A SURVEY OF NEW JERSEY SCHOOL PSYCHOLOGISTS' KNOWLEDGE OF

COCHLEAR IMPLANTED CHILDREN

A DISSERTATION

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CHELSEY PAGE DWORKIN

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APPROVED: _____
                   Kenneth Schneider, Ph.D.

                   _____
                   Sandra Harris, Ph.D.

                   _____
                   Patricia Gates Ulanet, Psy.D.

DEAN: _____
                   Stanley Messer, Ph.D.

Abstract

Cochlear implantation provides children with severe to profound sensorineural hearing loss the ability to achieve age-appropriate speech, language, and communication levels, and improved reading ability and literacy rates. With comprehensive habilitation services post-implementation, children with cochlear implants (CIs) have the opportunity to participate in inclusive educational programs. School psychologists (SPs) have an essential role in providing services and supports, and managing the educational needs of children with CIs in schools. In this study, a survey was conducted targeting SPs in New Jersey public schools to assess their knowledge and experience in working with children with CIs. Participants assessed a variety of areas relevant to the field including: background knowledge, classification and support services, programming, assessments, social emotional functioning, related services, and parent support. SPs also evaluated whether their school/district provided the necessary services and supports to assist children with CIs and their families sufficiently. The survey also queried possible challenges to the provision of services and desired resources to better service this population in public school settings. An electronic survey was created by the dissertation committee and emailed to all SPs in New Jersey public schools in order to receive a representative sample of the state. Contact information was gathered through Internet searches and telephone calls. An entire database of 1,777 SPs were emailed to participate in the study, with 490 respondents (27.57%). Data were analyzed using descriptive statistics. Survey questions had varying numbers of useable responses, requiring individual item analysis. Responses to open-ended questions were reviewed individually and categorized in order to determine common themes. The various categorical findings

indicate that SPs in New Jersey public schools have limited knowledge, skills, and awareness regarding children with CIs; however, public schools/districts in New Jersey are integrating and servicing children with CIs moderately well. Many SPs indicate the use of a needs-based and individualized approach when working with children with CIs, and the desire to receive more training and information regarding this population. The study's practical implications, limitations, and future directions for research are discussed.

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Chapter I

Introduction

Literature Review

Over the past 20 years, pediatric cochlear implantation has made a significant impact on the lives of children with severe-to-profound sensorineural hearing loss. A cochlear implant (CI) is defined by the United States Food and Drug Administration (FDA) as: "an implanted electronic hearing device, designed to produce useful hearing sensations to a person with severe to profound nerve deafness by electrically stimulating nerves inside the inner ear (FDA, 2010)." Research supports that cochlear implantation can provide children with hearing loss the ability to hear, achieve age-appropriate reading skills, and develop communication skills equal to their hearing peers (Niparko, Kirk, Mellon, Robbins, Tucci, & Wilson, 2009).

According to the FDA, as of December 2010, approximately 28,400 children have received CIs. In June 2000, the FDA lowered the age of eligibility from 24 months to 12 months (National Institute on Deafness and Other Communication Disorders [NIDCD], 2011). Early implantation (before the age of two) may limit negative consequences of auditory deprivation, allowing for more efficient acquisition of speech and language, and contribute to academic gains and improved social emotional functioning (Cochlear Americas, 2007; Ertmer, Strong, & Sodagopan, 2003). Infants implanted at 12 months or earlier show significantly better receptive and expressive language growth than individuals implanted between 12-24 months (Dettman, Pinder, Briggs, Dowell, & Leigh, 2007). More recently, research has shown that children implanted at 6 months or

younger can have significantly better auditory-based outcomes, vocabulary, and speech production than children implanted after 6 months (Colletti, Mandala, & Colletti, 2012).

The relatively recent increase in universal newborn hearing screening programs in the United States has contributed to a growing rate of early detection of congenital deafness, and has led to higher rates of early intervention, including cochlear implantation in infants and young children. This trend is expected to continue (Hyde, Punch, & Grimbeek, 2011). Early detection of hearing loss and implantation also allows for early intervention to begin while the child is still at optimum age for early language development. Post-implantation, it is crucial that children receive aggressive auditory skill development, speech and language, and other habilitation services (Cochlear Americas, 2007; Geers, Brenner, Nicholas, Uchanski, Tye-Murray, Tobey, 2003).

The many benefits of pediatric CIs are evidenced in the last two decades of research. CIs provide the young recipient with opportunities for developing oral language and more efficient acquisition of speech and language including improvements in auditory thresholds, speech production, speech perception, language, and literacy (Ertmer et al., 2003; Spencer, 2004). Niparko and Blakenhorn (2003) reported from their research findings that after three years of use, more than 75% of children with CIs had open-set speech, or understanding speech without visual cues. CI technology has proven to increase the auditory capacity of children with profound HL to provide better acquired spoken language, which can result in greater phonological awareness skills and reading outcomes (Johnson & Goswami, 2010). Performance of children with CIs depends on various factors including individual characteristics such as, cognitive level, age at onset of deafness and implantation, and presence of an additional disability, communication

mode, family related variables such as, size and socioeconomic status (SES), and parent involvement, as well as implant characteristics including duration of implant use, audiological and clinical rehabilitation supports, and educational management (Geers et al., 2003; Moog & Geers, 2003; Mukari, Ling & Ghani, 2007; Soman, Kan, & Tharpe, 2012).

Despite possible benefits, there is variability in progress as some children with CIs are not as successful and continue to struggle in some areas of functioning (Hyde et al., 2011). Children who experience challenges may have other disabilities that were not identified prior to implantation, or they may not have received appropriate interventions. Research has shown children with CIs may experience other difficulties including cognitive delays, social emotional deficits, and/or motor and vestibulary dysfunction (Jacot, Van Den Abbeele, Debre, Wiener-Vacher, 2008; Lyxell, Sahlen, Wass, Ibersson, Larsby, Hallgren, Maki-Torkko, 2008; Punch & Hyde, 2011). Estimates of approximately 40% of children with hearing loss have at least one other disability apart from their hearing that may also be educationally significant and need to be addressed in the school setting. Often these can be more significant than the HL, adding to challenges in schools for children with CIs (Archbold & O'Donoghue, 2007; Niparko et al., 2009). It is important to understand the various factors that influence outcomes, as well as individual strengths and weaknesses in order to provide optimal support for children and families. Based on this information, it is essential to provide appropriate interventions and services, and modify them according to individual progress and needs (De Raeve, 2010).

With the growing number of children receiving CIs, more public schools and districts will need to provide educational programs and services for these students.

Although the process of cochlear implantation begins as a medical intervention, it becomes the job of educators and professionals to service children with CIs in the school settings. Sue Archbold from The Ear Foundation in the United Kingdom stated: "what surgeons start, educators have to finish" (De Raeve, 2010). CIs bring together the worlds of medicine and education, as continued services are needed after implantation in order for the child to receive optimal benefits from their implant(s).

In the past, children with severe-to-profound hearing loss were educated in self-contained classrooms or schools where services focused on special needs. According to Gallaudet Research Institute in 2006, 44% of deaf and hard of hearing (DHH) students nationally spend more than 16 hours a week in classrooms with hearing students. In the United States there is a steady increase of DHH students participating in general education (GE) classrooms due to legislation and movement toward inclusion (Antia, Jones, Reed, & Kreimeyer, 2009; Spencer & Marschark, 2010).

Antia and colleagues (2009) examined DHH students who attended the GE for 2 or more hours a day over 5 years by assessing student progress through results of achievement tests and teacher ratings. The researchers found that 79-81% of DHH students made one or more year's progress annually. Over 5 years, 69-81% achieved average or above average academic competence, and 89% achieved average or above average progress. Student's expressive and receptive communication, classroom participation, communication mode, and parental participation were significantly, but moderately related to academic outcomes. A majority of the students in this study were successful as they achieved within normal range (+1 and -1 standard deviation) of hearing students on standardized tests, and were perceived by teachers as performing

academically within the range of their classmates. However, some DHH were still behind and failing to close the academic gap in areas, particularly in reading. The authors noted that DHH students need communication access, appropriate modifications, accommodations, and supports to be successful in order to make a year's progress in a year's time (Antia et al., 2009).

Due to younger implantation ages, children are spending less time in special DHH schools or programs, and moving toward mainstream public and private school settings. A recent survey by Nucleus® CI examined educational trends, and found that two-thirds of children ages 7-13 who attended public or private mainstream schools did not necessarily begin there (Cochlear Americas, 2007). More than half of these children attended a school with special support for children with hearing loss such as a private oral or public center-based school prior to their current mainstream school placement. Many children with CIs are most successful in a school setting that provides intensive initial support to foster and enhance language and learning skills in order to help children reach desired milestones before moving to the mainstream. Often children attend special programs for hearing impaired children for several years and then "graduate" to mainstream public school settings (Cochlear Americas, 2007).

Over the years, the passage of several federal education laws such as Public Law 94-142 and The Education of all Handicapped Children Act have increased special education services, allowing for more children with disabilities to be educated in public school settings. Under this legislation, children in the United States with disabilities are provided a free and appropriate public education (FAPE), required to be placed in the least restrictive environment (LRE), and receive an individualized educational plan (IEP).

The Individuals with Disabilities Education Act (IDEA), which is now referred to as the Individuals with Disabilities Education Improvement Act (IDEIA) as of 2004, is important legislation that ensures services for children with disabilities. Specifically, Part B Special education services for children and youth and Part C Early intervention services for infants and toddlers are relevant to educating students with hearing loss and CIs (Chute & Nevins, 2002; Soman et al., 2012).

The professionals in the schools must determine whether a child with CIs meets the criteria for special education services, or if their needs can be met appropriately in the general education setting with various accommodations and modifications. For children with CIs, the option of an inclusion model, such as a mainstream placement, is frequently a desirable option. Parents of children with CIs, similar to parents of normal hearing (NH) children, view the mainstream school environment as a place of success as it combines social and academic learning (Jachova & Kovacevic, 2010). However, it is crucial to determine the most appropriate placement and programming based on the individual student's needs. Since many children with CIs have additional cognitive, social emotional, and other deficits, they will require various services, accommodations, and supports in mainstream public school settings. Services and programming is often specific to the child's abilities, and may change over time (Sorkin & Zwolan, 2004). School professionals need to monitor children with CIs on a regular basis and evaluate their progress to ensure they are receiving the appropriate supports, and to continually assist and support parents in the decisions they will make throughout their child's education.

Due to the rapid growth of cochlear implantation, there is an increased need for implant and community-based services where long-term support can be provided (Archbold, 2010). Habilitation and education of children with CIs involves professionals from various disciplines including: teachers of the deaf (TOD) and communication clinicians (CC) such as speech language pathologists (SLPS), audiologists, psychologists, occupational therapists (OTs), social workers, and physicians (Ben-Itzhak, Tova, Weisel, 2005). Despite increased rates of pediatric implantation, many professionals lack the knowledge and experience working with children with CIs successfully in school settings (Chute & Nevins, 2006). According to the researchers, it is possible that these professionals do not have the appropriate information to work with this population due to lack of formal education and limited exposure (Ben-Itzhak et al., 2005). Professional's beliefs and expectations regarding academic achievement, social development, and educational placement may also be important factors when providing appropriate services. In addition to knowledge, training, and practical experience, feelings about professionals' own ability to work with children with CIs and their predictions of this population's success can be very influential (Ben-Itzhak et al., 2005).

Ben-Itzhak et al. (2005) examined the knowledge and attitudes of teachers and CCs including their self-reported knowledge, attitudes and beliefs about education and rehabilitation, and expectations of children with CIs. Although no differences were found between the two groups, more than two-thirds reported insufficient knowledge about the different types, maintenance, and operation of CIs. Those who had more knowledge and experience had higher expectations that children would perform better including higher expectations of academic achievement, communication ability, and family climate.

General knowledge about hearing, language and speech development, cognition, and family support led to a direct effect on expectations of self-image and family climate including improved relationships. However, both groups reported insufficient knowledge about how to provide support to families of children with CIs (Ben-Itzhak et al., 2005). Therefore, it is important that professionals receive the knowledge and skills on how to support children with CIs and their parents in the schools.

Clinical psychologists and school psychologists (SPs) have an essential role in assisting and managing the services of children with CIs and providing support for many families. According to the National Association for the Deaf (NAD), psychological services are imperative and should be consistent with standards by IDEIA with focus on whole child and family (Chute & Nevins, 2002). According to IDEIA, SPs are part of a multidisciplinary team, whose function is to determine eligibility for special education. Specific responsibilities of SPs in New Jersey include: evaluating students who may need special education programs and services; determining eligibility of students for special education programs and services; providing related services such as consultation with school staff and parents, training of school staff; and the design, implementation, and evaluation of techniques addressing academic and behavioral difficulties (New Jersey Administrative Code [N.J.A.C.], 2007). SPs often participate in many of these tasks for students with various disabilities, including children with CIs.

Psychologists can have crucial roles throughout the entire process of cochlear implantation. For instance, they often perform assessments to determine candidacy for CIs, and discuss expectations, responsibilities, and provide emotional support to the child and family pre and post-surgery (Cochlear Americas, 2007; Most & Zaidman-Zait, 2003).

Specifically, SPs will often be the case managers and evaluators for children with CIs including cognitive, psychoeducational, behavioral, or social emotional assessments. Additionally, SPs may provide support services including individual and group counseling, support groups, and classroom-wide or school-wide education for students and staff (Paludnevicinene & Leight, 2011). SPs also may continually be in contact with parents and family members, to provide them with information, support, and resources in the school, district, and community (Chute & Nevins, 2006).

A multidisciplinary approach is essential for assisting children with CIs in the schools in order to provide services and supports that meet the needs of the child and family. This includes ongoing communication and regularly monitoring of the child's progress. Similar to traditional IEPs, information regarding programming, services, and goals need to be well documented. Accommodations and modifications, many specific to children with CIs, are also developed by various professionals and included in the IEP and/or other documentation (Paludnevicinene & Leight, 2011; Spencer & Marschark, 2010). As cochlear implantation continues to increase within the pediatric population, more professionals will be needed to collaborate and deliver appropriate services to children with CIs in schools. Professionals who remain supportive of children with CIs and can work in a team approach are essential features to an optimal school placement (Chute & Nevins, 2006; De Raeve, 2010; Niparko et a., 2009).

The skills needed to work successfully with children with CIs can be acquired and expanded for professionals in the field. Research has shown that a lack of knowledge may lead professionals to plan unrealistic and inappropriate goals for children with CIs, and incorrectly interpret children's needs, progress, and achievements (Ben-Itzhak et al.,

2005). In order to promote professional competence, schools need to ensure that professionals are comfortable with CI technology, understand the varied outcomes for children with CIs, and are competent in incorporating strategies for auditory speech development, academic learning, and social-emotional growth (Paludnevicinene & Leigh, 2011).

To obtain the required knowledge to work with this population, professionals such as SPs should have access to resources regarding implantation, and updated research findings in order gain more realistic perspectives on rehabilitation and educational services (Ben-Itzhak et al., 2005). Training is also needed for school professionals to provide appropriate support services in mainstream school settings (Archbold, 2010). Professional training opportunities and educational training guides are available through CI manufacturers, agencies, and organizations (Paludnevicinene & Leigh, 2011). Recently, there has also been some attempts to acquire new knowledge and develop skills at local, regional, state and/or national conferences, as well as a movement by the State Departments of Education, school and district administration to develop professional development opportunities for school-based professionals (Chute & Nevins, 2006).

