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PROMOTING THE SPOKEN LANGUAGE LEARNING OF CHILDREN WITH COCHLEAR IMPLANTS

**A CONVERSATION ANALYTIC STUDY ON SPEECH AND
LANGUAGE THERAPY INTERACTION**

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ACADEMIC DISSERTATION

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ABSTRACT

Speech and language therapy for children with cochlear implants focuses on promoting the children's spoken language skills. In this dissertation, the professional practices of one speech and language therapist in promoting language learning are examined using a conversation analysis methodology. The research data consist of video recordings from speech and language therapy sessions, totalling approximately 36 hours. The total duration of analysed sequences is 3 hours, 52 minutes. The participants in the study are seven children with profound congenital hearing impairment who have received a cochlear implant and their speech and language therapist.

The general aim of the dissertation is to increase knowledge of speech and language therapists' professional practices in supporting spoken language learning of children with cochlear implants. The therapist's practices are examined in both play and task interactions at three different stages of the therapy. First, the dissertation examines the ways in which the therapist enhances the children's listening and imitation skills in the early stages of therapy and cochlear implant use (Study I). Second, it analyses the therapist's professional practices of involving the parents in multiparty therapy interaction (Study II). Third, it demonstrates how the therapist promotes lexical learning in children with cochlear implants in the later stages of therapy (Study III).

The dissertation offers new insights into the institutional nature of interaction in the speech and language therapy for children with cochlear implants. It demonstrates the therapist's professional practices and pinpoints techniques and strategies used in the intervention. Primarily, the children are provided with a repetitive and prosodically emphasised spoken language model to enhance their listening skills and spoken language learning. In addition multimodal elements such as gestures, signs and body movements are systematically used. The dissertation shows how the therapist supports the children's participation and fosters their competence, which is seen in the form of enhanced collaboration. Furthermore, the dissertation provides information about the ways in which the therapist involves parents in the therapy.

The findings reported here contribute to research on speech and language therapy interaction, as well as more broadly to the study of institutional interaction. The findings expand and specify the professional stock of interactional knowledge about speech and language therapy. The dissertation provides detailed and concrete descriptions of therapeutic practices and suggests practical guidelines for supporting the spoken language learning of

children with cochlear implants. These may be useful for clinicians and students working both with children with cochlear implants and children who have other communication disabilities.

TIIVISTELMÄ

Tässä väitöskirjassa tutkitaan vuorovaikutusta vaikea-asteisesti kuulovammaisten, sisäkorvaistutetta käyttävien lasten puheterapiassa. Sisäkorvaistutetta käyttävien lasten puheterapian tavoitteena on kuuntelutaitojen ja puhekielen kehittyminen. Tutkimuksessa tarkastellaan keskusteluanalyysin keinoin, miten puheterapeutti tukee tätä kehitystä, ja millaisilla ammatillisilla käytänteillä puheterapian tavoitteet pyritään saavuttamaan. Tutkimusaineisto muodostuu seitsemän sisäkorvaistutetta käyttävän lapsen puheterapiasta kootuista videonauhoituksista, joiden yhteiskesto on noin 36 tuntia. Analysoitujen vuorovaikutussekvenssien yhteiskesto on 3 tuntia, 52 minuuttia.

Tutkimuksessa tarkastellaan sisäkorvaistutetta käyttävien lasten puhekielen oppimista tukevia ammatillisia käytänteitä kolmessa erilaisessa puheterapian tehtävä- ja leikki-tilanteessa. Ensimmäisessä osatutkimuksessa tarkastellaan, miten puheterapeutti tukee leikki-tilanteissa lasten kuuntelu- ja jäljittelytaitojen kehitystä sisäkorvaistutteen käytön alkuvaiheessa. Toisessa osatutkimuksessa tarkastelun kohteena ovat puheterapeutin käytänteet sellaisissa tehtävätilanteissa, joissa lapsen vanhempi osallistuu puheterapiaan. Kolmannessa osatutkimuksessa tarkastellaan, miten puheterapeutti tukee lasten sanaston oppimista.

Tämä väitöskirjatutkimus tarjoaa uudenlaisen näkökulman sisäkorvaistutetta käyttävien lasten puheterapiaan. Tutkimus esittelee tekniikoita ja keinoja, joilla sisäkorvaistutetta käyttävien lasten puhekielen kehitystä tuetaan puheterapiassa. Tutkimuksessa korostuu puheterapiavuorovaikutukselle ominainen institutionaalinen luonne, joka ilmenee puheterapeutin ammatillisissa käytänteissä. Puheterapeutti käyttää terapiatilanteissa runsasta toistoa sisältävää ja prosodisesti korostettua puhetapaa lasten kuuntelutaitojen ja puheen kehittämiseksi. Myös vuorovaikutuksen multimodaalisten elementtien, kuten eleiden, viittomien ja kehon liikkeiden systemaattinen käyttö korostuu puheterapiassa. Tutkimus osoittaa, että puheterapeutti tukee lasten osallistumista vuorovaikutukseen ja nostaa esille heidän taitojaan, mikä ilmenee korostuneena yhteistyönä osallistujien välillä. Lisäksi tutkimus tarjoaa tietoa siitä, miten lasten vanhemmat puheterapiaan osallistuessaan voivat omaksua lapsen kielen kehitystä tukevia käytänteitä. Tutkimushavaintojen pohjalta esitetään myös käytännön neuvoja sisäkorvaistutetta käyttävien lasten puhekielen kehityksen tukemiseen. Tämän tutkimuksen tulokset tukevat ja monipuolistavat aikaisemmissa tutkimuksissa tehtyjä havaintoja puheterapiavuorovaikutuksesta ja yleisemmin myös institutionaalisesta vuorovaikutuksesta. Tutkimuksen yksityiskohtaiset ja konkreettiset löydöt

lisäävät puheterapiaan liittyvää vuorovaikutustiedon varantoa ja niitä voidaan hyödyntää sisäkorvaistutetta käyttävien lasten sekä muiden puheterapian asiakasryhmien terapiassa ja ohjauksessa.

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LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following publications:

- I Ronkainen, R. (2011). Enhancing listening and imitation skills in children with cochlear implants: The use of multimodal resources in speech and language therapy. *Journal of Interactional Research in Communication Disorders*, 2.2., 245-269.
- II Ronkainen, R., Tykkyläinen, T., Lonka, E. & Laakso, M. (2014). Involving parents in the speech and language therapy of children with cochlear implants. *Journal of Interactional Research in Communication Disorders*, 5.2., 167-192.
- III Ronkainen, R., Laakso, M., Lonka, E. & Tykkyläinen, T. (2017). Promoting lexical learning in the speech and language therapy of children with cochlear implants. *Clinical Linguistics & Phonetics*, 31, 4, 266-282.

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TRANSCRIPTION SYMBOLS

The notation used in this thesis is essentially the same as that used in the conversation analytic literature (see Atkinson & Heritage, 1984: xi–xvi). Gestures and other nonverbal actions are borrowed from Haakana et al. (2009). A simplified notation of gaze (Goodwin, 1981: vii–viii) is added.

		X_____ (gaze of the speaker; x indicates mutual gaze)
		<i>SIGN</i>
01	SLT:	speech
		English translation
		GESTURE
		X_____ (gaze of the recipient; x indicates mutual gaze)

SLT=speech and language therapist

[]	beginning and end of overlap
=	two words connected to each other without a pause
(1.2)	measured pause (1.2 seconds)
(.)	micropause (less than 0.2 seconds)
e:i	prolongation of sound
kol-	a cut-off word
↑ooh	a rising shift
?	rising intonation
.	falling intonation
.joo	an utterance produced whilst breathing in
<u>mummi</u>	emphasised part of a word
@joo@	changed tone of voice
<joo>	slower pace than the surrounding speech
>joo<	faster pace than the surrounding speech
£joo£	utterance spoken with a smiling voice
(yes)	unclear talk
(--)	word too unclear to transcribe
DRAWS	nonverbal action
<i>BIG</i>	sign
*	refers to the beginning of a gesture or sign produced simultaneously with speech
((a childish form))	transcriber's comments

1 INTRODUCTION

The prevalence of bilateral, permanent childhood hearing impairment in Finland is about 2 per 1,000 live births (Häkli et al., 2014). For moderate or more severe congenital hearing impairments, the prevalence is about 1 per 1,000. Profoundly deaf¹ children have a minimal capacity to perceive speech cues because of damage to or complete destruction of the sensory hair cells in the inner ear (e.g. Wilson & Dorman, 2008). If conventional hearing aids do not ensure sufficient hearing for spoken language development, children in western countries are most often fitted with cochlear implants (CI). Cochlear implants transmit information to the auditory cortex by bypassing the damaged hair cells in the cochlea and stimulating the auditory nerve directly with electrical pulses. In Finland, cochlear implants for congenitally deaf children were introduced in 1997 (Lonka et al., 2011); currently, there are almost 400 children with cochlear implants (hereafter CI-children) in Finland.

With cochlear implants, it is possible for congenitally and prelingually deaf children to acquire spoken language. Most CI-children need speech and language therapy to benefit optimally from the devices. In Finland, the speech and language therapy of CI-children focuses on the systematic training of listening skills and spoken language use. The linguistic skills of CI-children have been examined in several studies using standardised language tests (e.g. Boons et al., 2013; Dettman et al., 2016; Geers & Nicholas, 2013), but language learning in interaction and everyday communication skills has not been widely studied (e.g. Mahon, 2009; Tait et al., 2007). In particular, detailed knowledge about the content of speech and language therapy is lacking. This study examines speech and language therapy interaction and one therapist's professional practices in the therapy of CI-children.

In this thesis, speech and language therapy interaction is studied using conversation analysis (CA), which enables a detailed analysis of natural interaction. Speech and language therapy is institutional in nature, which means that therapists are directed to previously determined, institutional tasks (Drew & Heritage, 1992). In addition, the interaction examined here is characterised as being linguistically asymmetric, because the spoken language skills of CI-children are only just emerging and are still incomplete

¹ The word "deaf" is used in this study to indicate the audiological condition of profound hearing impairment. This use of the term deaf is not to be confused with the term "Deaf" which refers to the Deaf Community whose primary means of communication is sign language and who share in Deaf culture.

compared to adult language. This study belongs to the field of applied conversation analysis (Antaki, 2011). First of all, it is institutional applied CA, aiming at describing the ways in which an institutional activity, in this case speech and language therapy, is carried out. The goal of this kind of study is to identify details of professional practices that could be beneficial for clinical work. All three original studies that make up this thesis examine practices that are typical of the speech and language therapy of CI-children. Second, this study is communicational applied CA, which means that conversation analysis is used to study the interaction and communication of people with linguistic problems (Antaki, 2011). The goal of these kinds of studies is to understand the features of disordered talk and to challenge the picture of disorder by showing the possible competencies of linguistically challenged participants. The three original articles of this thesis examine how a speech and language therapist supports the language learning of CI-children in therapy and examines the achievements children can make with the therapist's support.

This study, therefore, aims at examining and understanding the nature of speech and language therapy interaction in the therapy of CI-children. The aim of conversation analytic studies of therapy interaction is not to analyse the outcomes of the therapy, but rather to examine therapy interactions turn-by-turn and analyse the interactional practices used in doing the therapy (see e.g. Peräkylä et al., 2008). With conversation analytic studies it is possible to study natural interaction between participants and to describe in detail the therapists' professional practices and their consequences in therapy sessions. In this way, conversation analytic study of therapy interaction reveals therapeutic techniques and practices that otherwise may remain implicit (Gardner, 2009; Gardner & Forrester, 2010).

This thesis consists of four chapters and three original articles. In the Introduction, I will first introduce the social interactional approach to language learning. Second, I will provide basic information on cochlear implants in prelingually deaf children and a discussion of the main features of CI-children's speech and language therapy. Third, I will introduce the basic principles of conversation analysis, which is the method used in this study, and discuss the asymmetric nature of interaction in speech and language therapy. Lastly, the research questions and the aim of the study are introduced. In the second chapter, Methods, I present the study participants and data and discuss the analytic procedure of this thesis. In the Results, I summarise the results of the original articles in which speech and language therapy interaction have been studied at three different stages of the therapy. Lastly, in the Discussion, the results are considered with regard to previous studies, and clinical implications and future perspectives are introduced.

1.1 SOCIAL INTERACTIONAL APPROACH TO LANGUAGE LEARNING

In this thesis, language learning is viewed from a social interactional perspective. This theoretical approach emphasises the environment and the context in which language is being learnt. Through this approach, meaningful interaction with others becomes the basis for new knowledge acquisition. The focus of language learning is on the social interaction between the developing child and linguistically knowledgeable adults. In the following section, I will provide a short overview of the basic theoretical concepts of this approach that are relevant to this thesis.

Social interactional approaches are largely based on the sociocultural theories of the Soviet psychologist Lev Vygotsky. Vygotsky's (1978) theory of the development of human cognitive and higher mental function emphasises the integration of social, cultural and biological elements in learning processes. Vygotsky introduced the concept of a “zone of proximal development”, where learners construct a new language through socially mediated interaction (Vygotsky, 1978: 86). The zone of proximal development refers to the tasks a child is unable to complete alone but is able to complete with the assistance of an adult. Vygotsky distinguished two developmental levels: the actual and the potential levels of development. A child's independent problem solving takes place at the actual developmental level, whereas the potential developmental level includes problem solving under adult guidance or in collaboration with more capable peers (Vygotsky, 1978: 84-91). Vygotsky argued that fostering a child's development within the zone of proximal development leads to the most rapid progress.

Similarly, Bruner's (1983) work pioneered in the social interactional approaches to language acquisition. Like Vygotsky, Bruner emphasised the social nature of learning, holding that other people should help a child develop skills through the process of “scaffolding” (Bruner, 1983). Scaffolding represents the way in which caregivers facilitate learning and enable a child to do something beyond his or her independent efforts. The support provided by parents is tailored to the cognitive potential of the child. More support is offered when a child is having difficulty with a particular task; over time, less support is provided as the child makes gains in mastering the task. In the case of language learning, the language behaviour of adults in talking to young children is especially adapted to support the acquisition process (the topic of child-directed speech is taken up later in the text).

The social-pragmatic dimensions of language acquisition have been described in the usage-based language theory by Tomasello (2003). Tomasello explains that children learn language from their language

experiences and language structures emerge from language use. Learning happens through specific communicative events; to understand other people's communicative intentions, children need flexible social-cognitive skills, such as joint attention (Tomasello, 1995). When children read adults' intentions and jointly share attention, they collect and segment the necessary language components, recognise speech patterns and conceptualise referents to create new constructions of their own later (Tomasello, 2003: 8-42). When children acquire words and language structures, frequency of use is important, because patterns which are repeated for communicative reasons seem to become automatic and conventionalised (Tomasello, 2003: 173-175). In novel word learning, for example, the more often a linguistic form occurs in the input, the stronger the child's representation of it becomes.

