in "I don't know" ☺

1. After a child has said their first word, how long does it take for them to regularly imitate new words?

   no time at all *up to 3 mo.* *up to 6 mo.* *up to 9 mo.* *up to 12 mo.*

2. How long does it take for a child to say 50 words from the time they said their first word?

   up to 3 mo. *up to 6 mo.* *up to 9 mo.* *up to 12 mo.* *up to 18 mo.*

3. How long does it typically take a child to learn 500 words from the time they learned their first word?

   ~12 mo. *~18 mo.* *~24 mo.* *~30 mo.* *~36 mo.*

4. What is fast mapping?

   _____

5. When do children typically learn to fast map?

~12 mo. *~18 mo.* *~24 mo.* *~30 mo.* *~36 mo.*

6. How many words do children typically have when they begin to fast map?

20-50 words *50-100 words* *100-200 words* *200-400 words* *500+ words*

7. Define **speech**

_____
_____

6. Define **language**

_____
_____

7. Define **rate of communication**

_____
_____

List five (5) strategies you could use to encourage a child to communicate:

1. _____
   _____
2. _____
   _____
3. _____
   _____
4. _____
   _____
5. _____
   _____

Now, imagine you have organized snack time for a pair of toddlers. Each child communicates their needs/wants differently, but your goal for this activity is to help develop their communication skills.

1. Lee communicates primarily through *gestures* (e.g., reaching, pointing). While sitting at the table, he reaches for a cracker. What can you do in response to further his communication skills?

_____
_____
_____

2. Cassie communicates primarily through two-word utterances. She starts banging her cup on the table, and saying, “more milk!” What can you do in response to further her communication skills?

_____
_____
_____

Thank you for taking the time to complete this questionnaire!

Language and Play Everyday (LAPE) Post Questionnaire

In order to plan future trainings and ensure the LAPE program is a meaningful learning experience, please complete this questionnaire and return to Christina Tufford before the end of LAPE on Friday, November 18th 2016. Your information will be kept confidential.

Student Code: _____ Age: _____

How confident do you feel in your ability to play with young children?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to recognize when a child with a disability is communicating?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to plan and implement developmentally appropriate activities for infants/toddlers (e.g., choosing age-appropriate toys, books, games)?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to help young children develop new language skills?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to lead group activities that promote language development?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to lead group activities that promote play skills?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to lead group activities that educate parents on child language development?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to assess speech and language skills in young children?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to assess parent-child interactions?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to collect data on child communication?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

How confident do you feel in your ability to work on an interdisciplinary team?

Not at all confident									*Very confident*
1	2	3	4	5	6	7	8	9	10

Relevant Knowledge

Please try your best to answer the following. If you are unsure, it is okay to write in "I don't know" ☺

1. After a child has said their first word, how long does it take for them to regularly imitate new words?

   no time at all *up to 3 mo.* *up to 6 mo.* *up to 9 mo.* *up to 12 mo.*

2. How long does it take for a child to say 50 words from the time they said their first word?

   up to 3 mo. *up to 6 mo.* *up to 9 mo.* *up to 12 mo.* *up to 18 mo.*

3. How long does it typically take a child to learn 500 words from the time they learned their first word?

   ~12 mo. *~18 mo.* *~24 mo.* *~30 mo.* *~36 mo.*

4. What is fast mapping?

   _____

5. When do children typically learn to fast map?

~12 mo. *~18 mo.* *~24 mo.* *~30 mo.* *~36 mo.*

6. How many words do children typically have when they begin to fast map?

20-50 words *50-100 words* *100-200 words* *200-400 words* *500+ words*

7. Define **speech**

_____
_____

8. Define **language**

_____
_____

9. Define **rate of communication**

_____
_____

List five (5) strategies you could use to encourage a child to communicate:

1. _____
   _____
2. _____
   _____
3. _____
   _____
4. _____
   _____
5. _____
   _____

Now, imagine you have organized snack time for a pair of toddlers. Each child communicates their needs/wants differently, but your goal for this activity is to help develop their communication skills.

1. Lee communicates primarily through *gestures* (e.g., reaching, pointing). While sitting at the table, he reaches for a cracker. What can you do in response to further his communication skills?