Specific Aims and Hypotheses

The purpose of the current study was to assess the knowledge and experience of SPs in working with children with CIs in public school settings. The survey assessed a variety of areas relevant to the field including: background knowledge, classification and support services, programming, assessments, social emotional functioning, related services, and parent support. Throughout the survey, SPs evaluated whether their

school/district has the necessary supports, services, and resources to assist children with CIs and their families appropriately, and what additional items would be desired to better serve children with CIs in public school settings. The survey was emailed to all SPs in New Jersey public schools in order to receive a representative sample of the state. Findings provided useful information including the knowledge and experience of SPs for this special population, and how schools/districts in New Jersey are integrating and servicing children with CIs in the public school setting.

Based on the nature of this study and large database of SPs in New Jersey, a 30% returned rate was hypothesized. It was predicted that participants would report one or more CI students in the school/district, or may have worked with an implanted child at some point during their career as a case manager or service provider, and therefore would be able to complete a majority of the survey. Due to lack of training in CIs and other medical conditions in graduate school programs, it was hypothesized that SPs would be unaware of much of the necessary information needed to work effectively with this population. It was predicated that those who are more knowledgeable or have experience working with children with CIs would be able to complete more of the survey than those with limited experiences. It was possible that these SPs work or have been employed in schools/districts that have special HI programs, or perhaps have a particular interest in this research area or population.

There were several hypotheses for each topic area assessed in the survey. In regard to background knowledge, it was hypothesized that a majority of SPs would not assess themselves as competent in their knowledge. It was predicted that SPs would be familiar with some, but not all of the classification and support services available and

needed for this population. Additionally, SPs may be limited to the classification categories, services, accommodations and modifications selected based on district policy and resources. As a case manager assisting in programming, it was hypothesized that SPs would be able to identify some of the necessary factors regarding programming and placement. Although many SPs might have selected general education (least restrictive environment) as an optimal setting, it was predicted that some would select a part mainstream and part resource room program for children with CIs.

It was predicted that some SPs might not have conducted assessments with this population. SPs who have administered assessments to children with CIs may be aware of some of the special considerations when giving these assessments; however, they may be limited in the assessments they are permitted to give based on school/district resources. For instance, it was predicted that SPs commonly administer Wechsler and Woodcock Johnson assessments, but would prefer to administer other verbal and nonverbal assessments. In regard to social emotional functioning, it was hypothesized that SPs would rate their school/district as average in integrating CIs students into the peer social environment, as many schools have already created programs and interventions with other special populations. It was also hypothesized that SPs would select five deficits related to social emotional functioning; however, they may be unfamiliar with some of the additional or less common challenges that can effect this population.

Due to New Jersey code and the large number of students in public schools, it was hypothesized that communication with other professionals is limited to quarterly or yearly. Since children with CIs require various related services, it was hypothesized that most children with CIs receive speech therapy, while only some receive occupational

therapy (OT) evaluations and services due to limited resources in this discipline in the public schools. In regard to parent resources, a limited amount of resources were predicted in schools/districts and communities.

It was hypothesized that only some of the participants would complete the open-ended questions at the end of the survey. Related to possible challenges, it was predicted that SPs may anticipate difficulties in providing services for this population due to lack of knowledge and experience, as well as lack of resources and various policies in their school/district. It was also hypothesized that SPs will want to gain more knowledge about this population in order to help children with CIs and their families in the future.

Chapter II

Methods

Participants

Participants of this study were school psychologists (SPs) in New Jersey public schools (*n* = 490). An updated database of current SPs in New Jersey was created based on a previous database of SPs working in the state of New Jersey as of May 2012. The contact information of the SPs for this study is as up to date as possible as of November 2012. Email addresses were obtained through Internet searches of New Jersey school district websites, and telephone calls to secretaries of special services and child study team departments of school districts and individual schools. SPs were not contacted directly during this part of the study. All SPs in the database (*n* = 1777) received the electronic survey through a personalized email.

While demographic data were not collected to ensure anonymity of the participants, it is hoped that a representative sample is generated from participants in each of the 21 counties, with varied knowledge and experience of working with this population. New Jersey has several implant centers and hospitals, special private schools, as well as public schools with hearing impaired program and services available to this population. In addition to federal laws regarding special education and children with medical conditions, New Jersey's Administrative Code Chapter 6A:14 also protects children with special needs (2007). Children with cochlear implants (CIs) may be eligible under various categories of this law, and would receive an individualized educational plan (IEP) including services, accommodations, and programming. Therefore, the sample obtained from this survey may be generalizable to the state of New Jersey.

Procedures

All SPs in the current database were invited to participate in the study. Personalized emails were sent to the participants on January 30th, 2013 through the mailer feature of Qualtrics, the web-based survey software utilized for this study. The email included a brief description of the purpose of the survey, a unique URL link to the survey, and contact information for the principal investigator and dissertation chair/faculty advisor (Appendix A).

If the SP chose to participate in the study, he/she proceeded by clicking the specified link to complete the survey. A unique URL link was sent to each email address in the database to prohibit SPs from taking the survey more than once or sharing the link to others. The consent form was included on the first window screen of the online survey (Appendix B). This form provided more detailed information about the purpose and procedures of the study. Contact information of the principal investigator, the dissertation chair/faculty advisor, and the Rutgers University Institutional Review Board (IRB) for the Protection of Human Subjects was also provided on this form. Participants could print the consent form for their records if they desired. Participants agreed to participate in the study by checking off the following boxes: "I agree to participate in this research study" and "I certify that I am at least 18 years of age." The participant was then directed to click the arrow below on the screen to begin taking the survey.

A reward for participating in the survey was offered in the form of a $10 Amazon gift card (there were 10 cards distributed electronically to the winners). Participants who wanted to enter the raffle drawing needed to complete the survey in order to view the instructions on the last window screen of the survey. The participants were directed to

send an email to rutgerscochlearimplantstudy@gmail.com with their name and a preferred email address for the gift card to be sent. The winners of the raffle drawing were contacted individually with their preferred email address. The participants also had the opportunity to request a summary of the results from the study at the end of the survey by emailing rutgerscochlearimplantstudy@gmail.com with their name and a preferred email address for the results to be sent. The summary of the results was sent through a separate mail merge upon completion of the study. Contact information from the raffle and request for the summary were entered and kept on separate excel files from the survey responses, and therefore there was no way to connect a particular person to a set of survey responses. The final window screen of the survey also thanked participants and provided two website links for SPs to learn more about cochlear implants if desired.

The survey for this study was created on the Rutgers account of Qualtrics by the principal investigator. The "By Invitation Only" feature was utilized, giving access only to those who were invited to participate in the study. The "Prevent Ballot Box Stuffing" feature was also selected, prohibiting participants from taking the survey more than once. Participants had the option of leaving questions blank or were permitted to stop completing the survey at any point. Additionally, participants were able to use the "back button" and "save and continue" features, allowing them to return to a question or finish the survey at a later time. Participants were also able to monitor their progress as a tool bar appeared on the screen tracking the percentages of completion. Any information that was partially completed by participants was included in the results. Participants were given a one month to return to the survey and complete it if desired. The participant's

responses were sent to the investigator through Qualtrics. IP addresses were disregarded and the identity of the participants remained anonymous.

A reminder email was sent out to all SPs in the database who did not complete the survey on February 13th, 2013, two weeks after the initial email to participate in the study. A second reminder was sent on February 27th, two weeks after the first reminder to the remaining SPs in the database who did not start or complete the survey. Qualtrics provided statistical data with the number of participants that completed the survey from the January 30th start date to the March 12th end date (Appendix E).

Emails from participants were reviewed with the principal investigator and dissertation chair. Questions regarding technical issues were answered accordingly. Participants with concerns regarding their lack of experience with children with CIs were provided with the following clause: "Thank you for your email. Taking the survey is not dependent on experience in working with cochlear implanted children. I encourage you to complete the survey as your participation and feedback is appreciated." Participants who provided their feedback and/or interest in the topic were provided with the following email response: "Thank you for your email. I look forward to sharing the results with you." If participants asked if they could send the survey to their colleagues, they were told the survey was just for SPs, and that others SPs in their district should have received an email as well with individual links to the survey.

Sample

A total of 1,777 email addresses of SPs in New Jersey were located, and those SP were emailed invitations to participate in the study. The email invitation included

instructions and a link with an electronic version of the survey. Over the course of 42 days, 490 surveys were initiated; however, not all of them were completed. Each item on the survey was analyzed individually since each item had a different number of useable responses.

Measure

The survey was created by the principal investigator and the dissertation committee for this study and includes 25 closed and open-ended questions (Appendix C). The content of the survey is based on key topics in the field, as well as research findings and personal experience working with children with CIs (Appendix J- Figure 1). The survey is comprised of Likert-scale, numerical, multiple choice, check boxes, and open-ended questions. Seven drafts of this survey were created over three months, and the fourth draft was given as a preliminary version to three SPs in New Jersey to receive additional feedback. The final version of the survey was sent to all SPs in the database.

Participants were first asked to provide their highest degree attained and the number of years of experience as a SP. Then they were asked a series of questions based on this population related to the field of school psychology. Under the category heading of background knowledge of children with CIs, participants were asked to rate their knowledge confidence about children with CIs, where they acquired this knowledge, their conceptualization of children with CIs, and the functioning level of children with CIs compared to typically developing peers.

In regard to classification categories and supports available for children with CIs, participants were asked how many children with CIs are in their district, the classification

category they would select for a child with CIs, the support services, accommodations, and modifications needed most for this population, and how well the needs of children with CIs are being met by the school/district in their opinion. In order to assess programming, participants were asked if the general education setting (least restrictive environment) is the most effective environment, what placement they think is optimal, and the five most important factors in the decision-making process for placement of children with CIs.

Items related to assessment measures asked participants to select considerations or accommodations they use when assessing children with CIs, which assessments are given in their district, and which they would prefer to give. Additionally, they were asked to select which Wechsler IQ profile they expect to find and which ability of cognitive processing they would expect to be delayed using the Kaufman Assessment Battery For Children (K-ABC-II) for children with CIs. Participants were asked to assess the social emotional functioning of children with CIs including how good they feel their school/district integrates CI students into the peer social environment, and the five most significant areas of deficit relating to social emotional functioning for children with CIs.

Since SPs are often case managers, participants were asked questions regarding related services including how often they communicate with the other professionals involved with children with CIs. Additionally, participants were asked how likely their child study team is to recommend an OT evaluation, and how many of the CI students in their district are receiving OT and speech and language services. Participants were asked to assess the services and resources available in their school/district as well as in the community for parents of children with CIs. Finally, participants were asked what

challenges they might anticipate as a case manager for children with CIs, and what additional information would be useful for them as SPs to help children with CIs/and or their families.

Data Analysis

Questions were analyzed individually. The number of responses were reported for each survey item. Quantitative, categorical, and ordinal data were used, and data analyses included frequencies, measures of central tendency, ranges, and standard deviations. The dissertation committee decided to handle outliers and missing data as follows: numbers that appeared excessively high were deleted.

Data were analyzed using the Statistical Package for Social Sciences (SPSS) 16.0 for Windows and/or Microsoft Excel. Descriptive statistics were conducted to analyze all of the closed-ended questions. Open-ended answers were reviewed individually and categorized in order to determine common themes. To minimized researcher's judgment, consultation with the dissertation committee and other experts assisted in objectivity, or confirmability of the coding and analyses, and helped ensure accuracy.

Analysis of the questions utilized the methodological approaches of priori (expected from previous research) and grounded theories (emerged from the data). Common themes expected from previous research and theory included information about CIs, programs and resources, as well as the needs of children and parents are commonly researched topics. Codes that emerged from the data without the use of prior data collection were also incorporated into the analysis, and helped develop many of the themes including the challenges for the SPs and other professionals (Mertens, 2010).

Triangulation, or inconsistencies across methods and data informants was also considered and therefore double coding procedures were used. Many responses received more than one code if the SP provided more than one challenge or suggestion within their response. Additionally, various responses received multiple codes as the responses were most adequately represented by more than one of the over-arching categories, thus demonstrating the need to consider all of these domains. Triangulation was also conducted between the quantitative categories and the development of the qualitative themes, which contributes to the compatibility between the two methods used for the survey (Patton, 2002).

Coding included several phases. The principal investigator read the de-identified responses several times. The second step included the reduction of data and the development of patterns. The third step included re-grouping of the data and the development of themes and sub-themes. This led to the creation of three over-arching categories in order to encompass the over-lapping of responses: Knowledge (1), Skills (2), and Awareness (3). Miscellaneous responses such as "Don't know" or "No Experience," were coded as Other (4). The categories and themes appeared similar across questions, and utilized the same coding process (Appendix D). Responses were coded with numbers for the categories, letters for the themes, and Roman numerals for some of the sub-themes. Flow charts display the categories and sub-categories for both open-ended questions (Appendix K- Figure 2). Percentages for each category were calculated for both questions (Appendix L- Figure 3).

Chapter III

Results

Characteristics of the Sample

Survey respondents included school psychologists (SPs) working in New Jersey public schools. 1,777 SPs ($n = 1777$) were emailed the survey, and a total of 490 responses to the survey were analyzed ($n = 490$). Most SPs initiated the survey on the start date and on the two dates when provided with email reminders (Appendix E- Table 1). The question response rates varied for each question (Appendix F- Table 2). The overall response rate was 27.57% and the completion mean was 75%. Of the 490 participants, 158 (32.24%) completed 100% of the survey (Appendix G- Table 3).

Survey items 1 and 2 included characteristics of the sample. As presented in Table 4, when asked to report their highest degree attained from a list of degrees, 87.76% responded. SPs indicated the attainment of the following highest degrees: Masters (23.06%), Educational Specialist (31.63%), and Doctorate (26.06%). "Other" degrees (6.73%) that were indicated included: Certificate of Advanced Graduate Study/Post Masters Certificate, JD, Masters (MA) + 30, MA + 60, MA + 45, MA+ 90, Professional Diploma in School Psychology, All But Dissertation (ABD), Board Certified Behavior Analyst (BCBA), Master of Psychology (PsyM), and Doctoral Candidate.

In the survey item related to years of experience, 86.12% of SPs responded (Table 5). SPs reported a minimum of less than a year to 41 years of experience as a SP, with a mean of 11.2 years ($M = 11.2$, SD $= 8.04$) and 7 years as the most commonly reported response ($M_o = 7$). A distribution of responses is presented in Appendix H- Table 6.

Table 4

Degrees of School Psychologists

Characteristic	N	%
Highest Degree	430	87.76
Educational Specialist	155	31.63
Doctorate	129	26.33
Masters	113	23.06
Other	33	6.73

Table 5

Years of Experience of School Psychologists

Years	N	%
Years of Experience	422	86.12
1 or less	22	4.49
>1 to <6	90	18.37
6 to 10	122	24.90
10+	188	38.34

Background

Survey items 3, 4, 5a, 5,b, and 6 focused on background information in which school psychologists assessed their knowledge about children with cochlear implants (CIs). Mean and frequency data provided information about SPs background and perceptions regarding this population.

Respondents rated their confidence in their knowledge of children with CIs from 1 (Not Very) to 5 (Very). Based on 82.04% of responses, a mean score of 1.97 was calculated ($M = 1.97$, SD = 0.95). Of those SPs who responded to the survey item, 31.77% indicated "1" and 0.61% indicated "5" in regard to confidence in their knowledge of children with CIs (Table 7).