Vygotsky's (1978) sociocultural theory also laid the foundation for later approaches to education and teaching that emphasise the social context of learning. Barbara Rogoff (1990: 7-8) has introduced the concept of guided participation, which refers to the process by which children actively acquire new skills through participation in meaningful activities with parents or other more experienced companions. Guided participation is a collaborative process whereby parents and other adults support the child's intellectual development. Guidance and teaching provide assistance at the skill level just beyond what the learner could accomplish alone, paralleling the view of the zone of proximal development by Vygotsky (1978: 86). Guided participation occurs throughout the course of childhood as children progress from a dependent role to one of increased autonomy and responsibility while they try to master the challenges posed by their social environment (Rogoff, 1990). Lave and Wenger (1991: 29), for their part, have developed the concept of legitimate peripheral participation to describe learning as it engages with social practice and relationships and occurs through active participation in a community of practice. Lave and Wenger have also argued that learning is a social process whereby knowledge is co-constructed; they maintain that such learning is situated in a specific context and is embedded within a particular social and physical environment. Specifically, legitimate peripheral participation accounts for the process by which newcomers join a community and learn through participation and action on the periphery (Lave & Wenger, 1991: 29-43). The action of the learner is described as moving from a peripheral position to a central position.

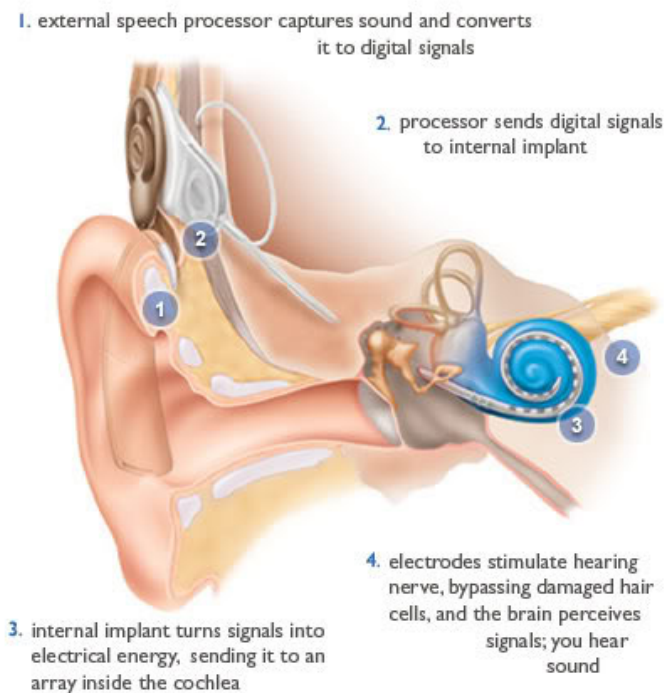
To sum up, the social interactional approaches of language learning describe the learner's social and active role in the process. Learning is promoted through collaboration between children and adults or between students and teachers. This is also the starting point for individual speech and language therapy, and these theories provide the theoretical framework in which speech and language therapy interaction is studied in this thesis. In addition, the method of conversation analysis fits the study of language

learning very well from this theoretical perspective, as it focuses on studying social interaction and examines collaboration between participants.

Next, I will move on to providing basic information on cochlear implants in prelingually deaf children and discuss the main features of CI-children's speech and language therapy.

1.2 PRELINGUALLY DEAF CHILDREN WITH COCHLEAR IMPLANTS

Cochlear implants are the most effective neural prostheses ever developed (Moore & Shannon, 2009). A cochlear implant bypasses the damaged sensory hair cells in the cochlea, providing direct electrical stimulation through the auditory nerve to the auditory cortex (Wilson & Dorman, 2008). A cochlear implant consists of external and internal components. It includes an external microphone, which receives the sounds and directs them to the speech processor behind the ear. Thereafter, the sound information is conveyed via a transmitter and from there, through the skin to a surgically implanted receiver on the temporal bone. The signals then pass on to an array of electrodes in the inner ear (for one type of CI, see Picture 1.). The main aim of CI sound processing schemes is to mimic normal auditory perception and the tonotopical order of the basilar membrane (for a detailed description of the function of CI, see e.g. Wilson & Dorman, 2008).



Picture 1. Cochlear implant (used by permission of Cochlear Ltd).

Cochlear implants are designed for severely to profoundly deaf people who cannot benefit sufficiently from conventional hearing aids. The general criteria for cochlear implantation are severe to profound bilateral sensorineural hearing impairment and a functioning auditory nerve (NICE, 2009). Congenitally deaf children usually receive their cochlear implants at an early age (e.g. Dettman et al., 2016; Geers & Nicholas, 2013; Niparko et al., 2010; Quittner et al., 2013; Vlastarakos et al., 2010). An early implantation age contributes to spoken language development, because the period of profound deafness becomes shorter and auditory-based communication can start earlier. This means that the gap between the child's chronological age and hearing age (the time elapsed since the child began receiving auditory input through CI) remains shorter. In several countries, neonatal hearing screening has facilitated the earlier identification and diagnosis of children with hearing impairment (Yoshinaga-Itano, 2003). This has led, in turn, to a steadily decreasing age of cochlear implantation for profoundly deaf children, even for those under the age of 12 months (Colletti, 2009; Vlastarakos et al., 2010). However, the effects of very early implantation need to be studied further. In Finland, cochlear implantations of congenitally deaf children were introduced in 1997 (e.g. Lonka et al., 2011). At that time, the age of cochlear implantation for children was around 2-4

years, but today, according to well-established clinical practice, the aim is to implant congenitally deaf children at the age of 10-11 months. Initially, cochlear implants were fitted unilaterally, but today most children in Finland receive bilateral CIs. The advantages of bilateral CI use are, for example, better speech recognition in noisy situations (Johnston et al., 2009) and a favourable effect on children's linguistic development (e.g. Sarant et al., 2014).

An early cochlear implantation age of congenitally deaf children contributes to benefits in spoken language development. International studies have shown that the favourable age for cochlear implantation is before the age of 2 years, for both language comprehension and expression scores (e.g. Dettman et al., 2016; Geers & Nicholas, 2013; Niparko et al., 2010; Quittner et al., 2013; Vlastarakos et al., 2010). For example, the study by Niparko et al. (2010) showed that children implanted under the age of 18 months had significantly better spoken language skills than children implanted at the age of 18-36 months or even older. The same was observed in De Raeve's (2010) study, although there was considerable variety in the outcomes. At best, children implanted under the age of 18 months may reveal trajectories of language development that parallel those of the hearing controls (Niparko et al., 2010). In the Finnish data, the most favourable age for cochlear implantation was around 2 to 3 years with respect to spoken language development (Lonka, 2014). In addition to implantation age, several other factors affect the linguistic development of CI-children, such as pre-implant residual hearing and nonverbal cognitive skills (e.g. Geers & Nicholas, 2013).

The language skills of CI-children have been widely studied with standardised language tests for both speech perception and production, such as receptive and expressive vocabulary (e.g. Davidson et al., 2014; Hayes et al., 2009), syntax and morphology (e.g. Boons et al., 2013; Le Normand & Moreno-Torres, 2014) and phonological skills (e.g. Ertmer et al., 2012). On average, CI-children acquire spoken language at a slower rate than their peers with normal hearing (e.g. Boons et al., 2013; Caselli et al., 2012; Davidson et al., 2014; Duchesne et al., 2009). However, some studies have reported that, at best, early implanted children may catch up with their peers, for example in vocabulary development (e.g. Fulcher et al., 2012; Hayes et al., 2009) and phonological development (Faes et al., 2016). The most problematic areas in linguistic skills have been reported to be morphology, syntax and lexical semantics (e.g. Caselli et al., 2012; Le Normand & Moreno-Torres, 2014).

Overall, enormous individual variations in CI-children's linguistic skills have been reported (e.g. Duchesne et al., 2009; Niparko et al., 2010; Schwartz et al., 2013; Tobey et al., 2013). Study comparisons are difficult to

make, as CI-children with additional disabilities (for example, intellectual disability, motor impairment, developmental delay or neurocognitive condition) have often not separated from other CI-children, which confuses the findings (Lonka, 2014; Meinzen-Derr et al., 2010). The estimated number of hearing-impaired children with additional disabilities is approximately 30-40% (Fortnum et al., 2002). In Finnish studies, additional disabilities were found in 35-40% of all hearing-impaired children (Häkli et al., 2014; Voutilainen et al., 1988). For CI-children in Finland, the corresponding number is approximately the same, 40% (Huttunen, 2008), although variation in different studies occurs. In the study by Lonka et al. (2011) which included the first Finnish CI-children, the percentage of additional disabilities was 25%. The results for those children in listening skills (CAP-test, categories of auditory perception) and spoken language skills were poorer than those for children without additional disabilities.

The first months of CI use are important for children's linguistic development, and early preverbal skills are predictive of later language outcomes (e.g. Connor et al., 2006; Tait et al., 2000). Tait et al.'s video analysis method has revealed that CI-children's listening and communication skills begin to develop during the first months of CI use when their communication changes from gestural to vocal (Tait et al., 2001; Tait et al., 2007). As early as the first six months of CI use, the children start to produce vocal turns, show auditory awareness and begin to make vocal initiations. Tait et al. (2007) have reported that those changes were most evident in children implanted at the age of 1-2 years, and the communication style for those children changed to oral communication during the first six months of CI use.

Most CI-children need speech and language therapy in order to benefit from the device and to develop better spoken language skills. In the next section, I will discuss the basic principles of speech and language therapy for CI-children.

1.2.1 INSIGHTS INTO SPEECH AND LANGUAGE THERAPY FOR CHILDREN WITH COCHLEAR IMPLANTS

To benefit optimally from cochlear implants, most congenitally deaf CI-children need regular rehabilitation. Early rehabilitation, which includes training in listening and spoken language skills, is the most favourable for speech and language development (e.g. Dunn et al., 2014; Moog & Geers, 2010).

Shaping of the central auditory system begins before birth, and prenatal experiences have a significant influence on the brain's auditory

discrimination accuracy (Partanen et al., 2013). In congenitally deaf children, sound deprivation during the fetal period and infancy may harm the neural basis of attention to sounds. When the CI is activated, the children have no experience in listening and are not accustomed to paying attention to sounds in their surroundings. During the rehabilitation process, the children need first to become aware of the sounds and to connect a meaning to them (e.g. Cole & Flexer, 2011: 208-211, 221-222). At the beginning of rehabilitation, the suprasegmental features of speech, such as rhythm and intonation, are easier to detect than speech sounds. Consequently, the use of child-directed speech, including plenty of prosodic variation, is important for children with newly acquired CIs (on child-directed speech, see e.g. Cruttenden, 1994; Ochs et al., 2005; Paavola, 2006; Snow, 1994). When parents use child-directed speech, the children gain optimal opportunities for learning spoken language. In the same way, the use of music and singing is important, because melodically produced utterances help to attract and sustain children's attention (Estabrooks, 2006). The use of music has been reported to have favourable effects on the spoken language learning of CI-children (Torppa, 2015).

It is difficult for hearing-impaired children to learn language by overhearing speech in their surroundings. Because of problems with distance hearing and hearing in noisy environments, hearing-impaired children may not be able to learn incidentally to the same extent as their normally hearing peers (Davidson et al., 2014). Consequently, repeated listening exposure and the systematic input of linguistic information are required in order to acquire the spoken language skills (Blaiser et al., 2014; Walker, 2010). Therefore, direct instruction and numerous repetitions of spoken words are needed to maintain robust representations of newly learned words.

At the beginning of the rehabilitation of hearing-impaired children, it is also important to support the use of gestural communication. Gesture has a crucial role in both deaf and hearing children's communication. Combining meaningful gestures with words is an important developmental step in language acquisition (Iverson & Goldin-Meadow, 2005; Özcaliskan & Goldin-Meadow, 2005). Children are able to express complex ideas with gesture-speech combinations before they can do so verbally (Özcaliskan & Goldin-Meadow, 2009). Vocal and gestural modalities are used together as children's spoken language skills improve, and gestures are not simply replaced by speech. The communication development of CI-children follows the same course: their use of gestural communication decreases with cochlear implant use as their vocal skills improve (Tait et al., 2007).

1.2.2 PARENTAL COUNSELLING

One of the most important aspects of rehabilitation of hearing-impaired children is parental counselling, because language learning happens through daily interactions with a child's caregivers. CI-studies suggest that the best results in spoken language development are achieved when children's parents are involved in rehabilitation (Moeller, 2000; Moog & Geers, 2010; Quittner et al., 2013; Yoshinaga-Itano et al., 1998). When parents actively participate in their child's rehabilitation, the skills that are learned in therapy will be more easily generalised to everyday communication. Studies have also suggested that parents who are trained to support their child's language learning may be as effective as clinicians in providing intervention (Law et al., 2003).

Parental counselling includes informational counselling, intended to educate families about their child's hearing impairment, for example by offering information about hearing aids and early intervention (English, 2011). Another aspect of counselling is to provide emotional support to parents and give them an opportunity to share their feelings, concerns and distress. For normally hearing parents who have a child with hearing impairment, the diagnosis usually represents a loss which must be grieved (Luterman, 2004). Parents' emotional reactions, for example anger, guilt and denial, may affect the quality of the parent-child interaction, and it is therefore important to help parents adjust to having a hearing-impaired child. Successful communication with a hearing-impaired child is greatly enhanced when the parents can accept the child emotionally.

Parents' self-esteem and confidence in helping their child make advances is a crucial factor in the child's development (Luterman, 2001: 169-176). Early intervention practices for young children should focus on building the parents' sense of self-confidence as they support their children's early development (DesJardin, 2006). It is important for parents to perceive themselves capable of supporting their children's communication development and to experience success in working with their children, especially in the early stages of therapy (Luterman, 2001: 173). Therefore, it is important to coach parents in how to enhance their interactions with their children and how to use techniques that facilitate their child's language learning (Quittner et al., 2013). An intervention model in which parents receive hands-on training and practice using appropriate communication techniques within naturally occurring activities enhances their parenting skills, which in turn improves the child's language learning (Cruz et al., 2013; DesJardin & Eisenberg, 2007).

An example of an intervention method that focuses on improving parent-child interaction is the Hanen programme, "It Takes Two To Talk" (Pepper &

Weitzman, 2004), which is based on the social interactional approach to language acquisition. The programme is designed for parents of children with various kinds of speech and language problems and delays, and it focuses on teaching parents and caregivers how to encourage and support their child's communication skills by making use of everyday situations. During the programme, parents and children are recorded on video, and the recordings are used to teach parents how to adapt their communication practices to their child's developmental level. The parents are also taught to observe and listen to the child and follow the child's lead during play and other day-to-day activities. In addition, they learn strategies to facilitate interaction and communication. Evaluation studies have revealed that after the programme positive changes have been observed in children's social interaction skills (Coulter & Gallagher, 2001; Pennington et al., 2009).