   _____
   _____
   _____

2. Cassie communicates primarily through two-word utterances. She starts banging her cup on the table, and saying, “more milk!” What can you do in response to further her communication skills?

_____
_____
_____

LAPE Practicum Experience

Did collaborating with students from another program enhance your experience? Why or why not?

_____
_____
_____

Please comment on what worked well. What aspects of this practicum experience were particularly helpful for your learning?

_____
_____
_____

Please comment on what could be improved. What could have been done better/differently to help you learn?

_____
_____
_____

Which LAPE strategies/experiences has been most useful and least useful to your learning?

_____
_____
_____

Thank you for taking the time to complete this questionnaire!

APPENDIX G

MEAN SCORES FOR PRE-POST QUESTIONNAIRES

Pre-Post Confidence Mean Scores

Confidence Rating	Pre-Mean Score	Post-Mean Score
Playing with young children	8.25	9
Recognizing communication in children with delays	7	8.25
Planning and implementing age appropriate activities	6	9
Helping young children develop language skills	6	8.25
Leading group activities for language development	5.5	8.5
Leading group activities for play	6	9
Leading group activities for parent education	3.5	6.5
Assessing speech and language in young kids	4.25	6.75
Assessing parent-child interactions	4.5	7
Collecting child communication data	5.75	7.25
Working on an interdisciplinary team	8	9.25
Confidence Total (of 10)	5.9	8.07

Pre-Post Knowledge Mean Scores

Knowledge Question	Pre-Mean Score	Post-Mean Score
Time child needs to imitate new words	0	0.25
Time child needs to learn 50 words	0	0.25
Time child needs to learn 500 words	0.25	0.5
Definition of fast mapping	0.25	1.75
Age of fast mapping	0.25	1
Vocab size needed for fast mapping to begin	0	0.5
Definition of speech	0.25	1
Definition of language	0.25	1.25
Definition of rate of communication	0.75	1.75
List of 5 communication-enhancing strategies	3	5
Gesture communication scenario	0.75	1
Verbal communication scenario	1	1
Knowledge Total (of 20)	6.75	15.25

APPENDIX H

PRE-POST QUESTIONNAIRE SCORING SYSTEM

Questionnaire Item	Description	Response	Corresponding Score
1	Education level	Bachelors	1
		Post-bac	2
		Some grad school	3
		Grad degree	4
2	Experience with delayed children	Yes	1
		No	0
3	Working experience (hours) with delayed children	< 20	1
		20-100	2
		< 500	3
		< 1000	4
		< 3000	5
		3000 +	6
4	Positions held with delayed children	Part-time	1
		Full-time	2
		Entry level	3
		Management	4

Questionnaire Item	Description	Response	Corresponding Score
5	Volunteer experience (hours) with delayed children	< 20	1
		20-100	2
		< 500	3
		< 1000	4
		< 3000	5
		3000 +	6
6	Experience with typical children	Yes	1
		No	0
7	Working experience (hours) with typical children	< 20	1
		20-100	2
		< 500	3
		< 1000	4
		< 3000	5
		3000 +	6
8	Positions held with typical children	Part-time	1
		Full-time	2
		Entry level	3
		Management	4
9	Volunteer experience (hours) with typical children	< 20	1
		20-100	2
		< 500	3
		< 1000	4
		< 3000	5
		3000 +	6

Questionnaire Item	Description	Response	Corresponding Score
10	Class or training in child language development	Yes	1
		No	0
11 to 21	Confidence self-rating scales	Not at all confident → very confident	1-10 scale
22	Time child needs to imitate new words	No response/incorrect	0
		Correct (up to 12 mo.)	1
23	Time child needs to learn 50 words	No response/incorrect	0
		Correct (up to 9 mo.)	1
24	Time child needs to learn 500 words	No response/incorrect	0
		Correct (~18 mo.)	1
25	Definition of fast mapping	No response/incorrect	0
		Partially correct	1
		Correct	2
26	Age of fast mapping	No response/incorrect	0
		Correct (~24 mo.)	1
27	Vocab size needed for fast mapping to begin	No response/incorrect	0
		Correct (200-400 words)	1