Table 7

Confidence in Knowledge of Children with Cochlear Implants

Confidence in Knowledge	N	%
1 (Not very)	156	31.77
2	132	26.88
3	89	18.13
4	22	4.48
5 (Very)	3	0.61

The types of acquired knowledge resources are presented in Table 8. A majority of the 80.41% of respondents indicated they acquired their knowledge from resources such as research (22.24%) and the work setting (45.31%). Some respondents indicated they acquired knowledge from conferences, organizations, graduate school, personal

experience, or indicated the response choice "Does not apply." SPs were also given the opportunity to indicate "Other" resources for their acquired knowledge. Responses included television/media, in-service/staff development, parent/staff consultation and collaboration, websites, a site visit to the Summit Speech School, a Teacher of the Deaf (TOD) or Speech Language Pathologist (SLP), and the case manager being resources for their knowledge. A few respondents reported acquiring their knowledge from experience with a family member including: having a child with a CI or helping a parent, relative, or friend conduct research regarding CIs.

Table 8

Acquired Knowledge Resources

Resources	N	%
Work setting	222	45.31
Research	109	22.24
Graduate school	72	14.69
Personal experience	69	14.08
Does not apply	65	13.27
Organizations	39	7.96
Conferences	36	7.35
Other	32	6.53

SPs selected a conceptualization from five statements regarding how children with CIs function assuming a child is implanted before age 2 and given the appropriate (re)habilitation services up until Kindergarten. The various conceptualizations are presented in Table 9. Based on the 82.45% of respondents, 28.78% reported "these children function as part of the hearing world but are different from normal hearing children," 20.41% conceptualized "these children function as part of the hearing world," 10.61% indicated

"these children function as part of both the Deaf and hearing worlds," and 1.02% indicated

"these children function primarily in the Deaf world." 21.63% of respondents indicated

they did not have enough understanding to make a conceptualization. When asked to rate

their confidence in this conceptualization from 1 (Not very) to 5 (Very), a mean score of

2.28 ($M = 2.28$, SD = 1.08) was calculated amongst the 81.84% of respondents. Of those

SPs who responded, 24.69% indicated "1" and 2.45% indicated "5" in regard to confidence

in their conceptualization. Most SPs (25.51%) indicated "3" (Table 10).

Table 9

Conceptualization of Children with Cochlear Implants

Conceptualization	N	%
These children function as part of the hearing world	100	20.41
These children function as part of the hearing world but are different from normal hearing children	141	28.78
These children function primarily as part of the Deaf world	5	1.02
These children function in both Deaf and hearing worlds	52	10.61
Don't have enough understanding to make a conceptualization	106	21.63

Table 10

Confidence in Conceptualization

Confidence in conceptualization	N	%
1 (Not very)	121	24.69
2	106	21.63
3	125	25.51
4	37	7.55
5 (Very)	12	2.45

SPs (60%) also indicated the length of time in years and months that is needed for children with CI to function at the same level as their typically developing peers. A mean of 34.15 months (or 2.85 years) was calculated based on 261 of the responses, with 0 months as the minimum and 126 months (10.5 years) as the maximum length of time. (M = 34.15, SD = 20.34). The most common response was 24 months (or 2 years) (M_o= 24). The remainder of the respondents indicated they did not know (DK) and children with CI's ability to function at the same level as typically developing peers depends on multiple variables, such as: the child and factors such as age at implantation, how severe the hearing loss, the services provided, prior communication, and home life. A few respondents indicated that children with CIs might never function at the same level as typically developing hearing peers.

Classification and Supports

Survey items 7, 8, 9a, 9b, and 10 focused specifically on classifications and supports for children with CIs. Mean and frequency data provided information about SPs' perceptions on the appropriate classification categories and services for this population. SPs were asked to identify the approximate number of children with CIs in their district. Based on the 71.02% of respondents, a mean of approximately two children (M = 1.91, SD = 3.28) was calculated based on 27.14% of the numerical responses. A distribution of responses is presented in Table 11 of Appendix I. A minimum of 0 children and maximum of 30 children with CIs were calculated. Outliers (n = 150 and n = 200) were deleted from the sample as these high numbers were either incorrectly entered or were special schools servicing this population. Many SPs (43.47%) indicated they did not

know (DK) how many children with CIs were in their district. The remainder indicated in the open response section they were unsure, worked with a student with CIs in the past, work(ed) with a student with a bone anchored hearing aid, (BAHA), hearing aid(s) or FM system.

To examine eligibility for Special Education and Related Services, 79.18% responded when asked to select an IDEIA classification category for a child with CIs without any further information. A majority of SPs indicated Auditorily Impaired (62.04%). Other responses included: Other Health Impairment (OHI) (6.12%), Cognitive Impairment (0.41%), Specific Learning Disability (SLD) (0.20%) and Multiply Disabled (0.20%). In addition, several respondents indicated they did not know (DK) (5.71%) and "Not eligible" (4.49%) (Table 12).

Table 12

IDEIA Classification Categories

Categories	*N*	*%*
Auditorily Impaired	304	62.04
Other Health Impairment (OHI)	30	6.12
Not eligible	22	4.49
DK	28	5.71
Cognitive Impairment	2	0.41
Specific Learning Disability (SLD)	1	0.20
Multiply Disabled	1	0.20

Of the 80.41% respondents, the most common responses for in-school support services for children with CIs included: Speech-Language Therapy (67.35%), Audiological Services (52.86%), Deaf Education Services (TOD) (38.16%) and Listening Therapy (Auditory Verbal Therapy (28.57%) (Table 13). Some SPs provided anecdotal

responses under the "Other" option (13.67%). Responses included: assistive technology such as an individual or classroom FM system, a TOD as a consultant, a nurse, in-class support services/accommodations as needed, an out of district deaf education preschool, interpreting and/or a note taker, special education teacher, academic support, and related services such as speech, occupational therapy (OT), physical therapy (PT) and audological services. Some SPs reported the need for any services or all of the services listed in the question. Many respondents indicated that in-school support services depends on the child, including level of functioning, academic levels, the impact of their learning, severity, individual needs, other issues and areas of deficit, and how early they received their CIs.

Table 13

In-School Support Services

Services	N	%
Speech-Language Therapy	330	67.35
Audiological Services	259	52.86
Deaf Education Services (Teacher of the Deaf)	187	38.16
Listening Therapy (Auditory-Verbal Therapy)	140	28.57
Counseling (Individual or Group)	79	16.12
Other	67	13.67
Resource Room	46	9.39
DK	38	7.76
Occupational Therapy	20	4.08
Physical Therapy (PT)	6	1.22

Based on 80% of respondents, the most common responses for in-school accommodations/modifications for children with CIs included: Preferential seating (68.37%), Visual aids and prompts (55.51%), Hearing Assistance Technology (HAT) such as a Frequency Modulation (FM) system (52.45%), Sound checks (29.6%),

Acoustical modifications such as creating and adjusting a MAP (27.96%) and Changes to physical classroom and/or school environment (27.96%). Other responses (2.45%) included that it depends on the child and individual needs including items such as academic and functioning levels. 8.57% indicated they did not know (DK) (Table 14).

Table 14

In-School Accommodations/Modifications

Accommodations/Modifications	*N*	*%*
Preferential Seating	335	68.37
Visual aids and prompts	272	55.51
Hearing Assistance Technology (HAT) such as a Frequency Modulation (FM) system	257	52.45
Sound checks	145	29.59
Acoustical modifications such as creating and adjusting a MAP	137	27.96
Changes to physical classroom and/or school environment	137	27.96
Copy of notes	124	25.31
Interpreting	84	17.14
Individual or small group instructional support	78	15.92
Captioning	60	12.24
DK	42	8.57
Computer Real Time Transcription	18	3.67
Untimed tests	15	3.06
Other	12	2.45
Adaptive physical education	7	1.43

SPs rated how well the needs of children with CIs are being met in their school district from 1 (Poor) to 5 (Excellent). Out of the 79.80% responses, a mean of 3.56 was calculated based on the respondents who provided a numerical quality rating ($M = 3.56$, $SD = 0.90$). As presented in Table 15, the most common quality rating was "3." The remainder 35.10% indicated, "Does not apply."

Table 15

Needs of Children with Cochlear Implants in Schools/Districts

Quality	N	%
1 (Poor)	2	0.41
2	22	4.49
3	83	16.94
4	76	15.51
5 (Excellent)	36	7.35
Does not apply	172	35.10

Programming

Survey items 11a, 11b and 12 centered on programming. The use of frequency

data provided information about SPs' perceptions on programming for children with CIs.

When asked about programming, 77.14% responded. Approximately half (50.61%),

indicated a general education setting (the least restrictive environment) as the most

effective environment for children with CIs. Some SPs, 24.29%, indicated they did not

know (DK) (Table 16). When asked to provide the optimal placement for children with

CIs, 64.69% of SPs responded. These open-ended responses were coded and grouped

according to common responses. As presented in Table 17, 7.14% indicated a least

restrictive environment/inclusion would be optimal. Some SPs indicated a general

education/mainstream setting (15.31%), while others were more specific and indicated a

general education/mainstream with supports, accommodations/modifications, and

services (12.86%) would be optimal for children with CIs. The most respondents

(23.27%) indicated it depends on needs, abilities, and other factors. "Other" responses

(3.47%) included: small classroom/group, as needed supports, placement with competent

staff/equipment, push in and pull out resource, replacement literacy, environment with

spoken language exposure, and with typical hearing peers. Some respondents indicated

that they could not generalize or determine the optimal placement without knowing

individual case.

Table 16

Least Restrictive Environment for Children with Cochlear Implants

Effective Setting	*N*	*%*
Yes	248	50.61
No	11	2.24
DK	119	24.29

Table 17

Optimal Placement for Children with Cochlear Implants

Optimal Placement	*N*	*%*
Depends on needs, abilities, other factors	114	23.27
General Education/Mainstream Setting	75	15.31
General Education/Mainstream Setting with supports, accommodations/modifications, and services	63	12.86
Least Restrictive Environment/Inclusion	35	7.14
In class resource/support	22	4.49
DK/not sure	19	3.88
Small/special program	14	2.86
Pull/out resource room	10	2.04
Placement that acknowledges strengths and weaknesses, whole child with appropriate supports, accommodations/modifications, and services	8	1.63
Combination program (General + Special Education, mainstream + small group)	6	1.22
Inclusion with general and special education teachers/collaborative teaching	6	1.22
General Education/Mainstream setting with TOD	5	1.02
Other	17	3.47

SPs also assessed the factors important in program planning. Based on the 77.35% of respondents, the most common responses for essential factors in the decision-making process for the placement of children with CIs included: Individual characteristics (57.14%), Mode of communication (28.98%), Communication abilities (46.94%), Language skills (45.31%), and Academic achievement and progress (32.86%). "Other" (1.02%) responses included the importance of all of the factors and the need to use a comprehensive approach for the child's overall level of functioning (Table 18).

Table 18

Essential Factors in Decision-Making Process for the Placement of Children with Cochlear Implants

Factors	N	%
Individual characteristics	280	57.14
Communication abilities	230	46.94
Language skills	222	45.31
Mode of communication	142	28.98
Academic achievement and progress	161	32.86
Speech skills	127	25.92
Additional disabilities	123	25.10
Intelligence/IQ scores	102	20.82
Level of independence	74	15.10
Classroom participation	47	9.59
Social skills	45	9.18
Standardized achievement test scores	42	8.57
Audiology/equipment support	42	8.57
Implant characteristics	40	8.16
Parent involvement and expectations	31	6.33
Attention	28	5.71
Academic competence	23	4.69
Identity and child's perceptions	18	3.67
DK	13	2.65
School/district resources and policies	11	2.24
Future life outcomes	8	1.63
Other	5	1.02
Family characteristics	2	0.41

Assessments

Survey items 13, 14a, 14b, 15a, 15b, SPs examined assessments and cognitive

profiles for children with CIs. Frequency counts determined how many respondents

selected each answer choice. Frequency data for each response provided information

about SPs' perceptions on assessments with children with CIs. As presented in Table 19,

a relatively even number of respondents indicated the use of the five methods utilized

during assessments. Based on the 74.49% of responses, approximately half, (50.82%)

indicated they never provided assessments for this population. In addition to the

response choices provided in the survey, respondents indicated using "other" methods

(3.06%) such as utilizing a teacher/aide familiar with ASL or a TOD, speaking towards

the ear with the CI, providing visual access to lips, manipulatives, visual aids, prompting

and redirection.

Table 19

Methods Utilized During Assessments

Methods	*N*	*%*
Never provided assessments for this population	249	50.82
Microphone/FM system	82	16.73
Physical environment	82	16.73
Consistent eye contact	79	16.12
Evaluator speech	75	15.31
Equipment check	59	12.04
Other	15	3.06

When asked which assessments might be given in district for children with CIs, 74.29% of SPs responded. As presented in Table 20, many indicated the use of Wechsler Scales (51.02%) such as the WPPSI-III, WISC-IV, WAIS-IV, the Test of Nonverbal Intelligence (TONI-3 or TONI-4) (42.45%) and the Woodcock Johnson Tests of Cognitive Abilities and Tests of Achievement (WJ-III) (40.41%). Many respondents indicated that their school/districts use picture vocabulary assessments such as the Peabody Picture Vocabulary Test (PPVT-4) (28.98%) and Expressive One-Word Picture Vocabulary Test (EOWPVT-4) (28.98%). "Other" responses (9.59%) included assessments such as the Wechsler Nonverbal (WNV) and the Wechsler Individual Achievement Test (WIAT), the Kaufman Brief Intelligence Test (KBIT-2), the Universal Nonverbal Intelligence Test (UNIT), the Comprehensive Test of Nonverbal Intelligence (CTONI-2) and Speech and Language tests such as the Clinical Evaluations of Language Fundamentals (CELF-4). Additional responses under "Other" included: adaptive, functional, audiological, and processing assessments, the need to consult with outside or other professionals and that the selection of assessments depends on the student. Some SPs (15.10%) indicated they did not know (DK).

In regard to preferred assessments for children with CIs, 69.59% of SPs responded. By response, preferred assessments for children with CIs included: Wechsler scales (12.24%) and TONI-3 or TONI-4 (9.39%). Additionally, 26.94% of respondents indicated they did not know (DK). "Other" responses (13.47) included the use of verbal and nonverbal measures, and expressive/receptive language measures. Many indicated the assessments they preferred to give depended on the individual student (Table 21).