1.2.3 INTERVENTION APPROACHES

There are several different rehabilitation options for CI-children (see e.g. Gravel & O'Gara, 2003). Some focus on developing spoken language skills, such as auditory-verbal therapy (Estabrooks, 2006). Spoken language can also be supported with visual elements, for example hand shapes, as in the cued speech method (Cornett & Daisey, 1992). Total communication, on the other hand, focuses on using all communication modes, such as signs and gestures, together with speech (e.g. Spencer & Tomblin, 2006). CI-children's communication mode is probably dependent on culturally determined rehabilitation options (Lonka et al., 2011). In Finland, there are no separate, certified rehabilitation programmes available for children with hearing impairment and their families. Finnish speech and language therapists use an eclectic approach in which the main emphasis is on auditory-verbal methods, but other elements of communication, such as gestures and signs, are also used (Lonka, 2008). The main goal of speech and language therapy for CI-children is to develop their listening and spoken language skills by using auditory-verbal techniques. The use of other communication elements is individually designed according to each child's needs. For example, at the beginning of rehabilitation the children's communication may be supported with manual and visual techniques (e.g. gestures and signs) if needed, but along with the successful use of CIs, the emphasis moves on to speech. In Finland, almost 80% of CI-children use sign-supported speech or spoken language alone in their daily communication (Lonka et al., 2011).

In Finland, five university hospitals (Helsinki, Turku, Tampere, Oulu, Kuopio) are responsible for the operation, care and co-ordination of the rehabilitation of CI-children. The children have regular follow-ups at the Hearing Centre, where a multi-professional team participates in their rehabilitation (Hyvärinen et al., 2011). Speech and language therapy usually

starts with follow-up visits and evaluations at the Hearing Centre. At that stage, the therapy focuses on guiding the parents to support their child's hearing aid use and fostering listening skills at home. The parents are taught to support their child's communication development, for example by using natural gestures and clear, simplified speech. If the child is provided with cochlear implants, then regular speech and language therapy usually begins by the time of implant activation. This therapy is put into practice by private speech and language therapists, who usually meet the children regularly. The methods that Finnish therapists use with CI-children are based on different theoretical approaches and practical experience, but many of the techniques aimed at developing listening skills and speech are adopted from auditory-verbal therapy. In the next section, I will provide an overview of this method.

Auditory-verbal therapy, or AVT, is an early intervention approach for hearing-impaired children and their families (Duncan & Rhoades, 2017; Estabrooks, 2006). The approach is based on an acoupedic programme developed by Doreen Pollack (Pollack, 1970), who outlined the guiding principles of auditory-verbal practice. These have become the hallmark of the philosophy (Estabrooks, 2006). The primary goal of AVT is to guide parents in helping their children to develop intelligible spoken language through listening. In individualised AVT sessions with a trained therapist parents are coached to become the primary facilitators of their children's spoken language development. Family involvement is significant in the programme, and the parent or caregiver must be present at each AVT session. This is a notable difference between auditory-verbal therapy and other approaches (Dornan et al., 2009). In AVT, parents are guided to create environments that support listening and help their child integrate listening and spoken language into all aspects of their life and daily activities. The goal is to develop spoken language skills that enable the child's inclusion in mainstream schools. A detailed description of the therapy is available, for example, in the handbooks entitled *Auditory-verbal therapy and practice* (Estabrooks, 2006) and *Auditory-verbal practice: Family-centered early intervention* (Rhoades & Duncan, 2017).

AVT should be administered by qualified educators of the deaf or speech and language therapists with certified auditory-verbal training (Kendrick & Smith, 2017). Certified AVT training is not available in Finland, and the method is not used as a separate programme for hearing-impaired children. Instead, Finnish speech and language therapists use techniques that have been adapted from the method.

The basic principle of AVT is to promote early diagnosis of hearing impairment and immediate audiological rehabilitation for children (Estabrooks, 2006). AVT sessions are diagnostic in the sense that the child's auditory functioning and communication are continuously evaluated and

new targets are introduced on the basis of these observations. Families participating in the AVT programme have regular sessions with their AVT therapist. During these sessions, the therapist demonstrates new techniques and strategies, which the parents and the child practise, and afterwards the interaction is discussed. Based on these practice sessions, the therapist outlines specific goals to work towards at home and suggests ways through which they can be achieved. Those specific goals could be, for example: localising sound sources, recognising environmental sounds, encouraging the child to vocalise and babble, recognising individual words and training auditory memory (Edwards & Estabrooks, 2006).

In AVT, the audibility of spoken language is enhanced by using acoustic highlighting techniques, for example emphasising prosodic features of speech (Estabrooks, 2006). The specific techniques and strategies that are described in AVT include the following: using a natural speaking model, using a singsong voice and singing, directing the child to listen closely, encouraging one person at a time to speak, pausing, repeating, waiting, modelling the correct use of linguistic patterns, expanding language, asking “what did you hear?”. In AVT training sessions, the children are always encouraged to listen before any visual cues are given. Unlike most other approaches, visual information such as signs, gestures and speech reading are minimised to encourage listening.

The efficacy of auditory-verbal therapy has been proved in a few studies (for a review, see Kaipa & Danser, 2016). The findings suggest that there is moderate evidence for effects of AVT on development of receptive and expressive language skills (e.g. Hogan et al., 2010). Given that AVT is one of the primary treatment approaches for developing the spoken language skills of hearing-impaired children, well-controlled prospective longitudinal cohort studies are needed to investigate its effects (Kaipa & Danser, 2016).

To sum up, Finnish speech and language therapists use strategies and techniques that are adopted from different theoretical approaches (for a review, see e.g. Lynas, 1994). In practice, these various techniques are used according to each child's individual needs. This same practice has been shown to be used by therapists elsewhere; for instance, a survey conducted in the UK indicates that most speech and language therapists use an eclectic approach made up of a combination of various methods (Rees et al., 2015). The study found similarities across approaches with the same strategies and methods being used in more than one approach. The researchers therefore suggested that in evaluating the effectiveness of rehabilitation, there may be more value in determining the effects of individual strategies and methods (the components of the approaches) than in comparing the programmes themselves.

To conclude, CI-children's speech and language development has been widely examined with standardised tests, and speech and language therapists have gained clinical experience over the years in the rehabilitation of CI-children. However, studies that examine speech and language therapy in detail as well as therapists' professional practices in supporting children's language learning in actual interaction are rare. A useful method for describing professional practices and features of therapy interaction is conversation analysis. The basic principles of that method will be introduced in the next section.

1.3 CONVERSATION ANALYSIS AS A METHOD FOR STUDYING INTERACTION

The method used in this study is conversation analysis (CA). It is a qualitative, data-driven method for investigating the structure and process of social interaction between people (Heritage, 1984). The roots of conversation analysis lie in sociological ethnomethodology, which was developed by Harold Garfinkel to investigate the processes and practical reasoning on which the social order of everyday life is based (e.g. Heritage, 1984; Heritage & Clayman, 2010). The methodology of conversation analysis itself was developed by the American sociologist Harvey Sacks together with his colleagues Emanuel Schegloff and Gail Jefferson in the late 1960s to study conversation and social interaction (e.g. Sacks, 1992 [1964-1972]; Sacks et al., 1974). In this section, I will provide an overview of the basic theoretical and methodological principles of CA. More comprehensive introductions to CA are available in several sources (e.g. Hutchby & Wooffitt, 1998; Sidnell, 2010; Sidnell & Stivers, 2013; Tainio, 1997; ten Have, 2007).

1.3.1 BASIC PRINCIPLES OF CONVERSATION ANALYSIS

The key idea of CA is to study the structural organisation of naturally occurring interactions (Sacks et al., 1974; Schegloff, 2007). CA focuses on analysing the sequential construction of the interlocutors' speaking turns: how a conversational turn treats a previous turn and what consequent effect it has on the turns to come. Talk is examined with respect to what each turn of talk is doing at a given moment of social interaction and how turns of talk are connected to each other. Turns are organised into sequences, with the most basic sequence of conversation being the adjacency pair (Schegloff, 2007: 13-14). This consists of two actions in which the first action, the first pair part, performed by one participant, invites a particular type of second action, the second pair part, to be performed by another participant. An example of an adjacency pair is the question-answer sequence, which is frequently used in institutional conversations (Heritage & Clayman, 2010:

22). The other part of an adjacency pair can consist of nonverbal actions such as gesture or laughter. An adjacency pair often serves as a core around which larger sequences are built (Schegloff, 2007: 26). For example, a pre sequence can precede an adjacency pair in conversation, or an insert expansion can be inserted between the first and second pair parts of an adjacency pair (Schegloff, 2007: 28-57, 97-114; Sidnell, 2010: 95-109). Through the turns, sequences can also be constructed into longer story-telling sequences (Stivers, 2013).

Through the details of their turns, participants achieve the necessary intersubjectivity, an understanding of each other's actions in conversation (Heritage, 1984: 254-260). The intersubjective state includes the concept of recipient design (Sacks et al., 1974), which means the way in which talk is designed for particular recipients in particular contexts. This arises at different levels of talk, including word selection, topic selection and ordering of sequences. It can also operate in terms of how speakers use their nonverbal actions, such as gaze, gestures and body movements, as indicators of their orientation towards the recipient (Goodwin, 1981). In this study, the role of nonverbal actions in interaction is significant, because CI-children's spoken language skills are still emerging, and other elements of communication are needed to achieve mutual understanding. If mutual understanding is threatened by problems in speaking, hearing or understanding, it can be restored through the operations of repair (Schegloff, 1992; Schegloff et al., 1977). In this study, however, when describing the therapist's institutional practices in promoting spoken language learning, the term "correction" is used instead of "repair". Correction refers to instances in which the therapist evaluates the child's response as problematic and makes a correction in pursuit of a specific response.

Conversation analysis deals with empirical data from naturally occurring interaction (e.g. Heritage & Clayman, 2010: 13). In analysing data, CA research describes the organisation of social actions achieved in conversation by participants using a range of verbal, vocal and embodied resources (Mondada, 2013). In the analysis, even the finest details of interaction are considered important in how the participants themselves interpret and orient to each other's actions. Audio and video recordings provide the data that enable a detailed analysis of interaction as well as repeated observations of the data (Mondada, 2013; Sidnell, 2010: 20). The data are carefully transcribed in order for the researcher to identify and analyse interactional practices (Hepburn & Bolden, 2013). The analytical procedure usually begins with unmotivated listening, and the research questions are not strictly decided in advance (Hutchby & Wooffitt, 1998: 94). When the researcher identifies interesting phenomena from the data, all related cases are collected from the data (Hutchby & Wooffitt, 1998: 93-98; Sidnell, 2010: 31-34). Each case is then analysed to determine the nature of the phenomenon in

question. In the last stage of the analytical procedure, the findings are discussed in the context of their wider implications, for example that of professional practices (e.g. Peräkylä & Vehviläinen, 2003).

The original purpose of conversation analysis was to examine the structure of mundane conversation. This is the primary form of interaction to which children are initially exposed in a social world (Heritage, 1984: 239). However, conversation analysis is also a useful method for studying institutional interaction, which will be more closely discussed in the following section.

1.3.2 INSTITUTIONAL INTERACTION

Institutional interaction involves participants with specific institutional roles and goal orientations (Arminen, 2005: 31-35; Drew & Heritage, 1992; Ruusuvuori et al., 2001). Examples of institutional interaction are doctor's appointments (e.g. Maynard, 2003; Ruusuvuori, 2000), classroom interaction (e.g. McHoul, 1990; Nassaji & Wells, 2000; Kääntä, 2010) and the speech and language therapy interaction examined in this thesis (e.g. Gardner, 1998, 2005; Klippi, 1996; Laakso, 1997; Sellman, 2008; Tykkyläinen, 2005). Conversation analysis provides a method for investigating how social institutions are "talked into being" through the participants' talk, and how talk is specialised to accomplish the institutional tasks at hand (Heritage, 1984: 290).

Each institution has specific goals and practices that form its unique fingerprint (Heritage, 1997; Heritage & Clayman, 2010: 18). Peräkylä and Vehviläinen (2003) describe how each profession has regularities in social conduct, which they call the "professional stock of interactional knowledge". These are professional theories and ideologies concerning interaction between professionals and their clients. The relationship between those theories and actual interactional practices are an important orientation in the research on institutional interaction. Conversation analytical findings can both complement and critically examine this professional knowledge. In other words, CA studies can be used for reflecting clinical work, evaluating professional practices and examining details of interaction that have not previously been discovered (see also Arminen, 2005: 81-83; Raevaara et al., 2001).

In an institutional setting, the resources of mundane talk are modified for institutional purposes (Drew & Heritage, 1992). According to Drew and Heritage, the basic elements of institutional talk are as follows:

1. In institutional interaction the participants are involved in specific goal-oriented tasks and identities associated with the institution in question.

2. Institutional interaction involves special and particular constraints on what the participants will treat as allowable contributions to the business at hand (e.g. how the conversational turns are distributed).

3. Institutional talk is associated with inferential frameworks and procedures that are particular to specific institutional contexts (e.g. professionals maintain cautiousness or a position of neutrality with respect to their co-participants).

Institutionality arises in conversation at several different levels. Drew and Heritage (1992) have introduced dimensions of interaction in which institutionality can be detected. These are lexical choice, turn design, sequence organisation, overall structural organisation and social epistemology and social relations, including interactional asymmetries between participants. For example, the sequential structure of interaction is constrained in many institutional settings, such as classroom interaction (Mehan, 1979; Nassaji & Wells, 2000). Such interactions include frequent use of question-answer sequences and a special three-part structure of interaction (Drew & Heritage, 1992; Heritage & Clayman, 2010). Some types of institutional interaction, for example medical consultations, also have an established overall structural organisation involving different phases or activities. Furthermore, asymmetries of interaction are typical of many institutional settings, and may be caused by asymmetries of institutional know-how and knowledge, because professionals have knowledge that laypeople do not (Heritage, 1997). Therefore, in institutional interaction, it is often the professional who controls the agenda of talk.

Speech and language therapy, which is studied in this thesis, is also institutional in nature. Interaction in the speech and language therapy of CI-children is characterised as being asymmetric, from both an institutional and a linguistic point of view. In the next section, I will discuss the asymmetric nature of interaction in speech and language therapy.

1.4 ASYMMETRIC NATURE OF INTERACTION IN SPEECH AND LANGUAGE THERAPY

Speech and language therapy is medical rehabilitation that aims at improving the clients' communication, speech and language skills (e.g. ASHA, 2016; Finnish Association of Speech Therapists, 2017). The therapy process usually starts with evaluations of the client's skills and needs, and is followed by rehabilitation based on an individual treatment plan. Accordingly, the speech and language therapist has an institutional task, which in this thesis is to help CI-children and their families develop children's spoken language skills. The therapist's orientation to institutional tasks and practices can be discerned, for example, in her goal-oriented work and in the structure of the

interaction. In this section, I will first discuss the institutional asymmetry of speech and language therapy interaction and continue by scrutinising the linguistic asymmetry of interaction.