Questionnaire Item	Description	Response	Corresponding Score
28	Definition of speech	No response/incorrect	0
		Partially correct	1
		Correct	2
29	Definition of language	No response/incorrect	0
		Partially correct	1
		Correct	2
30	Definition of rate of communication	No response/incorrect	0
		Partially correct	1
		Correct	2
31	List of 5 communication-enhancing strategies	No response/0 correct	0
		1 correct	1
		2 correct	2
		3 correct	3
		4 correct	4
		5 correct	5
32	Gesture communication scenario	No response/incorrect	0
		Correct	1
33	Verbal communication scenario	No response/incorrect	0
		Correct	1

Note: Items 1-10 appear on the Pre-Questionnaire only

APPENDIX I

VIDEO PROTOCOL

Coded by: _____

LAPE Strategy Use: Video Analysis Protocol

Participant Code: _____ Data Point: _____ Routine: _____

Start and end timestamps: _____Child Code(s), DX, and # of words at baseline: _____

	Did the student…		
Positive Behavior Supports (PBS)	*Design the activity to be fun, interactive, and age-appropriate?*	☐ yes	☐ no
	Follow the child's interest?	☐ less than half of time	☐ more than half of time
			PBS TOTAL ____/2

	Did the student…	Yes	No	Timestamps in Sample	**Total #**	Comments/ Qualitative rating
Environmental Arrangement (EA)	*Use **In View but Out of Reach/Assistance?***					
	*Use **Piece by Piece?***					
	*Use **Choices*?***					
	Introduce Something New or Wrong?					
	*Use **Silliness**?*					
					Total Instances of EA ___/3	
					# of EA strategies used ___/3	
					EA TOTAL ___/6	

** Appropriate presentation of the choice will vary per child and his/her vocabulary size. See Instructions for criteria.*

Coded by: _____

	Did the student…	yes	no	timestamps in sample	**Total #**	Comments/ Qualitative Rating
Responsive Interaction (RI)	*Use **Gesture Expansion**?*					
	*Use **Verbal Expansion**?*					
	*Use **Waiting?***	☐ less than half of time ☐ more than half of time				
					Total Instances of Exp. __/3	
					Waiting ___/1	
					RI TOTAL ___/4	
					OVERALL SCORE ___/12	

	Did the child/children…		
Child Behaviors	*Appear compliant?*	☐ less than half of time	☐ more than half of time
	Demonstrate interest in the activities/engage with materials?	☐ less than half of time	☐ more than half of time
	Require redirections?	☐ less than half of time	☐ more than half of time
	Display challenging behaviors?	☐ less than half of time	☐ more than half of time

Overall Comments:

_____
_____
_____
_____

APPENDIX J

VIDEO PROTOCOL SCORING SYSTEM

Protocol Item	Description	Responses	Code
PBS 1	Age appropriate activity design	Yes	1
		No	0
PBS 2	Following child interest	Less than 1/2 time	0
		More than 1/2 time	1
EA 1	Total instances of EA use	No EA use (0 instances)	0
		Some EA use (1-9 instances)	1
		Frequent EA use (10-24 instances)	2
		Consistent EA use (25+ instances)	3
EA 2	Number of different EA strategies used	0 strategies	0
		1-2 strategies	1
		3-4 strategies	2
		5 strategies	3
RI 1	Waiting	Less than 1/2 of time	0
		More than 1/2 of time	1
RI 2	Total of gesture and verbal expansions	Never expands (0instances)	0
		Sometimes expands (1-9 instances)	1
		Frequently expands (10-24 instances)	2
		Consistently expands (25+ instances)	3

REFERENCES CITED

American Speech-Language-Hearing Association. (2008a). *Core knowledge and skills in early intervention speech-language pathology practice* [Knowledge and Skills]. Available from www.asha.org/policy.

American Speech-Language-Hearing Association. (2008b). *Roles and responsibilities of speech language pathologists in early intervention: Guidelines*. Retrieved from http://www.asha.org/policy/GL2008-00293/

Ahrens, R. (2009). Training childcare providers to improve interactions with children: A comparison of in-service training versus direct modeling of desired behaviors. University of Nebraska at Omaha. Retrieved from http://search.proquest.com/docview/305139978

Budget of the United States Government, Fiscal Year 2016. Retrieved from https:// www.gpo.gov/fdsys/browse/collectionGPO.action?collectionCode=BUDGET

Barton, E.E., Moore, H.W., & Squires, J.K. (2012). Preparing speech language pathology students to work in early childhood. *Topics in Early Childhood Special Education*. DOI: 10.1177/0271121411434567.