Table 20

Assessments Used in District

Assessments	*N*	*%*
Wechsler Scales (WPPSI-III, WISC-IV, WAIS-IV)	250	51.02
Test of Nonverbal Intelligence (TONI-3 or TONI-4)	208	42.45
Woodcock Johnson Tests of Cognitive Abilities and Tests of Achievement (WJ-III)	198	40.41
Peabody Picture Vocabulary Test (PPVT-4)	142	28.98
Expressive One-Word Picture Vocabulary Test (EOWPVT-4)	142	28.98
Stanford-Binet Intelligence Scales (SB-5)	112	22.86
Differential Ability Scales (DAS-II)	86	17.55
DK	74	15.10
Kaufman Assessment Battery For Children (K-ABC-II)	51	10.41
Leiter International Performance Scale, Revised, (LEITER-R)	51	10.41
Other	47	9.59

Table 21

Preferred Assessments for Children with Cochlear Implants

Assessments	N	%
DK	132	26.94
Other	66	13.47
Wechsler Scales	60	12.24
WISC	40	8.16
WISC Integrated	1	0.20
WAIS	5	1.02
WPPSI	11	2.24
WNV	18	3.67
WIAT	2	0.41
Test of Nonverbal Intelligence (TONI-3 or TONI-4)	46	9.39
Stanford-Binet Intelligence Scales (SB-5)	13	2.65
Woodcock Johnson Tests of Cognitive Abilities and Tests of Achievement (WJ-III)	12	2.45
Differential Ability Scales (DAS-II)	12	2.45
Leiter International Performance Scale, Revised, (LEITER-R)	9	1.83
Peabody Picture Vocabulary Test (PPVT-4)	9	1.83
Kaufman Assessment Battery For Children (K-ABC-II)	5	1.02
Universal Nonverbal Intelligence Test (UNIT)	4	0.82
Comprehensive Test of Nonverbal Intelligence (CTONI-2)	3	0.61
Expressive One-Word Picture Vocabulary Test (EOWPVT-4)	2	0.41
Kaufman Brief Intelligence Test 2 (KBIT-2)	1	0.20
Bender Visual-Motor Gestalt Test (Bender-Gestalt II)	1	0.20
Clinical Evaluations of Language Fundamentals (CELF-4)	1	0.20
Battelle Developmental Inventory (BDI-2)	1	0.20

When asked to select a Wechsler IQ profile they would expect to find for children with CIs, 74.49% of SPs responded. Most responded (24.08%) with the profile "VCI significantly lower (more than 8 IQ points) than PRI, WMI, PSI." Fewest respondents (4.69%) indicated the profile "WMI significantly lower (more than 8 IQ points) than VCI, PRI, PSI." Additionally, 16.3% of respondents indicated "DK," meaning they did not know the expected IQ profile for children with CIs (Table 22).

Table 22

Wechsler IQ Profile

Profile	N	%
No unusual profile	58	11.84
VCI significantly lower (more than 8 IQ points) than PRI, WMI, PSI	118	24.08
WMI significantly lower (more than 8 IQ points) than VCI, PRI, PSI	23	4.69
PRI highest of all four index scores	86	17.55
DK	80	16.33

Based on the 73.27% of SPs who identified a Kaufman Assessment Battery for Children-II Mental Processing Index standard score profile for children with CIs, more respondents (15.10%) indicated Simultaneous Processing would be delayed than those who indicated that Sequential Processing would be delayed (5.31%). The remaining 52.86% of SPs indicated "DK," meaning they did not know which ability of cognitive processing would be delayed for children with CIs using the K-ABC-III (Table 23).

Table 23

Kaufman IQ Profile

Profile	N	%
Sequential Processing	26	5.31
Simultaneous Processing	74	15.10
DK	259	52.86

Social Emotional Functioning

Items 16 and 17 related to the social emotional functioning of children with CIs. Mean and frequency data provided information about SPs' perceptions on the social emotional functioning for this population. SPs rated how well the needs of children with CIs are being met in their district from 1 (Poor) to 5 (Excellent). Out of the 73.27% of responses, a mean of 3.75 was calculated based on SPs who provided numerical ratings ($M = 3.75$, SD $= 0.97$). The most common quality rating was "3" and "4," and the least common quality rating was "1." Most respondents (32.45%) indicated, "Does not apply" (Table 24).

Table 24

Integrating Children with Cochlear Implants into the Peer Social Environment

Quality	N	%
1 (Poor)	2	0.41
2	16	3.27
3	65	13.27
4	65	13.27
5 (Excellent)	52	10.61
Does not apply	159	32.45

SPs also assessed the social emotional functioning of children with CIs in which, 73.27% responded. The most common responses for the five most significant areas of deficit related to social emotional functioning for children with CIs included: Reciprocal social interaction (45.51%), Peer Relations (33.47%), Daily Functioning (33.88%), Perceived Competence (29.18%), and Self Advocacy (30.20%). 18.78% of respondents indicated they did not know (DK) and a few indicated "Other" responses (1.02%) such as it depends on the child (Table 25).

Table 25

Significant Areas of Deficits Related to Social Emotional Functioning

Social Emotional Areas	N	%
Reciprocal Social Interactions	223	45.51
Daily Functioning	166	33.88
Peer Relations	164	33.47
Self-Advocacy	148	30.20
Perceived Competence	143	29.18
DK	92	18.78
Psychosocial Adjustment	78	15.92
Mood Regulation	70	14.29
Psychological Well-Being	63	12.86
Perspective Taking	47	9.59
Developmental outcomes	46	9.39
Family climate and relationships	33	6.73
Behavioral Regulation	28	5.71
Mental State Language	23	4.69
Health Related Quality of Life	14	2.86
Theory of Mind	13	2.65
Other	5	1.02

Related Services

Survey items 18, 19, 20, and 21 referred specifically to related services provided in school for children with CIs. Mean and frequency data provided information about the current related services for this population. When asked how often they communicate with other professionals in their school/district who are involved in assisting children with CIs, 73.47% of SPs responded. The more common responses amongst those who provided frequencies were monthly (6.73%) and annually (6.53%). An average was calculated (M= 3.48, SD = 1.19), indicating communication on average of monthly to quarterly, or about 2 months. The remainder of respondents (48.37%) indicated "Does not apply" (Table 26).

Table 26

Communication Amongst Professionals in Schools/Districts

Frequency	*N*	*%*
Daily	5	1.02
Weekly	24	4.90
Monthly	33	6.73
Quarterly	29	5.92
Annually	32	6.53
Does not apply	237	48.37

When asked how likely their Child Study Team is to recommend an OT evaluation for children with CIs, 73.47% of SPs responded. The most common response amongst respondents who provided frequencies was "sometimes" (16.53%). An average was also calculated (M = 3.13, SD = 0.75), indicating the likelihood to recommend an OT

evaluation occurs at a frequency rate between "sometimes" and "seldom." The remaining

respondents indicated "Does not apply" (14.49%) and "DK" (32.86%) (Table 27).

Table 27

Recommendation of Occupational Therapy Evaluation

Frequency	*N*	*%*
Almost always	3	0.61
Often	14	2.86
Sometimes	81	16.53
Seldom	24	4.90
Never	6	1.22
Does not apply	71	14.49
DK	161	32.86

SPs were also asked how many children with CIs in their district receive specific

related services such as OT and Speech and Language Therapy. When asked how many

children with CIs receive OT services, 73.67% responded. The frequency of OT services

is presented in Table 28. Of the SPs who provided a frequency of OT services, most

(5.92%) indicated "less than 10%" of children with CIs receive OT. Additionally, an

average was also calculated ($M = 2.09$, SD $= 1.43$), indicating that approximately "10-

25%" of children with CIs receive OT. The remainder 306 respondents indicated "Does

not apply" (18.37%) and "DK" (44.08%).

When asked how many children with CIs receive Speech and Language Therapy

services, 73.67% responded. The frequency of Speech and Language Services is

presented in Table 29. Based on the respondents who provided a frequency of Speech and

Language Therapy services, (21.43%) indicated "75-100%" of children with CIs receive

Speech and Language Therapy and (0.41%) indicated "less than 10%" receive Speech

and Language Therapy. An average was also calculated ($M = 4.69$, SD = 0.83), indicating that between "50-75%" and "75%-100%" of children with CIs receive Speech and Language therapeutic intervention. The remainder of respondents indicated "Does not apply" (16.3%) and "DK" (32.04%).

Table 28

Frequency of Occupational Therapy Services

Frequency	N	%
Less than 10%	29	5.92
10-25%	9	1.84
25-50%	7	1.43
50-75%	3	.61
75-100%	7	1.43
Does not apply	90	18.37
DK	216	44.08

Table 29

Frequency of Speech and Language Services

Frequency	N	%
Less than 10%	2	0.41
10-25%	4	0.82
25-50%	5	1.02
50-75%	8	1.63
75-100%	105	21.43
Does not apply	80	16.33
DK	157	32.04

Parent Support

Items 22 and 23 focused on the parent support available for parents/guardians of children with CIs. Frequency counts were performed to determine the number of respondents providing scoreable responses. Frequency data also provided information about SPs' perceptions on the available supports for parents of children with CIs in the school/district and community. Based on the 71.22% of respondents, the most common responses for available services and supports in the school/district included: audio consultation (20.20%) resources and references (15.51%), and a liaison from the implant center, medical team, rehabilitative team, and/or previous school setting to provide knowledge, background information, reports, and suggestions to the educational team (15.10%). Several respondents (4.90%) indicated "Other" responses such as a TOD and on-going consultation with staff, while some indicated they do not work with any children with CIs. Additionally, 33.67% indicated the response choice "DK" (Table 30).

When asked about services and/or resources available in the community for parents of children with CIs, 72.94% of SPs responded. The most common responses included education and training workshops (9.80%) resources and references (10.61%), and parent support groups (7.76%). Respondents indicated "Other" (1.43%) responses such none, not applicable, or based on needs of the child. Additionally, 54.29% indicated "DK" (Table 31).

Table 30

Services and Resources for Parents in Schools/Districts

Services/Resources	N	%
DK	165	33.67
Audiological consultation including equipment training and daily CI management	99	20.20
Resources and references	76	15.51
Liaison from the implant center, medical team, rehabilitative team, and/or previous school setting to provide knowledge, background information, reports, and suggestions to the educational team	74	15.10
Informational meetings at the school	61	12.45
Education and training workshops	44	8.98
Parent support groups	33	6.73
School events	30	6.12
Other	24	4.90
Parent and child groups	13	2.65

Table 31

Services and Resources for Parents in the Community

Services/Resources	N	%
DK	266	54.29
Resources and references	52	10.61
Informational sessions or meetings	48	9.80
Education and training workshops	38	7.76
Parent and child groups	32	6.53
Parent support groups	18	3.67
Community events	16	3.27
Other	7	1.43

Open-Ended

Items 24 and 25 in the survey, asked respondents to provide additional information in their own words. When asked about anticipated challenges as a case manager of a child with CIs, 58.98% responded. There was a relatively even division amongst the three over-arching categories of knowledge, skills, and awareness, with a favoring towards awareness challenges (Figure 3). Approximately 24% of SPs reported knowledge challenges. Most of the SPs reported a lack of knowledge about CIs. Many reported being unfamiliar with the needs and challenges of this population, and having a lack of knowledge about CI technology such as the functioning, management, maintenance, and ways to create physically suitable environments. Approximately 28% of SPs reported skills challenges. While some challenges were specific to teachers, staff, and professionals, a majority of SPs specified challenges in their general as well as their collaborative role. Examples of challenges related to collaboration included, "not having enough information to provide the family," "coordinating services within the district," and "working with various organizations that support the student."

Awareness challenges for example, being unfamiliar with the various needs of children with CIs, was the highest represented category (37%). Nearly half of SPs indicated a challenge related to children's multi-faceted needs, particularly with their current level of functioning and individual needs. Responses included, "I would anticipate the student may have peer relational issues and social skills deficits," and "It would depend on the severity of the hearing loss and the child's academic and adaptive functioning." Many SPs indicated challenges related to resources, services, and support availability, while some reported the challenges of programming, and the needs of

parents and families. Approximately 11% of responses were coded as "Other." A majority of these SPs responded with "Don't Know" or "DK" and some reported they did not have experience working with children with CIs.

When asked what items would be helpful for them to know as a SP assisting children with CIs and/or their families, 52.65% responded. There was slightly less of an even distribution amongst the three over-arching categories than in the previous question. Similarly, there was a slight favoring towards awareness (Figure 3). Approximately 30% of SPs requested knowledge such as information about the CI process, technology, cultural implications, and profiles of CI children. While some SPs indicated the desire for research, a majority desired to learn the "best practices" for assisting the child and providing an appropriate environment. Approximately 19% of SPs indicated the need for skills. Many of these SPs requested supported skilled development, particularly in their ability to have on-going communication and consultation with other SPs and professionals who have experience with this population, medical physicians, and audiologists, and to provide support to the child and family. Many SPs also requested formal training for themselves and staff through workshops, seminars, or conferences.

Approximately 35% of responses were coded as awareness supports. Some SPs reported a desire for more knowledge of the available schools and programs. Many thought it would be helpful to be more cognizant about the child and families, including medical history. The majority of SPs reported access to resources, services, and supports in the school, community, and state would be helpful including contact information, references to print and access on online, support groups for children and families, and agencies and professionals with experience. Several SPs indicated, "hearing a simulation

of what children with CIs hear" would be useful. Approximately 16%, of responses were coded as "Other." Some responses included: "Anything!" "Everything!" "Answers to these survey questions!" and "DK."

Chapter IV

Discussion

Interpretation of Findings

The current survey-based research focused on school psychologists' (SPs) knowledge and experience in working with children with cochlear implants (CIs). While there are some studies that include various professionals' perceptions and involvement with children with CIs (Ben-Itzhak et al., 2005), there are currently no studies that focus solely on SPs' knowledge and experience in working with this population. Therefore, SPs ($n = 490$) in New Jersey public schools were surveyed in order to assess a range of topics relevant to the field of school psychology and children with CIs.

There are many advantages of electronic surveys. In addition to the ease and convenience factors, electronic surveys allow researchers to assess a larger population, thereby contributing to higher external validity and generalizability of the results (Evan & Mathur, 2005; Fricker & Schonlau, 2002). As 30% is an average return rate for online surveys, the response rate of 27.57% from the electronic survey for this current study was satisfactory (Instructional Assessment Resources, 2011; Nutly, 2008). There are also some disadvantages to web-based surveys. The reliability of the results may have been impacted from differences in software and Internet connections, as well as difficulties in controlling for other variables. Additionally, the participants were self-selected and not randomly representative of the general population, contributing to a possible selection bias. Other disadvantages include unacceptable data, issues related to anonymity due to hacking, and emails perceived as spam or junk mail (Evan & Mathur, 2005; Tuten, 2010).

Characteristics of sample.

Survey results indicated a relatively equal distribution of highest degrees obtained by the participants. Years of experience as a SP ranged from less than 1 to 41 years, with 7 years as the most common response ($M_o = 7$) and an average of 11.2 years ($M = 11.2$, SD = 8.04). Years of experience may have influenced SPs from participating in the survey, and the types of responses from those who did participate.

Background.

When assessing the background knowledge of children with CIs, most indicated they are not very confident ($M = 1.97$, SD = 0.95) on a Likert scale of 1 (Not very) to 5 (Very). It is possible SPs have not received the knowledge and training, or have limited exposure to children with CIs. While a majority reported they acquired knowledge from resources such as research (22.24%) and the work setting (45.31%), less SPs acquired their knowledge through conferences, organizations, graduate school, and personal experiences. These results indicate there is a need for SPs to receive more exposure to some of these resources throughout their training and career (Archbold, 2011; Chute & Nevins, 2006). Some identified the media and consulting and collaborating with professionals as resources, which can be practical and useful resources for SPs in the future (Paludnevicinene & Leigh, 2011).

A majority of SPs conceptualized children with CIs as "part of the hearing world but different from normal hearing children." More of SPs conceptualized children with CIs as part of the hearing world, or with a mixed identity than seeing them as part of the

Deaf world exclusively. While individuals continue to have different views of this

population (Paludnevicinene & Leigh, 2011), perhaps the increase of inclusion models

lead individuals to view children with CIs as being integrated into the hearing world or

with a mixed identity. Some SPs also indicated they did not have enough understanding to

make a conceptualization, perhaps demonstrating limited knowledge in the population.

Additionally when SPs were asked to indicate their confidence in their conceptualization,

a mean score of 2.28 on a Likert scale of 1 (Not very) to 5 (Very) was calculated,

providing further evidence to limited knowledge ($M = 2.28$, SD $= 1.08$).