1.4.1 INSTITUTIONAL ASYMMETRY

As described in the previous section, asymmetries of interaction are typical of many institutional settings (Heritage, 1997). Because of the institutional roles and tasks of both professionals and clients, asymmetries of participation are characteristic of such interactions. Institutional talk and interaction is orientated towards specific institutional goals, and therefore the professional usually controls the agenda of talk (Drew & Heritage, 1992; Heritage, 1997). In speech and language therapy, therapists are directed towards previously determined, institutional tasks and use techniques aimed at therapeutic goals (Gardner, 1998, 2005; Laakso, 2003, 2015). In therapy, the goal for the client can be learning new words and linguistic concepts, for example, or developing more intelligible speech. The goal-oriented work is seen in the way in which therapists set tasks and give specific feedback on clients' performance (Gardner, 1998, 2005; Sellman, 2008; Tykkyläinen, 2005).

The structure of interaction is often specific in institutional settings. Speech and language therapy sessions have a certain overall structure, which has been described in the literature (e.g. Panagos et al., 1986a; Sellman, 2009; Tykkyläinen, 2005). The therapy sessions usually consist of an opening phase, a work phase and a closing phase (Panagos et al., 1986a). The opening and closing phases are short and include greetings/goodbyes and brief comments about the lesson. The middle phase, called the work phase, is the core of the therapy and includes different learning tasks (see also Tykkyläinen, 2005). Letts (1985) has described the different phases of a therapy session in the form of communicative acts. The therapist uses organising acts to set up and maintain an activity, whereas ongoing acts form the fabric of the activity itself, and include such things as directives, questions and information-seeking turns.

The sequential structure of speech and language therapy tasks is also specific; it usually consists of three parts. This three-part structure of interaction is typical of many institutions and serves their particular purposes. It is characteristic both of speech and language therapy (e.g. Ferguson, 1998; Gardner, 2005; Panagos et al., 1986a, 1986b; Prutting et al., 1978; Sellman, 2008; Tykkyläinen, 2005) and of classroom interaction (e.g. Mehan, 1979; Nassaji & Wells, 2000; Sinclair & Coulthardt, 1975). In this structure, the teacher/therapist starts a sequence by asking a question or

giving a direction. This is followed by the pupil's/client's response, after which the teacher/therapist evaluates the response.

The next extract demonstrates the three-part structure of interaction. The data extract is from a speech and language therapy session and describes the therapist setting a task (from Tykkyläinen 2005: 65).

Extract 1.

SLT=speech and language therapist, C=child

- 01 SLT: .h no ota sä sitten [se kuv_a, (.) missä on
.h well you take then [that picture, where it was
<kai::kista tuulisinta.>
<mo::st windy.>
- 02 C: TAKES THE PICTURE ((4.4.))
- 03 SLT: ↑joo. (.) si_e:llä oli kaikista tuulisinta.
↑yeah. (.) the:re was most windy.

At the beginning of the sequence (line 01) the therapist sets the task and asks the child to choose the correct picture from the table (**.h well you take then that picture where it was most windy**). The therapist's turn is followed by a nonverbal response from the child, who in line 02 picks up the correct picture. Then, in the third turn (line 03), the therapist evaluates the child's response, which in this sequence is a confirmation (**yeah there was most windy**).

The three-part sequence can be realised in a simple form consisting of three turns, as shown in the previous example. Moreover, it can expand into a longer and more complex sequence, if the therapist has to do more work to elicit a response from the client (Panagos et al., 1986a; Tykkyläinen, 2005). In a complex sequence, the client either produces an incorrect response or the response is totally absent, and the therapist must either repeat the question or reformulate the question/direction. Typically, the third turn of this structure demonstrates the professional practices that are used to support learning. The teacher's/therapist's evaluation serves institutional purposes, namely teaching and rehabilitation. A critical evaluation is essential for changing the client's behaviour, as it makes learning possible (Sellman, 2008). Professionals evaluate the client's response with respect to the client's skills and knowledge: in other words, they change the task to a simpler form when necessary, and help the client perform the given task (Sellman, 2008; Tykkyläinen, 2005). In children's speech and language therapy, therapists formulate their evaluations and receipt turns in a way that facilitates children's language learning.

The three-part structure of interaction creates an asymmetric distribution: the teacher or therapist has a right and an obligation to ask questions, and the pupil/client is expected to answer (Drew & Heritage, 1992; Heritage, 1997). Studies have shown that speech and language therapists make the requests and clients produce the responses (Prutting et al., 1978; Silvast, 1991). For example, in conversations with aphasic speakers, speech and language therapists have a regulatory role in interaction (Silvast, 1991), and in children's speech and language therapy sessions, therapists have more speaking turns than children (Prutting et al., 1978; also Hulterstam & Nettelbladt, 2002; Nettelbladt & Hansson, 1993).

However, the therapist's regulatory role in interaction can also be interpreted as a scaffolding technique to support interaction. The therapist regulates the flow of conversation by using techniques which keep the communication partner talking; for example, checking understanding, requesting clarification, suggesting and interpreting (Ferguson, 1998; Laakso, 2015; Silvast, 1991). Children's speech and language therapists also use scaffolding and clarifying techniques to elicit responses from the children and expand their language (Nettelbladt & Hansson, 1993). More recent research on speech and language therapy interaction has challenged the view of clients as passive respondees, and instead shows clients as active participants in their therapy (Gardner, 1998; Sellman, 2008; Tykkyläinen, 2005). According to these studies, therapists support clients in taking an active role in interaction and in this way the therapist tries to achieve the goals of the therapy together with the client.

In addition to institutional asymmetry, speech and language therapy interaction of CI-children is also characterised as being linguistically asymmetric. This will be discussed in the following section.

1.4.2 LINGUISTIC ASYMMETRY

Linguistic asymmetry refers to participants' unequal linguistic skills. Linguistic asymmetry is present, for example, in mundane conversations between children and adults and between native and non-native speakers, as well as in conversations where one participant has limitations in linguistic skills owing to communication or language problems. Linguistically asymmetric conversations have been studied in people with aphasia (e.g. Goodwin, 2003; Klippi, 2015; Laakso, 2015; Laakso & Klippi, 1999; Wilkinson & Wielaert, 2012), people with hearing impairments (e.g. Pajo, 2013) and people with dysarthria (e.g. Bloch, 2005; Bloch & Wilkinson, 2011). Certain features have been identified as being characteristic of conversations between linguistically unequal participants. These include the

use of multimodal resources and contextual knowledge in conversation (see e.g. Haakana et al., 2009). For example, in conversation with aphasic speakers, multimodal resources play a special role, and gestures, gaze, writing and drawing are used to achieve mutual understanding (e.g. Goodwin, 1995, 2000; Klippi, 1996). In a similar way, in conversations with hearing-impaired adults, the use of multimodal resources and collaboration between participants has been found to be essential for more successful conversation (Pajo, 2013). For example, in repair sequences related to hearing problems, the collaboration between participants is intensified, and facial expressions and body movements play an important role.

In linguistically asymmetric conversations, the participants have to design their turns according to the recipients' linguistic skills. Recipient design (Sacks et al., 1974) describes the way in which talk is designed for particular recipients, and is therefore important in conversations with linguistically challenged speakers. This can be heard in conversations between typically developing children and their parents in the use of child-directed speech. When using child-directed speech, adults formulate their talk in a simpler and clearer form, which is easier for children to understand (on child-directed speech, see e.g. Cruttenden, 1994; Ochs et al., 2005; Paavola, 2006; Snow, 1994). Adults, as linguistically competent speakers, support children's language learning with various interactional practices in conversation (for a collection of conversation analytic studies on interactions with children, see Gardner & Forrester, 2010). CA studies suggest that the way in which adult speakers shape their receipt turns and give feedback provides continuous language learning opportunities for children (Corrin et al., 2001; Tarplee, 1996, 2010). Through the adult receipt turns, children have the opportunity to get feedback on their own utterances, and, based on that feedback, can reformulate their speech closer to targeted expressions (Tarplee, 1996, 2010). Parent-initiated corrections, whereby the parent revises a child's utterance, can also enhance children's language learning in conversations between children and their parents (Laakso, 2010; Laakso & Soininen, 2010). These offer children an adult language model and help them formulate more exact meanings and produce longer utterances.

In cases where the child's language development does not follow a typical pattern, for example, because of hearing impairment or language delay, adults have to formulate their language even more systematically. Speech and language therapists' turns in conversations with such children are therefore stressed and emphasised in a way not heard in the speech of laypeople (Gardner, 1998, 2005; Tykkyläinen, 2005, 2009). The systematic use of prosodic cues, linguistic formulations and nonverbal resources such as gestures and signs makes therapists' speech specifically recipient-oriented (Gardner, 2005; Tykkyläinen, 2005). Body behaviour and the use of therapy material also play a prominent role in modifying the therapists' turns (see

also Panagos et al., 1986b). Tykkyläinen (2005) has shown that with these means, therapists can, for example, direct children's attention and emphasise the critical substance of turns to make the talk more easily accessible.

Teachers also use linguistic formulations in the classroom to provide language learning opportunities for children with hearing impairment or language disorders (Mahon, 2009; Mourtou, 2014; Radford et al., 2012; Ridley et al., 2002). Teachers can expand children's expressions and model correct linguistic structures, for example by adding missing grammatical and semantic features and by substituting lexical items. Mahon (2009) has analysed how the teacher's turns before and after the child's utterance provide support and language learning opportunities for hearing-impaired children who construct multielement word-gesture utterances. The teachers adjust their support in response to the child's turns, and, for example, withdraw gestural support as the child begins to make progress.

All in all, it is characteristic of linguistically asymmetric interactions to be more collaborative than interactions between equally competent speakers (Haakana et al., 2009). The more competent participant has an important role in supporting the participation of the linguistically challenged participant. For example, in speech and language therapy, the therapists, as the more competent speakers, acknowledge the participation and effort of the linguistically challenged speakers, and in this way support them in taking an active role in the interaction (Gardner, 1998; Tykkyläinen, 2005). In this dissertation, the spoken language skills of the participating CI-children were only emerging, and the therapist supported that development in the speech and language therapy. The thesis analyses the practices that the therapist used to support the children's participation and learning in interaction.

1.4.3 CONVERSATION ANALYSIS METHODOLOGY IN STUDIES OF SPEECH AND LANGUAGE THERAPY INTERACTION

In the previous sections, I have introduced the conversation analysis methodology and examined the asymmetric nature of interaction in speech and language therapy. I will conclude by discussing the benefits of using CA methodology for studying speech and language therapy interaction.

The aim of conversation analytic studies in the field of speech and language therapy is to describe interactional features that are typical in this field and to examine the therapist's professional practices with clients. CA is a useful tool for analysing disordered talk and the effects it has on conversation, for example word searching (e.g. Laakso, 2015) and long and complex repair sequences (e.g. Pajo, 2013; Wilkinson et al., 2011). Likewise, with CA methodology it is possible to examine the competencies of

challenged speakers, which usually remain unseen in studies where disordered talk is analysed without taking its context into consideration. CA studies thus offer opportunities to determine how to overcome conversational challenges and how to take advantage of the competencies of challenged speakers. Consequently, findings from CA studies can be exploited in clinical work and used to develop therapy programmes (e.g. Gardner, 2006; Samuelsson & Plejert, 2015; Wilkinson, 2010; Wilkinson et al., 2011). For example, Wilkinson et al. (2011) have introduced an interaction-focused intervention for people with aphasia and their communication partners. The goal of this intervention is to guide aphasic speakers and their communication partners to adapt strategies that improve their conversation and help them cope with linguistic problems related to aphasia. Samuelsson and Plejert (2015) for their part have studied the use of CA in interventions with children with language impairment. In their study, the participants - language-impaired children with their parents and speech and language therapists - watched and discussed video recordings of intervention and everyday settings. The study showed that this method raised the participants' awareness of their own interactional behaviours and helped them discover strategies that are effective in supporting the communication of language-impaired children.

1.5 THE AIM OF THE STUDY

This study examines speech and language therapy interaction in the therapy of CI-children. Earlier research has mainly focused on examining CI-children's linguistics skills, but studies analysing speech therapy interaction and language learning in interaction have attracted less attention. In particular, detailed knowledge is lacking about the content of speech and language therapy and therapists' professional practices. Recently, CA has been applied, for example, to studies that examine and aim to improve the interactions of persons with aphasia (e.g. Wilkinson, 2010; Wilkinson & Wielaert, 2012), but CA research focusing on speech and language therapy interaction in children is still rare (however, see Gardner, 1998, 2005; Tykkyläinen, 2005, 2009). Therefore, the general aim of this study is to increase the knowledge of speech and language therapy interaction and therapists' professional practices in supporting CI-children's language learning. Through the method of conversation analysis, I will examine interactions between CI-children and their speech and language therapist in task and play sessions in both dyadic and multiparty interactions. The three original publications that comprise this thesis will present examples from speech and language therapy sessions and analyse actual interactional practices with which one therapist carries out the task of promoting children's language learning. The specific research questions for each individual study are as follows:

Study I: This study examines interaction in play sessions at the beginning of CI use. The research questions for Study I are:

1. How does the speech and language therapist seek the CI-children's attention at the beginning of the play sequences?
2. How does the speech and language therapist enhance the CI-children's listening and imitation skills?

Study II: This study examines multiparty interaction in the speech and language therapy for CI-children and their parents. The research questions are:

1. What kinds of sequential structure and turn allocation does the multiparty therapy interaction have?
2. What kinds of practices does the speech and language therapist use to involve the children's parents in the therapy?

Study III: This study examines interactions in lexical task sequences in speech and language therapy. The research questions are:

1. How does the therapist promote the CI-children's lexical learning in task interaction?
2. What kinds of practices does the therapist use to expand the children's vocabulary and support the acquisition of the correct phonological forms of the words?

2 METHODS

In this chapter, I will introduce the study participants, present the research data and discuss the research process.

2.1 PARTICIPANTS

The participants in this study were seven children with cochlear implants together with their speech and language therapist. All the participants were Finnish-speaking and the therapy sessions were in Finnish. The therapist was specialised in the rehabilitation of hearing-impaired children, and had over 30 years' experience. She had received education in the rehabilitation of hearing-impaired children both in her home country and abroad. She was also a pioneer in the rehabilitation of CI-children in Finland.

In Finland, five university hospitals (Helsinki, Turku, Tampere, Oulu, Kuopio) are responsible for the operation, care and co-ordination of the rehabilitation of CI-children. Cochlear implantation with subsequent rehabilitation services, including speech and language therapy, is financed by the Social Insurance Institution of Finland (acronym KELA) (Lonka et al., 2011). Speech and language therapy services are often put into practice by private speech and language therapists, a practice that also describes the therapist in this study.

