

UCLA

UCLA Electronic Theses and Dissertations

Title

Implementing Listening and Spoken Language Intervention for Children with Hearing Loss in the Public School Setting

Permalink

<https://escholarship.org/uc/item/3d09r6m9>

Author

Lucero, Renee Frances Polanco

Publication Date

2015

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Implementing Listening and Spoken Language Intervention for Children with Hearing Loss in
the Public School Setting

A dissertation submitted in partial satisfaction of the requirements for the degree
Doctor of Philosophy in Special Education

by

Renee Frances Polanco Lucero

2015

© Copyright by

Renee Frances Polanco Lucero

2015

ABSTRACT OF THE DISSERTATION

Implementing Listening and Spoken Language Intervention for Children with Hearing Loss in
the Public School Setting

by

Renee Frances Polanco Lucero

Doctor of Philosophy in Special Education

University of California, Los Angeles, 2015

Professor Connie L. Kasari, Chair

This exploratory study looked at the listening and spoken language outcomes of 28 children with hearing loss who received Listening and Spoken Language Intervention (LSLI) in the Public School Setting. Results showed that, while children demonstrated growth in most of the assessments, there were no significant correlations between listening and spoken language outcomes and parent participation in the sessions. Furthermore, SES and language of the home did not seem to have a significant relationship with parent participation. Statistical significance was established between some assessment subtests and parent education, SES, and ethnicity. In addition, language of the home seemed to influence how parents felt about LSLI sessions and their working relationship with the teachers. Findings showed support for previous studies that suggest that earlier diagnosis appears to have a positive effect on listening and spoken language outcomes.

The dissertation of Renee Frances Polanco Lucero is approved.

Alison Bailey

Nancy Hunt

Yvonne Sininger

Connie L. Kasari, Committee Chair

University of California, Los Angeles

2015

Dedication Page

For my mother, who set me on my road to success, and, my husband, Robert, and daughter, Reyna Marie, whose smiling faces in the morning inspire me daily to continue down this road.

TABLE OF CONTENTS

Introduction.....	1
Problem statement.....	4
Literature review.....	7
Theoretical Framework.....	20
Research aims and questions.....	22
Methods.....	24
Analysis Plan.....	33
Results.....	35
Discussion.....	39
Works Cited.....	54

List of Tables

Table 1: Characteristics of Children

Table 2: Characteristics of Parents

Table 3: Summary statistics of Assessment Standard Scores

Table 4: Correlation Matrix: Parent Participation and TOLD:P-4 SS scores

Table 5: Correlation Matrix of TOLD:P-4 composite scores and Audiologic Data

Table 6 : Correlation Matrix of TACL-3 and Audiologic Variables

Table 7: Correlation Matrix of Parent Attendance and Parent Survey Responses

List of Acronyms

APT/HI-R – Auditory Perception Test of the Hearing Impaired-Revised.

AVT- Auditory-Verbal Therapy

CI- Cochlear Implant

CLD- Culturally and Linguistically Diverse

DHH- Deaf and Hard of Hearing

EOWPVT- Expressive One Word Picture Vocabulary Test

HA- Hearing aid

LAUSD- Los Angeles Unified School District

LPH- Linguistic Profile of the Home

LSL- Listening and Spoken Language

LSLI- Listening and Spoken Language Intervention

LSLS- Listening and Spoken Language Specialist

ROWPVT- Receptive One Word Picture Vocabulary

SES- Socio-economic status

SPISE- Scale of Parental Involvement and Self-Efficacy

TACL-3- Test of Auditory Comprehension of Language

TOLD-P:4- Test of Language Development

WAIP- Working Alliance Inventory- Parent

WAIT- Working Alliance Inventory- Teacher

Acknowledgements

There are many people without whom I would not have been able to successfully complete my graduate studies. I am grateful for the guidance, support and encouragement of my doctoral advisor, Connie Kasari, and the members of my committee, Nancy Hunt, Alison Bailey, Gabriela Simon-Cereijido and Yvonne Sininger. These mentors have guided me through the inspiring—and sometimes difficult!—work of graduate studies. I would also like to extend my gratitude to Lois Weinberg, who supported my endeavors during the entire graduate school process. Much gratitude also extends to Wendy Shih at UCLA for her enthusiasm and willingness to provide statistical expertise.

This study could not have been completed without the support of the LSLs staff of LAUSD DHH Department; namely Bridget Scott-Weich, Theana Kezios, Heidi Fields, and Monique Marquez. I am honored to be part of such a hard-working team of professionals who strive daily to provide the highest-quality service and support to the families of children with hearing loss. In addition, thank you to the families who participated in this study and allowed me to share your story.

Furthermore, relationships with my loved ones helped me to survive the toughest of moments and enjoy the best of moments during these graduate school years. My parents and siblings have provided me with moral support (and hours of babysitting!) throughout this process and my dear friends have graciously accommodated my hectic schedule by being available for much needed lunch and coffee dates when I needed to decompress. I only hope that these special people know just how very grateful I am for their love, patience, and support.

Lastly, I would like to acknowledge my husband, Robert, and baby girl, Reyna Marie. I am so grateful for my husband, who has been a true partner during this journey and has whole-heartedly supported my efforts to complete my doctoral studies. He never complained about the weekends he was home with the baby while I was working long hours at Starbucks. Needless to say, I'm looking forward to the Starbucks-free weekends with my little family.

VITA

EDUCATION

- M.S.Ed. University of Southern California/John Tracy Clinic, Education, 2000
- B.A. Columbia University, Psychology, 1998

CREDENTIALS/CERTIFICATES

- 2008 *Alexander Graham Bell Association, Academy for Listening & Spoken Language (LSLS)*
LSLS Certified Auditory-Verbal Educator
- 2005 *State of California, Commission on Teacher Credentialing*
Level II, Education Specialist Instruction, Deaf and Hard of Hearing
- 2003 *Children's Hospital of Philadelphia/Clarke School for the Deaf/Smith College*
Educational Consultant for Children with Cochlear Implants

ACADEMIC/RESEARCH EXPERIENCE

- 2012– Principal Investigator. Implementing Listening and Spoken Language Intervention for Children with Hearing Loss in the Public School Setting.
- 2010 Principal Investigator. An Exploratory Study: Latino Families and Their Young Children with Hearing Loss Attending Public Auditory-Oral Programs.
- 2010 Graduate Research Assistant. Promoting Development in Toddlers with Communication Delays," Kasari Research Lab, UCLA
- 2004 Research Site Coordinator. Early Development of Children with Hearing Loss. Ohio State University.

HONORS

- 2011 Chancellors Doctoral Incentive Program, California State University
- 1998 Teaching Fellow, Multicultural Alliance Fellowship Program

TEACHING/INSTRUCTION

- Summer 2014 Preschool Curriculum (EDU 238A) and Practicum (EDU 238B), *Mount St. Mary/John Tracy Clinic* teacher training program
- Spring 2012 Low Incidence Disabilities (EDSP 570B), *California State University, Los Angeles* (Deaf and Hard of Hearing portion of the course)

Summer 2011 Preschool Curriculum (EDSP 555) and Practicum (EDSP 594P),
University of San Diego/John Tracy Clinic teacher training
am

PUBLICATIONS

July/Aug 2007 “Cultural Attitudes Toward Hearing Loss: An Inside Perspective,”
Volta Voices(co-authored with *Ida Guillermo*)

INVITED PRESENTATIONS

2015 LSLS training, Los Angeles County Office of Education, Deaf and
Hard of Hearing Program
2014 LSLS Training, Los Angeles County Office of Education, Deaf
and Hard of Hearing Program
2008 Presenter, California AG Bell Association Conference, John Tracy
Clinic
2006 Keynote speaker, No Limits Speech and Language Center, Spring
Graduation

CONFERENCE PRESENTATIONS

July 2013 Short course: *Listening and Speaking in Schools, Oh My!*
AG Bell Association LSLS Symposium
June 2010 Poster Session, AG Bell Association Convention

SERVICE/COMMUNITY OUTREACH

2015– Advisory Committee for the Center for Early Education and Low
Incidence Studies, Cal State Los Angeles
2014– Advisory Council, Mount Saint Mary’s University/John Tracy
Clinic DHH Graduate Program
2013– Advisory Committee, Joint Doctoral Program in Special
Education Cal State Los Angeles/ UCLA
2013– School-Age Financial Aid Committee, AG Bell Association
2013 AG Bell LSLS Symposium Advisory Committee
2010– Alumni Council, Webb School of California
2007– Advisory Committee, TAG (Training and Advocacy Group)
2007–8 California Chapter Board of AG Bell Association

Introduction

The current era of accountability in education, ushered in by the No Child Left Behind (NCLB) Act of 2002, dictates the need for implementation of evidence-based practices (EBP) and the systematic analysis of outcomes for children. This study will describe the implementation of Listening and Spoken Language Intervention (LSLI), as offered by the Deaf and Hard of Hearing (DHH) Programs of Los Angeles Unified School District (LAUSD), and attempt to set the stage for answering the question: is LSLI effective in the public school setting? I will analyze assessment data on spoken language and auditory outcomes of 28 children with hearing loss who receive LSLI, as collected by the DHH teachers providing the service. The relationship between parent attendance in LSLI sessions and student outcomes will be explored, as well as possible barriers to parent attendance in LSLI sessions. In addition, parents will be asked to reflect on their involvement and experience receiving LSLI through surveys.

Current Trends in DHH Education

Ninety-five percent of the children with hearing loss have hearing parents (Elweke et al., 2008). Therefore, many parents of children with hearing loss have not had prior experience with hearing loss. Moreover, early diagnosis due to Universal Newborn Hearing Screening (UNHS), access to hearing technology at an earlier age, and improved technology, such as digital hearing aids and cochlear implants, all seem to lead to an increasing trend in parents seeking DHH programs and services that promote listening and spoken language (LSL) development.

Auditory-Verbal Therapy (AVT)

Auditory-Verbal Therapy (AVT) falls under the umbrella of the Listening and Spoken Language (LSL) or auditory-oral approach, because similar strategies for developing listening and spoken language skills are used. AVT is, however, an intervention practice that requires

individual pull-out sessions with parent participation. This therapy, which promotes early detection of hearing loss and aggressive audiologic management, focuses on the development of listening and spoken language skills by maximizing auditory input (and, therefore, minimizing speech-reading when possible). Parents are considered the primary facilitators and are coached during these sessions to use Auditory-Verbal (AV) strategies for carryover in daily life (AG Bell, 2012; Estabrooks, 2006). One goal of AVT is to study one year's growth of the child's spoken language and listening skills development in one year's time (Rhoades, 2003; Hogan, Stokes, White, Tyskiewicz, & Woolgar, 2008). Professionals who carry out Auditory-Verbal Therapy are required to possess the *Listening and Spoken Language Specialist* certification (AG Bell, 2012). Although AVT is not a new intervention, the demand for it has increased in recent years due to the increased number of children receiving cochlear implants (Rhoades, 2003; Estabrooks, 2006). In the past, most school districts have had to contract out to private AVTs to satisfy the increase in parent requests for this service. However, in recent years, there has also been an increase in certified LSLs on school districts' staff. Thus, school districts are now faced with the task of implementing a service that was typically a private-based therapy, provided in private clinics, school, and practice.