When SPs were asked to indicate the length of time in years and months that is

needed for children with CIs to function at the same level as their typically developing

peers, a mean of 2.85 years ($M = 34.15$, SD $= 20.34$) was calculated. In a study by

Nichols and Geers (2007), children implanted between 12-16 months reached spoken

language levels of hearing age peers by 4.5 years. Therefore, it can take approximately 3

years for children with CIs implanted at an early age to function similarly to typically

developing peers, supporting the need for intensive services and supports in order to

"close the gap" (Nichols & Geers, 2007; Mukar et al., 2007; Niparko et al., 2009). While

SPs indicated that it depends on various factors, many also reported they did not know,

contributing to a limited knowledge, awareness, or exposure to children with CIs.

Classification and supports.

According to the FDA, as of December 2012, 38,000 children have received CIs

in the United States (NIDCD, 2012). Within the classification and supports section of the

survey, an average of approximately 2 students with CIs were reported in SPs' district

(M = 1.91, SD= 3.28). This was an expected response, as hearing loss is a relatively low incidence disability (NIDCD, 2012). Auditorily Impaired is the most common IDEIA classification category that SPs indicate they may consider for a child with CIs without any further information. It is possible that the SPs tended to select this response as they consider a child with CIs to primarily have an auditory disability rather than a cognitive, learning, health or a multiple disability. Perhaps if a child presented with other disabilities or impairments, the other categories would be more appropriate (Mukari et al., 2007; Soman et al., 2012; Spencer & Marschark, 2010). While only some SPs indicated no eligibility, it is possible children could be successful in school with accommodations through a 504 plan in the general education rather than an IEP through special education services (Gallaudet University, 2010; Schafer & Sweeney, 2012).

The most common in-school support services for children with CIs indicated by SPs in the survey included Speech-Language Therapy (67.35%), Audiological Services (52.86%), Deaf Education Services (TOD) (38.16%) and Listening Therapy/Auditory Verbal Therapy (28.57%). This finding was expected as many professionals may associate these types of services with hearing loss, and may not be familiar with the other needs of the population that require services such as OT, PT, and counseling (Cochlear Americas, 2007). Additionally, many SPs indicated the services would depend on the child and individual needs, which perhaps demonstrates SPs awareness and desire to individualize services for every child.

Preferential seating (68.37%), visual aids and prompts (55.51%), Hearing Assistance Technology (HAT) such as a Frequency Modulation (FM) system (52.45%), sound checks (29.6%), acoustical modifications such as creating and adjusting a MAP or

referring out for these services if they do not have an audiologist on-site, (27.96%), changes to physical classroom and/or school environment (27.96%) were identified as the most common in-school accommodations and modifications. While these were the most frequently selected from the survey, there is no research to support the most important accommodations and modifications. Rather, SPs and other professionals should consider a variety of accommodations and modifications for this population (Bureau of Exceptional Education and Student Services, 2007; Chute & Nevins, 2006). When asked to rate from 1 (Poor) to 5 (Excellent) how well the needs of children with CIs are being met, a mean of 3.56 was calculated (*M = 3.56,* SD = 0.90), indicating SPs believe the needs are being moderately to well met in their school/district. Approximately one-third of SPs indicated this item did not apply. Either these SPs did not have enough experience to respond and/or their school/district is not currently servicing any children with CIs.

Programming.

When asked about programming for children with CIs, a majority (77.14%) indicated a general education setting (the least restrictive environment) as the most effective environment. This is consistent with the IDEIA law and other initiatives to provide the least restrictive environment (LRE) to children with disabilities (Bureau of Exceptional Education and Student Services, 2007; Chute & Nevins, 2002, Soman et al., 2012). 24.29% indicated they did not know, thus demonstrating some of SPs lack of knowledge regarding appropriate programs for children with CIs. In regard to optimal placement, SPs reported a continuum of more and less restrictive settings with and without services. Many SPs indicated the least restrictive environment/inclusion, a

general education/mainstream setting, a general education/mainstream with supports, accommodations/modifications, and services would be optimal. Most respondents (23.27%) indicated that the placement depends on the child's needs, abilities, and other factors, which supports the use of a needs based and individualized approach consistent with the literature (Paludnevicinene & Leigh, 2011, Soman et al., 2012). SPs also indicated the five most important factors in the decision-making process regarding placement as Individual characteristics (57.14%), Mode of communication (28.98%), Communication abilities (46.94%), Language skills (45.31%), and Academic achievement and progress (32.86%). While these factors are consistent with the literature, there is no data to support the five most important factors when determining placements. All of these factors can be crucial when considering placement for children with CIs (Chute & Nevins, 2002; Cochlear Americas, 2007; Sorkin & Zwolan, 2004).

Assessments.

When examining assessment methods, measures, and profiles, approximately half of SPs (50.82%) indicated they never provided assessments for children with CIs, contributing to a lack of experience with this population, and the need for continued education and training in cognitive assessments (Spencer & Marschark, 2010). A relatively even distribution was provided amongst the various methods and approaches when providing assessments for this population. This supports the research regarding approaches to providing assessments including optimal environments, useful materials, and ways to communicate with children with CIs (Bureau of Exceptional Education and Student Services, 2007; Edwards, 2007).

A majority of SPs indicated the use of Wechsler Scales, the TONI-3/TONI-4, and the Woodcock Johnson Tests of Cognitive Abilities and Tests of Achievement (WJ-III) as assessments that might be given in district for children with CIs. While these instruments are commonly used in school settings (Sattler, 2006) there are other cognitive and neuropsychological measures that can and should be utilized when assessing this population that are preferable or more appropriate depending on the child's abilities (Moog & Geers, 2003). Some SPs indicated the use of picture vocabulary assessments such as the PPVT-4 and EOWPVT-4. Most SPs indicated they preferred to use the TONI-3/TONI-4 and the Wechsler scales. Based on the distribution of responses, it appears that SPs are aware that verbal and nonverbal measures may need to be utilized for this population. Similarly to other items on the survey, many SPs indicated they did not know which assessments they would prefer to give, or that the assessments would depend upon the individual student. These responses support the need for increased training in a variety of assessments, and the need for an individualized approach when selecting the appropriate measures (Moog & Geers 2003).

When asked to select the Wechsler IQ profile they would expect to find for children with CIs, most SPs selected the profile that stated the Verbal Comprehension Index (VCI) would be significantly lower than the Perceptual Reasoning Index (PRI), Working Memory Index (WMI), and Processing Speed Index (PSI). This is not an unusual response as individuals might assume verbal skills are the primary weak skill for this population, and might not be aware of the other possible deficits. While verbal skills are often lower than non-verbal skills, there can be additional areas of weakness and patterns that should be considered when assessing the cognitive functioning and

interventions for children with CIs (Moog & Geers, 2003; Pisoni & Cleary, 2003; Spencer & Marschark, 2010). The fewest SPs indicated that WMI would be significantly lower than the others scales. It is important that SPs are aware of possible weaknesses in auditory, verbal, and visual working memory, and short term memory, as well as processing abilities that are often areas of difficulty for children with CIs (Cleary, Pisoni, & Geers, 2001; Conway, Pisoni, Anaya, Karpicke, & Henning, 2011; Conway, Pisoni, & Kronenberger, 2009; Lyxell et al., 2008).

When asked to select a Kaufman Assessment Battery for Children-II profile for children with CIs, more SPs indicated that Simultaneous Processing would be more delayed than Sequential Processing. When asked to select a Kaufman Assessment Battery for Children-II profile for children with CIs, more SPs indicated that Simultaneous Processing would be more delayed than Sequential Processing. Conversely, research indicates that in children with CI's who fail to make the expected language gains, Sequential Processing is more impaired when compared with Simultanous Processing abilities (Conway et al., 2011; Gates Ulanet, Carson, Mellon, Niparko & Ouellette, in press). Approximately half of SPs indicated unfamiliarity with the K-ABC-III and/or how children with CIs process information simultaneously and sequentially. It may also be useful for SPs to be aware of the various types of processing skills and patterns that are common amongst this population.

Social emotional functioning.

To understand the social emotional functioning of children with CIs, SPs were asked to rate how well their school/district is at integrating children with CIs into the peer social environment on a Likert scale of 1 (Poor) to 5 (Excellent). A mean of 3.75 was calculated ($M = 3.75$, SD $= 0.97$), indicating relatively good integration. SPs rating on this particular item may reflect their responsibility for providing social emotional services such as counseling, and promoting positive social emotional learning within the school environment. Additionally, 32.45% reported the item did not apply; perhaps indicating their school/district does not have any children with CIs. It is crucial that SPs and schools make every effort to integrate children with CIs into their peer social environment (Martin, Bat-Chava, Lalwani & Waltzman, 2011; Punch & Hyde, 2011).

When examining social emotional functioning in children with CIs, SPs indicated the following as the most significant areas of deficit: Reciprocal social interaction (45.51%), Peer Relations (33.47%), Daily Functioning (33.88%), Perceived Competence (29.18%), and Self Advocacy (30.20%). While these areas are cited in the research are important to social development in all children, there is no data to support the five most important social emotional functioning areas. It is crucial for SPs to be aware of the variety of social emotional challenges for this population as listed in the survey item (Anita et al, 2012; Chute & Nevins, 2006; De Giacomo, Craig, D'Elia, Giagnotti, Matera, & Quaranta, 2013; Punch & Hyde, 2011). Some SPs indicated they did not know, also possibly contributing to SPs' limited knowledge and experience related to the social emotional functioning and services for children with CIs.

Related services.

When assessing related services, approximately half (48.37%) of SPs indicated, "Does not apply" when asked how often they communicate with other professionals to provide the appropriate services for children with CIs. This may indicate that SPs do not communicate with others regularly, or that they do not have any students with CIs on their caseloads that require communication about related services. Based on the SPs that provided a communication frequency, an average between monthly and quarterly ($M = 3.48$, SD = 1.19) or about every 2 months was reported. This finding supports research related to the importance of communication with a variety of service providers and professionals on an as needed basis (Cochlear Americas, 2007; De Raeve, 2010).

In regard to occupational therapy (OT), 16.53% of SPs indicated they sometimes would recommend an OT evaluation for children with CIs. On average, SPs indicated between sometimes and seldom ($M = 3.13$, SD = 0.75) they would recommend an OT evaluation. Most SPs indicated they did not know or the question did not apply, perhaps contributing to a lack of knowledge and awareness of OT needs and services for this population. Of those who provided a frequency of OT services, most (5.92%) indicated that less than 10% of children with CIs receive OT services. Conversely, most SPs (21.43%) who provided a frequency response for Speech and Language services indicated that 75-100% of children with CIs receive Speech and Language services. These findings support the possible assumption and practice that children with CIs are more often receiving speech and language services (Spencer et al., 2004; Schafer & Sweeney, 2012), however; are not receiving other necessary services such as OT. Based on research, this population can have a variety of vestibular and motor deficits, can be

diagnosed with sensory processing disorder, and display other weaknesses that support the need for OT services (Bharadwaj, Daniel, & Matzke, 2009; Jacot et al., 2008; Rine, Braswell, Fisher, Joyrce, Kalar, & Shaffer, 2004).

Parent support.

In order to understand the available supports for parents, SPs indicated Audio consultation (20.20%) Resources and references (15.51%), and a Liaison from the implant center, medical team, rehabilitative team, and/or previous school setting to provide knowledge, background information, reports, and suggestions to the educational team (15.10%) as the most common supports in school/district. While these were the most common supports reported by SPs, it is important to have access to a wide range of possible resources for children with CIs and their families (Chute & Nevins, 2006, Paludnevicinene & Leigh, 2011). Approximately one-third (33.67%) indicated they did not know. One possibility is that SPs lack the information; another is that these SPs may not be knowledgeable of the resources or where to direct parents. In regard to supports in the community, SPs indicated Education and training workshops (9.80%) Resources and references (10.61%), and Parent support groups (7.76%) as the most common supports. More than half (54.29%) reported they did not know, indicating even less knowledge and/or awareness of community supports. This finding suggests that SPs are unaware of the services provided in both the school/district and in the community, and reflects a notable area for improvement in the SP's role. Overall, this confirms the need for further awareness and availability of family supports (Archbold & O'Donoghue, 2007; Chute & Nevins, 2002; Most & Zaidman-Zait, 2003).

Open-ended.

The common themes, referred to as the "over-arching categories," found in the open-ended questions of the survey included: knowledge, skills, and awareness. When assessing anticipated challenges, a relatively even distribution was found amongst the three over-arching categories, with a favoring towards awareness challenges. The results of this study indicate each of the areas noted above are challenging in nature. Many SPs also noted children's multi-faceted needs. Thus, findings imply that SPs may feel it is important to take a "whole child" developmental perspective when managing the needs of this population appropriately ((Bureau of Exceptional Education and Student Services, 2007; Chute & Nevins, 2002).

Many of the SPs raised important questions and provided useful information. Some SPs described being new to the field or not having experience working with children with CIs:

> "Learning about the challenges of the student and providing for the student appropriately, given that I have never worked with a student with a CI and do not know much about typical functioning and needs of this population"

> "I am new to the field and unfamiliar with the research on children with CIs so I would need to spend time gathering and understanding the nature of the student's hearing and how to best support them. Since it is not prevalent in my current school it may be difficult to arrange the necessary accommodations for the student."

> "Having never case managed a student with a CI, I would be challenged to develop a more in depth understanding of the potential academic, social, emotional, and behavioral implications and to be able to determine what research-based interventions may be the most appropriate to facilitate an individual student's participation within the educational environment."

Others who have case managed for children with CIs stated the following anticipated challenges based on their personal experiences:

"The only challenge that I might anticipate is, as I only manage the case of a single CI student, not having enough information to provide the family with."

"I am the case manager of a child with CIs, and one of the challenges I faced was finding the most appropriate placement for him. Our classrooms have FM systems however there was a significant amount of background noise which clouded his sound field, so it was important to be diligent about the specifics of the environment before deciding on the appropriateness of the placement."

"I work in a high school and have had only one student with a CI. My greatest challenge was getting the faculty to consistently use the FM SYSTEM."

Many SPs discussed challenges related to learning information about CIs, understanding the needs, finding appropriate programming and services, working collaboratively with staff and other professionals, and learning from the child's perspectives:

"Learning more information about the implants and the needs associated with the individual based on the amount of time that the student has had the implant. Teaching the teachers what they need to know in order to most effectively work with the student."

"The biggest challenge would be working with the family and outside clinicians to help meet the individual needs of the students. It can be challenging to try to solicit the child's perspective when he/she is just learning how to speak with the new device. Learning about CIs and everything surrounding the device and the culture and the dynamics of the process could be challenging, but welcomed.

"Finding the most appropriate placement for the child academically, but also monitoring their social development and well being. Making sure that all needed supports are available within the district and making sure staff are trained and following guidelines for student's education."

In the final question of the survey, SPs were asked to share what would be helpful to know when working with this population. There was slightly less of an even distribution amongst the three over-arching categories; however; all were reported in many of the responses. Similar to the previous question, the category of awareness was the most frequently reported response. More SPs indicated the need for knowledge than

in the previous question, perhaps implying SPs viewed this more as a useful tool rather than a challenge. Similar to the previous question, SPs requested supported skilled development, indicating that SPs value their collaborative role, and would benefit from these affiliations. The SPs who noted they wanted to hear a simulation of what children with CIs hear perhaps are more eager to learn directly from the child's perspective to better understand their needs.