Originally, there were eight CI-children in the study. One was excluded because she was postlingually deafened. The seven remaining children had profound congenital hearing impairment (see Table 1). All were fitted with conventional hearing aids before cochlear implantation. The children's age at cochlear implant activation varied from 1 year, 8 months to 3 years, 10 months. All of the children regularly used unilateral devices from MED-EL or Cochlear, and none of them regularly wore a conventional hearing aid in the non-implanted ear. The pure tone thresholds (500-4,000 Hz) using CI were on average 20-30 dB HL. The children were among the first congenitally deaf children in Finland to receive cochlear implants. At the time, systematic data about their development were not collected with standardised tests as is done today (Hyvärinen et al., 2011). Information about the children's linguistic development was therefore limited. At the time of the data collection, no diagnoses other than profound deafness were reported for the children. Background information for the children is presented in Table 1. The children's real names are not used. The numbers after the children's name indicate the studies in which they participated.

Table 1: Children's background information

Name (not the child's real name)	Type of hearing impairment	Age at diagnosis	Age at cochlear implant activation	Communication mode (at the beginning of the study)
Emmi (II*)	congenital	4 mos	2 yrs 2 mos	speech and cued speech
Elisa (I, III)	congenital	4 mos	2 yrs 2 mos	speech and keyword signs
Lilja (II)	congenital	1 yr 11 mos	3 yrs 4 mos	speech and keyword signs
Milja (I)	congenital	1 yr 5 mos	2 yrs 8 mos	sign-supported Finnish
Milla (II)	congenital	3 mos	1 yr 8 mos	speech and keyword signs
Minttu (III)	congenital	3 mos	3 yrs 10 mos	speech and sign language
Sofia (I, III)	congenital	11 mos	2 yrs 9 mos	sign-supported Finnish and Swedish

*the number of the studies in which the child participated

During the first recordings of the data, some of the children were in the very early stages of their spoken language development. Yet, for all of them, the goal of speech and language therapy was to develop intelligible spoken language. In Finland, families with hearing-impaired children have been offered teaching in the use of signs (keyword signs, sign-supported Finnish or sign language according to the child's needs) taught by a sign language teacher. Most of the families in this study had had sign teaching and used sign-supported Finnish or speech and keyword signs as their main communication mode before the child's cochlear implant. One of the participating families used sign language as their main communication mode before cochlear implantation, and one of the families used cued speech, which they had learned while living abroad.

For most of the children in the study, speech and language therapy was started before cochlear implantation. The children received their implants at a rather advanced age, and therefore needed support with their communication development before the implantation. Usually the focus of the therapy at that stage was to guide the parents in supporting their child's communication development with gestures and signs. Regular speech and language therapy usually began at the time the child was fitted with a CI. All of the children attended these therapy sessions twice a week, which took place at the therapist's office or the child's day care centre. The children's parents also participated in the therapy, some occasionally and some more

regularly. Detailed information about the frequency of the parents' participation was not available.

After cochlear implantation, the general aim of speech and language therapy for all participating children was the same: to support the development of spoken language skills. At the beginning of CI use, the specific aims for the therapy were to enhance listening skills, for example, identifying, discriminating and understanding environmental and speech sounds. With regard to speech production, the therapeutic aims at the beginning of CI use were to encourage vocalisation and babbling and enhance imitation of onomatopoeic utterances and words. The early stages of therapy also aimed at supporting the children's overall communication skills and language development with the help of gestures and signs. At the stage when the children had made progress in their spoken language development, the therapeutic aims were to expand the children's vocabulary and strengthen their understanding of lexical-semantic categories, support the understanding and use of grammar and morphology, practise conversation and narrative skills and support the development of auditory discrimination and auditory memory. Training in speech reading was also part of the therapy. In addition to these linguistic aims, oral and verbal motor skills were also practised according to each child's individual needs.

2.2 RESEARCH DATA

The research data consist of video recordings from speech and language therapy sessions, collected during the years 1997-2005. The data were collected by the speech and language therapist mentioned earlier for purposes of her clinical practice and were not originally planned for research use. However, the therapist was interested in sharing the recordings for study purposes, and permission to use the data was given by the therapist and the participating families with the approval of the Ethical Committee of the Hospital District of Helsinki and Uusimaa (206/E7/2006). The participants were aware that they had a right to withdraw their participation at any stage during the study process. To protect the children's privacy, their real names have not been used in the original publications or in this thesis.

As the data were not originally designed to be used in a research project, it was not possible for the researcher to give input with regard to the points in time at which the recordings were made, or on their length, quality and content. The data included recordings made at various times in the course of the children's therapy, and the content and length of the recordings often differed. Some of the children had been video-recorded mainly at the beginning of their CI use, while others were recorded after using their CI for several years. The data totalled approximately 36 hours of material (see

Table 2). The total number of recordings was 88. The children's therapy sessions usually lasted 45 minutes, but usually only part of the session was recorded, for example one task session or a moment of unstructured play. Overall, the recordings contained therapy activities as follows: unstructured play, structured play, book reading, picture-naming tasks, narrative tasks, linguistic tasks with task sheets (e.g. vocabulary, morphology, grammar), articulation tasks, listening tasks, board games, and arts and crafts. Some of the activities, for example picture-naming tasks and listening tasks were therapist-led, whereas others, such as unstructured play and book reading were child-led. However, even if the activity itself was therapist-led and took place within the frames established by the therapist, the therapist was still sensitive to the child's focus of interest during those activities. In this way the child's interest and motivation were taken into account. In sessions in which the child's parents were present, the parents participated in the activities described above.

Table 2: Children's names (pseudonyms), age of cochlear implant activation and information on the video recordings.

Name (not the child's real name)	Age at cochlear implant activation (in years and months)	Number of recordings	Total duration of recordings (in hours)	Child's hearing age at the time of the recordings (in years and months)
Elisa	2;2	19	7	0;9, 0;10, 1;1, 1;2, 1;5, 1;8, 1;10, 2;1, 2;3, 2;5, 2;7, 2;10, 3;2, 3;6, 3;8, 3;10, 4;6, 5;0, 5;6
Emmi	2;2	18	8	0;1, 0;3, 0;5, 0;6, 0;8, 0;10, 0;11, 1;1, 1;2, 1;3, 1;4, 1;6, 1;9, 2;0, 2;3, 2;5, 2;9, 2;10
Lilja	3;4	9	6	0;7, 0;11, 1;0, 1;2, 1;4, 1;6, 1;8, 1;9, 1;10
Milja	2;8	13	4	0;4, 0;8, 1;3, 1;5, 1;7, 1;10, 2;1, 2;4, 2;6, 2;10, 3;3, 3;7, 3;11
Milla	1;8	13	5	0;6, 0;8, 0;9, 0;11, 1;0, 1;1, 1;2, 1;4, 1;7, 1;11, 2;1, 2;2, 2;3
Minttu	3;10	6	3	2;1, 2;2, 2;5, 2;9, 3;1, 3;2
Sofia	2;9	10	3	0;8, 0;9, 1;1, 1;4, 1;6, 1;10, 2;7, 2;11, 3;0, 3;3
Total		88	36	

The video data were longitudinal and used to examine the speech and language therapist's professional practices at different stages of the therapy. The study focused on therapy interaction and analysed interactional practices that were systematically repeated in the therapist's turns. However, this study did not concentrate on analysing the children's skills and did not include longitudinal analyses of their development.

2.3 THE RESEARCH PROCESS

Conversation analysis methodology was chosen for this study because it enables a detailed examination of therapy interaction and a qualitative analysis of a therapist's professional practices. The observation of the data began with unmotivated looking (Hutchby & Wooffitt, 1998: 94). This was intended to give an overall picture of the material and enable preliminary observations of interesting phenomena. Because it was not possible to decide on the content of the recordings, as they pre-existed the initiation of this research, the first task was to find recordings in which the same speech and language therapy activity was repeated with several children. The next stage was to identify the phenomena to be examined and make collections of instances in which they occur (Peräkylä, 2004). Those were the therapist's practices in supporting the children's language learning that were systematically repeated during the chosen task and play sessions. At this stage of the research process, the data were discussed and analysed in data sessions with other CA researchers to generate collaborative observations (Sidnell, 2010: 29). The decisions about the collections of sequences were made by consensus with the thesis supervisors. After that, the collected sequences were analysed in order to pinpoint the structure of the sequences and the variety of phenomena. Each study presents extracts that clearly represent the chosen therapeutic practices. The focus was on the therapist's practices and the subsequent effect of these on the turns to come. However, as the CA methodology is intended to describe what happens in the interaction, the study did not evaluate the outcome of the therapy (Peräkylä, 2004), but rather described how certain rehabilitation principles and theories are seen in actual interaction.

For the first study (Study I), I selected recordings from doll house play sessions, because these were systematically repeated in the recordings of three children and were a typical activity at the beginning of CI use. The aim of the activity was to practise listening skills systematically and encourage the children to imitate vocalisations and speech. In the selected recordings, the children's hearing age varied from 8 to 17 months (the chronological age varied from 3 years to 4 years, 1 month). The doll house play included repetitive sequences in which the therapist introduced the children new toys. The sequences were collected from five different therapy sessions. These

formed a collection of 30 sequences, which constituted the data analysed in Study I. The total duration of the analysed sequences was 55 minutes. The study presents data extracts that introduce different techniques used by the therapist to encourage the children to listen and imitate.

For the second study (Study II), I chose speech and language therapy sessions in which the children's parents participated, parent participation being an important part of the children's therapy. When parents participate in therapy sessions regularly, as in pure AVT, they learn to support the child's language learning and increase the amount of the child's training with practice at home. Recordings in which parents frequently participated in therapy sessions were found in the data for three children. The children's hearing age varied from 1 year, 1 month to 1 year, 10 months (the chronological age varied from 2 years, 9 months to 5 years, 1 month) in the selected therapy sessions. From the children's therapy sessions, I collected task sequences in which the therapist and parent performed therapy tasks with the child. These tasks were intended to enhance the children's listening, speech production and naming skills. A total of 47 sequences was found and analysed in Study II. The total duration of the sequences was 62 minutes. The data extracts in Study II present the therapist's techniques for involving the parents and introduce different forms of collaboration among the participants.

For Study III, I selected lexical task sequences, as working on the lexical-semantic aspects of words is an essential part of the speech and language therapy for CI-children. These sequences were systematically repeated at later stages of the therapy. The collection includes sequences from three children ranging in hearing age from 2 years, 1 month to 3 years, 3 months (the chronological age varied from 4 years, 3 months to 7 years). In lexical task sequences, the participants played board games, worked with vocabulary worksheets and made crafts, such as paper dolls. A total of 81 lexical task sequences was found and analysed in Study III. The total duration of the analysed sequences was 115 minutes. The study presents data extracts which introduce different techniques used by the therapist to promote the children's lexical learning.

Table 3 presents the total number and duration of analysed sequences in Studies I-III.

Table 3: The total number and duration of analysed sequences

Number of the study	Duration of the analysed sequences (minutes)	Number of analysed sequences
Study I	55	30
Study II	62	47
Study III	115	81
Total	232	158

The sequences were transcribed in detail using a CA notation (Atkinson & Heritage, 1984: xi–xvi). The keys to the transcription are presented at the beginning of this thesis. The transcription includes speech and nonverbal actions, such as signs, gestures and body movements. In some transcriptions, the participants' gaze is also indicated. The level of detail in transcriptions was decided according to the phenomena under study. In Study I the nonverbal actions and gaze of the participants were inspected and marked carefully, as those were significant in communication at that stage of the children's development. In contrast, in Studies II and III, the nonverbal actions were transcribed only when they were significant for the analysed phenomena. In the transcriptions, the main line with a speaker identification indicates the spoken utterance of the speaker. The line above shows the speaker's formal signs in italicized capital letters, and the line below shows the speaker's gestures in roman capital letters. The topmost line shows the speaker's gaze, and the bottommost line shows the recipient's gaze. The recipient's nonverbal actions were often transcribed as separate turns after the speaker identification. In the extracts, the English translation is written below the main line in bold letters.

X _____ (gaze of the speaker; x indicates mutual gaze)
SIGN
 01 SLT: speech
 English translation
 GESTURE
 X _____ (gaze of the recipient; x indicates mutual gaze)

SLT=speech and language therapist

The prosodic features of speech were analysed based on the researcher's auditory perception. In addition, in ambiguous cases the transcription of speech prosody was supplemented by PRAAT software (Boersma & Weenink, 2017). To attain the highest possible accuracy in the transcription and to

ensure the validity of the analysis, the data for this thesis were discussed in several data sessions with experienced CA researchers. As in CA studies in general, the decisions concerning collections and transcriptions were collaboratively discussed to reach consensus regarding their meaning.

3 RESULTS

In this chapter, I will summarise the results of the three original publications.

3.1 ENHANCING LISTENING AND IMITATION SKILLS IN CHILDREN WITH COCHLEAR IMPLANTS: THE USE OF MULTIMODAL RESOURCES IN SPEECH AND LANGUAGE THERAPY (STUDY I)

This study explored speech and language therapy sessions, the aim of which was to enhance children's listening and vocalisation skills. The interaction was examined in doll house play sessions, and the hearing age of the three participating children varied from 8 to 17 months. Thus, the children's listening experience and spoken language development was still at a relatively early stage. The 30 sequences studied were those in which the therapist introduced new toys belonging to the doll house, such as furniture, people and animals. In introducing these objects, the therapist connected them with listening and imitation tasks. The aim of the tasks was to develop the children's listening skills and encourage them to imitate vocalisations and speech.

At the beginning of CI use, the children are not automatically oriented to their communication partner. Joint attention, however, is a prerequisite for language development, and with hearing-impaired children, special attention has to be paid to the successful establishment and maintenance of joint attention (Nowakowski et al., 2009). In play sessions with CI-children, the therapist needed to use techniques that would attract the children's attention. The doll house play sequences formed two groups: the first, *sequences of mutual orientation* (n=14), were those in which the child's attention was directed to the therapist and the shared activity at the beginning of the sequence, and the therapist started the sequence by introducing a new toy. In the other group, *attention-seeking sequences* (n=16), the child was not oriented to a shared activity, and the therapist first had to attract the child's attention and only then introduce a new toy.

In the attention-seeking sequences, the therapist used several different ways of attracting the child's attention. These included calling the child's name, using interjections, singing and clapping. The attention-seeking sequences included multimodal elements and emphasised prosodic features. After successful attention-seeking, the child usually responded with a nonverbal turn, for example by looking at the therapist, which then led to the introduction of a new toy. The introduction activity itself was often a long

sequence, in which the therapist introduced the toy by naming it and producing sounds related to it.

The two types of sequences introduced above had different sequential structures. The attention-seeking sequences formed a pre sequence for the introduction of the toy. This is shown in Extract 2, which is from a doll house play session of a CI-child, Sofia. The attention-seeking sequence appears in lines 02-03.

Extract 2.