AVT service delivery in LAUSD

AVT, known as Listening and Spoken Language Intervention (LSLI) in LAUSD, is provided by DHH itinerant teachers who are certified LSLs; currently five itinerant teachers are certified LSLs on the LAUSD staff of approximately 50 itinerant teachers and 15 special day class teachers in LSL programs. The teachers who provide LSLI follow DHH department criteria to determine student eligibility for LSLI service, which includes: bilateral hearing loss, recent diagnosis of at least a mild-moderate hearing loss, recent change in hearing technology (e.g.

from the use of hearing aids to cochlear implant), at least a two-year delay in spoken language and listening skills, and parent commitment to attend LSLI sessions. Once eligibility has been determined, LSLI services are added to the student's Individualized Education Plan (IEP) as part of the school district's Free and Appropriate Education (FAPE) offer. Time and frequency of services are determined on an individual basis, but most students receive the service once a week for 45–60 minutes, which is typical of private-based AVT service time.

Because LSLI is based on the principles of AVT, which is a parent-centered practice, parents are strongly encouraged to attend the sessions to ensure maximum opportunities for parents to learn and carryover AV strategies and techniques into the home. Although parent participation cannot be legally enforced in public schools, careful consideration is currently being taken to develop a policy statement that “requires” parent participation for eligibility of service. Service provision is on the child's school site during school hours, typically 8 a.m. to 3 p.m.

Problem Statement

Auditory-based interventions are not equally serving children from all cultural groups (Rhoades, Price, & Perigoe, 2004). According to Easterbrooks, O'Rourke, and Todd (2000), "Because AVT is an early habilitation approach and typically is not available in public service settings, the vast majority of children with hearing loss do not have access to it. If AVT were accessible to more children, families with more diverse demographics might find it effective for their children" (p. 344). As stated earlier, Auditory-Verbal Therapy is already being implemented in the public schools; however, the previous statement conveys the urgency for establishing the effectiveness of this intervention in a school setting that serves culturally and linguistically diverse (CLD) children in order to establish if these school-based programs are capable of achieving an adequate level of performance.

One important component of the therapy, known to influence the outcomes, is parental involvement. The average parent participation rate is approximately 60% in the LSLI sessions, reported by current LAUSD LSLI teachers. Parents have cited a variety of reasons, such as conflicting work schedules, limited transportation, and difficulty making day care arrangements for siblings, for a lack of consistent attendance in LSLI sessions. In addition, at least 50% of the families speak languages other than English in the home; however, none of the LSLI teachers are bilingual. The LSLI teachers have reported attempts to accommodate parent schedules as much as possible, but district policy regarding when and where educational services can be provided appear to be a continued obstacle for maximum parent participation in LSLI sessions. The school district's support for the provision of this service to a demographic of families that has been historically excluded should be noted; however, the current provision of LSLI calls into question

whether the service is truly *accessible* to the families, not only as a service option, but in terms of being able to actually participate in the sessions themselves.

Furthermore, the challenges are not only limited to implementing this service within a public school infrastructure, but also implementing a service for which the evidence-based research rests on data from private settings and/or does not include CLD families.

Implementation of evidence-based practices in public schools is complicated because 1) interventions are often tested in controlled-laboratory settings that may have precluded participants representative of public school students; 2) barriers of school policies and administrator and teacher buy-in; 3) limited access to resources on school sites (materials, intervention space, funding for training and ongoing professional development); and 4) the ethics of typical research strategies such as placebo/control groups.

Issues that increase the difficulty in determining evidence-based practices (EBPs) for children with hearing loss include the heterogeneity of this population – varying degrees of hearing loss, age of identification, type of hearing technology (hearing aids or cochlear implants), early intervention experience, communication modality (spoken language or sign language), family background (SES, cultural and linguistic diversity), and a presence of an additional disability.

Research shows that the average reading level of children who are deaf or hard of hearing at high school graduation is at the fourth grade level, with Latino children consistently achieving the lowest scores (Wilkes, 2005). Thus, it would seem that current educational programs are not meeting the needs of students who are deaf or hard of hearing (DHH), particularly those who are designated as English Language Learners (ELL). Children with hearing loss from non-English speaking homes, specifically those who are enrolled in programs that focus on listening and

spoken language development, often arrive in English-only DHH preschools with low auditory and language skills, in both English and their home language.

The conversation about how to realistically validate and implement intervention practices at the school level must be a priority for researchers and school personnel alike. The purpose of this research is to evaluate the effectiveness of LSLI that is implemented in LAUSD; that is, systematic analysis of outcomes for children receiving LSLI could inform the utility of the intervention as it is currently applied and potentially highlight areas that could be restructured for maximum benefit. The following chapter will review the literature and discuss gaps in the research related to CLD parental involvement/engagement, AVT, and EBP in order that we can begin to address the effectiveness of LSLI in the public school setting serving CLD children and their families.

Literature Review

Parental Involvement and Self-Efficacy

Research has shown that parental involvement in school predicts school success for children in both general and special education programs. Federal support for parental involvement in special education is evidenced by the most recent reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004. As a result, general practices in early intervention and schools have begun to shift from *professional-driven* to *family-centered* practices. Furthermore, the majority of students entering the special education system in the largest school districts are culturally and linguistically diverse (CLD) students (Artiles, 2003). Thus, the rapidly changing demographics of public school programs experiencing a surge in the enrollment of CLD students has implications for special education practices and engagement of CLD families; this time of change presents an opportunity to analyze the role of parents and maximize their participation as a way to improve outcomes for children with hearing loss. Reflection on parental involvement in general education, special education, and deaf education provides guidance on how outcomes for children with hearing loss enrolled in listening and spoken language programs can be improved.

Parental Involvement in General Education

Parental involvement in schooling is a significant contributor to positive child outcomes (Green, Walker, Hoover-Dempsey, & Sandler, H.M., 2007). Green et al. (2007) refers to research that demonstrates positive personal beliefs about efficacy for helping children succeed in school are associated with increased parental involvement among elementary, middle, and high school students. Thus, self-efficacy of parents seems to influence parents' decisions about

the level of involvement in schools. Furthermore, they found that parental involvement was influenced by interpersonal relationships with their children and the teachers.

Parental Involvement in Special Education

Define parent involvement. Parent-professional collaboration is an effective means for facilitating parental involvement in their child's special education experience. Family-centered practices that span across all educational experiences-birth through high school is now the ideal in the parent-professional collaborative relationship. According to Dunst (2002), family-centered practices can be defined as "a particular set of beliefs, principles, values, and practices for supporting and strengthening family capacity to enhance and promote child development and learning" (139). There is support for continuing parent involvement and education beyond early intervention. However, more is known about the characteristics and consequences of family-centeredness in early childhood (Dunst, 2002).

Navigating a complicated special education system can impact levels of parental involvement in the schools. Furthermore, medical and therapy expenses usually accompany a diagnosis, in addition to the time that is needed to take their child to various medical and therapy appointments. Parents of a child with a disability may be expected to communicate more with the school, teachers, and service providers, especially in their participation in the annual IEP meeting. Often there is interagency collaboration, and it is not uncommon for parents to have deals with multiple professionals, an experience that can be time-consuming and overwhelming. IDEA is a law that helps to provide procedural safeguards.

IDEA: Impact on Parental Involvement

IDEA, first known as Education for Handicapped Act (EHA) when passed in 1975, has been reauthorized at least three times, most recently in 2004, with each passing reauthorization

increasing parental rights. Parent collaboration has always been in the interest of the law and procedural safeguards are detailed in IDEA to protect the rights of parents whose children receive special education services from birth to 21 years of age. Part C of the law, which stipulates rights for families of children birth to two years, reflects the shift from “provider-centered” services to family centered services (Harry, 2008). The most recent reauthorization of IDEA includes provisions for 1) parent training and information to parents 2) training and information to meet the needs of low-income parents and parents of English Language Learners (ELLs) 3) helping parents participate in school activities that benefit their children and 4) helping parents understand, prepare for, and participate in resolution sessions (IDEA part 3, section 671).

While the effort to recognize parental rights in the federal law should be lauded, it should also be noted that not all experiences of parents in the special education system are equal. As Artiles et al. (2006) state, access does not necessarily translate into meaningful or equal participation for culturally and linguistically diverse (CLD) families. In fact, Harry (2008) identified key themes in research within the first 15 years after the passage of the Education of Handicapped Act (EHA, now IDEA) in 1975: history of mistrust because of previous exclusion from public schooling, professional insensitivity to participation of families of low income, and a limited provision of information of parental rights and responsibilities under EHA.

Culturally Linguistic and Diverse (CLD) Families and Special Education

Harry (2002) proposes that a barrier to the involvement of CLD families in Special Education is that the enhancement of parental roles in special education were based on middle class advocate “who would participate in formal conferences and, if necessary, draw on the availability of due process of law” (p. 135). However, CLD parents may experience challenges

participating according to this ideal. In fact, stigma attached to ethnicity, culture, and social status of parents may impede an effective collaboration with professionals (Harry, 2002).

Mapp and Hudson (1997) reported that parents with less education and lower incomes used the coping strategies of escape/avoidance and distancing to a significantly greater degree than parents with higher income and education.

For CLD families, the experience of raising a child with a disability can be affected by additional socio-cultural-political factors. Many Latino families are monolingual Spanish-speaking and/or come from working-class backgrounds that may influence their experience with the school system. Immigrant families are less likely to be familiar with the operation and expectations of the school system, much less the extra layer of the special education system. Furthermore, some CLD parents may distrust the professional service system resulting from prior negative experiences with professionals and/or the general political climate that is centered on anti-immigration sentiments. Parents who are traditionally marginalized based on race, ethnicity, and class, and learning to navigate the special education system in urban public schools are those who are often criticized for neglectful parenting or low parental involvement. According to Carreon (2005), "Parent involvement is not a fixed event, but a dynamic and ever-changing practice that varies depending on the context in which it occurs." However, because CLD parents tend to be viewed with a "deficit" lens, rather than an "additive" lens, professionals may hold negative perceptions of CLD parental involvement (Harry & Klingner, 2007). That is, lack of IEP meeting participation may be misconstrued as lack of interest, when in fact parental involvement may manifest differently for CLD families (Carreon, Drake, & Barton, 2005; Harry & Klingner, 2007). Salas (2004) reported that Mexican-American mothers generally felt

disrespected during IEP meetings. Therefore, fostering positive relationships and genuine respect may help the process of collaboration.

Harry (2002) speaks of how the inadequate cultural fit of early intervention programs can have a negative effect on the parents' ability to cope with the disability and level of involvement. Different cultural constructions of disabilities are another potential area that could affect parental involvement. For example, the American cultural value of independence may conflict with the values of CLD families who traditionally honor interdependent systems. According to Bernheimer and Weisner (2007), exclusive focus on child outcomes is not in the best interest of the child or family. Therefore, early interventionists need to ask about the family's daily routine in order for intervention to have an impact on child outcomes. This could have implications beyond early intervention and suggests that in order for families to be "involved" in practices to support their child's development, their daily lives need to be respected and included in the service provision.