Some SPs were more willing to provide information, and were more optimistic regarding their school district's resources:

> "I can see that one of the challenges would be that I'm not very well informed and I would have to gain understanding of the resources available. I would also have to educate myself on the specific challenges children with CI face. My district is very accommodating and I know we could rise to this challenge."

Other SPs felt they did not have the knowledge or abilities, and therefore felt unqualified to provide responses. "DK- I have never worked with a child with a CI." Additionally, some SPs were unsure how to conceptualize children with CIs:

> "Is CI like glasses…not every student with glasses is visually impaired. Once you have a CI are you still disabled?"

Several SPs also desired to receive any information and training due to lack of exposure:

> "Everything in this survey!!"

> "A lot more! I NEVER learned anything about CIs in my School Psychology graduate program. I have also never case managed a student with CIs."

> "Well since I have absolutely no experience with CIs, any information would be useful."

In regard to useful resources, many SPs recommendation increased information, research, trainings, and other resources as presented in the following recommendations:

"More information about CIs and the process families have to go through can help with establishing rapport and trust and understanding. Research and best practices for accommodating for students with CIs would be very helpful."

"Knowledge regarding areas of potential problems for children with CIs. But more importantly, to know what the specific strengths, weaknesses, needs, and issues are for this particular child.

"Recommendations for best practices in terms of the services (i.e. research based interventions) that a school district should offer to students with CIs. Listings of community resources available (i.e. informational text, training, support groups, etc.)."

"A training in-district would be helpful to teach case managers and other school personnel on how to best meet the needs of these students"

Many SPs supported an inclusion model and desired recommendations to help children

be successful in the general education setting:

"With the strong emphasis on inclusion, it would be helpful to have recommendations for strategies and accommodations that benefit students with CI in a general education setting."

Several SPs discussed having printed resources that can be easily accessible and specific

to Child Study Team:

"I would like to have easily accessible reference resources in print and online, access to professionals familiarized with CI research and interventions technology, and access to program resources and services both within the school system and in the community.

It would be helpful to have a brief overview of CI developed for child study team members - how to assess, develop an appropriate IEP for these students, resources for teachers/CST/families to turn to for info - all in one package for child study team members who have little or no experience in this area."

Limitations of the Study

 Participants.

 A total of 1,777 SPs in the New Jersey public schools were emailed the electronic survey. 490 SPs began to complete the survey, with an overall response rate of 27.57%. The completion mean was 75% and 158 (32.24%) completed 100% of the survey. Each item on the survey was analyzed individually since each item had a different number of useable responses. While good participant sampling was utilized by sending the survey to all SPs in the database, and participants were not forced to respond to questions, thus there may be a response bias. Individual differences in the training and experiences of the SPs may have contributed to this possible response bias. Those participants who have some exposure to this population may have felt more competent in their ability to assess their knowledge and needs of children with CIs, and therefore were more likely to complete the survey. It is possible that participants who were unfamiliar with this population were less likely to complete the survey entirely, or unsure how to respond to some of the items. Conversely, SPs with limited knowledge and experience may have completed the survey to further their knowledge in the field, as they may be the case managers or service providers for children with CIs in the future.

 Those considered non-respondents could be individuals that were not 18 and/or not a current SP in a New Jersey public school. Additionally, there is no accurate way to verify that the individual who received the email was the respondent. While some SPs may have been willing to participate in the survey for a variety of reasons as mentioned above, others may have been reluctant to participate or failed to complete the survey due to unfamiliarity with the topic. Some SPs may not participate in any type of online

surveys and/or did not have enough time to complete the survey to any capacity. It is possible that non-respondents have knowledge or experience with children with CIs. Due to these differences, caution should be used when generalizing this study's findings to all SPs in New Jersey public schools. Furthermore, since this survey was created specifically for SPs in New Jersey and only sent to SPs in New Jersey public schools, caution should be used when generalizing results to other states as the role of a SP, state laws, and resources vary across states.

A variety of factors may have influenced SPs to complete the entire survey. In order to begin the survey, SPs needed to access their school email account and read the instructions from the email. SPs then proceeded by clicking on the unique link provided in the email, which lead them to the electronic version of the survey through Qualtrics. SPs were required to read the consent form on the first screen, providing consent that they were above 18 and a SP. Then the SPs needed to visit each page of the survey by clicking an arrow to continue until they reached the last page. SPs were given the option to skip any questions, contributing to some participants not completing the survey in its entirety. It is possible that some participants may have answered questions quickly or chosen to skip questions in order to get to the end of the survey where they were given the information to enter the raffle. SPs may have chosen to complete the survey in order to be eligible for the raffle, to assist in research and help a graduate student or a colleague with their dissertation, and/or were perhaps interested in the topic.

In addition, there are some limitations related to resources that may have impacted SPs ability or willingness to participate in the survey. Some districts have more resources for children with CIs, which may include special programs for children with

hearing losses. This may impact the SPs knowledge and ability to assess the needs of these students, and their opinions on the district's services. Additionally, districts that have more funding may have more resources to provide services for special populations including children with CIs. They also may have the funding to hire staff such as teacher of the deaf (TOD), audiologists, or other specialists who can be crucial members of the educational team in servicing children with CIs.

Methodology.

The contact information for possible participants was based on a previous database of SPs working in the state of New Jersey as of May 2012. The contact information of the SPs was updated as of November 2012. Email addresses were obtained through Internet searches of New Jersey school district websites, and telephone calls to school districts and individual school offices of Special Services and Child Study Team departments. While this database was comprehensive and took several months to complete, it is possible that random errors were made. For instance, some contact information may not have been available online or through telephone calls. Additionally, there may have been changes in SPs email addresses as their current place of employment may have changed, or contact information may not have been updated due to a transfer, a leave of absence, or retirement. Contact information of new SPs to a school and/or district may not have been updated as well.

There are some factors to consider regarding the use of emails and an electronic survey. To avoid the appearance of a mass email, individual and personalized emails were sent to all SPs in the database through Qualtrics. While some SPs may check their

email on a regular basis, others may not. SPs may delete emails from unfamiliar senders, or their computers may have settings that filter or block unfamiliar emails. Thus, there exists a possible "technical bias" as some SPs may never have seen the invitation and reminders to complete the survey. It is also possible that SPs may have forgotten about the email altogether. Procedures were also taken in attempt to decrease the impact of this limitation by sending two reminders in addition to the initial email that was sent to participants to complete the survey. The first reminder was sent after two weeks of the survey being out, and the second was sent after four weeks. The survey was available for a total of six weeks, providing a sufficient amount of time for completion. As SPs often have different "busy" time periods in the school year, it is possible if the survey were available for a longer period of time, more SPs would have taken the survey.

While some individuals choose to complete electronic surveys and are more comfortable and familiar with computers, others may not have been and therefore declined. It remains unknown as to whether a paper-and-pencil version would have garnered more or less respondents, particularly as the open-ended sections that required writing. In addition to extra steps that would be needed by the participants when sending the survey back, a paper-and-pencil version would have been more costly and require more time to analyze.

There are some additional limitations. For the quantitative section of the survey, each item on the survey was analyzed individually since there were a different number of useable responses. Correlations were not calculated, which could have provided useful information. However, this data could be analyzed further in the future. Additionally, limitations considered for the qualitative items of the survey include the possibility that a

bias may have existed for these questions. SPs may have skipped questions that required more thought and time, whereas others did not. It is possible that SPs who did not feel knowledgeable, skilled, or aware of the needs for this population, did not respond to the open-ended questions or did not provide lengthy responses. Those who felt more equipped may have been more likely to respond and/or provide honest responses. Placing the open-ended items at the end of the survey may have decreased the likelihood of participants responding due to fatigue or time pressures. These possible response biases may have impacted the distributions amongst the categories and themes. Although a web-base survey can assist in reaching a larger sample, a possible selection bias may have also existed, influencing the type of responses. Findings and suggestions therefore should be viewed in collaboration with other forms of data, as well as other current and future research studies.

Implications for Training and Practice

SPs have significant roles in servicing children with disabilities/needs including children with hearing loss and CIs (Ben-Itzhak et al., 2005; Cochlear Americas, 2007). Often SPs serve as a case manager and/or services provider for children with a variety of disabilities and needs (N.J.A.C., 2007). As more children with hearing loss are receiving CIs, they will continue to be integrated into public school settings. Therefore, SPs need the appropriate training and practice to appropriately service cochlear implanted children. This includes ensuring background knowledge about the needs of the population, and understanding the classification, supports and possible programming options. SPs will often provide the cognitive or other assessments and/or implement social emotional

services for these children. SPs also will continuously communicate with team members and other professionals and coordinate related services. Finally, SPs often need to provide supports for families of children with CIs in the school and in the community.

As presented in the current study, many SPs have a limited knowledge, awareness, and skills related to the topic of children with CIs. This study found SPs have and will continue to attain different and possibly numerous degrees with varied training. SPs' knowledge of cochlear implanted children, the types and amounts of acquired resources, conceptualizations, and ability to compare these children to typically developing peers may differ based on their background experiences.

The number of children with CIs in district will continue to vary based on several factors and resources. It is important for SPs to consider all possible classifications categories if a child is determined to be eligible for Special Education and Related Services, and to create an Individualized Education Plan (IEP) based on the child's needs and abilities. Some children with CIs may be able to receive accommodations through a 504 plan in the general education setting. Comprehensive and quality services are a crucial component to academic success, however; schools and districts will continue to differ in available services, accommodations, and modifications that can be provided. While the general education setting (LRE) can be an effective environment and optimal setting for some children with CIs, there may be more appropriate placements depending on the child's needs. Therefore, an individualized approach is preferable in the decision-making process for the placement of children with CIs.

When providing assessments for children with CIs, there are many approaches and supports that may be necessary to utilize in order to provide them with the optimal

testing environment. Additionally, a combination of verbal and non-verbal assessments, common and less common measures used, as well as neuropsychological assessments should be considered, and perhaps preferred by some SPs. The profiles of children with CIs may vary, however; there are several areas that are commonly delayed for this population, some of which are less identified. In addition to verbal delays, working memory, particularly in the area of storage, and processing abilities are common areas of delays for children with CIs. (Gates Ulanet et al., in press; Harris, Pisoni, Kronenberger, Gao, Caffrey, & Miyamoto, 2011; Nittrouer, Caldwell-Tarr, & Lowenstein, 2013; Schopmeyer, Mellon, Dobaj, Grant & Niparko, 2000). It is also important for SPs to receive up-to date training on new assessment measures as they become available on the market.

Schools will continue to differ in their abilities to integrate children with CIs into the peer social environment, often based on available resources. It is important to recognize and provide the appropriate services for the variety of possible social emotional functioning deficits for this population. When planning and implementing related services, communication amongst services providers and professionals is essential. Often occupational therapy (OT) evaluations may be warranted in order to further assess common areas of weakness for this population. Several related services including OT and Speech and Language Therapy will continue to benefits children with CIs in the school setting. A multidisciplinary approach is essential when servicing these children. In addition, to working with a variety of service providers, administrative support can also be helpful when working as a collaborative team for children with CIs. It is imperative that parents receive supports and resources in the school/district as well as in the

community. SPs need to be aware of the possible resources and/or provide parents with the necessary referrals to receive them.

As indicated by responses from the open-ended section, some SPs will continue to have limited knowledge, awareness, and skills related to the topic of children with CIs, leading to possible challenges as more children with CIs attend public schools. Many SPs noted the importance of an individualized and needs based approach, which can be very effective for this population. While some of the SPs in this study had an insufficient understanding and few experiences working with cochlear implanted children, many desired to gain more insights. Therefore, trainers of SPs and current SPs can benefit from an increased understanding of the population throughout their careers.

Based on the results from this study, there is a tremendous need across the three domains of competence: knowledge, skills, and awareness. Various methods and resources should be used to increase SP's knowledge, skills, and awareness in order to better serve this population. For instance, a manual or guide should be created addressing a wide range of areas related to the field for children with CIs as seen in the survey. Increased training in graduate schools, resources including research and current studies, and on the job through trainings, workshops, conferences, literature, websites, and consultation with colleagues would be helpful in order to be effective case managers and service providers for cochlear implanted children in the future.

Future Directions

SPs have a variety of integral roles in case managing and providing services for children with CIs. In addition to providing a variety of resources to increase their skills,

knowledge, and awareness, it is important to expose SPs and service providers to the current research findings. As of writing of this dissertation new research and technology is occurring, including the impact of unilateral versus bilateral implantation on brain development, improvements to CIs, and new versions of various assessment measures. It is essential for SPs to maintain awareness and training related to these as well as other new developments.

This initial work lays the foundation for further study. More focused research within the various topics broadly will be useful to delineate some of the best practices for servicing children with CIs. Studies can be further conducted within New Jersey, as well as other states across the country. Information from private schools and specialized schools for children with hearing loss and/or CIs can be collected and compared to information gathered from public schools. It may be useful to delineate some of the best practices for servicing children with CIs as they enter the public school system by learning through specialists who work more consistently with this population.

Evaluation of graduate school training programs will facilitate an understanding of the current state of education for the provision of the wide range of services necessary for children with CIs to succeed in school. Questions to be answered include: what background knowledge are SPs receiving about children with CIs? Are SPs aware of the various classification and supports and are they comfortable using them? Are SPs cognizant of the possible programming options? Do SPs know how to administer a range of assessment measures and how to interpret the results in order to provide appropriate interventions? Are SPs aware of the wide range social emotional functioning needs and can they provided these services? Are SPs aware of the related services that may be

needed? Are SPs able to provide parent support and resources? Critic to the SPs'
effectiveness is understanding the barriers that impact gaining knowledge, awareness, and
skills necessary to provide services for children with CIs. Further analysis of budget or
political constraints affecting the range of assessments and services is important
information to gain for future educational planning and support for the CI population of
children within the public school system.

Examining the success of children with CIs may yield some fruitful insights as
well. Longitudinal studies of resources and supports that impact how children with CIs
develop and function in public school settings over time is valuable information. These
research findings can also provide information to understand resources and supports
necessary for these children. In addition to current research findings, it may be beneficial
to further understand the perspectives of children with CIs by interviewing or surveying
them, including how they view themselves, their current school program and supports,
their service providers, and available resources. Interviews and surveys of children with
CIs will provide a more comprehensive understanding of the needs of children with CIs
and how to assist them in school settings.

This survey highlights specific areas of need for those SPs within the public
school system who are responsible for the educational care and support of children with
CI's. This current study and other research findings provide an outline to create a manual
focused on the key topic areas, and various resources including materials, interventions,
case studies, and references. In the absence of a manual or professional framework,
currently, SPs will benefit greatly from exposure to a combination of current research
studies, trainings, and resources.

Summary

In summation, findings of this study indicate that SPs have an integral role in servicing children with CIs in New Jersey public schools. When working with this population, SPs provide a range of services including classifying the students for Special Education and Related Services and developing Individualized Education Plans (IEPs). Additionally, many SPs conduct cognitive and other assessments and/or provide counseling and social emotional supports. They may communicate and collaborate with related service providers, and provide parent support or resources to help facilitate the success of children with CIs in the public school setting.

While the reported number of children with CIs in New Jersey public schools/districts was low, findings from this study indicate that public schools/districts in New Jersey are integrating and servicing children with CIs moderately well. Additionally, results show that many SPs are unfamiliar with the needs of children with CIs and the appropriate practices when working with this population. Continued research, training, workshops, manuals, references, and other resources would be useful to SPs during their graduate schooling and throughout their professional careers. Results from this study and recommendations include the continued use of an individualized approach for children with CIs, in regard to educational programming. It is essential that SPs gain a background knowledge and awareness of the needs of this population, and feel competent and confident in their skills and abilities in order to work successfully with cochlear implanted children and their families in the public school setting.