Doll house play:

SLT=speech and language therapist

S=Sofia, hearing age 9 months (chronological age 3 years, 6 months)

01		SOFIA PLAYS WITH THE DOLL HOUSE
02	SLT:	↑Sofia
	S:	TURNS TO LOOK AT THE THERAPIST
04	SLT:	*täällon pupu * there is a bunny in here *SHOWS WHERE THE BUNNY IS HIDDEN AND LEANS TOWARDS SOFIA
	S:	EXTENDS HER HAND TOWARDS THE THERAPIST

When the sequence begins, Sofia is playing with the doll house. The therapist seeks Sofia's attention by calling her name in line 02 and using a higher than normal pitch. Sofia reacts to the therapist's turn by turning to look at her (line 03). This attention-seeking activity in lines 02-03 is an adjacency pair, composed of the therapist's prosodically emphasised turn (line 02) and Sofia's nonverbal turn (line 03). This is followed by the introduction of the toy, which begins in line 04, where the therapist leans towards Sofia, shows her where the toy is hidden (in her hand), and says, **there is a bunny in here**. Sofia responds to the therapist's turn by extending her hand towards the therapist. The adjacency pair in lines 04-05 is composed of the therapist's multimodal turn (line 04) and Sofia's gestural turn (line 05).

The introduction of the new toy was usually composed of several different elements. At the beginning of the turn, the therapist often produced sounds related to the toy (e.g. onomatopoeic sounds, such as animal or vehicle sounds) while still hiding the toy in her hands. In this way, she directed the child's attention to listening. After that, the therapist named the toy and

usually repeated the name several times during the sequence. With these turns, the therapist endeavoured to establish the meaning of the sounds and words and encourage the children to imitate them. Examples of these practices are presented in Extract 3. The therapist introduces the new toy in line 03.

Extract 3.

Doll house play:

SLT=speech and language therapist

S=Sofia, hearing age 8 months (chronological age 3 years, 5 months)

- 01 THE THERAPIST IS DIGGING IN THE TOY BAG, SOFIA IS
LOOKING AT THE DOLL HOUSE
- 02 THE THERAPIST AND SOFIA TURN TOWARDS EACH
OTHER
- 03 → SLT: >Sofia täält´ kuuluu< ↑tik tak [↑tik] *tak ↑tik [tak]
> **Sofia it says**< ↑**tick tock** [↑tick] ***tock** ↑**tick** [**tock**]
HOLDS THE WATCH TO HER EAR *NODS TO THE
RHYTHM OF SPEECH
therapist/watch alternately_____
- 04 → S: X__ X__
[əh] [əh]
(TOUCHES HER CHEEK)
- 05 SLT: [tulee ↑kello
[**here comes a** ↑**watch**
LEANS TOWARDS SOFIA
- 06 S: [LEANS TOWARDS THE THERAPIST TO TAKE THE WATCH
- 07 SLT: ke:llo? tuli
a watch? came
SHOWS THE WATCH

At the beginning of the sequence, the therapist and Sofia turn towards each other at the same time (line 02), and the therapist starts to introduce a new toy. She says, **Sofia it says tick tock tick tock tick tock**, holds the watch to her ear and nods her head to the rhythm of her speech (line 03). By saying **tick tock**, the therapist imitates the sound of the watch with an onomatopoeic expression. Onomatopoeic expressions are easy to hear and imitate because of their simple segmental structure and emphasised

suprasegmental features (e.g. Estabrooks, 2006). The therapist's turn invites imitation from Sofia, who responds with short vocalisations in line 04, overlapping with the therapist's turn.

Thereafter, the therapist names the toy (line 05) and shows it to Sofia (line 07). In introducing the toy, the therapist uses simple and short, repetitive sentences (**here comes a watch**, line 05, **a watch came**, line 07). In those turns, the key word is emphasised with prosodic features, such as a rise in pitch and a lengthening of the sounds. This emphasises the key word and makes it easily audible to Sofia. By showing the watch to Sofia while at the same time naming it (line 07), the therapist shows the word-referent relation in a concrete way.

To sum up, Study I explored therapy interaction at the early stages of CI use and examined therapeutic practices typical of CI-children's therapy. The analyses described how the therapist systematically put into practice her institutional tasks to enhance the children's listening and imitation skills. The practices characteristic of CI-children's therapy were the systematic use of multimodal elements and emphasised prosody. The therapist used multimodal turns that combined speech, gestures, signs and body movements in the same way as has been described in earlier research on speech and language therapy practices (Tykkyläinen, 2005). The therapist's turns were emphasised prosodically with variations in intonation, lengthening of sounds and words, changes in speech tempo and volume, stress and pausing (for similar practices, see also Panagos et al., 1986a; Reuvers & Hargrove, 1994). With these elements, the therapist attracted the children's attention and succeeded in encouraging them to vocalise and imitate sounds and words.

3.2 INVOLVING PARENTS IN THE SPEECH AND LANGUAGE THERAPY OF CHILDREN WITH COCHLEAR IMPLANTS (STUDY II)

An important goal of CI-children's rehabilitation is to involve parents in their child's speech and language therapy and guide them in helping the child develop intelligible spoken language. According to several studies, parent participation positively affects the results of the therapy (Moeller, 2000; Moog & Geers, 2010; Quittner et al., 2013). In addition, intervention implemented by trained parents may be as effective as clinician administered intervention (Law et al., 2003). This study examined the ways in which parents are involved in speech and language therapy sessions. The study analysed the therapist's practices in supporting parent participation in the therapy and introduced different stages of participation. The study did not concentrate on describing the progression of an individual parent, but

demonstrated forms of co-operation at different stages of the process. The sequences that were examined in this study were those in which the child, the parent and the speech and language therapist together performed linguistic tasks. The focus of the analysis was on co-operation among the participants, and, more specifically, sequential structure and turn allocation in multiparty interaction. Data from the therapy sessions of three children were included in this study, and the children's hearing age varied from 1 year, 1 month to 1 year, 10 months. A total of 47 task sequences was analysed.

This study showed that the therapist's professional practices in promoting the children's language learning in task interaction, for example the use of multimodal elements and prosodic highlighting, were similar to those used in individual CI therapy (see Study I). However, this study examined the features that are typical of multiparty therapy interaction, and explored the specific goals and institutional tasks of interaction in a multiparty setting. In multiparty therapy sessions, the therapist concentrated on two goals, namely supporting the child's spoken language learning and guiding the parent to use practices that promote the child's language acquisition. The therapist directed her attention to these different goals without disturbing the flow of the therapy. She used recipient-oriented formulation of talk (Sacks et al., 1974) for two different recipients and specifically designed her turns for each of them.

The analysis of this study pointed out the development of participatory roles in the therapy. Shifts in participation were scrutinised in three different stages. In the first stage, *therapist-driven task interaction*, the therapist modelled practices that can promote children's language learning. The parent observed the therapist working with the child, and took only a few, short turns, which did not provide information which would effectively support the child's learning. In the second stage, *shared practices*, the parent took a more active part in the therapy tasks together with the child and the therapist. The parent took more responsibility and shared the therapeutic practices in the tasks at hand. An example of this is shown in Extract 4.

Extract 4.

A linguistic task with a game board:

SLT=speech and language therapist

E=Emmi, hearing age 1 year, 2 months (chronological age 3 years, 3 months)

M=mother

- 01 SLT: nyt pitää miettiä kumpi on suurempi possu vai
lehmä
**now you have to think which one is bigger
the pig or the cow**
POINTS AT THE PICTURES ON THE GAME BOARD

- 02 E: possu
the pig
POINTS AT THE PICTURE
- 03-07 *((lines removed; the therapist and the parent repeat the question))*
- 08 SLT: *katotaas °mmm joo näist se on helpompi°
***let's see °mmm yes it is easier with these°**
*TAKES SOME DOLLS FROM THE TABLE
- 09 → näiss on *tämä on suurempi ku **tuo
in these is *this one is bigger than **that one
*POINTS AT THE BIG DOLL **POINTS AT THE SMALL DOLL
- 10 → **BIG*
eikö nii tämä on *suu::rempi
isn't it that this one is *bigger
- 11 E: (joo)
(yes)
- 12 → M: ja *Leena on [suurempi ku *sinä
and *Leena is bigger than *you
*POINTS AT THE THERAPIST *POINTS AT EMMI

The participants are sitting at a table and looking at a picture game board in front of them. The therapist sets a new task of choosing which is bigger, a cow or a pig (line 01), and simultaneously points at the corresponding pictures. Emmi's answer, **the pig**, is incorrect (line 02), and the therapist and the mother repeat the question (lines 03-07, removed from the transcript). Emmi does not react to the questions posed by the therapist and the mother. Therefore, the therapist and the mother give concrete examples to help her understand the question, with the therapist going first and the mother following the therapist's example. The therapist takes the dolls that Emmi was playing with before the task and uses them to concretise the comparative form "bigger". She points at the dolls and says **in these this one is bigger than that one, isn't it that this one is bigger** (lines 09-10). She also signs *BIG* with the word **bigger** and emphasises the word by forcefully lengthening the vowel sound. After the therapist's turn, the mother tries to make the comparison even more concrete to the child by using the therapist and the child as examples (line 12). She also points at the persons she is talking about. However, despite concretisation and the help given by

both adults, Emmi does not answer, and the participants move on to the next task.

This extract shows that the therapist and the mother used shared practices in a task sequence with the child. They both oriented themselves to helping the child solve linguistic tasks, and the parent adopted the therapist's style to give a concrete example to help the child comprehend. The parent also used clarifying gestures along with speech in the same way as the therapist. The use of shared practices showed that the therapist and the parent had achieved an important therapy goal, namely to teach the parent to use practices that support the child's learning.

In the last stage, *parent-driven task interaction*, the parent took the lead in task interaction. The parent took responsibility and, for example, set tasks and gave feedback to the child. The parent also formulated his turns in a recipient-designed manner and used practices that were suitable to the child's linguistic level. An example of this is shown in Extract 5.

Extract 5.

Playing a memory game:

SLT=speech and language therapist

L=Lilja, hearing age 1 year, 10 months (chronological age 5 years, 1 month)

F=father

- 01 F: isi kattoo tästä vierestä (.) mikäs täällä on
dad looks here next to it (.) what is in here
 TURNS A CARD
- 02 L: keetu
“a fox” ((incomplete phonological form of the word *kettu*, **a fox**))
- 03 F: <kettu>
 <**a fox**>
- 04 → SLT: kettu (0.2) *kettu* *pörröhätä
a fox a fox *fluffy tail
 *POINTS AT THE PICTURE

The three participants, the child Lilja, her father and the therapist, are sitting at a table and playing a memory game. When the sequence begins, the father sets the task (line 01). He turns a new card and asks, **what is in here**. When Lilja sees the picture, she names it correctly as a fox, but produces the word in an incomplete phonological form (*keetu* instead of *kettu*, line 2). The father then models the correct form for Lilja in his next turn (line 03) and

also emphasises the word by slowing down his speech tempo. In the next turn (line 04), the therapist joins the conversation and also models the correct form of the word. She emphasises the phonological form of the word by stressing the last syllable and thus points out exactly the part that Lilja produced incorrectly. In addition, the therapist repeats the word and expands its meaning by describing the features of the animal in question (**a fox a fox fluffy tail**). This example illustrates that the father has learned to set tasks and give feedback to the child on her pronunciation. The therapist allows the father do that job, but she in turn uses more elaborate techniques and models them for the father.

In the stage of parent-driven task interaction, the parent also used therapeutic approaches that helped the child identify the sounds of words and succeeded in helping the child produce correct responses to the tasks. When the therapist gave the parent room to work with the child and directed the child's attention to the parent, it underlined that the sequence structure was not therapist-led, but the parent was highlighted as the person to set the task. Data extracts showed that when the parent succeeded in encouraging the child to produce the correct answer by using the therapeutic practice he had learned, the therapist gave explicit positive feedback to the parent and evaluated the work he had done. This showed that along with rehabilitating the child, the therapist sought specifically to guide the parent. The parent is also seen as a "target" of therapy, someone to be trained by the therapist. This direct guidance and training allows the parent, in a practical way, to learn and internalise practices that are beneficial for the child's development, and also helps the parent generalise the skills learned in everyday communication in the family.

To sum up, Study II showed how the therapist and parent together addressed one of the main goals of the therapy: to help parents become the primary facilitators of their child's spoken language development (see e.g. Estabrooks, 2006). During the task interaction, the therapist and the parent allied and worked together towards a shared goal. The therapeutic practices were modelled for the parent, and responsibility for the child's development was gradually shifted to the parent. The parents learned, for example, to set therapy tasks, use concrete linguistic formulations, correct their child's speech production and emphasise the phonetic features of words. In the analysis, the parents' developing knowledge was marked by changing participation. The same thing has been described by Sellman (2008) in the case of adult participants in voice therapy. In this study, the change appeared in the form of longer and more frequent turns and more complex sequence structure, where the parent played a more active role in taking turns.

3.3 PROMOTING LEXICAL LEARNING IN THE SPEECH AND LANGUAGE THERAPY OF CHILDREN WITH COCHLEAR IMPLANTS (STUDY III)

The acquisition of vocabulary may be slower for CI-children than for their peers with normal hearing. Thus, lexical training is an important part of CI-children's speech and language therapy (e.g. Blaiser et al., 2014). Slower lexical development may be due to the fact that CI-children may not be able to learn incidentally to the same extent as their normally hearing peers. Consequently, in speech and language therapy with CI-children, direct instruction and numerous repetitions of spoken words are required if the children are to acquire and maintain new vocabulary (Walker, 2010). This study examined lexical intervention sessions in speech and language therapy for CI-children. Particular focus was placed on the therapist's professional practices in supporting the children's lexical development. The participants were three CI-children, whose hearing age varied from 2 years, 1 month to 3 years, 3 months. Interaction with their speech and language therapist was studied in lexical task sequences in which the participants played board games, worked with vocabulary worksheets and made crafts, e.g. paper dolls. The data consisted of 81 lexical task sequences.

In the lexical tasks, the therapist worked on both the phonological form and the lexical meaning of the word. After data analysis, the sequences were divided into groups according to the therapeutic practice used in the task. Four groups emerged from the data. The therapeutic practices in the lexical tasks and their frequencies in the data are presented in Table 4.

Table 4: Therapeutic practices in the lexical tasks

Therapeutic practice	Number of sequences
Modelling the word in correct phonological form -with neutral prosody (16) -with exaggerated prosody (23)	39
Working on the lexical meaning of the word -expanding the lexical meaning of the word - specifying the lexical meaning of the word - correcting the lexical meaning of the word	18 13 11
Total	81

In about half the sequences, the child produced a semantically correct word, but the phonological form was incomplete. In these cases, the therapist produced a corrective repetition, whereby she approved the child's lexical choice, but at the same time modelled the correct phonological form of the

the correct form (Gardner, 1998). With this practice the therapist ensures that the CI-child hears the correct version of the word. This prosodically emphasised corrective repetition also invites Elisa to correct her own production, as in line 03 she tries to imitate the therapist's correction, and successfully produces the first consonant of the word (**it is "lii"**) (cf. Tarplee, 1996; 2010). After Elisa's correction, the therapist approves it by saying, **yes it is "lil lil liimaa"**, and playfully repeats the sound that has been dealt with in the sequence. The correction sequence ends in a playful way, which possibly softens the delicate nature of direct correction.