Parental Involvement in Deaf Education

Parent-professional collaboration in deaf education can be especially complicated by the multiple options and professional opinions about methodology (Meadow-Orlans et al, 1995). However, the empowerment model of early intervention has now replaced the traditional model of "professional knows best" (Turnbull & Turnbull, 2001). Therefore, there has been an increased sense of partnership between parents and professionals, as they collaborate on strategies to facilitate a child's growth across developmental domains. While early intervention is technically defined as the collaboration with families of children between birth and three years of age, there is support for continuing parent involvement and education beyond early

intervention. In fact, Calderon (2000) reports the importance of parental involvement in the education of their child with hearing loss, as it could impact their literacy levels.

Research has demonstrated that parental involvement can lead to positive outcomes for children with hearing loss (Calderon, 2000; DesJardin, 2004; Moeller, 2000). Children with hearing loss are often delayed in their language skills and parents play a significant role in facilitating the development of these skills. While this information is significant for validating the importance of fostering parental involvement with effective parent-professional collaborative practices, it is important to consider the characteristics of the families and children involved in these studies in order to determine if this can be generalized to CLD families.

According to Calderon (2000), parental involvement in their deaf child's education could impact literacy levels. Maternal communication skills, an important aspect of parental involvement, were a significant indicator for language development, early reading skills, and social-emotional development. Furthermore, it was found that direct parental involvement in their deaf child's education program may not play as significant a role as other indicators of parental involvement (e.g. maternal communication); however, mothers who can communicate better with their child may feel more comfortable interacting with their child in a variety of settings, including school, which would lead to increased direct parental involvement in school. Although the link between SES and maternal communication was weak, Calderon suggests that mothers with higher SES may have greater access to resources that support the development of their communication skills with their child.

DesJardin's research (2005) that included Caucasian, Latino, and Asian mothers supports the importance of facilitating parental involvement and self-efficacy skills for a child's spoken language development, regardless of the type of amplification. Mothers of children who had

cochlear implants rated their child's early intervention program lower in quality and reported higher self-efficacy skills in areas of equipment management, and involvement in developing speech and language skills. Age of amplification and enrollment in an early intervention program is associated with mother's sense of competence (Moeller, 2000; DesJardin, 2005). Moeller (2000) also found that that family involvement was an important factor in predicting language outcomes for children with hearing loss. In her study, all the families spoke English.

CLD DHH children and their families

As stated earlier, auditory-based interventions are not equally serving children from all cultural and linguistic groups (Rhoades, Price, & Perigoe, 2008); therefore, it is important to increase efforts to ensure that adequate services are provided to all families. For example, although Latino children with hearing loss make up 25% of the deaf and hard of hearing population, their parents traditionally have much lower rates of pursuing cochlear implants for their children as compared to other ethnic groups. In fact, White children are implanted three times more often than Latino and 10 times more often than Black patients, despite the fact that "lower-income children are twice as likely to be deaf as higher-income children and that minority children have higher rates of severe to profound sensorineural hearing loss (SNHL)" (Stern, Yueh, Lewis, Norton, & Sie, 2005).

Recently, however, it has been reported that an increasing number of Latino families are seeking cochlear implants as an option, in part due to increased coverage provided by state agencies such as California Children Services (Levi, Boyett-Solano, Nicholson, & Eisenberg, 2001).

There are a higher number of children with hearing loss from low-income families and Latino families than from higher-income families (Mehtar, Eavey, & Keamy, 2009). In addition

to increased risk for facing discrimination (McHatton, 2005), Latino children with hearing loss are more likely to have lower SES and more likely to be below educational level than non-hearing impaired Latino children (Lee, Gomez-Marin, & Lee, 1997). Furthermore, Hispanic and African-American children have the highest percentage of uninsured children (Belzner & Seal, 2009). This affects access to quality and timely healthcare, which has long-term consequences on the well-being of these children. Generally, there are poorer outcomes for Latino children because they are more likely to live in poverty, have greater exposure to health risks, and are at higher risk for developmental and behavioral disorders. Furthermore, Meadow-Orlans & Sass-Lehrer (1995) state that a family's basic need for food, clothing, shelter, and health care may interfere with parental ability to provide a nurturing environment.

Furthermore, with current immigration trends, an increasing number of Latino children with hearing loss from Spanish-speaking homes are entering deaf education programs. In a study conducted by Sininger et al. (2010) analyzing auditory outcomes for early-amplified children, the mean SES of families who dropped from the study was 12.6 (years of education), and the mean SES of families who completed the study was 15.63 years. This seems to indicate that families with higher SES are likely to complete their education. Thus, researchers should increase recruitment efforts to include CLD families pursuing spoken language approach for their children with hearing loss. This study sought to do that.

In addition, there is a subsequent increase in number of families that speak languages other than English. Thus, an increasing number of Latino children with hearing loss from Spanish-speaking homes are entering deaf education programs. Currently, approximately 78% of the DHH students reported in Los Angeles Unified School District (LAUSD) are Latino (Data Quest). However, approximately 85% of students enrolled in the DHH special day class

programs are Latino, with the majority coming from Spanish-speaking homes.

Historically, Spanish-speaking parents of children with hearing loss were encouraged to speak only English to their children with hearing loss so as to not “confuse them,” especially when formal schooling began (Levi et al., 2001; Waltzman, Robbins, Green, & Cohen, 2003). Current professional attitudes have generally changed, and parents are now encouraged to speak in their primary language, a recommendation supported by researchers (Levi et al., 2001; Guiberson, 2005; Guiberson, Barrett, Jancosek, & Yoshinaga-Itano, 2006). This implies that providing home language support during LSLI therapy sessions could be beneficial for coaching parents to use AV strategies.

Furthermore, Sininger, Grimes, and Christensen (2010) found that children with hearing loss who are exposed to more than one language in the home are more likely to have higher auditory outcomes. They posit that one possible explanation is that these children were exposed to more diverse, rich auditory input between language at home and language at school. It is important to keep in mind that most of the children came from middle-class homes, and many parents were proficient in English. Thus study offers that living in a bilingual home can in fact provide a rich auditory foundation for children with hearing loss; however, the challenge arises in determining how to maximize the bilingual auditory experience potential in Latino families, such as those included in this study, that may face additional socio-cultural, socio-economic difficulties and are often, as previously stated, monolingual non-English speaking homes.

Furthermore, AV practice is primarily offered in the private sector, and therefore less accessible to many CLD families. To date, LAUSD has five certified LSLS professionals in a program that serves approximately 2,000 DHH students. This is not to suggest that highly trained auditory-oral teachers cannot provide effective instruction utilizing AV strategies, but if the trend

is that highly educated parents are seeking service provision of this Evidenced Based Practice (EBP), this has implications for children from lower-socio economic status who are not accessing this service at the same rate (Rhoades, 2010). However, since the CLD families of LAUSD, many of them Spanish-speaking, are increasingly accessing LSLI; it important to establish whether it is in fact an effective practice for these families.

Evidence Based Practices

The No Child Left Behind Act (NCLB) mandates teachers to use scientifically proven practices in their classrooms (Cook, Tankersley, Cook, & Landrum, 2008; Odom, Brantlinger, Gersten, Horner, Thompson, & Harris, 2005); in addition, the Individuals with Disabilities Education Act (IDEA) also specifies that teachers be trained in science-based practices (Cook et al., 2008). However, there is a debate about the quality of research in special education and what defines “evidence.” Evidence Based Practice (EBP) is a basis for establishing what we know, what we don’t know, and what we need to know (Spencer & Marschark, 2010).

EBP in Education

The concern for perceived lack of effective educational practices in the schools has led to the call for identification and implementation of EBPs. Similar to the above definitions, special education professionals have defined an EBP as being one that is “identified when a sufficient quantity of high quality research studies that demonstrate experimental control have been conducted and show that student outcomes are improved as a result of using that practice” (Cook et al., 2008). Furthermore, Meline and Paradiso (2003) state, “EBP requires the conscientious use of current theories, current research, and empirical data to guide practice” (p. 274). Thus, it is important to be familiar with research and theory to provide effective practices for all.

EBP in Special Education

Some professionals would argue that special education research is especially difficult because of 1) variability of participants – between and within disabilities, and cultural and linguistic diversity, and 2) the educational continuum in special education is broader than general education (Odom et al., 2005). In addition, Guralnick proposed that researchers need to specify not only if the intervention is effective, but also for whom it is effective and in what contexts (as cited in Odom et al., 2005). Research conducted in controlled settings may not be easily “portable” into clinical practice, in this case, the schools (Kratchowill & Shernoff, 2004).

Barriers to Implementing Special Education EBP in schools

Schools play an important role in determining the effectiveness of instructional and intervention practices; however, there are many challenges to implementing EBP in schools. First of all, many EBPs require manuals and/or trainings that can be costly (Schaeffer, Bruns, Stephan, Goldstein, & Simpson, 2005). These are important for ensuring fidelity of intervention/practices. Thus, administrative buy-in is important for acquiring support and resources for appropriate implementation. Schaeffer et al. (2005) found that even though teachers may be implementing EBP, the practices are not necessarily being implemented appropriately. Therefore, ongoing training and monitoring are important. Barth et al. (2012) echoes similar concerns regarding access to training and managing treatments models and client’s needs and duration of treatments; furthermore, they question whether EBPs address the needs of CLD clients.

EBP in Deaf Education

As established earlier in this review, children with hearing loss are a diverse group, with varying degrees of hearing loss, hearing technology, communication modality, and come from

families with heterogeneous characteristics of SES, cultural and linguistic background.

Furthermore, hearing loss is a low incidence disability, which means that hearing loss occurs in about 2.5 out of 1,000 births in the United States (Spencer & Marschark, 2010). Thus, research methodologies that require large numbers of participants can be difficult to carry out in low incidence populations such as DHH (Odom et al., 2005). Also, research that does exist does not usually include CLD children and families that we normally serve in public schools.

Furthermore because of this diversity, there is no one solution or communication methodology that fits all children; however, communication methodology is still controversial, and educational practices/interventions are often based on personal bias and not research/evidence. Traditionally, the two major methodologies of communication for children with hearing loss are sign language and spoken language. Many urban school districts, such as Los Angeles Unified School District (LAUSD), offer a two-track system including total communication (TC), in which sign language and spoken language are used simultaneously, and listening and spoken language programs (LSL, also referred in the literature as auditory-oral), in which the focus is on spoken language development. With the exception of traditional speech and language therapy, there are not a variety of “interventions” that supplement these communication methodologies for language development. Spencer and Marschark (2010) call for professionals to move away from belief and toward evidence. This means that systematic efforts need to be made to engage in research to provide support for practices being implemented in the schools. Auditory Verbal Therapy (AVT), which is a LSL intervention, is of primary interest in this study.