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Appendix A

Dear [**SCHOOL PSYCHOLOGIST'S NAME INSERTED HERE**],

I am inviting you to participate in a research study that I am conducting for my dissertation that involves surveying all school psychologists in New Jersey public schools.

I am interested in learning about school psychologists' knowledge and experience of working with children with cochlear implants in public school As more children with hearing loss are being implanted earlier and receiving rehabilitation and early intervention services, the movement towards public school education is increasing. Findings from this study will hopefully provide information about the supports, services, and resources available in schools/districts, and what additional items would be desired to better serve children with cochlear implants in public school settings.

If you are interested in participating in this survey, please take the online survey available at: [**LINK TO QUALTRICS SURVEY INSERTED HERE**]. It should take approximately 15 minutes to complete. Your participation is voluntary. You may choose to withdraw at any point without any penalty to you. In addition, you may skip any questions you choose. Your answers will remain anonymous. There are no foreseeable risks to participation in this study.

If you choose, you may be entered into a raffle drawing to win a $10 Amazon gift card (there will be 10 cards). Additionally, you will be given the opportunity to request a summary of the results, which will be provided upon the completion of the study. If you do not complete the survey, you will not be able to enter the raffle drawing or request a summary of the result.

I appreciate you participation and feedback in order to provide meaningful and useful data for my dissertation and for future knowledge in the field.

If you have any questions, please email me at cdworkin@eden.rutgers.edu

Thank you,

Chelsey Dworkin
School Psychology Doctoral Student
Graduate School of Applied & Professional Psychology
Rutgers, The State University of New Jersey
152 Frelinghuysen Road
Piscataway, NJ 08854

Appendix B

Survey on Cochlear Implanted Children

You are invited to participate in a dissertation study being conducted by Chelsey Dworkin, a school psychology study at the Graduate School of Applied & Professional Psychology at Rutgers University. The purpose of this research study is to assess school psychologists' knowledge and experience of working with children with cochlear implants in public school settings.

You will be asked to answer a few questions regarding your training degree and years of experience in the field. You will also be asked questions regarding your background knowledge of children with cochlear implants, as well as your knowledge and experience regarding classification and supports, programming, assessments, social emotional functioning, related services, and parent resources for this population.

If you choose, you may be entered into a raffle drawing to win a $10 Amazon gift card (there will be 10 cards). Additionally, you will be given the opportunity to request a summary of the results, which will be provided upon the completion of the study. If you do not complete the survey, you will not be able to enter the raffle drawing or request a summary of the results.

Your answers will remain anonymous and will not be linked to you in any way. There are no foreseeable risks to participation in this study. This study will provide information regarding school psychologists' knowledge and experience working with children with cochlear implants in New Jersey public schools.

Your participation is voluntary. You may choose to withdraw at any point without any penalty to you. In addition, you may skip any questions you choose.

If you have any questions or concerns about the study contact the principal investigator or the dissertation chair/faculty advisor.

Chelsey Dworkin (Principal Investigator)
School Psychology Doctoral Student
Graduate School of Applied & Professional Psychology
Rutgers, The State University of New Jersey
152 Frelinghuysen Road
Piscataway, NJ 08854
Tel: 908-770-5778
Email: cdworkin@eden.rutgers.edu

Kenneth Schneider (Dissertation Chair/Faculty Advisor)
School Psychology Doctoral Student
Graduate School of Applied & Professional Psychology
Rutgers, The State University of New Jersey
152 Frelinghuysen Road
Piscataway, NJ 08854
Tel: 973-467-9409
Email: schneid@rci.rutgers.edu

If you have any questions regarding your rights as a research participant, you may contact
the Sponsored Programs Administrator at Rutgers University:

Rutgers University Institutional Review Board for the Protection of Human Subjects
Office of Research and Sponsored Programs
3 Rutgers Plaza
New Brunswick, NJ 08901-8559
Tel: 732-932-0150
Email: humansubjects@orsp.rutgers.edu

You may print a copy of this consent form for your records.

Click "I agree" below if you agree to participate in this research study.
☐ I agree to participate in this research study
☐ I certify that I am at least 18 years of age

Click the arrow below to continue to take the survey.

⇨

Appendix C

1) Highest degree attained

_Bachelors
_Masters
_Educational Specialist
_Doctorate
_Other (please specify) _____

2) Number of years of experience as a school psychologist

_____

Background

3) Using the following scale, please rate how confident you are in your knowledge of children with Cochlear Implants (CIs).
1 (Not Very)   2   3   4   5 (Very)

4) How did you acquire this knowledge? Please select as many as necessary.
_Research from articles and books   _Work setting
_Conferences   _Personal experiences
_Organizations (NASP, NJASP, APA)   _Does not apply
_Graduate school   Other____

5- A) Assuming a child is implanted before age 2 and given the appropriate rehabilitation services up until Kindergarten, please select the statement below that best conceptualizes your understanding of how these children function.
_These children function as part of the hearing world
_These children function as part of the hearing world but are different from normal hearing children
_These children function primarily as part of the Deaf world
_These children function in both Deaf and hearing worlds
_Don't have enough understanding to make a conceptualization

5- B) Please rate your confidence in your conceptualization.
1 (Not Very)   2   3   4   5 (Very)

6) Approximately how long would it take a newly implanted child with a CI to function at the same level as his/her typically developing peers? (__years, __months)

Years _____
Months _____

Classification and Supports

7) Approximately how many children in your district have CIs? (Type DK if Don't Know)

_____

8) Without any further information, when a child with a CI(s) enters your school or district, what IDEIA classification category might you think this child is eligible for? Pick 1

_Cognitive Impairment   _Other Health Impairment (OHI)
_Specific Learning Disability (SLD)   _Not eligible
_Multiply Disabled   _DK
_Auditorily Impaired

9- A) Which in-school support services are needed for children with CIs? Please select as many as necessary.

_ Deaf Education Services
   (Teacher of the Deaf)
_ Speech-Language Therapy
_ Occupational Therapy (OT)
_ Physical Therapy (PT)
_ Counseling (Individual or Group)
_ Audiological Services
_ Listening Therapy
   (Auditory-Verbal Therapy)
_ Resource Room
_ DK
Other____

9- B) Please select five in-school accommodations/modifications that are most needed for children with CIs.
_Preferential seating (near front, away from noise-producing equipment like air vents and doors)
_Individual or small group instructional support
_Untimed tests
_Copy of notes
_Interpreting (Signed Exact English, American Sign Language, Cued Speech, or Oral)
_Computer Real Time Transcription
_Captioning
_Visual aids and prompts
_Hearing Assistance Technology (HAT) such as a Frequency Modulation (FM) system
_Acoustical modifications such as creating and adjusting a MAP
_Sound checks
_Changes to physical classroom and/or school environment (carpet, drapes, structure of class)
_Adaptive physical education
Other____
_DK

10) In your opinion, please rate how well the needs of children with CIs are being met in your school/district.
1 (Poor)   2   3   4   5 (Excellent)   Does not apply

Programming

11- A) Is placement with typical children in a general education setting (least restrictive environment) the most effective environment for children with CIs?
_Yes   _No   _DK

11- B) What placement do you think is optimal for children with CIs?
_____

12) Please select the five most important factors you think are essential in the decision-making process for the placement of children with CIs.
_ Individual characteristics (age at implantation, duration of deafness, degree of hearing loss)
_ Mode of communication (oral and/or sign)
_ Communication abilities
_ Speech skills (intelligibility and perception)
_ Language skills (expressive and receptive)
_ Social skills
_ Identity and child's perceptions
_ Attention
_ Intelligence/IQ scores
_ Standardized achievement test scores
_ Academic achievement and progress (grades and work samples)
_ Additional disabilities
_ Level of independence
_ Academic competence (teacher judgment)
_ Classroom participation (understands teacher, understands students, positive affect, negative affect)
_ Parent involvement and expectations
_ Family characteristics (psychosocial status, support, size)
_ School/district resources and policies (cost-benefit, environmental factors, personnel)
_ Future life outcomes
_ Implant characteristics (duration of implant use, number of active electrodes, dynamic range between processor and maximum comfort levels and highest frequency codes)
_ Audiology/equipment support
Other___
_DK

Assessments

13) In your assessments with children with CIs, which of the following are you using? Please select as many as necessary.
_Microphone/FM system
_Equipment check
_Physical environment (acoustically quiet room, carpet, shades, etc…)
_Evaluator speech (natural inflection, slow rate of speech, frequent pauses)
_Consistent eye contact
Other_____
_Never provided assessments for this population

14- A) Which assessments might be given in your district for children with CIs? Please select as many as necessary.
_Wechsler Scales (WPPSI-III, WISC-IV, WAIS-IV)
_Stanford-Binet Intelligence Scales (SB-5)
_Woodcock Johnson Tests of Cognitive Abilities and Tests of Achievement (WJ-III)
_Kaufman Assessment Battery For Children (K-ABC-II)
_Leiter International Performance Scale, Revised, (LEITER-R)
_Test of Nonverbal Intelligence (TONI-3 or TONI-4)
_Differential Ability Scales (DAS-II)
_Peabody Picture Vocabulary Test (PPVT-4)
_Expressive One-Word Picture Vocabulary Test (EOWPVT-4)
Other____
_DK

14- B) From the above assessments, which would you prefer to give? (Type DK if Don't Know)

_____

15- A) Please select the Wechsler IQ profile you would expect to find for children with CIs.
_No unusual profile
_VCI significantly lower (more than 8 IQ points) than PRI, WMI, PSI
_WMI significantly lower (more than 8 IQ points) than VCI, PRI, PSI
_PRI highest of all four index scores
_DK

15- B) Using the K-ABC-II, which ability of cognitive processing would you expect to be delayed for children with CIs?
_Sequential Processing
_Simultaneous Processing
_DK

Social Emotional Functioning

16) Please rate how well you think your school/district is at integrating children with CIs into the peer social environment.
1 (Poor)   2   3   4   5 (Excellent)   Does not apply

17) Please select the five most significant areas of deficit relating to social emotional functioning for children with CIs.
_Reciprocal Social Interactions
_Perspective Taking
_Theory of Mind
_Mental State Language
_Peer Relations
_Daily Functioning (use of CIs, ability to participate in activities and conversations)
_Family climate and relationships
_Psychological Well-Being
_Physiological/Physical Well-Being
_Developmental outcomes (problem solving skills, symbolic play)
_Mood Regulation (loneliness, depression)
_Behavioral Regulation
_Perceived Competence
_Psychosocial Adjustment
_Health Related Quality of Life
_Self-Advocacy
Other____
_DK

Related Services

18) How often do you communicate with the other professionals in your school/district involved with children with CIs?
_Daily
_Weekly
_Monthly
_Quarterly
_Annually
_Does not apply

19) How likely is your Child Study Team to recommend an OT evaluation for children with CIs?
_Almost always
_Often
_Sometimes
_Seldom
_Never
_Does not apply
_DK

20) How many of the children with CIs in your district are receiving OT services?
_Less than 10%
_10-25%
_25-50%
_50-75%
_75-100%
_Does not apply
_DK

21) How many of the children with CIs in your district are receiving Speech and Language services?
_Less than 10%
_10-25%
_25-50%
_50-75%
_75-100%
_Does not apply
_DK

Parent Support

22) What are some special services or resources available in your school/district for parents of children with CIs? Please select as many as necessary.
_Informational meetings at the school
_Parent and child groups
_Parent support groups
_Education and training workshops
_Audiological consultation including equipment training and daily CI management
_Resources and references
_School events
_Liaison from the implant center, medical team, rehabilitative team, and/or previous school setting to provide knowledge, background information, reports, and suggestions to the educational team
_DK
Other____

23) What are some services or resources available in your community for parents of children with CIs? Please select as many as necessary.
_Information sessions or meetings
_Parent and child groups
_Parent support groups
_Education and training workshops
_Resources and references
_Community events
_DK
Other____

24) If you were the case manager of a child with CIs, what challenges might you anticipate?

_____

25) What else would be helpful for you to know as a school psychologist to help children with CIs and/or their families?

_____

Thank you for participating in this survey!

To enter the raffle drawing for a $10 Amazon Gift Card, please send an email to rutgerscochlearimplantstudy@gmail.com with your name and a preferred email address.

To receive a summary of the results from the study, please send an email to rutgerscochlearimplantstudy@gmail.com with your name and a preferred email address.

Please go to the following websites to learn more about cochlear implants!
[UPDATED PAGES OF THE BELOW WEBSITES INSERTED HERE]
http://cochlearimplantonline.com/site/
http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/ImplantsandProsthetics/CochlearImplants/default.htm

Appendix D

Coding System for Open-Ended Questions

Question 24- Anticipated Challenges

- 1) Knowledge challenge
    - o A. Lack of knowledge
        - ▪ i. Culture
        - ▪ ii. Dynamics of process
        - ▪ iii. CI technology
            - • Technical information about the device
            - • Functioning of equipment- daily check, troubleshooting
            - • Equipment management/maintenance
            - • Assistive technology in class- FM system, interpreter
            - • Creating physical environment suitable for CI- sound reducing equipment
        - ▪ iv. Unfamiliarity with population
            - • Challenges/needs of children with CIs
    - o B. Need for research
    - o C. Needing education from organizations
        - ▪ Information/best practices from NASP/ASHA

- 2) Skills challenge
    - o A. Challenges for SP
        - ▪ i. General Role
            - • Lack of training/ability to train staff
            - • Providing for the student appropriately
            - • Being effective case managers
            - • Feeling comfortable and confident evaluators on CST
            - • Providing the appropriate social emotional supports to CI students
            - • Work with typical hearing students to interact with CI students
            - • Integrating and implementation of modifications and accommodations- IEP
        - ▪ ii. Collaboration
            - • Communication, consultation, and/or collaboration with faculty/staff
            - • Monitoring progress and coordination with other professionals in the school
            - • Collaborating with outside clinicians and/or organizations, including updated reports
            - • Creating strategies with parents and carrying strategies over at home
            - • Not having enough information to provide families

- On-going communication between school and home
- Connecting parents to resources
  - Access to resources, following up
  - B. Challenges for Teachers
    - Competency/understand needs
    - Training/education
    - Teaching styles
    - Ability to make accommodations and implement modifications
    - Ability to communicate with CI students/families
    - Perceptions, expectations, cooperation, resistance
    - Coordination with TOD
  - C. Challenges for other Staff/Professionals
    - Understanding of needs
    - Training/education
    - Working with children, families, and each other
    - Implementation of services/supports
    - Use of research based interventions and valid assessments
    - Providing speech, TOD, audiological, other services

- 3) Awareness Challenges
  - A. Programming Challenges
    - Least restrictive environment/integration into general education setting
    - Finding a program/curriculum at their level
      - Stay in public school, out of district placement, or special program
    - Total Communication program (with sign) vs Oral Language programs
    - Transition services- to different programs/schools
  - B. Resources, Services, Support Challenges
    - Accessing and availability of appropriate resources/services
    - Accessing appropriate supports in rural areas/distant location
    - Administrative support for services
    - Financial resources/budget in school/district
  - C. Challenge of children's multi-faceted needs
    - i. History/Background
    - ii. Level of hearing
    - iii. Age at implantation
    - iv. Current level of functioning
      - Academic performance
      - Cognitive abilities
      - Social emotional functioning
        - Self-Esteem
        - Social Development/Social Skills
          - Peer relationships/developing friendships
          - Perceptions and acceptance of peers