Boyer, V. E. (2014). Preservice education: Perspectives about integrating caregivers. *Education Research International*, doi: http://dx.doi.org/10.1155/2014/541039

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (2000). How people learn: Brain, mind, experience, and school, expanded edition (Report to Committee on Developments in the Science of Learning, National Research Council). Washington, DC: National Academy Press.

Brown, J. A., & Woods, J. J. (2015). Effects of a triadic parent-implemented home-based communication intervention for toddlers. *Journal of Early intervention*, *37*(1), 44–68. http://doi.org/10.1177/1053815115589350

Bruder, M.B. (2010). Early childhood intervention: A promise to children and families for their future. *Exceptional Children, 76*(3), 339–355.

Bruder, M. B., & Dunst, C. J. (2005). Personnel preparation in recommended early intervention practices: Degree of emphasis across disciplines. *Topics in Early Childhood Special Education*, 25, 25–33.

Bryman, A. (2015). *Social research methods*. Oxford university press.

Cable, A. L., & Domsch, C. (2015). Systematic review of the literature on the treatment of children with late language emergence. International journal of language & communication disorders, 1-17.

Camarata, S. & Nelson, K. (2006). Conversational recast intervention with preschool and older children. In R. McCauley & M. Fey (Eds), *Treatment of Language Disorders in Children* (pp. 237-264). Baltimore: Brookes Publishing.

Campbell, P. H., Chiarello, L., Wilcox, J. M., & Milbourne, S. (2009). Preparing therapists as effective practitioners in early intervention. *Infants & Young Children*, *22*, 21–31

Carter, A. S., Messinger, D. S., Stone, W. L., Celimli, S., Nahmias, A. S., & Yoder, P. (2011). A randomized controlled trial of Hanen's "More Than Words" in toddlers with early autism symptoms. *Journal of Child Psychology and Psychiatry*, 52, 741–752.

Center to Inform Personnel Preparation Policy and Practice in early intervention and Preschool Education. (2005). Study II data report: The higher education survey for early intervention and early childhood special education personnel preparation—Instructional

methods and course content used by institutions of higher education to address early intervention. Farmington, CT: Author. Retrieved from *uconnucedd.org/wpcontent/uploads/sites/1340/2015/06/study2_2_19_09_land.pdf*

Chen, D., Klein, M. D., & Minor, L. (2009). Interdisciplinary perspectives in early intervention: Professional development in multiple disabilities through distance education. *Infants & Young Children*, *22*(2), 146-158.

Cleave P. L., Fey M. E. (1997). Two approaches to the facilitation of grammar in children with language impairments: Rationale and description. American Journal of Speech-Language Pathology, 6, 22–32.

Cohen, L., Manion, L., & Morrison, K. (2013). *Research methods in education*. Routledge.

Coufal, K. L. (1993). Collaborative consultation for speech-language pathologists. Topics in Language Disorders, 14, 1–14. doi:10.1097/00011363-199311000-00003

Crais, E. R., Able-Boone, H., Harrison, M., Freund, P., Downing, K., & West, T. (2004). Interdisciplinary personnel preparation. Graduates' use of targeted practices. *Infants & Young Children*, 17, 82– 92.

Delprato, D. J. (2001). Comparisons of discrete-trial and normalized behavioral language intervention for young children with autism. *Journal of autism and developmental disorders*, *31*(3), 315-325.

Division for Early Childhood. (2014). DEC recommended practices in early intervention/ early childhood special education 2014. Retrieved from http://www.decsped.org /recommendedpractices

Dyer, K., & Karp, R. (2013). A Staff-Training Program to Increase Spontaneous Vocal Requests

in Children With Autism. Behavior Analysis in Practice, 6(2), 42–60.

Eaton, B., Gangluff, D., & Deere, D. (2004). Motivating stu- dents to learn: Application of solution-focused learn- ing to interdisciplinary training. *Infants & Young Children*, *17*, 59–68.

Fenson, L., Marchman, V. A., Thal, D. J., Dale, P. S., Reznick, J. S., & Bates, E. (2007). *MacArthur-Bates communicative development inventories: User's guide and technical manual* (2nd ed.). Baltimore, MD: Paul H. Brookes.