In the other half of the lexical task sequences, the lexical meaning of the word was the focus. In these cases, the therapist worked to expand, specify or correct the meaning of the target word. Some of the therapist's practices were similar to those described in earlier research with typically developing and language-disordered children. For example, the therapist specified and corrected the lexical meanings of the children's words in the same way as parents do with their typically developing and language-disordered children (Laakso & Soininen, 2010; Vander Woude & Barton, 2001). Likewise, the therapist systematically expanded the children's utterances and modelled correct linguistic forms, which is a typical practice in speech and language therapy and in teaching language-disordered and hearing-impaired children (Mahon, 2009; Radford et al., 2012; Ridley et al., 2002; Tykkyläinen, 2005). Extract 7 presents a task sequence in which the therapist works with the lexical meaning of the word and specifies the meaning of the word the child uses. The therapist's practices are shown in lines 03-04.

Extract 7.

Colouring; spontaneous naming:

SLT=speech and language therapist

S=Sofia, hearing age 3 years (chronological age 5 years, 7 months)

- | | | |
|------|------|---|
| 01 | | S TAKES A CRAYON FROM THE BOX AND STARTS TO COLOUR |
| 02 | S: | suhuu
"mouth" ((incomplete phonological form of the word <i>suu</i> , mouth)) |
| 03 → | SLT: | ja suu? huulet (0.8) ne on (0.5) <huulet?> (1.6) oi? miten
and mouth? lips those are < lips?> oh? how |
| 04 → | | vahvat huulet
strong lips |

- 05 S: *ME PURPLE*
(--)
- 06 SLT: ai sinullaki on liilaa siellä
oh you have purple there as well

The therapist and the child, Sofia, are sitting at a table, and Sofia is colouring a picture. She spontaneously names a picture as mouth (line 02), and the therapist produces feedback, whereby she first approves the child's word by repeating it (**and mouth**), but then hurries to replace it with another, more exact word, **lips** (line 03). She highlights the new word prosodically by slowing down her speech tempo and repeating the word a total of three times during her turn (lines 03-04). In addition to emphasising the target word in different ways, the therapist also expands the utterance by describing it with an adjective (**oh how strong lips**). The therapist's turn in lines 03-04 both validates and corrects the child by identifying the exact item. This way the therapist aims at expanding the child's vocabulary and establishing the exact meanings of words. However, in this sequence Sofia does not repeat the new word after the therapist, but continues the conversation.

The last extract shows another example in which the therapist works with the lexical meaning of a word, this time correcting the meaning of the word the child uses. The therapist's practices are shown in lines 03 and 05.

Extract 8.

A naming task:

SLT=speech and language therapist

S=Sofia, hearing age 3 years (chronological age 5 years, 7 months)

- 01 SLT: mikäs ↑se on
what is ↑that
POINTS AT THE PICTURE OF A NAIL
- 02 S: *HIT WITH A HAMMER*
po po po po
“**nocknocknocknock**” ((incomplete
phonological form of the expression *kop kop*, **nock
nock**))
- 03 → SLT: <↑naula>
<↑**a nail**>

- 04 S: laua?
“a nail?” ((incomplete phonological form of the word *naula*, **a nail**))
- 05 → SLT: ↑naulaa hakataan kop ↑kop kop kop kop isä hakkaa
naulan seinään?
↑you hit the nail nock nock ↑nock nock nock
daddy hits the nail into the wall?

The therapist asks Sofia the name of the target word in line 01. Sofia answers by signing *HIT WITH A HAMMER* and by producing an onomatopoeic expression to represent the action (*po po po po*, **nock nock nock nock**). Sofia's answer is related to the correct topic, but she does not name the object in the picture, a nail. The therapist makes a correction in line 03, where she names the object and highlights the word by slowing down her speech tempo and using a higher than normal pitch. In this way, the correction is made explicit prosodically. It is also produced in an isolated turn, which does not serve any task other than to make a correction. This leads the child to make a correction (Radford et al., 2012), as in line 04 Sofia repeats the correct word (*laua*, **a nail**).

The therapist's turn in line 05 is a long one. She repeats the target word twice and also makes an expansion, describing the action related to the target word. In the expansion, she utilises the word that Sofia signed in her answer and binds it to the target word (**you hit the nail**). She also uses the same onomatopoeic expression that Sofia used (**nock nock nock nock**), and from these elements she builds a full sentence, which is further expanded (**you hit the nail nock nock nock nock daddy hits the nail into the wall**, line 05). The therapist formulates her expansion around the elements that the child used (Ridley et al., 2002), and the solution to the task includes elements they have both used. In this way, the therapist endeavours to perform the task in co-operation with the child. The therapist acknowledges the child's participation and treats her as a competent participant in the conversation (Tykkyläinen, 2005).

To sum up, Study III explored interaction in lexical intervention sessions of CI-children. The therapist used a systematic set of practices and multimodal resources to support the CI-children's lexical acquisition. For example, by highlighting and repeating the target words, the therapist invited imitations from the children, and by using emphasised prosody she eased the perception of sounds and encouraged the children to produce correct sounds. These practices are explained in therapy manuals (e.g. Estabrooks, 2006), and this study showed how they work in the field. The systematic use of therapeutic practices demonstrated the therapist's orientation to her institutional task in lexical intervention sessions. This finding is in

accordance with previous research on speech and language therapy interaction with other types of clients (Gardner, 2005; Sellman, 2008; Tykkyläinen, 2005).

4 DISCUSSION

This study examined speech and language therapy interaction in CI-children's therapy. The empirical part described in detail the professional practices that the therapist used to promote the children's spoken language learning. The practices were analysed in task and play sessions at three different stages of the therapy (Studies I-III). This study adds knowledge to the research on speech and language therapy interaction and therapists' professional practices. The aim of institutional interaction research is to enable reflection on and critical observation of clinical work (Arminen, 2005: 81-83). The analytical findings can assist in identifying details of interaction and professional practices that might otherwise go unnoticed (see also Raevaara et al., 2001). With CA studies, therapy is opened up for reflection and dialogue with the theories and descriptions offered by manuals. The analysis presented in this thesis demonstrates how professional stocks of interactional knowledge are formed (Peräkylä & Vehviläinen, 2003) and how they are shown in speech and language therapy with CI-children. Furthermore, this study opens a window on CI-children's skills and capabilities by analysing learning in interaction. In the last chapter of the thesis, I will discuss the study's findings with regard to previous research and consider the clinical implications of these findings. In addition, I will discuss the methodological issues and future perspectives.

4.1 MAIN FINDINGS OF THE STUDY

This thesis, which systematically examines one therapist's professional practices and their consequences, contributes to the research on speech and language therapy interaction and also more broadly to studies of institutional interaction. Moreover, this study provides descriptions of therapy techniques and interactions that can be useful for clinicians working with CI-children as well as with children with other communication disabilities. The speech and language therapy interactions and the therapist's goal-oriented practices analysed herein are reminiscent of those described in previous research (Gardner, 1998, 2005; Sellman, 2008; Tykkyläinen, 2005). Moreover, the use of multimodal resources, which has earlier been described as typical of linguistically asymmetric interaction, is also highlighted (e.g. Goodwin, 1995, 2000; Klippi, 1996; Pajo, 2013; Tykkyläinen, 2005). I will scrutinise these findings more closely below.

The thesis highlights the institutional nature of the speech and language therapy interaction, which is demonstrated in the therapist's practices. The study describes how the therapist puts into practice her institutional tasks

and endeavours to attain the goals of the therapy. This is shown in the way in which she systematically modifies her turns in a recipient-oriented manner in the same way as reported in previous research (Gardner, 1998; Sellman, 2008; Tykkyläinen, 2005, 2009). The therapist sets tasks in a way that is suitable for the children's skills and gives feedback to the children on their performance. Some of the therapist's practices are similar to those described in the speech and language therapy research on children with language and phonological disorders (Gardner, 1998, 2005; Tykkyläinen, 2005) and in teaching interaction (Radford et al., 2012; Ridley et al., 2002). These include, for example, the way that the therapist models correct linguistic structures and corrects and expands children's utterances. Using these practices, the therapist provides linguistic information for the children, gives them cues and helps them to produce correct responses. The three-part structure of interaction, which according to previous studies is typical of speech and language therapy interaction (Gardner, 2005; Sellman, 2008; Tykkyläinen, 2005), was also found in this study.

Next, I will examine the study's main findings in more detail. I will first discuss the therapist's use of multimodal resources and emphasised prosody. The central role of these resources and techniques in speech and language therapy interaction and linguistically asymmetric interaction was strengthened in this study (e.g. Goodwin, 1995, 2000; Pajo, 2013; Tykkyläinen, 2005). The systematic use of multimodal resources increases the fluency of communication when the client's linguistic skills are limited. For example, the therapist used gestures, signs, body movements, gaze and therapy material in the same way as has been noted in previous research on speech and language therapy interaction (e.g. Panagos et al., 1986b; Tykkyläinen, 2005). The emphasised use of multimodal elements is characteristic of CI-children's therapy, especially at the beginning of CI use, when the children are not accustomed to listening. Study I showed that the therapist used gestures and body movements to attract and maintain the children's attention, and clarified her spoken messages with signs and gestures. For example, the therapist signed the keywords simultaneously with her speech and produced gesture-speech combinations to reinforce her spoken message (cf. Iverson & Goldin-Meadow, 2005). Cross-modal gesture-speech combinations served as a model to the children, who mostly used one element utterances in their own turns (gesture alone, or gesture in combination with vocalisations). However, studies show that the number of signs and gestures in communication with CI-children diminishes as soon as the children's spoken language develops with successful CI use (Mahon, 2009; Tait et al., 2007).

In addition to gestures and signs, the therapist's turns were emphasised with controlled and modified prosodic features. These have been reported earlier as being characteristic features of speech and language therapy

interaction (Tykkyläinen, 2005), and they recall the so-called clinical therapy register (Panagos et al., 1986a; Reuvers & Hargrove, 1994). The prosodic features that the therapist used in these data occupied a special position in her turns. Prosody was emphasised by slowing down speech tempo, lengthening sounds and words, and variations in intonation and pausing. At the beginning of CI use, identification of suprasegmental features of speech is easier than identifying segmental features (e.g. Estabrooks, 2006), and the therapist made use of this knowledge by greatly exaggerating prosody and rhythm. In Study I, for instance, the therapist often used singing and rhythmic vocalisations in her turns. She used interjections and onomatopoeic utterances, which are easy to hear owing to their prominent prosodic features. The therapist also segmented the parts of her utterances with varying prosodic features (e.g. changes in pitch, voice quality, speech tempo, and pausing) to make them more salient to the child. The data extracts demonstrated that the therapist's speaking style was successful in attracting and holding the children's attention, helping them to recognise sounds and encouraging them to imitate vocalisations at the beginning of CI use. In lexical training with CI-children (Study III), the therapist particularly emphasised the target words to separate them from continuous speech. For example, the target words were highlighted by stressing or lengthening the sounds or slowing down the speech tempo or using a rise in pitch. Prosodic highlighting was often accompanied by exaggerated articulation movements, which assist the children in paying attention to the speaker's lip movements, thereby also evoking the children's interest in imitation. However, in Study III the children did not often spontaneously imitate the therapist's reformulated words or corrections, which may be due to hearing-related issues or to interactional factors. Nevertheless, throughout the data the therapist ensured that the children were provided with sufficient auditory input, and she constantly paid attention to the children's hearing, immediately correcting possible mishearings during task interactions.

The therapist's speaking style with CI-children had features similar to child-directed speech (see e.g. Cruttenden, 1994; Ochs et al., 2005; Paavola, 2006; Snow, 1994). Even though the nature of speech and language therapy interaction is institutional, in the early stages of CI use, the therapist provided support in a manner that recalls child-directed speech, as Mahon (2009) has also noted in her research. The therapist designed her speech in a natural manner and in a way suitable to the children's skills. This was especially highlighted in Study I, where the focus was on developing the children's listening and vocalisation skills. In her turns, the therapist greatly exaggerated the speech prosody and rhythm, whereas the linguistic material was very simple and repetitive, containing very little linguistic information. The model of "child-directed communication" introduced by Ochs et al. (2005) is also appropriate in this connection, because besides speech, it

includes other elements of communication (gestures, gaze, touch, writing, pictures, music) and is not only used by parents, but also by other adults.

The second main finding of this study is the enhanced collaboration between participants, which according to previous studies is typical of linguistically asymmetric interaction (e.g. Bloch, 2005; Bloch & Wilkinson, 2011; Laakso & Klippi, 1999; Pajo, 2013). The linguistically more competent speaker, the therapist, offered support to the linguistically challenged participant, the child. As described in the social interactional approaches on language learning (Bruner, 1983; Vygotsky, 1978; see also Lave & Wenger 1991; Rogoff, 1990), learning was promoted through collaboration between the child and the therapist. The therapy activities took place in the zone of proximal development (Vygotsky, 1978: 86), where the children were able to complete tasks with the assistance of the therapist, who promoted their development. In therapy sessions, the therapist aimed to support the children's participation and bring out their competence, as Gardner (1998) and Tykkyläinen (2005) have also demonstrated in their studies. For example, in the early stages of the therapy (Study I), the children's participation was still limited, but the therapist encouraged them to participate in shared activities. She acknowledged the children's efforts to participate and approved their nonverbal turns as competent turns in conversation. In the later stages of the therapy, in lexical training sessions (Study III), the therapist co-constructed task solutions together with the children, and in that way tried to maintain the children's active role in carrying out therapy tasks (Tykkyläinen, 2005). Thus, this study views asymmetric interaction from a perspective that highlights co-operation between the participants. It challenges the view that sees clients as passive respondees, describing them instead as active participants and showing their competencies (Gardner, 1998; Sellman, 2008; Tykkyläinen, 2005).

Last, this study provides information about the ways in which parents can be involved in the therapy. The aim of rehabilitation is to teach the parents practices that they can use to support their child's communication at home. When this aim is achieved, it will influence not only the child's environment, but also the child's participation in everyday life (WHO, 2001). In this study, parent participation in the children's therapy sessions was not systematic, but the study does offer insights into the practices used when the parents take part. The data extracts in Study II demonstrated that besides the children, the parents were also the "target" of the therapy. The study explored the ways in which the therapist modelled practices that support the children's linguistic development and gave concrete feedback to the parents on their performance with the child. On the other hand, besides being the "target" of the therapy, the parents also worked side-by-side with the therapist, as her partner. They attempted to achieve the goals of the therapy together and promote the children's spoken language learning together.