- o Well-Being
- o Emotional Difficulties
  - • Behavioral needs
  - • Executive functioning
  - • Physical abilities- participation in physical education/sports
  - • Communication abilities- speech and/or language
  - • Learning abilities/disabilities
    - ▪ v. Individual needs
      - • Adjusting to CIs/hearing loss
      - • Different levels of functioning
      - • Understand strengths and weaknesses
      - • Ruling out what is contributing to limited progress
      - • Meet needs throughout the school day
      - • Understanding child's perspective
      - • Ability to communicate
      - • Self-advocacy of needs
- o D. Challenge of parent's/family's needs
  - ▪ Expectations/perceptions
  - ▪ Decision process
    - • Regarding placement for their child
    - • Integration with typically developing children
  - ▪ Concerns
  - ▪ Anxiety
  - ▪ Resistance
  - ▪ Compliance with child wearing device
  - ▪ Language barriers
  - ▪ Auditory impairments
  - ▪ Other disabilities
  - ▪ Financial struggles

- • 4) Other
  - o A. No challenges
  - o B. Lack/No experience working with CIs
  - o C. Don't Know (DK)
  - o D. N/A

Question 25- Supports

- 1) Knowledge
  - A. Information about CIs
    - i. Cultural implications- Deaf vs Hearing Cultures
    - ii. CI process
      - Needs associated with surgery
      - Outcomes
    - iii. CI technology
      - How it works
      - New equipment/technological improvements
      - Maintenance
      - Effectiveness
      - Incidence
    - iv. Profiles of children with CIs
      - Trends/trajectory
      - Optimal functional outcomes
      - Timelines for language development milestones
      - Possible challenges
      - Needs at different times periods
      - Comparisons to hearing peers
      - Case examples
    - v. Other
      - What is hearing loss
  - B. Research/outcome research
  - C. Best Practices
    - Research based interventions/strategies
    - Assessments
    - Supports/Services
    - Accommodations/modifications (individual and environmental)

- 2) Skills
  - A. Supported Skilled Development for SP
    - i. General Role
      - Access and ability to provide appropriate assessments/evaluation tools for various academic/cognitive levels
        - Samples of profiles/score patterns
      - Ability to interpret an audiological evaluation
      - Develop appropriate IEP
      - Strategies for facilitating social skills groups
    - ii. Collaboration
      - Access/communication with other SPs/professionals who work with children with CIs
      - To be a liaison/professional that can coordinate assistance

- Ongoing communication with other professionals in and out of school setting
- Networking with medical/audiological service providers
- Best ways to help educate and provide support to children and families
- Communication with parents and child
  - B. Formal Training for SP/All Professionals
    - Workshops, seminars, conferences for case managers/school personnel

- 3) Awareness
  - A. Program Development
    - Types of schools/specialized programs
    - How to successfully integrate into mainstream
    - Transitioning
  - B. Availability of Enriched Resources, Services, Supports
    - In school
    - In community
    - County and state wide
    - Consultants
    - Contacts
    - References to print and online
    - Support groups for children and/or families
    - Agencies/professionals with experience
    - Materials in other language (Spanish)
  - C. About the Child
    - Background of child
      - Developmental history
      - Medical history
        - Co-morbid disabilities/health issues
      - History of services
        - Previous assessments/reports, pre-test/post-test skills
    - Level of hearing
      - Before/after CI
    - Age at implantation
    - Current level of functioning
      - Cognitive
      - Academic
      - Social emotional
      - Communication
      - Behavioral
      - Physical
      - Learning strategies
    - Individual needs
      - Child's perceptions

- Acculturation to deaf/hearing community
- Specific strengths, weaknesses
- What the child enjoys
- Goals
  - Future- vocational
- Impacts throughout the day
- Progress
  - D. About the Parents/Families
    - Understand and learn about the family
      - Philosophy/Culture of the family
      - Expectations
      - Long term goals
      - Concerns
      - Possible challenges
      - Need of support
    - Family history
    - Medical history
      - Including hearing loss
    - Characteristics of family
      - Dynamics
      - Challenges at home/stressors
  - E. Miscellaneous- Hear a simulation of what they hear

- 4) Other
  - A. Answers to survey questions
  - B. Anything/Everything
  - C. DK/Not sure
  - D. N/A or limited knowledge

Appendix E

Table 1

Survey Start Dates

Date	N	%
1/30/13	210	42.86
1/31/13	36	7.35
2/1/13	16	3.27
2/4/13	5	1.02
2/5/13	3	0.61
2/6/13	4	0.82
2/7/13	2	0.41
2/8/13	2	0.41
2/10/13	1	0.20
2/12/13	2	0.41
2/13/13*	98	20.00
2/14/13	12	2.45
2/15/13	2	0.41
2/18/13	1	0.21
2/19/13	6	1.22
2/20/13	3	0.61
2/25/13	4	0.82
2/26/13	1	0.20
2/27/13*	58	11.84
2/28/13	12	2.45
3/1/13	6	1.22
3/2/13	1	0.20
3/3/13	1	0.20
3/4/13	2	0.41
3/5/13	1	0.20
3/12/13	1	0.20

*Reminder Email Sent Out

Appendix F

Table 2

Survey Question Response Rates

Question	N	%
Consent	434	88.57
1	430	87.76
2	422	86.12
3	402	82.04
4	394	80.41
5A	404	82.45
5B	401	81.84
6	294	60.00
7	348	71.02
8	388	79.18
9A	394	80.41
9B	392	80.00
10	391	79.80
11A	378	77.14
11B	317	64.69
12	379	77.35
13	365	74.49
14A	364	74.29
14B	341	69.59
15A	365	74.49
15B	359	73.27
16	359	73.27
17	359	73.27
18	360	73.47
19	360	73.47
20	361	73.67
21	361	73.67
22	349	71.22
23	353	72.04
24	289	58.98
25	258	52.65

Appendix G

Table 3

Survey Completion Percent

Percent Complete	N	%
0	87	17.35
10	0	0.00
20	11	2.24
30	8	1.63
40	12	2.45
50	8	1.63
60	5	1.02
70	5	1.02
80	39	7.96
90	159	32.45
100	158	32.24

Total Responses = 490
Completion Mean = 75%

Appendix H

Table 6

Years of Experience of School Psychologists- Long Version

Characteristic	N	%
Years of Experience	422	86.12
Less than 1	5	1.02
1	17	3.47
1.5	4	0.82
2	21	4.29
2.5	3	0.61
3	10	2.04
3.5	2	0.41
4	22	4.49
4.5	3	0.61
5	24	4.90
5.5	1	0.20
6	24	4.90
7	32	6.53
7.5	2	0.41
8	24	4.90
8.5	1	0.20
9	17	3.47
10	22	4.49
10.5	1	0.20
11	15	3.06
12	21	4.29
13	15	3.06
14	11	2.24
15	24	4.90
16	12	2.45
16.5	1	0.20
17	8	1.63
18	12	2.45
19	7	1.43
20	8	1.63
21	7	1.43
22	3	0.61
23	3	0.61
24	8	1.63
25	11	2.24

Table 6 - continued

26	2	0.41
28	1	0.20
29	1	0.20
30	4	0.82
32	3	0.61
34	2	0.41
35	2	0.41
36	2	0.41
37	1	0.20
40	2	0.41
41	1	0.20

Appendix I

Table 11

Amount of Children with CIs in District

Children with CIs in District	*N*	%
Number of Children	133	27.14
0	44	8.98
1	37	7.55
2	21	4.29
3	10	2.04
4	7	1.42
5	5	1.02
6	5	1.02
8	1	0.20
10	1	0.20
15	1	0.20
30	1	0.20

Appendix J

Figure 1

Survey Key Topics
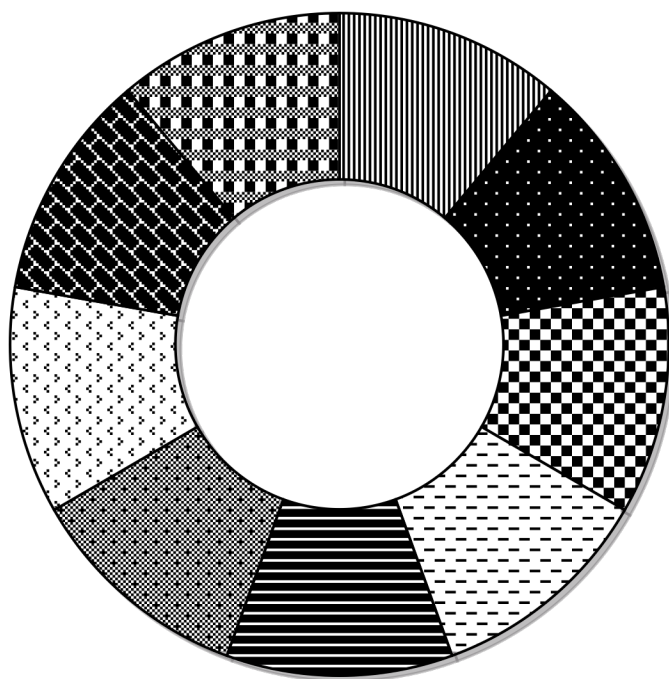
⊞ Characteristics of Sample
◨ Background
▨ Classification and Supports
⊟ Programming
☰ Assessments
▦ Social Emotional Functioning
⊡ Related Services
◪ Parent Supports
▩ Open-Ended

Appendix K

Figure 2

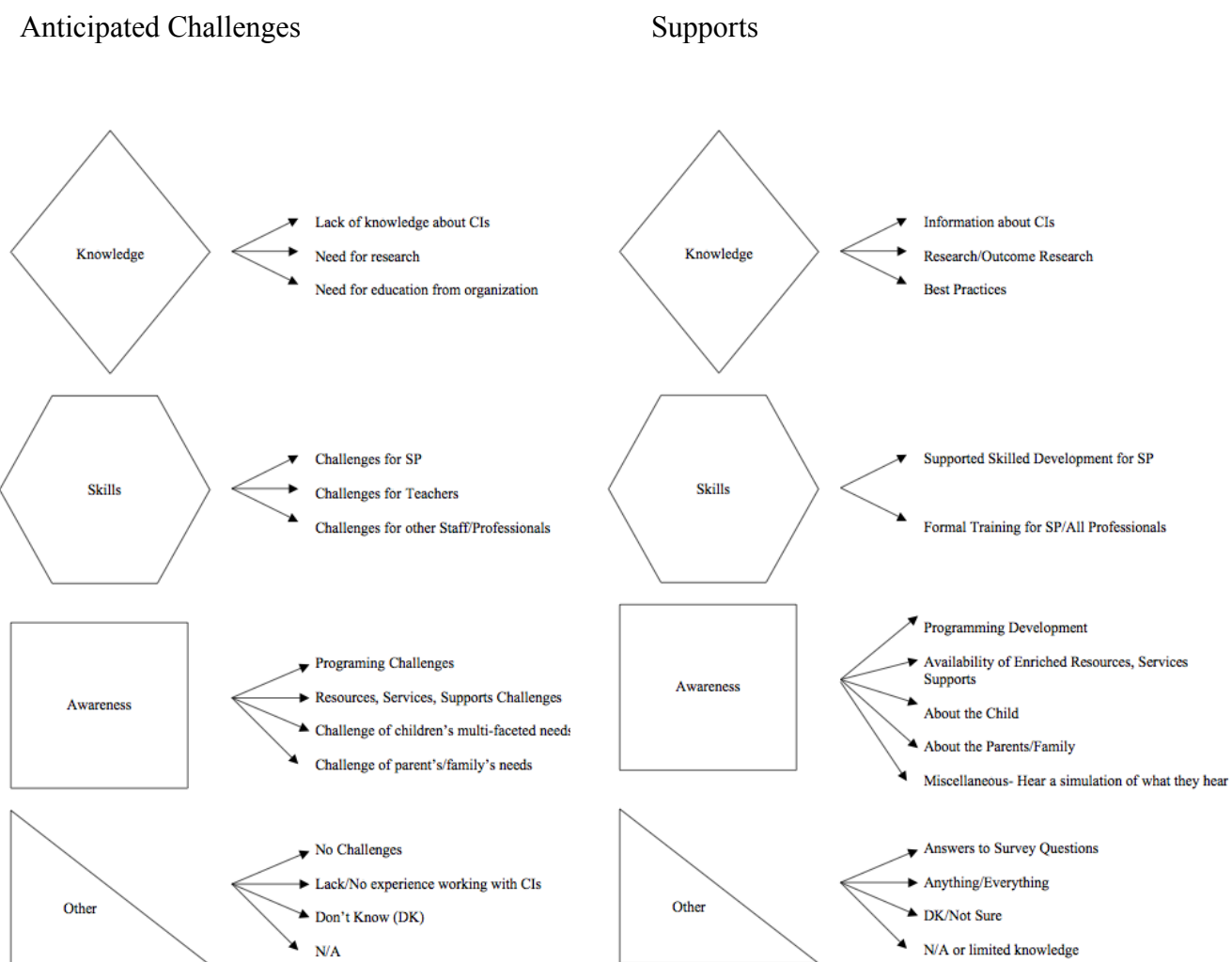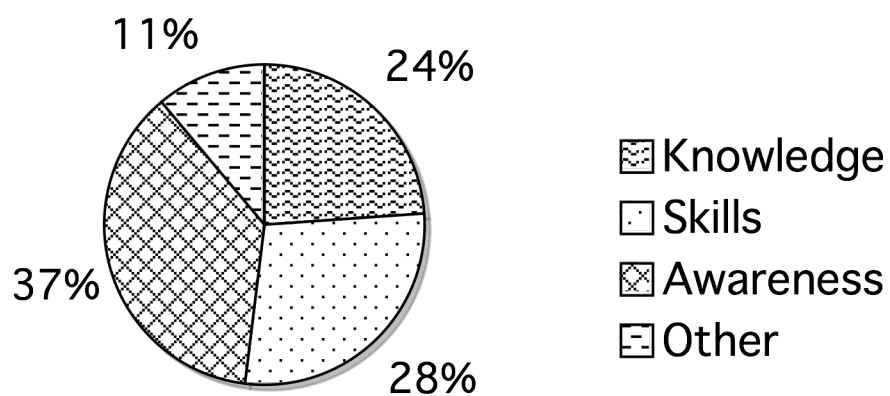*Flow Chart of Over-Arching Categories and Themes*

Anticipated Challenges   Supports

Knowledge
- Lack of knowledge about CIs
- Need for research
- Need for education from organization

Skills
- Challenges for SP
- Challenges for Teachers
- Challenges for other Staff/Professionals

Awareness
- Programing Challenges
- Resources, Services, Supports Challenges
- Challenge of children's multi-faceted needs
- Challenge of parent's/family's needs

Other
- No Challenges
- Lack/No experience working with CIs
- Don't Know (DK)
- N/A

Knowledge
- Information about CIs
- Research/Outcome Research
- Best Practices

Skills
- Supported Skilled Development for SP
- Formal Training for SP/All Professionals

Awareness
- Programming Development
- Availability of Enriched Resources, Services Supports
- About the Child
- About the Parents/Family
- Miscellaneous- Hear a simulation of what they hear

Other
- Answers to Survey Questions
- Anything/Everything
- DK/Not Sure
- N/A or limited knowledge

Appendix L

Figure 3

Distribution of Over-Arching Categories in Percentages

Anticipated Challenges

Supports