Auditory-Verbal Therapy

Close analysis of the literature that declares AVT “effective” (Dornan et al., 2010) or that it has “efficacy” (Goldberg & Flexer, 2001) reveals that the findings do not meet the criteria of the definitions of efficacy and effectiveness outlined above. There are literature reviews (Spencer & Marschark, 2010; Rhoades, 2010; Eriks-Brophy, 2006) that have analyzed the effectiveness of AVT, and the researchers agree that while there is some data to support it as a viable practice in which children have demonstrated positive gains in spoken language and listening skills, most research is retrospective, quasi-experimental and qualitative (Goldberg & Flexer, 2001); therefore, its efficacy is not empirically supported by experimental studies. In fact, Brennan-Jones et al (2014), after analyzing 13 articles on AVT that met initial criteria for review, found a lack of well-controlled studies establishing effectiveness of AVT as an intervention for promoting spoken language development in children. However, according to Rhoades (2010), efficacy of AVT may be unrealistic to establish because the intervention is provided in the “real world” with fewer controls. This is not to suggest that AVT cannot be a viable therapy option that leads to positive listening and spoken language outcomes for children with hearing loss, but to reveal the urgency of involving urban public schools in research efforts establish effectiveness. The current research literature does not include studies in which therapy is being carried out in public schools with CLD families and children. Furthermore, while parent participation is the crux of the intervention, none of the published studies have controlled for the role of parent participation on student outcomes. While it may be considered an ethical challenge to design a study that does not offer AVT/LSLI to eligible children or to ask parents not to attend sessions, in the LAUSD setting, there is a natural occurrence of less than 100% parent

participation. Thus, there is an opportunity to examine possible effects of parent attendance in sessions on listening and spoken language outcomes.

Theoretical Framework

Bronfenbrenner's bio-ecological systems theory for child development (1979) defines the environment as "a set of [four] nested structures, each inside the next, like a set of Russian dolls." Bronfenbrenner was a pioneer in breaking down barriers across disciplines and creating a useful model of interrelatedness for analyzing different systems and its importance on child development (Weisner, 2008). Specifically, this framework validates the significance of the familial role in the child's life, a philosophy supported by listening and spoken language educators of children with hearing loss (Rhoades, 2010). Hearing loss can affect the dynamic of a child's relationship with caregivers and teachers, and impact overall development, according to Bronfenbrenner and Morris' theory regarding the significance of a person's bio-psychological characteristics on the surrounding environment (Rhoades, 2010). The structure of that child-caregiver relationship then has important implications for that child's learning and development.

Following Bronfenbrenner's theoretical framework, a child is more likely to develop age-appropriate language if his or her parents and teachers are able to interact with the child in ways that promote listening and spoken language (microsystem). Age-appropriate language use in this study, can be defined as the child using spoken language in a way that is comparable to same-age peers. At the next level, the mesosystem, the relationship between school and family has a direct effect on the child. Bronfenbrenner suggests that the interconnectedness at this level can be just as important to a child's development as the individual relationships in the microsystem. Furthermore, a parent's ability to have a positive, effective relationship with teachers and schools depends on the supports in place that allow help with work-place stress, community resources,

language of the home, immigration status, and financial duress, which are all components of the exo-system. Ultimately, this is reliant on a society that adopts policies supporting the important role of families and recognizing the value of home language and culture (the macro-system).

Research Aims and Questions

Research Aims

1. To describe language and auditory outcome gains in children with hearing loss who receive LSLI at LAUSD.
2. To evaluate the relationship between parental attendance in LSLI sessions and student language and auditory outcomes.
3. To determine the potential barriers to parent attendance in the LAUSD LSLI sessions.

Research Questions and Hypotheses

1. What are the listening and spoken language outcomes over a six-month period for children who receive LAUSD LSLI?

Hypothesis. Children who are diagnosed earlier will have better listening and spoken language

2. What is the relationship between parental attendance in LSLI sessions and listening and spoken language outcomes for children?

Hypothesis. There will be a positive correlation between parental attendance and language and auditory growth over six months when controlled for other factors including degree of hearing loss, length of intervention, type of hearing technology.

3. What are the potential barriers to parent attendance in LSLI sessions?

Hypothesis A. Non-English speaking and lower SES families will have lower parent attendance in LSLI sessions.

Hypothesis B. Parents with higher self-efficacy and working alliance scores will have higher attendance in LSLI sessions.

Methods

This study analyzed the outcomes for children receive LSLI services in a public school district that serves a predominately CLD population. The topic is complex not only because of questions surrounding appropriate communication/education methodology for educating a child with hearing loss, but also because of the socio-cultural and economic considerations of working with CLD families raising their children in urban areas. Thus, gathering data from assessments and parent surveys will allow for answering multiple questions.

Participants

Participating School District/DHH Program

Los Angeles Unified School District (LAUSD) is spread over 720 square miles, and is the second largest school district in the nation, with more than 640,000 students in kindergarten through 12th grade, at over 900 schools, and 187 public charter schools. (LAUSD, 2012). The majority of the LSLI services are implemented on the campuses that house the LSL (spoken language) DHH SDPs (special day programs) that are located in: El Sereno (East), Gardena (South), Palms (West), North Hollywood (mid-city), and West Hollywood (North/Valley). Teachers who provide LSLI also travel to the general education schools sites where the fully included students, who receive this service, attend. The DHH school-age program enrolls approximately 2,000 students in the SDP and itinerant program. Between September and February in one school year children and families could potentially have been provided as many as 20 sessions.

Participating students and families

This study looked at the listening and spoken language outcomes of students receiving LAUSD LSLI and the parent perceptions of these students. When a child with disability turns

three years old and is found eligible for special education support, they are offered placement in public special education programs and/or designated instructional services, such as speech and language, DHH itinerant services, etc. Thus, recruitment for this study was affected by the number of students who met eligibility for LSLI during the recruitment period. During this time there were 55 students, ranging in age from 3–11 years, receiving DHH itinerant/LSLI services. This was documented in their Individualized Education Plans (IEPs). However, after careful review of records, it was determined that only 28 students were receiving LSLI using the AVT model. Each student receiving LSLI has a diagnosis of bilateral hearing loss of at least a moderate degree. Approximately 80% of the students are in DHH SDP and the remaining students are fully included in general education classrooms. In addition, approximately 65% of the students have cochlear implants. Currently, 75% of the students are Latino and 50% come from Spanish-speaking households. Diagnosis of autism precluded participation in this study because autism affects language outcomes regardless of intervention or deafness. However, there were no DHH students with additional disabilities receiving LSLI that precluded them from participation in this study.

Participating teachers

LSLI is provided by six DHH teachers who are employed in the LAUSD DHH itinerant program. The teachers who provide LSLI have a range of teaching experience from 12 to 20+ years. Four of the teachers are LSLS certified Auditory Verbal Educators (Cert. AVEs). One teacher who provided LSLI self-identified as a teacher of color; however, none of the LSLI teachers were bilingual. Generally, one LSLI teacher is assigned to a LSL DHH program site to provide LSLI; each teacher also has a caseload of general DHH itinerant students. The LSLI teachers met once a month as a team to discuss caseloads, assessment and intervention practices,

and to work on the development of a department LSLI policy manual.

LSLI sessions. As has been established, AVT is not a manualized intervention; however, there are the AV Guidelines (AGBell 2012) to guide the practice, numerous resources, and general consensus of what a typical session should include: activities that work on the development of listening, spoken language, speech, and cognition, all within the context of parent coaching. In private therapy, parent participation is required. In LAUSD LSLI, parent participation is highly encouraged. In the event that a parent does not attend, the LSLI were left with the decision to either work with the student (while maybe even including another student in the session for modeling and social interaction) or provide in-class support.

Procedures

After explaining the study to the administrators of the LAUSD DHH Programs, the researcher had a meeting with LAUSD LSLS to explain the purpose of the study and their role in data collection.

AVT, the therapy guidelines under which LSLI operates, is diagnostic in nature. Ongoing listening and spoken language assessment- formal and informal- is a routine part of the program. The researcher was responsible for creating a centralized database for student information, assessment scores, and surveys. In addition, the LSLI teachers were given folders with consent forms to give to parents. Consent forms were reviewed during the LSLI sessions. LSLI teachers placed phone calls to parents who were unable to attend sessions to explain the consent form that was sent to their home. Parents were also provided with an envelope to return the consent form to school. The LSLI teachers returned the consent forms to the researcher.

Information was gathered at two time points: beginning of the school-year assessments were conducted within the first month of school (mid-August-September) and a second

assessment six months later (February-March). The assessments and surveys that were administered are described below. At time point one, LSLSs completed a student information sheet for each student receiving LSLI; this data was entered into a centralized database. The student data included degree of hearing loss, age of intervention, type of hearing technology, presence of additional disability, length of intervention. In addition to descriptive student data, assessment data included age equivalence scores for the four standardized assessments (TACL-3, TOLD, EOWPVT, ROWPVT) and a percentage for the criterion-referenced assessment (APT-HI/R). These assessments will be further described in the measures section below.

At the second time point (February-March), primary caregivers who attended the LSLI sessions were asked to complete the Scale for Parental Involvement and Self-Efficacy (SPISE), the Working Alliance Inventory- Short Form (WAI-S), and the Linguistic Profile of the Home (LPH); these Likert scales gave parents an opportunity to reflect on their involvement, self-efficacy, working relationship with their teacher, and the use of language in the home. Parents were given the option to complete the surveys during the LSLI sessions; once completed, they were provided with an envelope so that they could seal it for confidentiality before returning to the LSLI teacher. The LSLI teacher mailed the forms from the school sites to the PI. Once parents returned the surveys, their child was given the opportunity to select from a “gift box,” which consisted of various age-appropriate family board games/toys/books, at each time point. On average, it took the parents approximately 15–20 minutes to complete the surveys. Bilingual assistants or staff district interpreters were in attendance for all sessions with Spanish-speaking families.

In February, LSLS teachers were also asked to complete a Working Alliance Inventory form for each family they work with in LSLI sessions. On average, it took the teachers

approximately 60–90 minutes to complete the surveys.

Measures

Following is a description of measures that were used with students, parents, and LSLI teachers.

Student measures. The following assessments are routinely administered to students who receive LSLI. A formal comprehensive Auditory-Verbal standardized assessment does not exist. Rhoades (2003) recommends that comprehensive assessments be administered at least once a year, i.e. standardized language assessments once a year with quarterly informal assessments. Hogan et al. (2009) administered a standardized language assessment, *The Preschool Language Scale*, every six months to monitor the rate of language growth for children receiving AVT in the private setting. While the LAUSD LSLI teachers have been using listening and spoken language assessments to monitor language and auditory growth, they had agreed to standardize the Auditory-Verbal Assessment protocol in LAUSD by determining an appropriate battery of formal and informal assessments that they would all use to measure listening and spoken language development. This battery of assessment was used at timepoint 1 of this study. There may be assessment data from *some* of the following measures for some of the students prior to timepoint 1, but not every student had been given the entire battery of the following assessments on a routine basis. All of the measures are appropriate for replication at least every 6–12 months.

Receptive One Word Picture Vocabulary Test, 4th Edition (ROWPVT-4) (Martin & Brownell, 2011). This is a norm-referenced assessment of vocabulary comprehension measured by a picture identification task (match a spoken word with a color illustration of objects, actions, and concepts in an array of 4 pictures). This assessment was standardized on English-speaking individuals ages 2–80+ years residing in the United States. This is an untimed test, but usually

takes about 20 minutes to administer. Raw scores were converted to standard scores, percentiles, and age equivalents. Reliability and validity has been established for this assessment.