Parent participation is acknowledged as being an important part of the therapy process and affects the results of the therapy positively (Moeller, 2000; Moog & Geers, 2010; Quittner et al., 2013; Yoshinaga-Itano et al., 1998). Studies with language-disordered children and children with speech sound disorders have shown, however, that parents do not support their children's development in as systematic and goal-oriented way as do speech and language therapists (Gardner, 2005; Tykkyläinen, 2009). This study points out that in the therapy sessions, the therapist systematically modelled techniques and practices that supported the child's spoken language learning and offered the parents an opportunity to learn them. The data extracts showed that the parents learned to model linguistic and phonetic formulations, for example, and to correct their child's productions. Therefore, the systematic teaching and modelling of these practices is useful for parents. When the parent experiences success in helping the child and gets positive feedback from the therapist, it can build the parent's sense of self-confidence in supporting the child's development (Luterman, 2001: 173), which in turn may enhance the use of facilitative strategies.

To sum up, this study offered new insights into the speech and language therapy for CI-children. It highlighted the specific features of therapy and introduced techniques and strategies that are used in therapeutic interventions. The children were provided with repetitive and prosodically emphasised spoken language models to enhance their listening and spoken language skills. In addition multimodal elements were systematically used in the therapy sessions. The study showed that the therapist endeavoured to support the children's participation and foster their competence, which was seen in the form of enhanced collaboration. Furthermore, this study highlighted the importance of parent participation in CI-children's speech and language therapy.

4.2 METHODOLOGICAL ISSUES

In this section, I will discuss the issues concerning the method, the data and the participants in this study.

The method used herein has been conversation analysis, which is suitable for examining speech and language therapy interaction. With CA, it is possible to analyse details of interaction that are difficult to detect with other methods. CA studies can reveal competencies of participants that might remain buried when studied without their context; for instance, the meaning of participants' incomplete turns or part of turns that seem irrelevant as such can be discovered with the support of other participants and contextual information (e.g. Goodwin, 1995, 2000). Interaction is a central tool for therapists, and by analysing their professional practices we can see how the

therapy is carried out (Raevaara et al., 2001). CA studies are also ecologically valid, because the findings are based on the interpretations that the participants make of each other's turns. The sequential analysis indicates the consequences that the participants' turns have on other participants' actions, which in this study means the consequences that the therapist's practices have on the children's actions. For these reasons, CA has been well-suited for this thesis (on the validity of CA, see Peräkylä, 2010).

The data for this thesis consisted of video recordings from seven CI-children's speech and language therapy sessions, totalling approximately 36 hours. The data are ecologically valid, as they have been collected in naturalistic therapy sessions. The overall duration of the recordings is long, and the strength of the video data was that several recordings from each child had been made at different time points over a long time span. The weakness of the video data, however, was that the recordings had not been originally collected for research purposes. The researcher thus had no input into decisions about the content and the length of the recordings, which varied greatly. The content and quality of each recording affected the accuracy of each analysis. If the recordings had been originally collected for research purposes, their content could have been planned carefully, which would have made it possible to achieve larger data collections and make longitudinal analyses. However, this did not prevent making a collection of data extracts representing the therapist's professional practices in promoting the spoken language learning of CI-children.

The number of sequences analysed in each study (Study I: 30 sequences, Study II: 47 sequences, Study III: 81 sequences) was sufficient to examine the variation of the chosen phenomena. In Study I, the sequences were divided into two different groups, while in Study III, four different groups emerged from the data. In Study II, parent participation in CI-children's therapy was examined with examples from the data representing different forms of co-operation among the participants. However, the examples described several different therapy activities. The analysis in Study II would have been improved had the data been collected from more similar activities.

In the transcriptions, the nonverbal elements of speech were marked as carefully as possible. Quite often, though, this was not possible, such as when one of the participants moved away from the camera every now and then. This could have been avoided with careful planning of the data collection or by using two cameras. The speech prosody was mainly transcribed according to the auditory perception of the researcher and supplemented by PRAAT software (Boersma & Weenink, 2017). The use of prosody is an important part of speech and language therapy practices, and could have been transcribed and studied more carefully and with better accuracy. However, the aim of this study was to describe the wide range of different therapeutic

practices, which led to the decision to undertake a rougher transcription and analysis with regard to each individual feature.

Patient records for the children who participated in this thesis were rather limited, both in number and in quality. It would have been useful to have more accurate and systematic information about the children's linguistic skills. There were no systematically collected test results for the children's linguistic performance; the reports that were available mostly consisted of speech and language therapists' descriptions of the children's skills. Likewise, information about the course of each child's therapy, for example, the frequency of parents' participation, was not available. If that information had been available to the researcher, it would have been possible to report more carefully on the linguistic skills and the specific aims of the therapy for each participant.

Only one speech and language therapist participated in this study, which means that the practices analysed describe those of only one therapist. It would have been desirable to collect data from several therapists to enable a broader description of speech and language therapists' professional practices. On the other hand, the therapist who participated in this thesis had long experience working with hearing-impaired children and had worked with CI-children since cochlear implantations were initiated in Finland. Therefore, the practices that are analysed in this study are representative of a quite experienced therapist. To enable the findings to be more generalisable, more research and cumulative information about therapeutic practices is needed (e.g. Peräkylä, 2010).

The data for this thesis were collected during the years 1997-2005, and the children's age at cochlear implant activation varied from 1 year, 8 months to 3 years, 10 months. Today's implantation practices (Hyvärinen et al., 2011) are different, and according to well-established clinical practice in Finland, the aim is to implant congenitally deaf children at the age of 10-11 months. Moreover, nowadays almost all congenitally deaf children in Finland receive bilateral implants. This change has enabled faster spoken language development for congenitally deaf children. Therefore, the children in this study are not representative of present implantation practices. In these children, the gap between hearing age and chronological age is greater, and their cognitive development is ahead of their spoken language development. However, the aim of this study was not to describe the linguistic skills of CI-children in relation to their chronological age or hearing age. The therapist's practices that were examined remain the same despite the children's cochlear implantation age, and more specifically, these practices are used with regard to the children's spoken language skills. It is also important to note that even though the spoken language development of CI-children can, in the best

cases, be quite rapid, some of the CI-children have additional disabilities which introduces more challenges for their rehabilitation (Lonka, 2008).

4.3 CLINICAL IMPLICATIONS AND FUTURE PERSPECTIVES

In the last section of this thesis I will discuss the clinical implications of the findings and consider some perspectives for future research.

This study explored features that are typical of speech and language therapy interaction and analysed the therapist's professional practices in speech and language therapy for CI-children. The examination and analysis of professional practices enables their systematic use in clinical work. This thesis provides detailed and concrete descriptions of the therapeutic practices with which most therapists are familiar. However, when systematically specified and differentiated, the practices are more easily adapted to clinical use and developed more consciously (e.g. Sellman, 2008; Tykkyläinen, 2005). This thesis can thus offer tools for developing and improving practices in clinical work. The study analysed the practices of one speech and language therapist and features that are typical of the speech and language therapy with CI-children. In the future, more research is needed to explore the identified practices among children with other communication disabilities and in wider populations. In that way, we could gain more cumulative knowledge of speech and language therapy interaction and the therapists' professional practices.

Another useful benefit of the findings here would be to use this knowledge in the training of speech and language therapy students. From early in their education, speech and language therapy students could be guided to pay careful attention to the details of interaction and to identify different interactional practices with the help of video-recorded therapy sessions. Video feedback, whereby professionals receive feedback from their own interactional behaviour, is effective for improving their interaction skills and communication in professional settings (Fukkink et al., 2011; see also Cummins et al., 2013). Moreover, video counselling could be useful for CI-children's parents and other adults working with CI-children in their daily surroundings. They need guidance in how to support the children's language development, and this can be actualised by learning to identify different techniques and strategies from video clips. For example, studies by Gardner (2006) and Samuelsson and Plejert (2015) have shown positive experiences of CA-based video guidance. In Samuelsson and Plejert's study, the adults working with language-disordered children learned to identify different communication strategies while watching videos of communication situations with those children. In a similar way, Gardner's (2006) study has

shown that with CA-based guidance, adults working with children who have speech sound disorders learned to use techniques that are helpful in supporting the children's speech development.

Recent work on interaction-focused intervention using CA has produced evidence that intervention targeting conversations involving a participant with a communication disorder and their partner can undergo change (e.g. Wilkinson & Wielaert, 2012). The findings of this study also inspired an idea about intervention, whereby communication between a CI-child and their parent could be recorded and retrospectively analysed (see Samuelsson & Plejert, 2015). It would then be possible to practise identifying and using techniques and strategies that are beneficial in supporting children's spoken language development. With a systematic CA-based method, it would be possible to point out to parents the consequences that adults' actions have on children and how to use techniques that promote children's learning. In the same way, video recordings could be used to demonstrate for parents the children's competencies and skills that the parents may otherwise miss, given that in the early stages of CI use such skills can still be modest. This also leads to an idea for future research. An analysis of parent-child interaction would be interesting, and the findings could be compared to therapist-child interaction, as for example Tykkyläinen (2009) and Gardner (2005) have done. It would be useful to examine the differences and similarities of the interactions between parents with CI-children and professionals with CI-children.

Furthermore, the findings of this study could be applied to speech and language therapy with children who have other communication disorders. Many of the therapeutic practices demonstrated in this study are similar to those used with language-disordered and language-delayed children. For example, expanding and correcting children's utterances and modelling language are very typical of children's speech and language therapy in general. Moreover, working with the children's parents and involving them in the therapy is part of children's speech and language therapy for various disorders. This thesis demonstrates with concrete examples how these practices are used, and the findings could be beneficial to therapists working with children who have other communication disorders. As for future research, the practices that have been identified and analysed in this study could be examined in therapies of children with other communication disorders, in order to discover possible similarities and differences between them.

The aim of this study was to provide a description of the repertoire of different therapeutic practices used in therapy with CI-children. It would also be interesting to study some of those individual practices in more detail. For example, speech prosody proved to be an essential part of the therapist's

practices, and its detailed examination would add knowledge about prosody that is typical of speech and language therapy. Moreover, it would be interesting to broaden the focus of this study to describe the children's development in more detail and analyse different developmental issues. CI-children's linguistic skills could be studied by using standardised language tests along with interaction analysis, and the children's developing language could be followed for its manifestations in interaction and therapists' practices. As Peräkylä (2004) emphasises, the detailed and naturalistic descriptions of interaction that CA studies offer, should be combined with therapy outcome measurements to achieve a broader and deeper picture of outcomes. Overall, further studies should include an examination of speech and language therapists' practices as well as an analysis of children's communication abilities now that implantation practices have changed and children are usually fitted with bilateral cochlear implants at an earlier age than in this study.

Finally, drawing on the findings of this thesis and earlier research, I suggest a summary of points that are important for communicating with CI-children as well as with any hearing-impaired children. These basic instructions can be used to support CI-children's listening and spoken language development in everyday settings. These guidelines are based on the findings related to the video recordings in the three original articles. The results of this study support the clinical knowledge and experience that speech and language therapists have accumulated over the years. Here, the guidelines are listed as short and specific instructions.

1. Attracting and maintaining the child's attention

In talking to a hearing-impaired child, the adult needs to gain and hold the child's attention during the talking turns. In attracting and maintaining attention, prosodic features play an important role. This means that the child's attention can be attracted by using emphasised prosody, for example interjections (“oh”) and onomatopoeic utterances (e.g. sounds of animals and vehicles, “meow”), which are easy to hear because of their prominent prosodic features. Singing and melodically produced utterances also help to attract a child's attention, because suprasegmental features of speech (e.g. intonation and rhythm) are easier to detect than segmental features. In addition, gestures and changes in body posture (e.g. pointing, touching, leaning closer to the child) are helpful in gaining the child's attention.

2. Connecting meaning to sounds

CI-children are not accustomed to listening to sounds in their surroundings and therefore need concrete guidance to be able to pay attention. They need help in localising the sound sources in their surroundings and connecting meaning to sounds. This is done by showing concrete sound sources (e.g. toys, instruments, environmental sources) to the

children and helping them to understand the connection between the sound and its source. Speech sounds and words should be combined with specific objects to highlight the word-referent relation in a concrete way, for example by showing the item while simultaneously producing a sound related to it or naming it.

3. Ensuring the child's hearing

When communicating with a hearing-impaired child, it is always important to ensure that the child can hear as well as possible. This can be achieved by staying close to the child and speaking to them directly. It is easier for the child to perceive speech if the child can see the speaker's face. It is also important to use a speaking voice that is loud enough and slow in pace. Messages should be repeated when necessary; it is also helpful to check what the child has heard (by asking, "What did you hear?").

4. Emphasising and repeating key words

It is important to emphasise the key words of a message to children who are acquiring language. Parts of utterances can be segmented with varying prosodic features to make them more salient to the child. The key words can be highlighted amidst the surrounding talk by pausing before the key word or slowing down the speech tempo in producing the key word. This gives the child time to process what they have heard. Other useful methods are to use a higher than normal pitch, stressing parts of words and stretching speech sounds. For example, singing emphasises the rhythm of speech and highlights the keywords in a sentence. The key words also need to be repeated several times so that the child has an opportunity to memorise them.

5. Clarifying spoken turns with multimodal features

The use of multimodal features, such as gestures and signs, is important, especially in the early stages of language learning. Spoken messages can be clarified with signs and gestures, for example by using gesture-speech combinations, which reinforce spoken messages, or by signing key words while also speaking them. However, the primacy of listening and spoken language can be emphasised by using spoken language first, before giving multimodal cues.

6. Correcting mishearings immediately

If it appears that the child has misheard something, it is important to correct such mishearings immediately. The child may have learned words incorrectly, and needs an instant model of the correct versions. When correcting misheard words, the incorrect sounds must be emphasised (as above: slowing down speech tempo, stretching the sounds, stressing). The misheard sound can be contrasted with the correct sound emphasising the

difference between the right and wrong versions (“se ei ole piima vaan llliima”, “it is not *piima* but *llliima*”).

7. Expanding children's utterances and lexicon

Hearing-impaired children need to be provided with systematic and repetitive language models. The children's utterances should be expanded and new words and linguistic structures modelled. A child's phrases are expanded by adding semantic and syntactic details, for example by producing a full sentence with the word the child has used or adding grammatical markers to the child's incomplete utterances. The child's utterances can also be extended by adding more information, such as by describing the features of the words the child has used.

To conclude, the focus of this thesis has been interaction, specifically, the theoretical approaches that focus on language learning in interaction and the interventions that emphasise the role of interaction in improving children's language skills. The study has shown that interaction is an essential tool for speech and language therapists. The therapist's professional practices were explored in this study in several different play- and task situations, and in all of those the practices were the same. It therefore appears that the content of the activity does not play a key role in supporting children's language development. More importantly, spoken language development can be supported in all everyday activities, and the systematic, child-oriented and emphasised way of providing language to children plays the biggest role.

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