Fixsen, D. L., Naoom, S. F., Blasé, K. A., Friedman, R. M., & Wallace, F. (2005). Implementation research: A synthesis of the literature (FMHI Publication #231). Tampa: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network.

Francois, J.R., Coufal, K.L., & Subramanian, A. (2015). Student preparation for professional practice in early intervention. *Communication Disorders Quarterly*, *36*(3), 177–186. https://doi.org/10.1177/1525740114543349

Friedman, M., & Woods, J. (2015). Coaching teachers to support child communication across daily routines in Early Head Start classrooms. Infants & Young Children, 28(4), 308-322.

Fukkink, R. G., & Tavecchio, L. W. (2010). Effects of video interaction guidance on early childhood teachers. Teaching and Teacher Education, 26(8), 1652-1659.

Fuller, F. F., & Manning, B. A. (1973). Self-confrontation reviewed: A conceptualization for video playback in teacher education. Review of Educational Research, 43(4), 469–528.

Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. American educational research journal, 38(4), 915-945.

Girolametto, L., Pearce, P. S., & Weitzman, E. (1996). Interactive focused stimulation for toddlers with expressive vocabulary delays. *Journal of Speech and Hearing Research*, 39(6), 1274-1283. doi: http://dx.doi.org/10.1044/jshr.3906.1274

Girolametto, L., & Weitzman, E. (2006). It takes two to talk—the Hanen Program for parents: Early language intervention through caregiver training. In R. McCauley & M. Fey (Eds.), *Treatment of language disorders in children* (pp. 77-103).

Girolametto, L., Weitzman, E., & Greenberg, J. (2003). Training day care staff to facilitate children's language. *American Journal of Speech-Language Pathology*, *12*(3), 299-311.

Girolametto, L., Wiigs, M., Smyth, R., Weitzman, E., & Pearce, P. S. (2001). Children with a history of expressive vocabulary delay: Outcomes at 5 years of age. American Journal of Speech-Language Pathology, 10(4), 358-369. doi:10.1044/1058-0360(2001/030)

Graneheim, U., & Lundman, B. (2004). Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today* 24, 105–12.

Grela, B. G., & McLaughlin, K. S. (2006). Focused stimulation for a child with autism spectrum disorder: a treatment study. Journal of autism and developmental disorders, 36(6), 753-756.

Hains, A. H., Rhyner, P. M., McLean, M. E., Barnekow, K., Johnson, V., Kennedy, B. (2005). Interdisciplinary teams and diverse families: Practices in early inter- vention personnel preparation. *Young Exceptional Children*, 8(4), 2–10.

Hancock, T.B. and Kaiser, A.P. (2006). Enhanced Milieu Teaching. In R. J. McCauley and M. E. Fey (Eds.). *Treatment of language disorders in children* (p.203-236). Baltimore: Paul H. Brookes.

Hanft B., Rush D., Shelden M. (2004). *Coaching families and colleagues in early childhood*. Baltimore, Maryland: Paul H. Brookes Publishing Co., Inc.

Hebbeler, K., Spiker, D., Bailey, D., Scarborough, A., Mallik, S., Simeonsson, R., & Nelson, L. (2007). early intervention for infants and toddlers with disabilities and their families: Participants, services, and outcomes. *Final Report of the National early intervention Longitudinal Study (NEILS)*. Menlo Park, CA: SRI International.

Hong, S. B., & Shaffer, L. S. (2015). Inter-Professional Collaboration: Early Childhood Educators and Medical Therapist Working within a Collaboration. *Journal of Education and Training Studies*, *3*(1), 135-145.

Horn, E., & Banerjee, R. (2009). Understanding curriculum modifications and embedded learning opportunities in the context of supporting all children's success. *Language, Speech, and Hearing Services in Schools*, *40*(4), 406-415.

Horn, E., & Jones, H. (2004). Collaboration and teaming in early intervention and early childhood special education. In E. M. Horn & H. Jones (Eds.), *Interdisciplinary teams*. *Young Exceptional Children Mono- graph Series No. 6.* (pp. 11–20). Longmont, CO: Sopris West.