Expressive One Word Picture Vocabulary Test, 4th Edition (EOWPVT-4) (Martin & Brownell, 2011). This is a norm-referenced assessment of an individual's expressive vocabulary measured by a picture naming task, ability to name objects, actions, and concepts of color illustrations. This assessment was standardized on English-speaking individuals ages 2–80+ years residing in the United States. This is an untimed test, but usually takes about 20 minutes to administer. Raw scores were converted to standard scores, percentiles, and age equivalents. Reliability and validity has been established for this assessment.

Test of Auditory Comprehension (TACL-3) (Carrow-Woolfolk, 1999). The TACL-3 is an individually administered measure of receptive spoken vocabulary, grammar, and syntax. Divided into three subsets, it assesses an individual's ability to understand the following categories of English language forms for ages 3.0 through 9.11 years old: vocabulary, grammatical morphemes, and elaborated phrases and sentences. There is also an overall quotient score. It is normed on individuals who do not have a hearing loss. Reliability and validity has been established for this assessment (Levi, Boyett-Solano, Nicholson, & Eisenberg, 2001).

Auditory Perception Test for the Hearing Impaired- Revised (APT-HI/R) (Allen, 1998). This evaluation tool analyzes an individual's auditory perception skills. It was designed to be used with individuals with hearing loss over the age of three years. The APT/HI-R measures 16 different skills areas, including auditory awareness, answering open-ended questions in a conversation, and determining auditory functioning levels by identifying developed, emerging or missing auditory skills. Progress is charted on a profile form and results are reflected as a total percentage of auditory skills developed. Reliability of the APT/HI was determined using a

Spearman-Brown test of split-half reliability, and the resulting correlation was 0.99. Construct validity has also been established.

Test of Language Development (TOLD) (Newcomer & Hammill, 1997). This assessment, consists of six semantics and grammar subtests: picture vocabulary, relational vocabulary, oral vocabulary, syntactic understanding, sentence imitation, and morphological completion. There are also six composite scores: listening, organizing, speaking, grammar, semantics, and spoken language. The TOLD-P (Primary), for children who are 4-8.11, was used in this study. One student was not given the TOLD-P because she did not meet age criteria.

Parent/Caregivers measures. These measures are not routinely given to parents; these measures are expressively for the purpose of this research project in order to consider the parent experiences. All parent measures were available in English and Spanish. Spanish-speaking parents were provided with Spanish-language versions of each measure. All parents were given the option of completing the forms during sessions or in their home.

Scale of Parental Involvement and Self-Efficacy (SPISE). Developed by Jean DesJardin (2002), this scale was designed specifically for parents of children with hearing loss. The SPISE has been used in studies including parents of children with hearing loss (DesJardin 2005; 2004). The SPISE consists of three sections: demographic information, self-efficacy, and parental involvement. The demographic section includes: age of diagnosis, length of amplification use, type of amplification, socio-economic status (SES), parent education level, length of participation in an early intervention program. The self-efficacy and parental involvement sections include a total of 25 questions that are rated on a 7-point Likert-type scale, from “not at all” to “very much.” The self-efficacy scale measures parental perceptions of their influence on their child’s development. The parental involvement sections measures parental perceptions of

their involvement in their child's intervention and/or school-age program. Content validity has been established for the SPISE. This scale is available in English and Spanish.

Working Alliance Inventory-Short Form (WAI-S for parents). Working alliance (WA) is defined as the extent to which a client and therapist work collaboratively and purposefully; WA is conceptualized as a common factor that is believed to cut across various treatment approaches (Hanson, Curry, & Bandalos, 2002). The WAI-S is a 12 item self-report measure of working alliance. There are three subscales: goals, tasks, and bond. They measure the same constructs that are in the original, 36-item Working Alliance Inventory (WAI). It is a 7-point Likert scale, ranging from 1 (never) to 7 (always). There are two versions of this inventory: a client-version and a therapist-version. Reliability of both the WAI and WAI-S has been established (Hanson, Curry, & Bandalos, 2002). Developed for use in psychotherapy, and other fields which center on collaborative working relationships are using this measure, such as early intervention (Daro, 2010). The Working Alliance Short Form has been modified slightly for this study so that the language reflects that which is used in LSLI. It will be referred to in this study as the Working Alliance Inventory-Parents (WAI-P). The scores for the 12 statements were combined for a total working alliance score (range from 12-84). The higher the score, the higher working alliance was rated.

Ability and Use of Language in the Home (Gutierrez-Clellen, Kreiter, & Zagursky, 2007). This parent survey is comprised of six sections, asking parents about the use of language in the home and additional demographic information (parent education level and school lunch status). Section VI, *Linguistic Profile of the Home (LPH)*, was of particular interest in this study. In this section, parents are asked about how well their child speaks, understands, and hears Spanish and English. Parents rated their answers from 1–5 on their child's ability to speak and understand

English and Spanish (1= “does not speak/understand any” to 5= “speaks/understands all of the time”). The scores were averaged for English and Spanish. The proficiency ratio was calculated by dividing Spanish score by the combined Spanish and English score. Higher scores meant they were more proficient in Spanish than in English. . Parents rated the amount their child hears English and Spanish in the home from the mother, father, and sibling (1= “never” to 4 “all of the time”). The three scores were averaged for both languages. The Spanish score was then divided by the combined Spanish and English score to create a Spanish-to-English exposure ratio. Higher values meant more Spanish was spoken at home than English. Parents’ report of their child’s eligibility in the school lunch program (free, reduced, regular) was also used in this study to determine SES.

LSLI Teacher Measures. These measures are not routinely given to the LSLI teachers; these measures are expressively for the purpose of this research project in order to consider the teacher perspectives.

Working Alliance Inventory-Short Form (WAI-S for therapists). Working alliance (WA) is defined as the extent to which a client and therapist work collaboratively and purposefully; it is a 12 item 7-point Likert scale, ranging from 1 (never) to 7 (always). As stated above, the Working Alliance Short Form has been modified slightly so that the language reflects that which is used in LSLI. It will be referred to in this study as the Working Alliance Inventory-Therapists (WAI-T). The scores for the 12 statements were combined for a total working alliance score (range from 12-84). The higher the score, the higher working alliance was rated.

Analysis Plan

Research Aim 1. I will describe and summarize data on the participants, including: age of the child, ethnicity, language of the home, SES (as determined by participation in free and reduced lunch program), degree of hearing loss, type of hearing technology, age of diagnosis, length of amplification use, as reported by the LSLI teacher on individual student information forms, and individual parent participation rate, as will be calculated by the LSLI teacher at timepoint 2. Assessment data will include: 1) standard scores obtained by the ROWPVT and EOWPVT; 2) standard scores on the TACL-3 and TOLD-P:4 ; 3) auditory scores, presented as a percentage, on the APT-HI/R. In addition, data will be provided by the parent surveys (SPISE, WAI-P, LPH) and teacher surveys (WAI-T).

The descriptive summary statistics (mean, standard deviation, median, range, distribution) for pre and post scores and difference scores will be reported. To compare the pre and post scores, I will use the one sample t-test (requires normality) or the Wilcoxon sign rank test (does not require normality).

Research Aim 2. In this analysis, parent attendance in the LSLI sessions is the predictor, and the assessments listed above are the outcomes. Potential covariates include: amount of previous therapy, degree of hearing loss, age of diagnosis, age of access to hearing technology, ethnicity, home language (English vs. other), cochlear implant use (Y-N) and SES. I will assess the bivariate correlation between the number (percent) of sessions attended by parent versus the change from base in each continuous outcome measure using Spearman correlation.

To assess the bivariate correlation between each continuous change from base outcome measure versus each continuous/ordered covariate (e.g. age of access to hearing technology, amount of hearing loss, etc), I will use Spearman correlation. To assess the bivariate relationship

between each continuous change from base outcome measure versus each nominal covariate, such as ethnicity or home language, I will report the means/medians in the change from baseline scores by level of each nominal covariate, and compute the corresponding p-values using Kruskal-Wallis (comparing medians).

In the multivariate analysis, to assess the relationship between the number (percent) of sessions attended by parent versus the change from base in each outcome measure while controlling for the above covariates, I will use multiple linear regression.

Research Aim 3. In this analysis, parent attendance in the LSLI sessions will be treated as the outcome and the eight potential predictors will include: language of the home, SES, ethnicity, type of transportation, job conflict, SPISE, WAI-T, WAI-P. I will assess the bivariate correlation between each continuous predictor including SPISE, parent WAI (WAIP) and teacher WAI (WAIT), and the Proficiency Ratio and Spanish-English Ratio of the Linguistic Profile of the Home (LPH) versus the number (percent) of sessions attended by parent using Spearman correlation. I will analyze the mean/median number (percent) of sessions attended by parent by level of each nominal predictor (home language, ethnicity) using the Kruskal-Wallis test.

Chapter 4

Results

Research Aim 1: To describe listening and spoken language outcome gains in children with hearing loss who receive LSLI at LAUSD.

Inspection of Shapiro-Wilk scores for the 19 individual subtests of the language and auditory assessments determined that the assessment standard scores were not normally distributed. Therefore, a Wilcoxon sign rank test was used to determine if there was a statistically significant difference in standard score median between pre-test and post-test assessment scores.

The assessment battery included 5 tests, APT-HI/R, EOWPVT, ROWPVT, TACL-3, and TOLD-P:4. The TACL and TOLD:P have multiple subtests. Nineteen subtests were analyzed. Students demonstrated statistically significant improvement in twelve of the nineteen subtests (see Table 3). Improvements were noted in 3 of the subtests for expressive language, 6 of the receptive language subtests, and 3 composite scores on the TOLD that evaluated a combination of expressive and receptive language (grammar, semantics, and spoken language). No improvements were noted for 7 subtests (see Table 3). There were no observed differences between performance on expressive language and receptive language subtest scores.

Research Aim 2: To evaluate the relationship between parental attendance in LSLI sessions and student language and auditory outcomes.

Table 4 notes that the only statistically significant relationship between parent attendance and difference in assessments standard scores was for the TOLD picture vocabulary subtest, $r_s = -.435$, $p < .0005$ with lower attendance associated with higher vocabulary scores.

Other characteristics were examined in relation to language and auditory difference scores

using Spearman correlations (see Tables 5 and 6). A strong negative correlation was found between age of diagnosis and TOLD spoken language composite score ($r = -.513, p < .0005$) and the Elaborated Phrases and Sentences subtest of the TACL-3 ($r = -.431, p < .005$). Thus, the later a child was diagnosed with hearing loss the less well the child scored on these two subtests.

Kruskal-Wallis test yielded significant differences for three other characteristics, parent education, ethnicity, and SES.

Parent Education

Parent education level was split into “high school and below” and “vocational and above.” Distributions of the assessment scores were similar for each group as assessed by visual inspection of a boxplot. Median assessment scores were statistically significantly different between groups, with parents with higher education demonstrating higher medians on the following assessments: ROWPVT, APT-HI/R, relational vocabulary, and the semantics and spoken language composite scores for the TOLD-P:4.

Ethnicity

Child language scores were examined for two groups based on ethnicity: “Latino” and “non-Latino.” Distributions of the assessment scores were similar for each group as assessed by visual inspection of a boxplot. Median assessment scores were statistically significantly different between groups, with non-Latino parents demonstrating higher medians on the listening, organizing, semantics and spoken language composite scores of the TOLD-P:4. On the other hand, Latinos showed higher medians on the morphological completion and sentence imitation subtests of the TOLD-P:4.

Socio-economic status (SES)

SES was examined using a proxy measure of “Free/reduced lunch” and “regular lunch.”

Distributions of the assessment scores were similar for each group as assessed by visual inspection of a boxplot. Median assessment scores were statistically significantly different between groups, with parents qualifying for regular lunch rates demonstrating higher medians on the listening, semantics and spoken language composite scores of the TOLD-P:4.

Research Aim 3: To determine the potential barriers to parent attendance in the LAUSD LSLI sessions.

The third aim of this research is to determine if there are factors, including degree of hearing loss, length of intervention, type of hearing technology, language of the home, self-efficacy and working alliance scores that may act as obstacles to parent attendance in LSLI sessions. Because parent attendance was not normally distributed, as determined by the Shapiro-Wilk test, a Kruskal-Wallis test was carried out for the parent and child characteristics: language of the home, SES, parent education, ethnicity, degree of hearing loss, and type of hearing technology (hearing aid only or CI). The relationship between parent attendance and each of these categories was not statistically significant. There was also no statistically significant relationship observed between parent attendance and the WAI-T.

Another hypothesis was that parents with higher self-efficacy and working alliance scores would have higher attendance in LSLI sessions. Self-efficacy and working alliance were not significantly associated with parent attendance (Table 7). However, higher self-efficacy score significantly correlates with higher working alliance score, $r_s = .451$, $p < .05$.

To further consider how language of the home may affect parent attendance, a Spearman correlation was run between scores on the Spanish-English ratio and the Proficiency Ratio (LPH) and parent attendance (Table 7). A statistically significant correlation was found between WAIP and Spanish-English ratio $r_s = -.548$, $p < .05$. Thus, it appears that the more Spanish the child heard

in the home correlated with lower working alliance scores.

Discussion

Parent attendance is the center of LSL practice since parents are considered the primary student. Therefore, the finding of this study that parent attendance may not have a significant relationship with child listening and spoken language outcomes is surprising. However, considering that the majority of the participants in this study are working-class Latino, a group that has not been traditionally included in previous AVT research, this finding is cause to consider: do we need to change how we implement the therapy in order to maximize the effectiveness of this intervention for working-class CLD families?

Furthermore, how do we address the concerns of parents who speak Spanish in the home? While there was a not a direct correlation between language of the home and parent attendance, there was a statistically significant relationship between the Spanish-English ratio and the total working alliance score. Thus, it appears that the more Spanish the child hears in the home, the lower parents rated working alliance with the therapist. This finding falls in line with research that traditionally marginalized families may have a distrust of professionals. Traditional AVT/LSLI may in fact be an “inadequate cultural fit” for some of our CLD families, particularly those in public school setting. While this therapy seems to be benefitting the students with their overall listening and spoken language growth, how do we carry out AVT/LSLI for CLD families being served in the public schools? Simply implementing LSL strategies , many of which are supported by research, in a traditional therapy model may not necessarily be the most effective way to promote a positive working relationship with the most important clients, the parents.

The findings that lower SES, lower parent education, and ethnicity had statistically significant relationship with lower assessment difference scores on many subtests is also supported by research. Geers et al (2009) reported that children with hearing educated parents

tended to score higher on assessments. So while children generally made growth, the fact that a child's SES, ethnicity and parent education is related to listening and spoken language growth on many of the subtests could—and should—have implications for how we may reconsider implementing LSLI in the schools. This is discussed later in this section.

The later a child was diagnosed with hearing loss is strongly related to lower scores on two spoken language and auditory comprehension subtests, which reiterates the importance of early diagnosis and fitting with hearing technology. LSLIs should also consider the effectiveness of therapy for children who did not access service until after 3 years old, which includes the majority of the children in this study since this service is not available in LAUSD until after children reach the age of 3. The majority of the children in this study were not diagnosed until after 21 months of age and the children with cochlear implants were not activated until the average age of 38 months. Because research has reported better outcomes for children who receive cochlear implants at an earlier age (Geers et al, 2006 & Nicholas & Geers, 2006), children in this study are already at an even greater disadvantage than their peers with hearing loss who were not only fitted with hearing technology at an earlier age, but also received AVT/LSLI at an earlier age. While there was general progress demonstrated on most of the subtests over the 6-month time, there were still seven subtests that showed less than statistically significant progress. Thus, is it realistic to expect that their growth will follow the same trajectory of progress as other middle-class children who receive hearing technology and AVT/LSLI before the age of 3?

Children whose parents attended the sessions less than 90% of sessions (considered “low” attendance) scored better on the oral vocabulary and picture vocabulary subtests of the TOLD-P-4. These results should be interpreted with caution since this significant relationship only

presented for two out of 19 subtests in the assessment battery. However, this finding is interesting because it appears that parents who perceive their children as “doing well” may not feel the need to attend sessions as often. While parent attendance is required in the private setting, it can only be strongly encouraged in the public school setting.

This brings us back to the question: does parent attendance matter in listening and spoken language interventions for children with hearing loss? Despite the findings of this exploratory study, parent participation in the schools has been found to have a positive impact on the education of the child. Thus, while parent participation hasn’t been specifically controlled for in AVT research, parent participation is at the center of AVT/LSLI. It is not the intention of this study to suggest that we not encourage parent attendance in the sessions, or that we not offer this service to children who are implanted later, but to consider how we might implement other strategies to augment the existing framework of AVT practice so that the potential benefits of this practice are truly accessible to all families.

This is an exploratory study with a relatively small sample size; therefore, generalizability is very limited. A larger sample would help to better identify the relationship between parent attendance and listening and spoken language outcomes for children with hearing loss. However, results from this study could inform the future direction of AVT/LSLI and CLD families with children in the public school setting.

Future Directions

In a time in which poverty is rising in public education and the rising assault against public schoolteachers for lack of student progress, researchers agree that the demographics and circumstances of the families who are in the public school system may affect overall progress of CLD children. While the purpose of this study is not to address immediate solutions that ought to

be undertaken by the federal government to support working-class CLD families, it is the hope that findings from this study will generate discussion among LSLSs to consider other ways in which we may better meet the needs of these families accessing LSLI/AVT.

There are ways in which AVT differs from other aural rehabilitation: emphasis on audition, family and normal developmental process (Brennan-Jones et al., 2013). The focus is on the parent-child dyad, and a LSLS would not usually work with a child by herself during a traditional AVT/LSLI session. In context of my study, a question is: how could this look for children of working-class families who may find it difficult to attend therapy? How can we redefine parental “involvement” for such families who receive the service in the public school setting? Teletherapy in AVT is rising in popularity, however we are working with a demographic of families who may not have consistent access to the technology that is necessary to utilize teletherapy. Or, for those families who can attend, perhaps there is a need to supplement the intervention to meet their needs? Alterations to current LSLI practice could include:

- Bimonthly group parent meetings centering on LSLS topics: parents of children with special needs are often isolated from other parents of children with special needs, especially if their child is bussed to their special education program. Bimonthly meetings that focus specifically on LSLS strategies could be another avenue for parents to not only practice and discuss strategies outside of the traditional therapy setting, but also share ideas with other parents about how they implement strategies at home.
- Additional two hours a month for direct parent consultation (which could include video feedback of parent-child interaction): parents may feel more comfortable practicing and discussing strategies with the teacher and without their child present. In this study, parent education levels appeared to significantly impact outcomes. Thus, if the majority of the

parents have lower education levels, perhaps they need more than just an hour a week to teach them the strategies? This is not to suggest multiple hours weekly, but perhaps some additional time on a monthly basis for direct instructional time to explicitly discuss concepts and strategies. This additional time could also provide the teacher/therapist with the opportunity to foster a positive working relationship with the parents. In this study, self-efficacy positively correlated with working alliance. Thus, it seems that focusing on more explicit parent-education could help improve a parent's self-efficaciousness and therefore their working relationship with the therapist.

- Staff interpreter/assistants for LSLI teachers to promote consistent relationship between the parents and teachers. Currently teachers will use available district interpreters and bilingual classroom assistants during sessions. Having a consistent staff interpreter/bilingual assistant will also serve to promote a positive relationship between the parent and LSLI teacher.
- Offer LSLI/AVT during after school hours: 61% of families were not able to attend sessions on a consistent basis. 56% of the families who were not able to attend cited work conflict. Offering therapy during after-school hours may increase opportunities for these families to attend sessions.

Future studies

AVT research, with the majority of participants being middle-class, White children, has been useful in demonstrating the potential of children with hearing loss, who are identified and fit with hearing technology early, to develop age-appropriate listening and spoken language skills. The field would benefit from more research that includes CLD families with children in public school settings because AVT/LSLI is becoming increasingly more available in that

domain. The families in this study all had children attending the same school district. Future studies should include families from multiple public education settings. Data from such studies will help to establish AVT/LSLI as evidence-based practice for all families.

Fidelity of therapy sessions in this study was not established. Since all teachers carrying out this therapy were LSLI certified professionals, caution against assumption of quality of session (teaching) or carryover (parents) should be considered; however, the validity of future findings could be supported by establishing fidelity of sessions.

My study looks at whether parent participation affected outcomes. In the future, parent-child interaction should be recorded and closely analyzed. A tool that could be useful for analyzing parent-child interaction could be Elizabeth Cole's [Checklist for Caregivers: Communication-Promoting Behaviors \(2009\)](#), which analyzes caregivers' sensitivity to child and communication behaviors that promote development of listening and spoken language skills. Information gathered from this scale could help the LSLI identify specific areas of interaction to coach parents during sessions.

Bilingual assessments should be included in the battery of language and auditory tests administered to children from non-English-speaking households in order to get a true measure of listening and spoken language growth. Without these assessments, it is difficult to ascertain the actual language growth, especially for the children with ELL designation, in this short time period. Since Spanish-language assessments were not administered to children from Spanish-speaking homes, the full linguistic profile of the bilingual children in this study could not be assessed.

Furthermore, the benefits of offering LSLI to children whose parents do not attend needs to be considered. Since the children did show progress, questions arise: should continued service

provision be considered? Would they have made the same progress without the therapy?

Therefore, future studies should include, matching children receiving LSLI in the public schools and their peers not receiving LSL (but attending LSL programs in public schools) could also contribute another layer of validity of to future studies.

While there are many limitations to this study, findings from this exploratory study point to the need to seriously consider that listening and spoken language interventions may need to be implemented differently for CLD families of children with hearing loss. Considering that the average age of children receiving cochlear implants in this study is higher than the recommended age for ideal listening and spoken language progress, the reality is that service provision of the children from lower income and less educated families entering the public school-age DHH programs may warrant additional consideration.