Individuals with Disabilities Education Act, 20 U.S.C. § 1400. (2004). Retrieved from http://idea.ed.gov/archive

Kaiser, A.P. (2016). ACE EMT Code. Unpublished coding protocol. Vanderbilt University.

Kaiser, A. P., & Hancock, T. B. (2003). Teaching parents new skills to support their young children's development. *Infants & Young Children*, *16*(1), 9-21.

Kaiser A. P., Hester P. P. (1994). Generalized effects of enhanced milieu teaching. Journal of Speech, Language, and Hearing Research, 37, 1320–1340.

Kaiser, A. P., Ostrosky, M. M., & Alpert, C. L. (1993). Training teachers to use environmental arrangement and milieu teaching with nonvocal preschool children. Journal of the Association for Persons with Severe Handicaps, 18(3), 188-199.

Kaiser, A. P., & Roberts, M. Y. (2011). Advances in early communication and language intervention. Journal of early intervention, 33, 298–309. doi:10.1177/1053815111429968

Kaiser, A.P., & Wright, C.A. (2013). Enhanced milieu teaching: Incorporating AAC into naturalistic teaching with young children and their partners. Perspectives on Augmentative and Alternative Communication, 22, 37-50.

Kasari, C., Kaiser, A.P., Goods, K., Niereld, J., Mathy, J., Landa, R., Murphy, S., & Almirall, D. (2014). Communication interventions for minimally verbal children with autism: Sequential multiple assignment randomized trial. Journal of the American Academy of Child & Adolescent Psychiatry. Advance online publication. doi: 10.1016/j.jaac.2014.01.019

Kong, N. Y., & Carta, J. J. (2013). Responsive interaction interventions for children with or at risk for developmental delays: A research synthesis. *Topics in Early Childhood Special Education*, 33(1), 4-17.

Lederer, S. H. (2001). Efficacy of parent-child language group intervention for late-talking toddlers. *Infant-Toddler Intervention*, 11(3-4), 223-235.

Lillas, C., & Turnbull, J. (2009). The Norton series on interpersonal neurobiology. Infant/child mental health, early intervention, and relationship-based therapies: A neurorelational framework for interdisciplinary practice. New York: W W Norton & Co.

Mancil, G. R. (2009). Milieu therapy as a communication intervention: A review of the literature related to children with autism spectrum disorder. Education and Training in

Developmental Disabilities, 105-117.

McDonald, D., Proctor, P., Gill, W., Heaven, S., Marr, J., & Young, J. (2015). Increasing early childhood educators' use of communication-facilitating and language-modelling strategies: Brief speech and language therapy training. *Child Language Teaching and Therapy*, *31*(3), 305–322. https://doi.org/10.1177/0265659015588203

Mellin, A., & Winton, P. J. (2003). Interdisciplinary collaboration among early intervention faculty members. Journal of early intervention, 25, 173–188

Moore, H.W., Barton, E.B., & Chironis, M. (2014). A program for improving toddler communication through parent coaching. *Topics in Early Childhood Special Education, 33,* 212-224.

National Association for the Education of Young Children. (2009). NAEYC Position statement on standards for professional preparation. Washington, DC: Author.

National Association for the Education of Young Children. (2012). *2010 NAEYC standards for initial and advanced early childhood professional preparation programs*. Washington, DC: Author. Retrieved from http://www.naeyc.org/highered/standards/initial-standards-summary

Paul, R., & Norbury, C. (2011). *Language disorders: From infancy through adolescence*. Philadelphia, PA: Elsevier Health Sciences.

Phajane, M. H. (2014). Exploring the Roles and Responsibilities of Early Childhood Teachers. *Mediterranean Journal of Social Sciences*, *5*(10), 420.

Piasta, S. B., Justice, L. M., Cabell, S. Q., Wiggins, A. K., Turnbull, K. P., & Curenton, S. M. (2012). Impact of professional development on preschool teachers' conversational responsivity and children's linguistic productivity and complexity. Early Childhood

Research Quarterly, 27(3), 387–400. https://doi.org/10.1016/j.ecresq.2012.01.001

Peterson, P., Carta, J., & Greenwood, C. (2005). Teaching enhanced milieu language teaching skills to parents in multiple risk families. *Journal of early intervention*, 27, 94–109.