Table 1. *Characteristics of Children.*

	(%)	SD	Range
N	28		
Mean Age in months	73	21.50	44-142
Gender			
Male	15 (54)		
Female	13 (46)		
Ethnicity			
Latino	21 (75)		
Non-Latino	7 (25)		
Primary Language of the Home			
English	10 (36)		
Non-English	18 (64)		
SES			
Free/Reduced	24(86)		
Regular	4 (14)		
Age of Diagnosis <i>in months</i> (SD)	21	14.87	0-48
Age at Initial Hearing Technology Fit <i>in months</i> (SD)	30	15.07	1-60
Age of Cochlear Implant* <i>in months</i>	38	18	12-81
Degrees of Hearing Loss			
Mild-Severe	8 (30)		
Moderate-Profound	10 (35)		
Severe-Profound	10 (35)		
Type of Hearing Technology			
Hearing Aid/s(HA)	11 (39)		
Cochlear Implant/s (CIs)	17 (61)		
<i>Cochlear Implant</i>	3		
<i>Bilateral Cochlear Implant</i>	8		
<i>Bimodal (CI & HA)</i>	6		
Length of time receiving LSLI <i>in months</i>	17	12.72	1-60

Table 2. Characteristics of Parents

	(%)
Parent Education	
≤High School	16 (57%)
≥Vocational School	10 (36%)
Parent Participation	
Mean <i>percentage (SD)</i>	61% (36.5)
High participation (>90%) (%)	11 (39)
Reasons for non-attendance	
Work	9 (56)
Other (Lack of childcare, transportation)	7 (44)

Table 3. *Summary Statistics of Assessment Standard Scores.*

Name of Test	Pre-test Mean (SD)	Range	Post-test Mean (SD)	Range	Difference Mean (SD)	Range	p
APT-HI/R	65.57(26.49)	1-95	78.36(21.26)	20-100	12.79(9.76)	-12-32	<.001
ROWPVT	70.36(12.80)	54-101	75.04(14.20)	54-99	4.67(8.10)	-8-23	<.05
EOWPVT	64.41(13.66)	54-111	69.63(13.84)	54-114	5.62(5.15)	0-17	<.001
TACL-3							
Vocabulary	5.26(3.29)	1-12	6.37(3.18)	1-14	1.11(2.29)	-3-7	<.05
Grammatical Morphemes	5.30(2.49)	1-11	5.19(2.57)	1-11	-.111(2.42)	-10-4	>.05
Elaborated Sentences&Phrases	5.04(2.72)	1-10	5.56(2.90)	1-11	.518(1.93)	-4-5	>.05
Composite (Quotient)	55.96(30.17)	9-100	59.30(30.14)	6-113	3.33(7.25)	-15-15	<.05
TOLD-4:P							
Picture Vocabulary	4.00(2.91)	1-13	4.52(3.08)	1-12	.54(1.99))	-2-6	>.05
Relational Vocabulary	4.83(3.78)	1-14	6.04(3.97)	1-17	1.30(2.28)	-1-7	<.05
Oral Vocabulary	4.74(3.87)	1-12	5.67(3.83)	1-15	.809(3.90)	-11-7	>.05
Syntactic Understanding	4.48(2.42)	1-9	5.76(2.81)	2-13	1.48(3.60)	-5-12	>.05

Name of Test	Pre-test Mean (SD)	Range	Post-test Mean (SD)	Range	Difference Mean (SD)	Range	p
Sentence Imitation	3.65(2.33)	1-8	4.43(2.60)	1-10	-.238(3.22)	-8-6	>.05
Morphological Completion	3.65(1.50)	1-8	4.10(1.87)	2-8	.381(1.94)	-2-6	>.05
Listening Composite	66.83(13.23)	49-105	73.04(15.12)	52-111	6.21(9.89)	-8-28	<.01
Organizing Composite	68.63(15.60)	48-106	71.85(16.73)	-8-23	4.46(8.47)	-8-23	<.05
Speaking Composite	65.13(13.88)	49-94	66.62(19.11)	0-100	4.75(4.45)	-6-15	<.01
Grammar Composite	65.63(9.52)	53-86	68.81(11.28)	-10-22	4.04(7.78)	-10-22	<.05
Semantics Composite	65.71(19.46)	47-119	70.65(19.24)	47-127	6.00(8.25)	-11-25	<.01
Spoken Lang Composite	61.96(15.14)	46-10	66.04(16.11)	44-110	5.17(7.39)	-8-21	<.01

Table 4. *Correlation Matrix Parent Participation and TOLD-4:P Subtests*

	PP	PV	RV	OV	SU	SI	MC
Parent Participation (PP)	1.000	-.435*	-.038	-.322	.030	-.137	-.117
Picture Vocabulary (PV)	-.435*	1.000	-.066	.347	-.099	-.056	.214
Relational Vocabulary (RV)	-.038	-.066	1.000	-.058	.201	.050	-.058
Oral Vocabulary (OV)	-.322	.347	-.058	1.000	.532*	.536*	.464*
Syntactic Understanding (SU)	.030	-.099	.201	.532*	1.000	.680**	.140
Sentence Imitation (SI)	-.137	-.056	.050	.536*	.680**	1.000	.369
Morphological Completion (MC)	-.117	.214	-.058	.464*	.140	.369	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 5. *Correlation Matrix of TACL-3 Difference Scores and Hearing Information*

	Dx	Rx	CI	VOC	GM	EPS	CQ
Age of Diagnosis (Dx)	1.000	.459*	.434	-.288	-.203	-.431*	-.301
Age of Initial Hearing Technology Fit (Rx)	.459*	1.000	.854**	.007	-.209	-.159	-.126
Age Received Cochlear Implant (CI)	.434	.854**	1.000	-.211	-.378	-.234	-.091
Vocabulary (Voc)	-.288	.007	-.211	1.000	.017	.318	.537**
Grammatical Morphemes (GM)	-.203	-.209	-.378	.017	1.000	.159	.236
Elaborated Phrases and Sentences (EPS)	-.431*	-.159	-.234	.318	.159	1.000	.765**
Comprehensive Quotient (CQ)	-.301	-.126	-.091	.537**	.236	.765**	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 6. *Correlation Matrix TOLD:P-4 Composite Scores and Hearing Data*

	Dx	Rx	CI	LIS	ORG	SPK	GRAM	SEM	SPL
Age of Diagnosis (Dx)	1.000	.459*	.434	-.266	-.395	-.384	-.250	-.372	-.513*
Age at Initial Hearing Technology Fit (Rx)	.459*	1.000	.854**	.054	-.152	-.140	-.078	-.001	-.227
Age Received Cochlear Implant (CI)	.434	.854**	1.000	-.301	-.006	-.064	-.121	-.086	-.159
Listening (LIS)	-.266	.054	-.301	1.000	.580**	.502*	.818**	.493*	.704**
Organizing (ORG)	-.395	-.152	-.006	.580**	1.000	.729**	.755**	.648**	.885**
Speaking (SPK)	-.384	-.140	-.064	.502*	.729**	1.000	.595**	.811**	.720**
Grammar (GRAM)	-.250	-.078	-.121	.818**	.755**	.595**	1.000	.391	.740**
Semantics (SEM)	-.372	-.001	-.086	.493*	.648**	.811**	.391	1.000	.776**
Spoken Language (SPK)	-.513*	-.227	-.159	.704**	.885**	.720**	.740**	.776**	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Table 7. *Correlation Parent Attendance and Parent Survey Responses*

	PA	WAIP	SPISE SE	SPISE PI	SE ratio	Prof ratio
Parental Attendance	1.000	-.128	-.006	.081	.140	.234
Total WAIP	-.128	1.00	.451*	.093	-.548*	-.369
SPISE Self-Efficacy	-.006	.451*	1.00	-.384	-.343	-.165
SPISE Parental Involvement	.081	.093	-.384	1.00	-.307	-.077
Spanish-English ratio (LPH)	.234	-.548*	-.132	-.307	1.000	.799**
Proficiency Ratiio (LPH)	.234	-.369	.105	-.077	.799**	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Works Cited

- Alexander Graham Bell Association Academy of Listening and Spoken Language (2012). The Principles of Auditory-Verbal Therapy. In *2012 Certification Handbook*. Retrieved from <http://nc.agbell.org//Document.Doc?id=730>
- Allen, Sue (2008). Auditory Perception Test for the Hearing Impaired-Revised (APT- HI/R). San Diego, CA:Plural Publishing, Inc.
- Artiles, A., & Ortiz, A., (2002). English language learners with special needs: Contexts and possibilities. In A. Artiles & A. Ortiz (Eds.), *English language learners with special education needs: Identification, assessment, instruction* (pp. 3–30). Illinois: Delta.
- Brennan-Jones, CG, White, J., Rush, RW, Law, J. (2014). Auditory-verbal therapy for promoting spoken language development in children with permanent hearing impairments. *Cochrane Database Syst Rev.* 2014 Mar 12;3:CD010100. doi: 10.1002/14651858.CD010100.pub2.
- Burns, M. K., & Ysseldyke, J. E. (2009). Reported prevalence of evidence-based instructional practices in special education. *The Journal of Special Education, 43*(1), 3–11.
- Calderon, R. (2000). Parental involvement in deaf children's education programs as a predictor of child's language, early reading, and social-emotional development. *Journal of Deaf Studies and Deaf Education, 5*, 140–155.
- Carrow-Woolfolk, E. (1999). Test of Auditory Comprehension of Language, Third Edition (TACL-3). Austin, TX: Pro-Ed.
- Chambless, D., & Hollon, S. (1998). Defining empirically supported therapies. *Journal of Consulting and Clinical Psychology 66*(1), 7–18.

- Cole, E. (2009). Checklist for caregivers: communication-promoting behaviors. Retrieved from <http://firstyears.org/c4/u3/cole-chklist.pdf>
- Cook, B. G., Tankersley, M., Cook, L., & Landrum, T. J. (2008). Evidence-based practices in special education: Some practical considerations. *Intervention in School and Clinic, 44*(2), 69–75.
- Daro, D. (2010, December). Replicating Evidence-Based Home Visiting Models: A framework for assessing fidelity. *Supporting Evidence-Based Home Visiting to Prevent Child Maltreatment, Brief 3*.
- DesJardin, J.L. (2002). Scale of Parental Involvement and Self-Efficacy (SPISE). Los Angeles, CA: House Ear Institute.
- DesJardin, J. L. (2005). Maternal perceptions of self-efficacy and involvement in the auditory development of young children with prelingual deafness. *Journal of Early Intervention, 27*(3), 193–209.
- Dornan, D., Hickson, L., Murdoch, B., Houston, T., & Constantinescu, G. (2010). Is Auditory-Verbal therapy effective for children with hearing loss? *The Volta Review, 110*(3), 361–387.
- Douglas, M. (2011). Teaching children with hearing impairment to listen and speak when the home language is not English. *Perspectives on Hearing and Hearing Disorders in Childhood, 13*(1), 20–30. doi: 10.1044/hhdc21.1.20
- Dunst, C. J. (2002). Family-centered practices: Birth through high school. *Journal of Special Education, 36*, 139–147.

- Easterbrooks, S. R., O'Rourke, C. M., & Todd, N. W. (2000). Child and Family Factors Associated with Deaf Children's Success in Auditory-Verbal Therapy. *The American Journal of Otology*, 21, 341–344.
- Easterbrooks S. R., Lederberg, A. R., Miller, E. M., Bergeron, J. P., & Connor, C. M. (2008). Emergent Literacy Skills During Early Childhood in Children With Hearing Loss: Strengths and Weaknesses. *The Volta Review*, 108(2), 91–114.
- Eriks-Brophy, A. (2004). Outcomes of Auditory-Verbal therapy: A review of the evidence and a call for action. *The Volta Review*, 104(1), 21–35.
- Eriks-Brophy, A., Durieux-Smith, A., Olds, J., Fitzpatrick, E., Duquette, C., Whittingham, J. (2006). Facilitators and barriers to the inclusion of orally educated children and youth with hearing loss in schools: Promoting partnerships to support inclusion. *Volta Review*, 106 (1), 53–88.
- Estabrooks, W. (Ed.) (2006) Auditory-Verbal Therapy and Practice. Washington, DC: A. G. Bell.
- Garcia, S. (2002). Parent-professional collaboration in culturally sensitive assessment. In A. Artiles, & A. Ortiz (Eds.), *English language learners with special education needs: Identification, assessment, instruction* (pp. 87–106). Illinois: Delta.
- Garcia, E., & Wiese, A., & Cuellar, D. (2011). Language, public policy, and schooling: A focus on Chicano English language learners. In R. R. Valencia (Ed.). *Chicano School Failure and Success: Past, present and future* (pp.143–159). New York: Routledge.
- Geers, A.E., Moog, J.S., Biedenstein, J., Brenner, C., & Hayes, Heather. (2009). Spoken language scores of children using cochlear implants compared to hearing-age mates at school entry. *Journal of Deaf Studies and Deaf Education*, 14(3), 371- 385.

- Gerston, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C., & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 249–164.
- Goldberg, D., & Flexer, C. (2001). Auditory-Verbal graduates: Outcome survey of clinical efficacy. *Journal of American Academy of Audiology, 12*, 406–414.
- Green, C. L., Walker, J. M., Hoover-Dempsey, K. V., Sandler, H. M. (2007). Parents' motivations for involvement in children's education: An empirical test of a theoretical model of parental involvement. *Journal of Educational Psychology, 99*(3), 532–544.
- Guiberson, M. (2005). Children with cochlear implants from bilingual families: Considerations for intervention and a case study. *The Volta Review, 15*, 29–39.
- Guiberson, M. M., Barrett, K. C., Jancosek, E. G., & Yoshinaga-Itano, C. (2006). Language maintenance and loss in preschool-age children of Mexican immigrants. *Communication Disorders Quarterly, 28*(1), 4–17.
- Gutierrez-Clellen, V. F., Kreiter, & Zagursky. (2007). Ability and use of language in the home [survey form].
- Hanson, W. E., Curry, J. T., & Bandalos, D. L. (2002). Reliability generalization of Working Alliance Inventory scale scores. *Educational and Psychological Measurement, 62*, 659-673.
- Harry, B. (2002). Trends and issues in serving culturally diverse families of children with disabilities. *The Journal of Special Education, 36*(3), 131–138.
- Harry, B. (2008). Family-professional collaboration with culturally and linguistically diverse families: Ideal vs. reality. *Exceptional Children, 72*(3), 372–388.

- Harry, B., & Klingner, J. (2007). Discarding the deficit model. *Educational Leadership*, 64(5), 16-21.
- Hogan, S., Stokes, J., White, C., Tyszkiewicz, E., Woolgar, A. (2008). An evaluation of Auditory-verbal therapy using the rate of early language development as an outcome measure. *Deafness and Education International*, 10(3), 143–167.
- Jackson, C. W., Traub, R. J., & Turnbull, A. P. (2008). Parents' experience with childhood deafness: Implications for family-centered services. *Communication Disorders Quarterly*, 29(2), 82–98. doi: 10.1177/1525740108314865
- James, D., Rajput, K., Job, A., & Joseph, A. (1997). Phonological awareness, vocabulary, and word reading in children who use cochlear implants: Does age of implantation explain individual variability in performance outcomes and growth? *Journal of Deaf Studies and Deaf Education*, 131, 117–137.
- Kirk, K. I., Miyamoto R. T., Ying, E. A., Perdew, A. E., & Zuganelis H. (2002). Cochlear implantation in young children: Effects of age at implantation and communication mode. *Volta Review*, 102(6), 127–144.
- Kohnert, K., Yim, D., Nett, K., Kan, P. F., & Duran, L. (2005). Intervention with linguistically diverse preschool children: A focus on developing home language(s). *Language, Speech, and Hearing Services in Schools*, 36, 251–263.
- Kratochwill, T. R., & Shernoff E. S. (2004). Evidence-based practice: Promoting evidence-based interventions in school psychology. *School Psychology Review*, 33(1), 34–48.
- Levi, A. V., Boyett-Solano, J., Nicholson, B., & Eisenberg, L.S. (2001). Multilingualism and children with cochlear implants: How multilingualism may influence functional speech

- perception and language test measures of young recipients of cochlear implants. *The Hearing Review*, 8(6), 44–49.
- Los Angeles Unified School District (2012). *District information*. Retrieved from http://home.lausd.net/apps/pages/index.jsp?uREC_ID=178745&type=d
- Martin, N., & Brownell, R. (2011). Expressive One-Word Picture Vocabulary Test, Fourth Edition (EOWPVT-4). Novato, CA: ATP Assessments.
- Martin, N., & Brownell, R. (2011). Receptive One-Word Picture Vocabulary Test, Fourth Edition (ROWPVT-4). Novato, CA: ATP Assessments.
- McConkey-Robbins, A., Green, J. E., & Waltzman, S. B. (2004). Bilingual oral language proficiency in children with cochlear implants. *Arch Otolaryngolog Head Neck Surg*, 130, 644–647.
- Meline, T., & Paradiso, T. (2003). Evidence-based practice in schools: Evaluating research and reducing barriers. *Language, Speech, and Hearing Services in Schools*, 34, 273–283.
- Meadow-Orlans, K. P., Lee, K. D., & Sass-Lehrer, M. (1995). Support services for families with children who are deaf challenges for professionals. *Topics in Early Childhood Special Education*, 15(3), 314–334. doi: 10.1177/027112149501500305
- Mehra, S., Eavey, R. D., Keamy, D. G. (2009). The epidemiology of hearing impairment in the United States: Newborns, children, and adolescents. *Otolaryngology-Head and Neck Surgery*, 140, 461–472.
- Moeller, M.P. (2000). Early intervention and language development in children who are deaf and hard of hearing. *Pediatrics*, 106, 1–9.
- Moore, J. A., Prath, S. P., & Arrieta, A. (2006). Early Spanish acquisition following cochlear implantation. *The Volta Review*, 106(3), 321–341.

- Moreno, R.P., & Valencia, R.R. (2011). Chicano families and schools: Challenges for strengthening family-school relationships. In R. Valencia (Ed.). *Chicano school failure and success: Past, present, and future* (pp. 197-210). New York: Routledge.
- Newcomer PL, Hammill DD. Test of Language Development-Primary, Third Edition. Pro-Ed, Inc.; Austin, TX: 1997.
- Nicholas, J., & Geers, A. (2006). Effects of early auditory experience on the spoken language of deaf children at 3 years of age. *Ear and Hearing, 27*, 286–298.
- Odom, S.L., Brantlinger, E., Gersten, R., Horner, R.H., Thompson, B., et al. (2005). Research in special education: Scientific methods and evidence-based practices. *Exceptional Children, 71*(2), 137-148.
- Olivos, E. M. (2009). Collaboration with Latino families: A critical perspective of home-school interactions. *Intervention in School and Clinic, 45*(2), 109–115.
- Olivos, E. M., Ochoa, A. M., & Jimenez-Castellanos, O. (2011). Critical voices in bicultural parent engagement: A framework for transformation. In E. M. Olivos, Ochoa, A.M, & Jimenz-Castellanos, O. (Eds.). *Bicultural parent engagement: Advocacy and engagement* (1–15). New York: Teachers College Press.
- Rhoades, E. A. (2003). Lexical-semantic and morphosyntactic language assessment in Auditory-Verbal intervention: A position paper. *The Volta Review, 103*, 169–184.
- Rhoades, E. A., Price, F., & Perigoe, C. B. (2004). The changing American family and ethnically diverse children with multiple needs. *The Volta Review, 104*(4), 285–305.
- Rhoades, E. A. (2008). Working with multicultural and multilingual families of young children. In J. R. Madell & C. Flexer (Eds.). *Pediatric audiology: Diagnosis, technology, and management* (pp. 262–268). NY: Thieme.

- Rhoades, E.A. (2010). Evidence-based Auditory-Verbal practice. In E.A. Rhoades & J. Duncan, J. (Eds.), *Auditory-verbal practice: Toward a family-centered approach* (23-51). Springfield: Charles C. Thomas Publisher, Ltd.
- Schaeffer et al. (2005). Overcoming challenging to using evidence-based interventions in schools. *Journal of Youth and Adolescence*, 34: 15–22.
- Sininger, Y. S., Grimes, A., & Christensen, E. (2010). Auditory development in early amplified children: Influencing auditory-based communication outcomes in children with hearing loss. *Ear & Hearing*, 31(2),
- Smith, T., Scahill, L., Dawson, G., Guthrie, D., Lord, C., Odom, S., Rogers, S., & Wagner, A. (2007). Designing research studies on psychosocial interventions in Autism. *Journal of Autism Developmental Disorders*, 37, 354–366.
- Spencer, P.E., & Marschark. (2010). Issues and trends in best practice. In *Evidence-Based Practice in Educating Deaf and Hard of Hearing Children*. New York, NY: Oxford University Press.
- Steinberg, A. G., Davila, J. R., Collazo, J., Loew, R. C., Fischgrund, J. E. (1997). “A little sign and a lot of love...”: Attitudes, perceptions, and beliefs of Hispanic families with deaf children. *Qualitative Health Research*, (2), 202–222.
- Stern, R. E., Yueh, B., Lewis, C., Norton, S., & Sie, K. C. (2005). Recent epidemiology of pediatric cochlear implantation in the United States: disparity among children of different ethnicity and socioeconomic status. *Laryngoscope*, 115(1), 125–31.
- Thomas, E., El-Kashlan, H., & Zwolan, T. A. (2008). Children with cochlear implants who live in monolingual and bilingual homes. *Otology Neurotology*, 29(2), 230–234.

Trivette, C. M., & Dunst, C. J. (2000). Recommended practices in family-based practices.

In S. Sandall, M. E. McLean, & B. J. Smith (Eds.), *DEC recommended practices in early intervention/early childhood special education* (pp. 39–46). Longmont, CO: Sopris West.

Waltzman, S. B. Robbins, A. M., Green, J. E. & Cohen, N. (2003). Second oral language capabilities in children with cochlear implants. *Otology and Neurotology*, 25, 757–763.

Zaidman-Zait, A., & Young, R. A. (2008). Parental involvement in the habilitation process following children's cochlear implantation: An action theory perspective. *Journal of Deaf Studies and Deaf Education*, 13(2), 193–214.