Rapport, M. J. K., McWilliam, R. A., & Smith, B. J. (2004). Practices across disciplines in early intervention: The research base. *Infants & Young Children, 17*, 32–44.

Rescorla, L. A. (2013). Late-talking toddlers: A 15-year follow-up. In L. A. Rescorla and P. S. Dale (Eds.), Communication and language intervention series. Late talkers: Language development, interventions, and outcomes (pp. 219-239). Baltimore: Paul H Brookes Publishing.

Roberts, M. Y., and Kaiser, A. P. (2011). The effectiveness of parent-implemented language interventions: A meta-analysis. *American Journal of Speech-Language Pathology*, 20, 180-199. doi:10.1044/1058- 0360(2011/10-0055)

Rush, D. D. & Shelden, M. L. (2011). The early childhood coaching handbook. Baltimore, MD: Paul 2. H. Brookes Publishing Company.

San Jose State University. (2000). Final Report: A Team Approach to Training early intervention and Preschool Personnel in Speech-Language Pathology, 1998-2000. Retrieved from https://www.gpo.gov/fdsys/pkg/ERIC-ED466859/pdf/ERIC-ED466859.pdf

Scarinci, N., Rose, T., Pee, J., & Webb, K. (2014). Impacts of an in-service education program on promoting language development in young children: A pilot study with early childhood educators. Child Language Teaching and Therapy, 31(1), 37–51. https://doi.org/10.1177/0265659014537508

Smith, J. (2010). An interdisciplinary approach to preparing early intervention professionals: A

university and community collaborative initiative. *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children*.

Scherer, N., and Kaiser, A.P. (2010). Enhanced milieu teaching with phonological emphasis: Application for children with CLP in treatment of sound disorders in children. Chapter to appear in Williams, L., McLeod, S., & McCauley, R. (Eds.), Interventions for Speech Sound Disorders in Children. Baltimore: Brookes Publishing.

Snyder, P. A., Rakap, S., Hemmeter, M. L., McLaughlin, T. W., Sandall, S., & McLean, M. E. (2015). Naturalistic instructional approaches in early learning: A systematic review. *Journal of early intervention*, 37(1), 69-97.

Stayton, V. D. (2015). Preparation of early childhood special educators for inclusive and interdisciplinary settings. *Infants & Young Children*, *28*(2), 113-122

Stayton, V. D., Whittaker, S., Jones, E., & Kersting, F. (2001). Interdisciplinary model for the preparation of related services and early intervention personnel. *Teacher Education and Special Education*, *24*, 395–401.

Surbeck, E., & Brown, J. (2000). The new professionals in early childhood: Overview of a transdisciplinary training program and initial student outcomes. *Jour- nal of Early Childhood Teacher Education*, *21*, 21–37.

Warren, S. F., Bredin-Oja, S. L., Fairchild, M., Finestack, L. H., Fey, M. E., & Brady, N. C. (2006). Responsivity education- prelinguistic milieu teaching. In R. J. McCauley, and M. E. Fey (Eds.), *Treatment of language disorders in children* (pp. 47–75). Baltimore, MD: Paul H. Brookes.

Weismer, S., & Robertson, S. (2006). Focused Stimulation Approach to Language Intervention. In R. McCauley, & M. Fey. *Treatment of Language Disorders in Children* (pp. 237-264). Baltimore, MD: Paul H. Brookes Publishing Co.

Werner, C. D., Linting, M., Vermeer, H. J., & Van IJzendoorn, M. H. (2016). Do Intervention Programs in Child Care Promote the Quality of Caregiver-Child Interactions? A Meta-Analysis of Randomized Controlled Trials. *Prevention Science*, 17(2), 259–273. https://doi.org/10.1007/s11121-015-0602-7

Wolfe, D. L., & Heilmann, J. (2010). Simplified and expanded input in a focused stimulation program for a child with expressive language delay (ELD). *Child Language Teaching and Therapy*, *26*(3), 335–346. https://doi.org/10.1177/0265659010369286

Wright, C. A., Kaiser, A. P., Reikowsky, D. I., & Roberts, M. Y. (2013). Effects of a naturalistic sign intervention on expressive language of toddlers with Down syndrome. *Journal of Speech, Language, and Hearing Research*, 56(3), 994-1008. doi:10.1044/1092-4388(2012/12-0060)